

FEDERAL TRADE COMMISSION DECISIONS

FINDING, OPINIONS, AND ORDERS

PUBLISHED BY THE COMMISSION

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The Office of the Secretary
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**MEMBERS OF THE FEDERAL TRADE COMMISSION
DURING THE PERIOD
JULY 1, 2006 TO DECEMBER 31, 2006**

DEBORAH PLATT MAJORAS, *Chairman*
Took oath of office August 16, 2004.

PAMELA JONES HARBOUR, *Commissioner*
Took oath of office August 4, 2003.

JON LEIBOWITZ, *Commissioner*
Took oath of office September 3, 2004.

WILLIAM E. KOVACIC, *Commissioner*
Took oath of office January 4, 2006.

J. THOMAS ROSCH, *Commissioner*
Took oath of office January 5, 2006.

DONALD S. CLARK, *Secretary*
Appointed August 28, 1988.

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FEDERAL TRADE COMMISSION DECISIONS

FINDINGS, OPINIONS, AND ORDERS
JULY 1, 2006, TO DECEMBER 31, 2006

IN THE MATTER OF

**TAKE-TWO INTERACTIVE SOFTWARE, INC.
AND
ROCKSTAR GAMES, INC.**

CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS OF
SECTION 5 OF THE FEDERAL TRADE COMMISSION ACT

*Docket C-4162; File No. 052 3158
Complaint, July 17, 2006 – Decision, July 17, 2006*

This consent order addresses allegations that Take-Two Interactive Software, Inc. and Rockstar Games, Inc (“Respondents”) engaged in deceptive practices concerning the advertisement, sale, and distribution of its Grand Theft Auto: San Andreas video game. According to the complaint, Respondents failed to provide the Entertainment Software Rating Board (“ESRB”) with complete and accurate information about potentially viewable and explicit sexual content, specifically data files containing female nude skins and an embedded interactive sex mini-game. The complaint further alleges that this information was material to ESRB’s rating determination and Respondents’ failure to disclose this information constituted a deceptive practice. The consent order prohibits Respondents from misrepresenting the content or ratings of its video games and requires Respondents to establish a comprehensive system reasonably designed to ensure that all content in an electronic game is considered and reviewed by Respondents in preparing submissions to a rating authority.

Participants

For the *Commission*: *Keith Fentonmiller and Richard Kelly.*

For the *Respondent*: *Robert J. Mittman, William H. Roberts, and Leonard D. Steinman, Blank Rome LLP; and Molly Boast, Gena Feist, and John Missing, Debevoise & Plimpton LLP.*

Complaint

COMPLAINT

The Federal Trade Commission, having reason to believe that Take-Two Interactive Software, Inc. and Rockstar Games, Inc., corporations (“respondents”), have violated the provisions of the Federal Trade Commission Act, and it appearing to the Commission that this proceeding is in the public interest, alleges:

1. Respondent Take-Two Interactive Software, Inc. (“Take-Two”) is a Delaware corporation with its principal office or place of business at 622 Broadway, New York, New York 10012.

2. Respondent Rockstar Games, Inc. (“Rockstar”) is a Delaware corporation with its principal office or place of business at 622 Broadway, New York, New York 10012. Rockstar is a wholly-owned subsidiary of Take-Two.

3. Respondents design, manufacture, advertise, offer to sell, sell, and distribute interactive entertainment software, commonly known as video games, to the public. Respondents’ software offerings include titles for the leading video gaming platforms – such as Sony PlayStation 2 and Microsoft Xbox systems, as well as for personal computers (“PCs”) – and include the video game *Grand Theft Auto: San Andreas*.⁴ The acts and practices of respondents in the advertising and selling of *Grand Theft Auto: San Andreas* to consumers as alleged in this complaint are acts or practices in or affecting commerce, as “commerce” is defined in Section 4 of the Federal Trade Commission Act.

5. Virtually all video games sold by retailers in the United States are rated by the Entertainment Software Rating Board (“ESRB”). The ESRB is an industry self-regulatory body established in 1994 by the Entertainment Software Association (“ESA”). Most major retailers in the United States will not sell video games unless they have been rated by the ESRB.

Complaint

6. An important purpose of the ESRB rating system is to provide information to consumers, including parents, about the content of a game to help consumers determine if the game is suitable for themselves, another person, or their family.

7. The ESRB ratings have two parts: 1) rating symbols that suggest age appropriateness; and 2) content descriptors that indicate elements in a game that may have triggered a particular rating and/or may be of interest or concern. The ESRB system consists of the following rating symbols: **EC (Early Childhood)**, **E (Everyone)**, **E10+ (Everyone 10 and older)**, **T (Teen)**, **M (Mature 17+)**, and **AO (Adults Only 18+)**. There are over thirty different content descriptors for game elements, including Blood and Gore, Intense Violence, Lyrics, Mature Humor, Mild Violence, Nudity, Sexual Themes, Strong Language, Strong Sexual Content, Use of Drugs, and Violence.

8. Many consumers use and rely on the ESRB ratings when deciding whether to purchase a video game. In addition, many retailers use and rely on the system. Certain major retailers will not sell games that have been rated **AO (Adults Only 18+)** by the ESRB.

9. *Grand Theft Auto: San Andreas* is the fifth in a series of popular video games developed and marketed with the *Grand Theft Auto* name. Each of the previous four games in the *Grand Theft Auto* series, *Grand Theft Auto*, *Grand Theft Auto II*, *Grand Theft Auto III*, and *Grand Theft Auto: Vice City*, were rated **M (Mature 17+)** by the ESRB for one or more video game platforms. According to the ESRB rating system, games rated **M (Mature 17+)** have content that may be suitable for persons ages 17 and older. Games in this category may contain intense violence, blood and gore, sexual content, and/or strong language. Games rated **AO (Adults Only 18+)**, according to the ESRB rating system, have content that should only be played by persons 18 and older. Games in this category may include prolonged

Complaint

scenes of intense violence and/or graphic sexual content and nudity.

10. The ESRB rates games prior to release based on information supplied to it by game companies. The ESRB requires game companies to answer a questionnaire about the type and frequency of content relevant to the ESRB's rating criteria, such as violent action, sexual content, gambling, language, and the use of alcohol, tobacco, and drugs (hereafter, "relevant content"). The ESRB also requires game companies to submit video footage showing the most extreme relevant content in the game. Prior to July 2005, the ESRB's published requirements mandated that game companies disclose relevant content resulting from the use of "cheat codes" or the unlocking of virtual "Easter eggs" (*i.e.*, messages, graphics, sound effects, features, or actions that are enabled when the user inputs a set of commands on a game console or keyboard). The ESRB's published requirements did not state that relevant content included unused textures ("skins") in the game software or content in the game code that was inaccessible and unplayable without modifying the code.

11. On or about September 12 or 13, 2004, respondents submitted materials to the ESRB for the purpose of obtaining a rating for the PlayStation 2 version of *Grand Theft Auto: San Andreas*. Respondents did not inform the ESRB about the existence of unused nude female skins on the game disc or an unfinished "sex mini-game" that had been edited out of game play but was embedded in wrapped form in the game's computer code. If the game code for the sex mini-game were to be unwrapped, the mini-game could be enabled, permitting the player to control the game's principal male character, who was clothed, during simulated sexual acts with different clothed female characters. As described in paragraph 10, the ESRB's published requirements at that time did not state that game companies were required to disclose unused skins in the game software or content in the game code that was inaccessible and unplayable without modifying the code.

Complaint

12. Based on respondents' submissions, on September 23, 2004, the ESRB issued a rating certificate for the PlayStation 2 version of *Grand Theft Auto: San Andreas*. The ESRB assigned the game the rating symbol **M (Mature 17+)** and the following content descriptors: Blood and Gore, Intense Violence, Strong Language, Strong Sexual Content, and Use of Drugs. Respondents formally accepted this rating on the same day.

13. In October 2004, respondents began selling the PlayStation 2 version of *Grand Theft Auto: San Andreas* to the public. The PlayStation 2 game discs offered for sale to the public contained the unused nude female skins and the wrapped code for the unfinished sex mini-game described in paragraph 11.

14. On or about January 7, 2005, respondents asked the ESRB to rate the PC and Xbox versions of *Grand Theft Auto: San Andreas* by requesting the ESRB to reissue the **M (Mature 17+)** rating symbol and associated content descriptors previously assigned to the PlayStation 2 version. On or about January 10, 2005, the ESRB reissued the **M (Mature 17+)** rating and content descriptors rating for the PC and Xbox versions of *Grand Theft Auto: San Andreas*.

15. In June 2005, respondents began selling the PC and Xbox versions of *Grand Theft Auto: San Andreas* to the public. The PC and Xbox game discs offered for sale to the public contained the unused nude female skins and the wrapped code for the unfinished sex mini-game described in paragraph 11.

16. From approximately October 2004 through July 2005, respondents disseminated or caused to be disseminated advertisements for *Grand Theft Auto: San Andreas*, including the attached **Exhibits A** through **D**. Respondents advertised the game through product packaging and through numerous magazine advertisements, including ads in *Electronic Gaming Monthly*,

Complaint

Entertainment Weekly, The Onion, Maxim, Spin, PlayStation Magazine, and PC Gamer. Respondents also advertised the game through thirty- and sixty-second television commercials run on numerous networks and cable television channels, including UPN, MTV, TNT, USA Network, Spike TV, BET, and MTV. They also advertised the game on billboards, posters, point-of-purchase materials, and video displays at major game retailers, through respondents' websites, online banner ads, and in game trailers available for download from www.rockstargames.com/sanandreas. These advertisements contained the following statements and depictions, among others:

- A. PlayStation 2, Xbox, and PC product packaging (Exhibit A):
- i. Front: “grand theft auto San Andreas™... MATURE 17+... M... CONTENT RATED BY ESRB”
 - ii. Rear: “ROCKSTAR GAMES PRESENTS A ROCKSTAR NORTH GAME... grand theft auto San Andreas™ Mature 17+... M... Blood and Gore... Intense Violence... Strong Language... Strong Sexual Content... Use of Drugs... ESRB CONTENT RATING... www.esrb.org”
 - iii. Game Discs: “grand theft auto San Andreas™... MATURE 17+... M... CONTENT RATED BY ESRB”
- B. Print advertisements (Exhibit B): “ROCKSTAR GAMES PRESENTS... grand theft auto San Andreas™... A ROCKSTAR NORTH PRODUCTION... IN STORES NOW... WWW.ROCKSTARGAMES.COM/SANANDREAS... MATURE 17+... M... Blood and Gore... Intense Violence... Strong Language... Strong Sexual Content... Use of Drugs... CONTENT RATED BY ESRB”

Complaint

C. Retailer advertising (Exhibit C):

- i. Pre-sell gift card for Wal-Mart: “Reserve your copy today.... Playstation2... GIFT CARD... grand theft auto San Andreas™... MATURE 17+... M... CONTENT RATED BY ESRB... Available 10.19.04... PlayStation®2... WAL*MART®”
- ii. Window cling for Kmart: “grand theft auto San Andreas... NOW AVAILABLE ON XBOX®... MATURE 17+... M... Blood and Gore... Intense Violence... Strong Language... Strong Sexual Content... Use of Drugs... CONTENT RATED BY ESRB”

D. Online banner advertisement (Exhibit D): “grand theft auto San Andreas... IN STORES NOW... MATURE 17+... M... Blood and Gore... Intense Violence... Strong Language... Strong Sexual Content... Use of Drugs... CONTENT RATED BY ESRB”

17. Respondents did not disclose the existence of the unused nude female skins and the wrapped code for the unfinished sex mini-game described in paragraph 11 either in their advertising for *Grand Theft Auto: San Andreas*, or on the product packaging.

18. On or about June 9, 2005, two days after the release of the PC version of *Grand Theft Auto: San Andreas*, a third-party computer programmer posted a software program on the Internet entitled “Hot Coffee.” When downloaded and installed, the Hot Coffee program enables users of the originally released PC version of the game to access the unfinished sex mini-game described in paragraph 11. An updated version of the program was posted on the Internet on June 11, 2005 that further modifies the sex mini-game described in paragraph 11 by rendering the

Complaint

female characters unclothed through use of the nude skins on the game disc.

19. Within weeks of the release of the Hot Coffee program for the PC version of *Grand Theft Auto: San Andreas*, PlayStation 2 and Xbox users were able to access the same content by taking certain steps, such as modifying or adding a hardware accessory to their game console, installing special software, and inputting codes developed by third parties.

20. On July 20, 2005, as a result of, among other things, viewing *Grand Theft Auto: San Andreas* as modified by the Hot Coffee program and the widespread availability of that program, the ESRB revoked the existing rating for the game. Respondents entered into an agreement with the ESRB that provided, among other things, that they would not contest a change in rating for the game from **M (Mature 17+)** to **AO (Adults Only 18+)** with an additional content descriptor for nudity.

21. Through the means described in paragraph 16, respondents represented, expressly or by implication, that the ESRB had rated the content of the original versions of *Grand Theft Auto: San Andreas* **M (Mature 17+)** and that the ESRB had assigned the following content descriptors as part of the ESRB rating: Blood and Gore, Intense Violence, Strong Language, Strong Sexual Content, and Use of Drugs. Respondents did not disclose to consumers that the game discs contained unused, but potentially viewable, nude female skins and disabled, but potentially playable, software code for a sexually explicit mini-game that the ESRB had not rated. The presence on the game discs of this unrated content that might change, and, in fact, did change, the rating of the game to **AO (Adults Only 18+)** with an additional content descriptor for nudity, would have been material to many consumers, particularly parents, in their purchase, rental, or use of the product. The failure to disclose these facts, in light of the representation made, was and is a deceptive practice.

Complaint

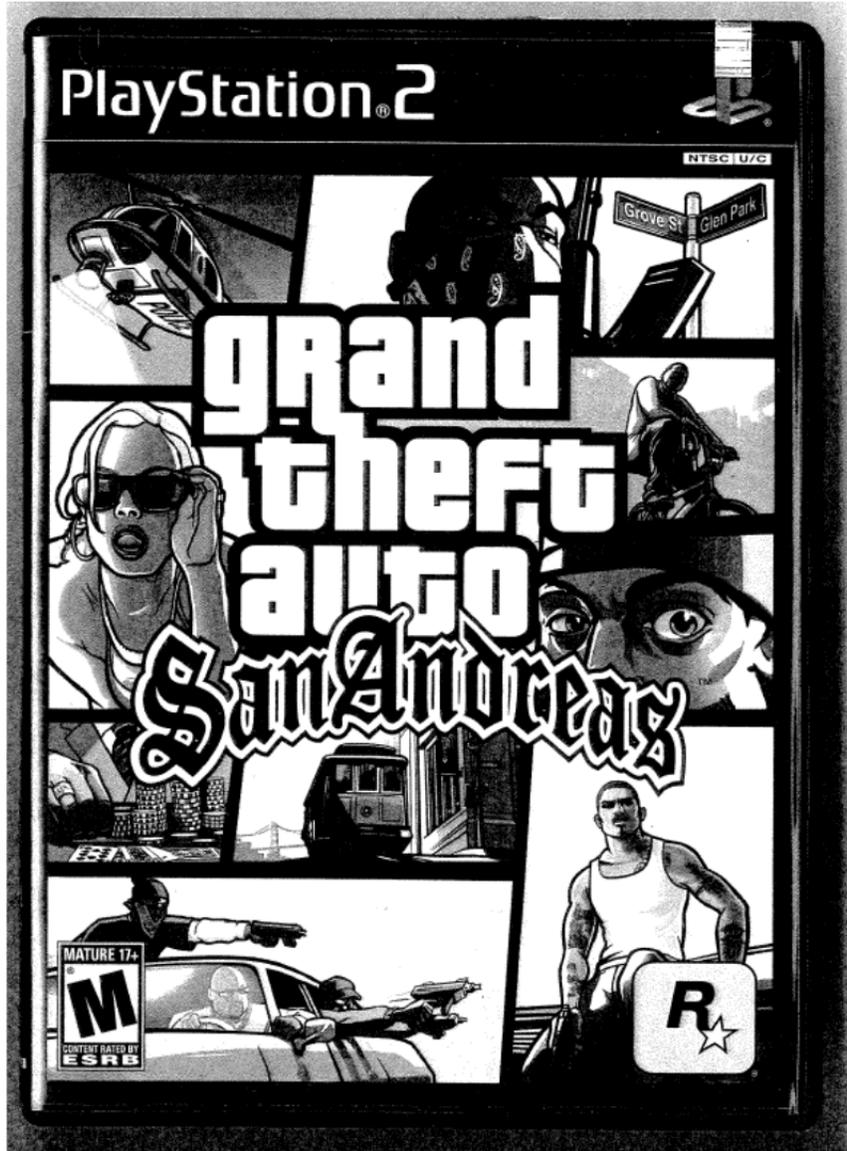
22. The acts and practices of respondents as alleged in this complaint constitute unfair or deceptive acts or practices in or affecting commerce in violation of Section 5(a) of the Federal Trade Commission Act.

THEREFORE, the Federal Trade Commission this seventeenth day of July, 2006, has issued this complaint against respondents.

By the Commission.

Complaint

EXHIBIT A



Complaint

ROCKSTAR GAMES PRESENTS A ROCKSTAR NORTH GAME



FIVE YEARS AGO CARL JOHNSON ESCAPED FROM THE PRESSURES OF LIFE IN LOS SANTOS, SAN ANDREAS, A CITY TEARING ITSELF APART WITH GANG TROUBLE, DRUGS AND CORRUPTION. WHERE FILMSTARS AND MILLIONAIRES DO THEIR BEST TO AVOID THE DEALERS AND GANGBANGERS.

grand theft auto San Andreas



NOW, IT'S THE EARLY 90s. CARL'S GOT TO GO HOME. HIS MOTHER HAS BEEN MURDERED, HIS FAMILY HAS FALLEN APART AND HIS CHILDHOOD FRIENDS ARE ALL HEADING TOWARDS DISASTER. ON HIS RETURN TO THE NEIGHBORHOOD, A COUPLE OF CORRUPT COPS FRAME HIM FOR HOMICIDE. CJ IS FORCED ON A JOURNEY THAT TAKES HIM ACROSS THE ENTIRE STATE OF SAN ANDREAS, TO SAVE HIS FAMILY AND TO TAKE CONTROL OF THE STREETS.

WWW.ROCKSTARGAMES.COM/SANANDREAS

SOUNDTRACK AVAILABLE ON INTERSCOPE RECORDS

1-2 Players | Memory Card (for PS2) - 400 KB | Analog Control
 Vibration Function | Pressure Sensitive

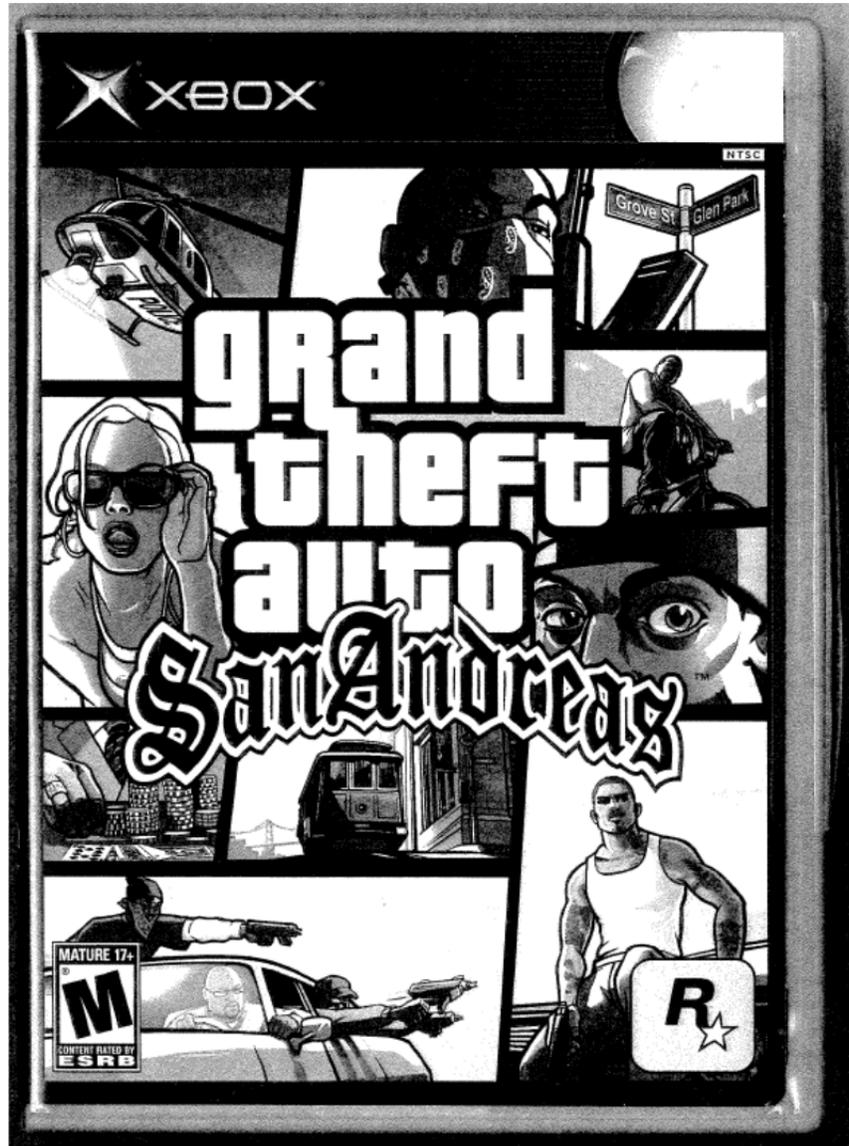
1 | R | DOLBY PRO LOGIC II | DVD ROM | R

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 Licensed by Sony Computer Entertainment America for play on PlayStation 2 computer entertainment systems with the NTSC-U/C designation only. "PlayStation" and the "PS" Family logo are registered trademarks of Sony Computer Entertainment Inc. The release icon is a trademark of the Entertainment Software Association. Manufactured and printed in the U.S.A. THIS SOFTWARE IS COMPATIBLE WITH PLAYSTATION 2 CONsoles WITH THE NTSC U/C DESIGNATION. U.S. AND FOREIGN PATENTS PENDING.

7 10425 27410 7

MATURE 17+
 Blood and Gore
 Intense Violence
 Strong Language
 Strong Sexual Content
 Use of Drugs
 ESRB CONTENT RATING www.esrb.org

Complaint



Complaint

ROCKSTAR GAMES PRESENTS
A ROCKSTAR NORTH GAME

7 10425 29695 6
PROOF OF PURCHASE

FIVE YEARS AGO CARL JOHNSON ESCAPED FROM THE PRESSURES OF LIFE IN LOS SANTOS, SAN ANDREAS, A CITY TEARING ITSELF APART WITH GANG TROUBLE, DRUGS AND CORRUPTION. WHERE FILMSTARS AND MILLIONAIRES DO THEIR BEST TO AVOID THE DEALERS AND GANGBANGERS.

grand theft auto San Andreas™

NOW, IT'S THE EARLY 90s. CARL'S GOT TO GO HOME. HIS MOTHER HAS BEEN MURDERED, HIS FAMILY HAS FALLEN APART AND HIS CHILDHOOD FRIENDS ARE ALL HEADING TOWARDS DISASTER. ON HIS RETURN TO THE NEIGHBORHOOD, A COUPLE OF CORRUPT COPS FRAME HIM FOR HOMICIDE. CJ IS FORCED ON A JOURNEY THAT TAKES HIM ACROSS THE ENTIRE STATE OF SAN ANDREAS, TO SAVE HIS FAMILY AND TO TAKE CONTROL OF THE STREETS.

WWW.ROCKSTARGAMES.COM/SANANDREAS

PLAYERS 1-2 System link
 MEMORY UNIT 38 Slots Dolby 48Kp
 Custom Soundtracks Other
 In-game Dolby Digital Other

SOUNDTRACK AVAILABLE ON INTERSCOPE RECORDS

ROCKSTAR GAMES DOLBY DIGITAL DVD ROM I R

X = features supported by this game

IMPORTANT! Read Instruction Manual for important safety and health information. **Microsoft**

For use only with Xbox video game consoles with "NTSC" designation. Unauthorized copying, reverse engineering, transmission, public performance, rental, pay for play, or circumvention of copy protection is strictly prohibited.

Rockstar Games, A Take2 Company
622 Broadway, New York City, NY, 10012

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MATURE 17+
 Blood and Gore
 Intense Violence
 Strong Language
 Strong Sexual Content
 Use of Drugs

ESRB CONTENT RATING www.esrb.org

Complaint



Complaint

ROCKSTAR GAMES PRESENTS A ROCKSTAR NORTH GAME

FIVE YEARS AGO CARL JOHNSON ESCAPED FROM THE PRESSURES OF LIFE IN LOS SANTOS, SAN ANDREAS, A CITY TEARING ITSELF APART WITH GANG TROUBLE, DRUGS AND CORRUPTION. WHERE FILMSTARS AND MILLIONAIRES DO THEIR BEST TO AVOID THE DEALERS AND GANGBANGERS.

grand theft auto San Andreas

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WWW.ROCKSTARGAMES.COM/SANANDREAS

SOUNDTRACK AVAILABLE ON INTERSCOPE RECORDS

<p>MINIMUM HARDWARE REQUIREMENTS</p> <p>1GHz Intel Pentium III or AMD Athlon Processor 256MB RAM 64 MB Video Card with DirectX compatible drivers (not included in box) 16 speed DVD-ROM Drive 3.0 GB of free hard disk space for a minimal install DirectX compatible Stereo Sound Card</p> <p>SUPPORTED OPERATING SYSTEMS</p> <p>Windows 2000 Professional (DirectX9) (Info Service Pack 1 or higher) plus DirectX9, Windows XP (Info Service Pack 1 or higher) plus DirectX9</p>	<p>RECOMMENDED HARDWARE REQUIREMENTS</p> <p>800 MHz Pentium 4 or AMD Athlon XP processor (or better) 512MB RAM 128MB Video Card with DirectX compatible drivers (DirectX 9.0c or better) (Info Service Pack 1 or higher) 16X speed DVD-ROM Drive 3.7 GB of free hard disk space for a full install DirectX compatible Surround Sound Card (Sound Blaster Audigy 2 Series recommended) Subscribed with Internet access (DSL or Japnetix Port)</p> <p>GENERIC REQUIREMENTS</p> <p>DirectX9 Keyboard and Mouse</p>
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Rockstar Games, 427 Broadway, New York, NY 10017. A Take2 Company
© 2004 Rockstar Games, Inc. Rockstar, Grand Theft Auto, the Rockstar logo and the Grand Theft Auto logo and related indicia are registered trademarks of Take Two Interactive Software, Inc. All other marks and trademarks are property of their respective owners. All Rights Reserved. The ratings box is a trademark of the Entertainment Software Association.

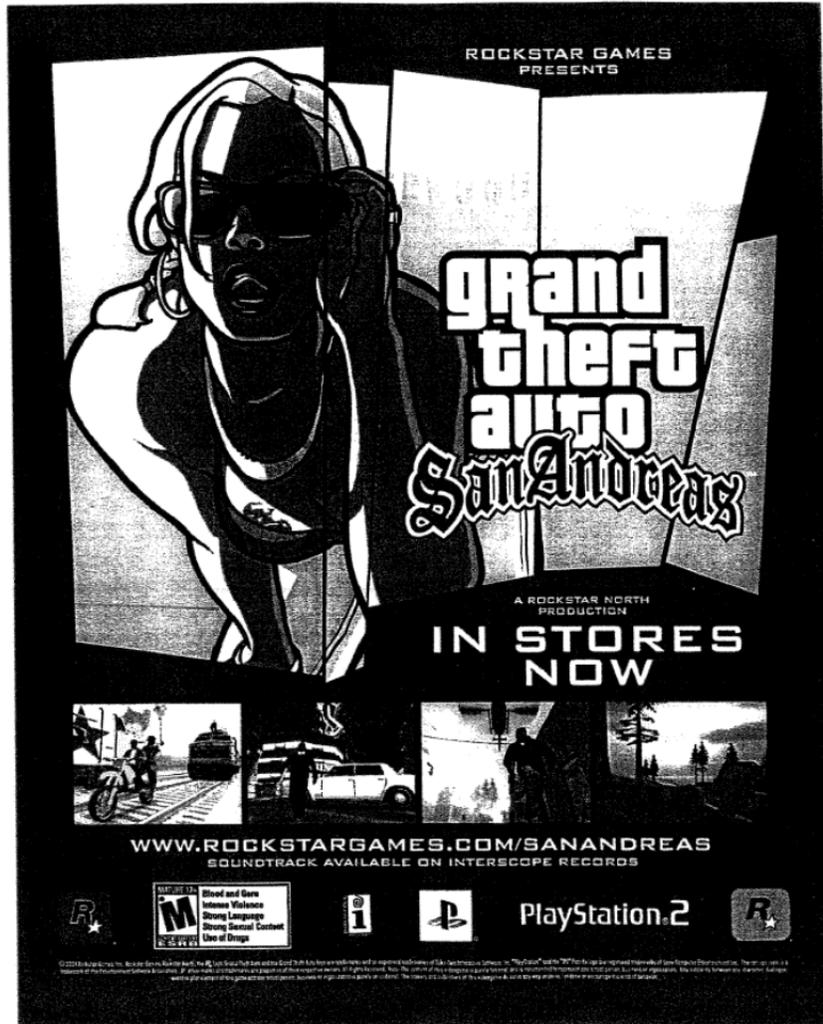
PC DVD-ROM

MATURE 17+
Blood and Gore
Intense Violence
Strong Language
Strong Sexual Content
Use of Drugs
ESRB CONTENT RATING www.esrb.org

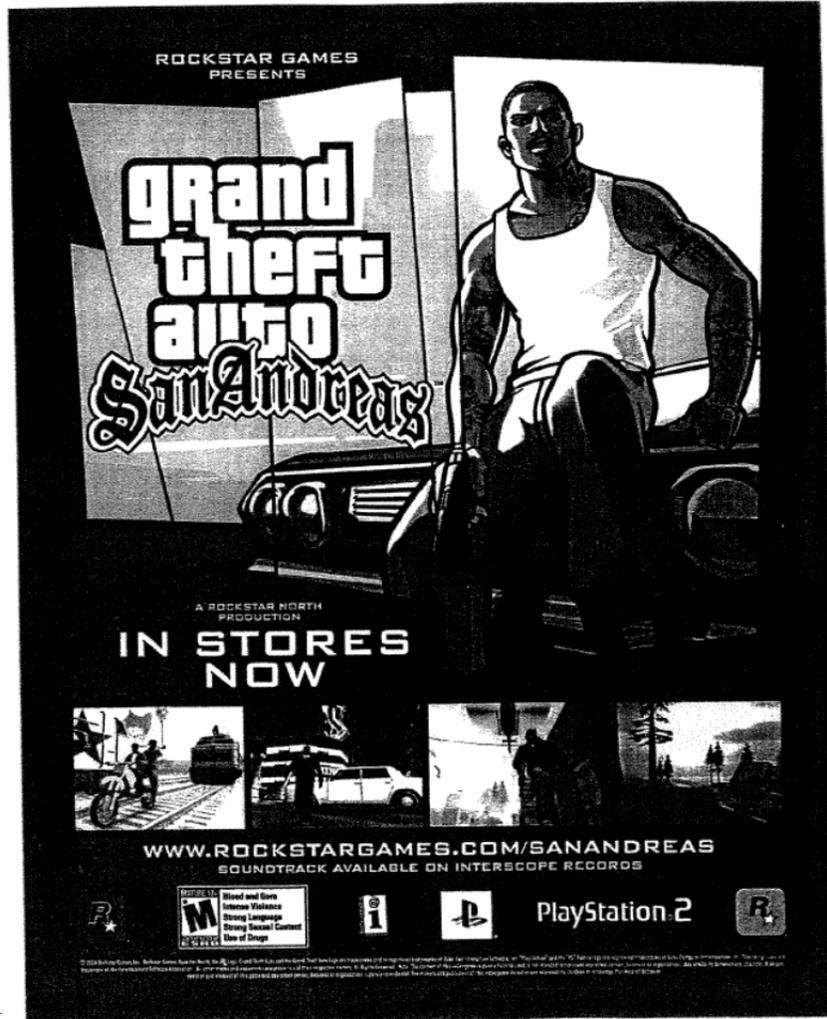
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Complaint

EXHIBIT B



Complaint



Complaint

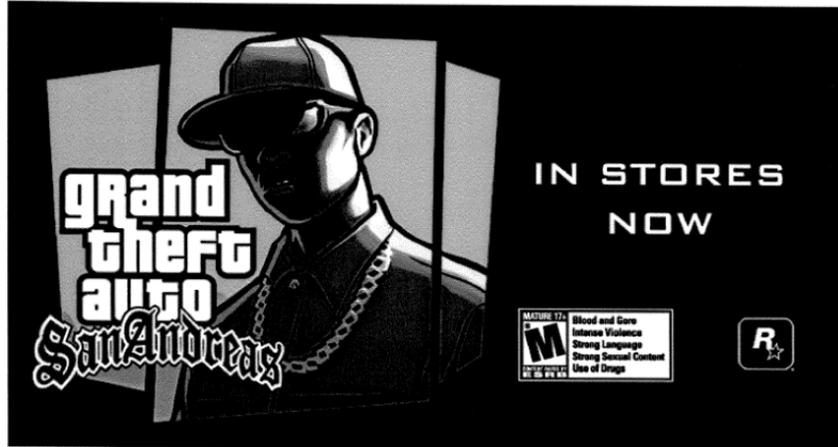
EXHIBIT C



Complaint



Decision and Order

EXHIBIT D**DECISION AND ORDER**

The Federal Trade Commission having initiated an investigation of certain acts and practices of the respondents named in the caption hereof, and the respondents having been furnished thereafter with a copy of a draft of complaint which the Bureau of Consumer Protection proposed to present to the Commission for its consideration and which, if issued by the Commission, would charge the respondents with violation of the Federal Trade Commission Act; and

The respondents, their attorneys, and counsel for the Commission having thereafter executed an agreement containing a consent order, an admission by the respondents of all the jurisdictional facts set forth in the aforesaid draft complaint, a statement that the signing of the agreement is for settlement

Decision and Order

purposes only and does not constitute an admission by the respondents that the law has been violated as alleged in such complaint, or that any of the facts as alleged in such complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission's Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that the respondents have violated the Act, and that complaint should issue stating its charges in that respect, and having thereupon accepted the executed consent agreement and placed such agreement on the public record for a period of thirty (30) days, now in further conformity with the procedure prescribed in § 2.34 of its Rules, the Commission hereby issues its complaint, makes the following jurisdictional findings, and enters the following order:

1. Respondent Take-Two Interactive Software, Inc. is a Delaware corporation with its principal office or place of business at 622 Broadway, New York, New York 10012.
2. Respondent Rockstar Games, Inc. is a wholly owned subsidiary of Take-Two, with its principal office or place of business at 622 Broadway, New York, New York 10012.
3. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the respondents, and the proceeding is in the public interest.

ORDER**DEFINITIONS**

For purposes of this order, the following definitions shall apply:

Decision and Order

1. “Commerce” means as defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44;
2. “FTC” or “Commission” means the Federal Trade Commission.
3. “Respondents” means Take-Two Interactive Software, Inc., its successors and assigns, and its officers, agents, representatives, and employees, and Rockstar Games, Inc., its successors and assigns, and its officers, agents, representatives, and employees.
4. The terms “Interactive electronic game,” “electronic game,” or “game” means any creative product consisting of data, programs, routines, instructions, applications, symbolic languages, or similar electronic information (collectively, “software”) that controls the operation of a computer and enables a user to interact with a computer-controlled virtual universe for entertainment purposes. The terms include electronic games distributed via a cartridge, disc, or other tangible information storage device, as well as such electronic games that are distributed electronically, such as through an online connection, electronic mail, or a wireless communication device. The terms do not include any electronic games whose software has been altered or modified by consumers or other third parties.
5. “Rating” or “rated” refers to a system, such as the system used by the Entertainment Software Rating Board, of classifying interactive electronic games based on criteria for age appropriateness, content, or both.
6. “Content descriptor” refers to a system used by the Entertainment Software Rating Board to designate words or short phrases that describe content (such as violence, blood and gore, strong sexual content) contained in an interactive electronic game.

Decision and Order

7. “Content” refers to any software that is both: a) contained in an electronic game; and b) capable of rendering, depicting, displaying, or activating scenes, images, words, or sounds. Any such software constitutes content under this definition regardless of whether respondents have disabled it for game play or intend it to be accessed during game play.
8. “Rating authority” means the Entertainment Software Rating Board or any other game rating organization to which respondents submit a game to be sold in the United States.
9. “Content relevant to the rating” means content that likely would affect or change the rating or content descriptors for a game if that content were reviewed by a rating authority.
10. “Clearly and prominently” shall mean as follows:
 - A. In an advertisement communicated through an electronic medium (such as television, video, radio, and interactive media such as the Internet and online services), the disclosure shall be presented simultaneously in both the audio and visual portions of the advertisement. Provided, however, that in any advertisement presented solely through visual or audio means, the disclosure may be made through the same means in which the advertisement is presented. The audio disclosure shall be delivered in a volume and cadence sufficient for an ordinary consumer to hear and comprehend it. The visual disclosure shall be of a size and shade, and shall appear on the screen for a duration, sufficient for an ordinary consumer to read and comprehend it. In addition to the foregoing, in interactive media, the disclosure shall also be unavoidable and shall be presented prior to the consumer installing or downloading any software

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code, program, or content and prior to the consumer incurring any financial obligation.

- B. In a print advertisement, promotional material, or instructional manual, the disclosure shall be in a type size and location sufficiently noticeable for an ordinary consumer to read and comprehend it, in print that contrasts with the background against which it appears. In multipage documents, the disclosure shall appear on the cover or first page.

The disclosure shall be in understandable language and syntax. Nothing contrary to, inconsistent with, or in mitigation of the disclosure shall be used in any advertisement.

I.

IT IS ORDERED that respondents, directly or through any corporation, subsidiary, division, or other device, in connection with the manufacturing, advertising, promotion, offering for sale, sale, or distribution of *Grand Theft Auto: San Andreas* or any other interactive electronic game, in or affecting commerce, shall:

- A. disclose, clearly and prominently, on product packaging and in any promotion or advertisement for an electronic game, content relevant to the rating, unless that content has been disclosed sufficiently in prior submissions to the rating authority;
- B. not misrepresent, expressly or by implication, the rating or content descriptors for an electronic game; and
- C. establish and implement, and thereafter maintain, a comprehensive system reasonably designed to ensure that all content in an electronic game is considered and

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reviewed by respondents in preparing submissions to a rating authority.

Provided, however, nothing herein shall constitute a waiver of respondents' right to assert that any of their conduct is or was protected by the First Amendment to the United States Constitution or any analogous provision of a State constitution, except that respondents nonetheless acknowledge their obligations to comply with this order.

II.

IT IS FURTHER ORDERED that respondents, and their successors and assigns, shall, for five (5) years after the last date of dissemination of any representation covered by this order, maintain and upon request make available to the Federal Trade Commission for inspection and copying all advertisements and promotional materials for each interactive electronic game developed or produced by respondents, including videotape or DVD recordings of any broadcast advertisement and an audiotape or CD of any radio advertisement.

III.

IT IS FURTHER ORDERED that respondents, and their successors and assigns, shall deliver a copy of this order to all current, and for ten (10) years to all future directors, officers who exercise policymaking functions, developmental studio heads, and to those personnel having supervisory responsibilities with respect to Parts I-V of this order, and shall secure from each such person a signed and dated statement acknowledging receipt of the order. Respondents shall deliver this order to such current personnel within thirty (30) days after the date of service of this order, and to such future personnel within thirty (30) days after the person assumes such position or responsibilities.

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IV.

IT IS FURTHER ORDERED that respondents, and their successors and assigns, shall notify the Commission at least thirty (30) days prior to any proposed change in their respective corporate structures that likely will affect compliance obligations arising under this order, including but not limited to a dissolution, assignment, sale, merger, or other action that would result in the emergence of a successor corporation; the creation or dissolution of a subsidiary, parent, or affiliate that engages in any acts or practices subject to this order; the proposed filing of a bankruptcy petition; or a change in the corporate name or address. *Provided, however,* that, with respect to any proposed change in the corporation about which respondents learn less than thirty (30) days prior to the date such action is to take place, respondents shall notify the Commission as soon as is practicable after obtaining such knowledge. All notices required by the Part shall be sent by certified mail to the Associate Director, Division of Enforcement, Bureau of Consumer Protection, Federal Trade Commission, 600 Pennsylvania Avenue, NW, Washington, D.C. 20580.

V.

IT IS FURTHER ORDERED that respondents, and their successors and assigns, shall within sixty (60) days from the date of service of this order, and at such other times as the Federal Trade Commission may require, file with the Commission a report, in writing, setting forth in detail the manner and form in which it has complied with this order.

VI.

This order will terminate on July 17, 2026, or twenty (20) years from the most recent date that the United States or the Federal Trade Commission files a complaint (with or without an accompanying consent decree) in federal court alleging any

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violation of the order, whichever comes later; *provided, however*, that the filing of such a complaint will not affect the duration of:

- A. Any Part in this order that terminates in less than twenty (20) years;
- B. This order's application to any respondent that is not named as a defendant in such complaint; and
- C. This order if such complaint is filed after the order has terminated pursuant to this Part. *Provided further*, that if such complaint is dismissed or a federal court rules that the respondents did not violate any provision of the order, and the dismissal or ruling is either not appealed or upheld on appeal, then the order will terminate according to this Part as though the complaint had never been filed, except that the order will not terminate between the date such complaint is filed and the later of the deadline for appealing such dismissal or ruling and the date such dismissal or ruling is upheld on appeal.

By the Commission.

**ANALYSIS OF CONSENT ORDER TO AID PUBLIC
COMMENT**

The Federal Trade Commission has accepted, subject to final approval, an agreement containing a consent order from Take-Two Interactive Software, Inc. and Rockstar Games, Inc. ("the companies"). The proposed consent order has been placed on the public record for thirty (30) days for receipt of comments by interested persons. Comments received during this period will become part of the public record. After thirty (30) days, the

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Commission will again review the agreement and the comments received, and will decide whether it should withdraw from the agreement or make final the agreement's proposed order.

This matter involves alleged deceptive representations in advertising and on product packaging concerning the content in the video game *Grand Theft Auto: San Andreas* ("*San Andreas*"). In September 2004, the companies submitted materials to the Entertainment Software Rating Board ("ESRB") for the purpose of obtaining a rating for the PlayStation 2 version of *San Andreas*. The companies did not inform the ESRB about the existence of an interactive sex mini-game that was embedded in the game's computer code, but was inaccessible during normal game play. Nor did the companies tell the ESRB that the game disc contained data files (unused in game play) for female skins, which, if accessed, render the female characters partially or completely nude. However, the ESRB's published requirements in effect at that time did not state that game companies were required to disclose unused skins in the game software or content in the game code that was inaccessible and unplayable without modifying the code. Based on the companies' submission, the ESRB assigned *San Andreas* a M (Mature 17+) rating and content descriptors for Blood and Gore, Intense Violence, Strong Language, Strong Sexual Content, and Use of Drugs. The companies released the Playstation 2 version of *San Andreas* in October 2004.

On June 7, 2005, the companies released versions of *San Andreas* playable on PCs and the Xbox console. The PC and Xbox game discs also contained the same code for the sex mini-game and the nude skins. As with the PlayStation 2 version, the companies did not disclose the existence of the disabled sex mini-game or the nude skins on the PC and Xbox game discs. The ESRB rated the PC and Xbox versions of the game M (Mature 17+) and assigned the same content descriptors previously assigned to the PlayStation 2 version.

Analysis to Aid Public Comment

The ESRB rating information appeared in print, television, and retailer advertisements for *Grand Theft Auto: San Andreas*, and on game packaging, for all three versions of the game. Among other things, the companies made the following claims about the game: “MATURE 17+... M...” and “CONTENT RATED BY ESRB.” None of the advertising mentioned that the game contained nudity.

On June 9, 2005 – two days after the release of the PC version of the game – game enthusiasts posted a program on the Internet, which, when downloaded and installed on a user’s PC, enables the sex mini-game code. This program was dubbed “Hot Coffee.” A subsequent version of the program imported nude skins resident on the game disc onto several of the female characters. PlayStation 2 and Xbox players eventually were able to access the mini-game by physically modifying or adding a hardware accessory to their game console, installing special software, and inputting cheat codes developed by third parties.

On July 20, 2005, the ESRB revoked the existing rating for the game as a result of, among other things, viewing *Grand Theft Auto: San Andreas* as modified by the Hot Coffee program and the widespread availability of that program. The companies entered into an agreement with the ESRB that provided that they would not contest a change in rating for the game from M (Mature 17+) to AO (Adults Only 18+) with an additional content descriptor for nudity. The companies also agreed to re-label or recall all existing inventory, and to make available to consumers a downloadable patch rendering the Hot Coffee content inoperable. In response, most retailers decided not to sell the re-labeled AO version of the game. In September 2005, the companies released a second M-rated version of *San Andreas* without the Hot Coffee content.

According to the FTC complaint, the companies represented, expressly or by implication, that the ESRB had rated the content of the original versions of *Grand Theft Auto: San Andreas* M

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(Mature 17+) and that the ESRB had assigned the following content descriptors as part of the ESRB rating: Blood and Gore, Intense Violence, Strong Language, Strong Sexual Content, and Use of Drugs. The complaint alleges that the companies did not disclose to consumers that the game discs contained unused, but potentially viewable, nude female skins and disabled, but potentially playable, software code for a sexually explicit mini-game that the ESRB had not rated. The presence on the game discs of this unrated content that might change, and, in fact, did change, the rating of the game to AO (Adults Only 18+) with an additional content descriptor for nudity, would have been material to many consumers, particularly parents, in their purchase, rental, or use of the product. The complaint alleges that the companies' failure to disclose these facts, in light of the representation made, was and is a deceptive practice.

The proposed consent order contains provisions designed to prevent the companies from engaging in similar acts and practices in the future. Part I of the consent order requires the companies, in connection with the advertising, sale, or distribution of any electronic game, to disclose, clearly and prominently, on product packaging and in any promotion or advertisement for an electronic game, content relevant to the rating, unless that content has been disclosed sufficiently in prior submissions to the rating authority. Part I also prohibits the companies from misrepresenting the rating or content descriptors for an electronic game, and requires the companies to establish and implement, and thereafter maintain, a comprehensive system reasonably designed to ensure that all content in an electronic game is considered and reviewed by the companies in preparing submissions to a rating authority. Finally, Part I of the order states that nothing in the order shall constitute a waiver of the companies' right to assert that any of their conduct is or was protected by the First Amendment to the United States Constitution or any analogous provision of a State constitution, except that the companies nonetheless acknowledge their obligations to comply with the order.

Analysis to Aid Public Comment

Parts II through V of the consent order require the companies to keep copies of relevant advertisements and promotional materials, to provide copies of the order to certain of their personnel, to notify the Commission of changes in corporate structure, and to file compliance reports with the Commission. Part VI provides that the order will terminate after twenty (20) years under certain circumstances.

The purpose of this analysis is to facilitate public comment on the proposed order, and it is not intended to constitute an official interpretation of the agreement and proposed order or to modify in any way their terms.

Complaint

IN THE MATTER OF

**BOSTON SCIENTIFIC CORPORATION
AND
GUIDANT CORPORATION**CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS OF
SECTION 5 OF THE FEDERAL TRADE COMMISSION ACT*Docket C-4164; File No. 061 0046
Complaint, July 21, 2006 – Decision, July 21, 2006*

This consent order addresses the acquisition of Guidant Corporation by Boston Scientific Corporation (“Respondents”), which was likely to substantially reduce or eliminate competition in the research, development, marketing, and sale of certain medical devices. The order addresses two areas: Guidant’s vascular business and Boston Scientific’s stake in Cameron Healthcare Inc. (“Cameron”), which is developing a novel implantable cardioverter defibrillator (ICD). The order requires Boston Scientific and Guidant to divest all assets (including intellectual property) related to Guidant’s vascular business to a third party, enabling that third party to make and sell drug eluting stents with the rapid exchange delivery system, percutaneous transluminal coronary angioplasty balloon catheters, and coronary guidewires. Respondents selected Abbott Laboratories (“Abbott”) as the buyer for the divestiture package. To assist the divestiture’s success, Abbott will obtain four existing manufacturing facilities and one currently under construction. Manufacturing in other facilities will be transferred to Abbott-owned facilities in a timely fashion. Additionally, Abbott and Boston Scientific will enter into interim transitional service and confidentiality agreements. The order also requires Respondents to limit Boston Scientific’s control over certain Cameron actions and the sharing of non-public information about Cameron’s ICD product. To ensure the Commission will have an opportunity to review any attempt by Boston Scientific to exercise its option to acquire Cameron, the order requires Boston Scientific to provide prior notice pursuant to a Hart-Scott-Rodino framework even if the transaction otherwise would be non-reportable. The Commission will appoint an interim monitor, who will file periodic reports with the Commission on the status of the divestitures. Finally, the Commission may appoint a divestiture trustee if any of the remedies are not accomplished within the time frames established by the order.

Complaint

Participants

For the *Commission*: *Richard H. Cunningham, Daniel P. Ducore, Jonathan S. Klarfeld, Thomas D. Mays, Christine Naglieri, and Kari A. Wallace.*

For the *Respondents*: *Deborah L. Feinstein and Michael N. Sohn, Arnold & Porter LLP; and Ian G. John, Mary Lou Steptoe, and Neal R. Stoll, Skadden, Arps, Slate, Meagher & Flom LLP.*

COMPLAINT

Pursuant to the Clayton Act and the Federal Trade Commission Act, and its authority thereunder, the Federal Trade Commission (“Commission”), having reason to believe that Respondent Boston Scientific Corporation (“BSC”), a corporation subject to the jurisdiction of the Commission, has agreed to acquire Guidant Corporation (“Guidant”), a corporation subject to the jurisdiction of the Commission, in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act (“FTC Act”), as amended, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding in respect thereof would be in the public interest, hereby issues its Complaint, stating its charges as follows:

I. DEFINITIONS

1. “Commission” means the Federal Trade Commission.
2. “BSC” means Boston Scientific, its directors, officers, employees, agents, representatives, predecessors, successors, and assigns; its joint ventures, subsidiaries, divisions, groups and affiliates controlled by Boston Scientific, and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.

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3. “Guidant” means Guidant Corporation, its directors, officers, employees, agents, representatives, predecessors, successors, and assigns; its joint ventures, subsidiaries, divisions, groups and affiliates controlled by Guidant Corporation, and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.

4. “Cameron” means Cameron Health, Inc., a corporation organized, existing, and doing business under and by virtue of the laws of the State of Delaware, having its principal place of business located at 905 Calle Amanecer, Suite 300, San Clemente, California 92673.

5. “Coronary Drug Eluting Stent” or “Coronary DES” means a Drug Eluting Stent used in the treatment of coronary artery disease.

6. “Coronary Guidewire” means a thin and flexible wire used in interventional cardiology procedures.

7. “Drug Eluting Stent” or “DES” means a stent that elutes or otherwise delivers one or more drugs or pharmaceutical compositions.

8. “FDA” means the United States Food and Drug Administration.

9. “Implantable Cardioverter Defibrillator” or “ICD” means an implantable device designed to counteract heart arrhythmias and restore normal heart rhythms by applying a brief electric shock.

10. “Percutaneous Transluminal Coronary Angioplasty Balloon Catheter” or “PTCA Balloon Catheter” means a balloon-tipped interventional cardiology catheter that is inserted into a blocked coronary artery and inflated to improve blood flow.

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11. “Rapid Exchange,” “Rapid Exchange delivery system” or “RX” means intraluminal catheters and stent and embolic protection delivery systems having a guidewire lumen with a proximal guidewire port located substantially remote from the proximal end of the catheter shaft.

12. “Respondents” means BSC and Guidant, individually and collectively.

II. RESPONDENTS

13. Respondent BSC is a corporation organized, existing, and doing business under and by virtue of the laws of the State of Delaware, with its offices and principal place of business located at One Boston Scientific Place, Natick, MA 01760. BSC, among other things, is engaged in the research, development, marketing, and sale of interventional cardiology products.

14. Respondent Guidant is a corporation organized, existing, and doing business under and by virtue of the laws of the State of Indiana, with its offices and principal place of business located at 111 Monument Circle, Indianapolis, Indiana 46204. Guidant, among other things, is engaged in the research, development, marketing, and sale of interventional cardiology products and cardiac rhythm products.

15. Respondents are, and at all times relevant herein have been, engaged in commerce, as “commerce” is defined in Section 1 of the Clayton Act as amended, 15 U.S.C. § 12, and are corporations whose business is in or affects commerce, as “commerce” is defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

III. PROPOSED ACQUISITION

16. On January 25, 2006, BSC and Guidant entered into an agreement and plan of merger (the “Purchase Agreement”)

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whereby BSC agreed to acquire Guidant in a transaction valued at approximately \$27 billion (the “Acquisition”).

IV. RELEVANT MARKETS

17. For the purposes of this Complaint, the relevant lines of commerce in which to analyze the effects of the Acquisition are the research, development, manufacture, and/or sale of the following products:

- a. Coronary Drug Eluting Stents;
- b. Percutaneous Transluminal Coronary Angioplasty Balloon Catheters;
- c. Coronary Guidewires; and
- d. Implantable Cardioverter Defibrillators.

18. For the purposes of this Complaint, the United States is the relevant geographic area in which to analyze the effects of the Acquisition in the relevant lines of commerce.

V. STRUCTURE OF THE MARKETS

19. BSC is one of only two companies (the other is Johnson & Johnson) currently selling Coronary DESs in the United States. At least three other companies – including Guidant, Abbott Laboratories, and Medtronic – are involved in the research and development of Coronary DESs and are poised to receive FDA approval to sell Coronary DESs in the United States in the next two to three years.

20. There are only three companies that have access to the intellectual property covering Rapid Exchange versions of Coronary DESs: BSC, Guidant, and Johnson & Johnson. No other company has licenses or other access to the Rapid Exchange

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patents for Coronary DESs. Currently, over 70 percent of the Coronary DES devices sold in the United States employ the Rapid Exchange delivery system, and the percentage of Coronary DES devices sold on Rapid Exchange delivery systems in the United States is expected to continue to increase rapidly.

21. The U.S. market for PTCA Balloon Catheters is highly concentrated as measured by the Herfindahl-Hirschman Index (“HHI”). BSC and Guidant are two of only four companies that compete in the market for PTCA Balloon Catheters. BSC is the market leader, and together with Guidant, accounts for over 90 percent of the sales of PTCA Balloon Catheters in the U.S. market.

22. The U.S. market for Coronary Guidewires is also highly concentrated. Together BSC and Guidant account for 85 percent of the U.S. Coronary Guidewire market. The other competitors in the United States – J&J, Medtronic, Inc., and Abbott Laboratories – each have only a 5 percent share of the market.

23. Guidant, Medtronic, and St. Jude Medical are the only companies with significant sales of ICDs in the United States. Cameron is involved in the research and development of ICDs and is poised to receive FDA approval to sell its ICD in the United States in the next two to three years.

24. On November 7, 2003, BSC entered into a Securities Purchase Agreement and an Agreement and Plan of Merger (“the Cameron Agreements”) with Cameron, which provide BSC, among other things, with an option to acquire Cameron. Under the Cameron Agreements, Cameron is obligated to provide BSC with non-public, competitively sensitive information about Cameron’s financial and competitive situation and BSC may exert aspects of control over the conduct and business of Cameron.

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VI. ENTRY CONDITIONS

25. Developing a Coronary DES, PTCA Balloon Catheter, Coronary Guidewire, or ICD, developing around and/or acquiring licenses to critical intellectual property related to the devices, obtaining FDA approval for the devices, and marketing the devices, takes significantly longer than two years. Therefore, entry into the relevant lines of commerce described in Paragraph 17 would not be timely, likely, or sufficient in magnitude, character, and scope to deter or counteract the anticompetitive effects of the Acquisition.

VII. EFFECTS OF THE ACQUISITION

26. The effects of the Acquisition, if consummated, may be to substantially lessen competition and to tend to create a monopoly in the relevant markets in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45, in the following ways, among others:

- a. eliminating potential competition between two of only three suppliers of Coronary Drug Eluting Stents with access to a Rapid Exchange delivery system;
- b. eliminating actual, direct, and substantial competition between BSC and Guidant in the markets for the research, development, marketing, and sale of PTCA Balloon Catheters and Coronary Guidewires;
- c. eliminating actual, direct, and substantial competition between Cameron and Guidant in the market for the research and development of ICDs through BSC's exercise of contractual control and receipt of information rights over Cameron, thereby reducing innovation in this market; and by eliminating potential competition between BSC/Cameron and Guidant in the market for the manufacture and sale of ICDs through BSC's exercise of contractual control and receipt of

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information rights over Cameron, thereby (a) increasing the likelihood that the combined entity would delay or forego the launch of Cameron's product and (b) increasing the likelihood that the combined entity would delay or eliminate the additional price competition that would have resulted from Cameron's entry into the ICD market;

d. increasing the ability of the merged entity to raise prices unilaterally in the relevant markets; and

e. reducing research and development in the relevant markets.

VIII. VIOLATIONS CHARGED

27. The Purchase Agreement described in Paragraph 16 constitutes a violation of Section 5 of the FTC Act, as amended, 15 U.S.C. § 45.

28. The Acquisition described in Paragraph 16, if consummated, would constitute a violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this twenty-first day of July, 2006, issues its Complaint against said Respondents.

By the Commission, Commissioner Harbour recused.

Decision and Order

DECISION AND ORDER

The Federal Trade Commission (“Commission”) having initiated an investigation of the proposed merger of Respondent Boston Scientific Corporation (“BSC”) and Respondent Guidant Corporation (“Guidant”), hereinafter referred to as “Respondents,” and Respondents having been furnished thereafter with a copy of a draft of Complaint that the Bureau of Competition proposed to present to the Commission for its consideration and which, if issued by the Commission, would charge Respondents with violations of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondents, Abbott Laboratories, their attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Orders (“Consent Agreement”), containing an admission by Respondents of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondents that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondents have violated the said Acts, and that a Complaint should issue stating its charges in that respect, and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby makes the following jurisdictional findings and issues the following Decision and Order (“Order”):

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1. Respondent BSC is a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its offices and principal place of business located at One Boston Scientific Place, Natick, MA 01760.
2. Respondent Guidant is a corporation organized, existing and doing business under and by virtue of the laws of the State of Indiana, with its offices and principal place of business located at 111 Monument Circle, Indianapolis, IN 46204.
3. Abbott Laboratories is a corporation organized, existing, and doing business under and by virtue of the laws of the State of Illinois, with its offices and principal place of business located at 100 Abbott Park Road, Abbott Park, IL 60064.
4. The Federal Trade Commission has jurisdiction over the subject matter of this proceeding and of Respondents and Abbott Laboratories, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that, as used in this Order, the following definitions shall apply:

- A. "BSC" means Boston Scientific Corporation, its directors, officers, employees, agents, representatives, predecessors, successors, and assigns; its joint ventures, subsidiaries, divisions, groups and affiliates controlled by Boston Scientific Corporation, and the respective directors, officers, employees, agents, representatives, successors, and assigns of each. After the Effective Date, the term "BSC" shall include Guidant.

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- B. “Guidant” means Guidant Corporation, its directors, officers, employees, agents, representatives, predecessors, successors, and assigns; its joint ventures, subsidiaries, divisions, groups and affiliates controlled by Guidant Corporation, and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.
- C. “Respondents” means BSC and Guidant, individually and collectively.
- D. “Commission” means the Federal Trade Commission.
- E. “Abbott” means Abbott Laboratories, its directors, officers, employees, agents, representatives, predecessors, successors, and assigns; its joint ventures, subsidiaries, divisions, groups and affiliates controlled by Abbott Laboratories, and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.
- F. “Abbott Agreement” means the “Transaction Agreement” by and between BSC and Abbott dated January 8, 2006, as amended as of January 16, 2006, February 16, 2006, and April 5, 2006, and all amendments, exhibits, attachments, agreements, and schedules thereto, including, but not limited to, the May 19, 2006, amendment to the Master Transition Services Agreement, that have been approved by the Commission to accomplish the requirements of this Order. The Abbott Agreement is attached to this Order as non-public Appendix I.
- G. “Acquisition” means the acquisition contemplated by the “Agreement and Plan of Merger” dated as of January 25, 2006, by and among BSC and Guidant (“Acquisition Agreement”), whereby BSC agreed to acquire Guidant.

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- H. “Actual Cost” means the actual cost incurred to provide the relevant assistance or service (including a reasonable allocation for overhead expenses attributable thereto and without any markup for profit), calculated in a manner consistent with past custom and practice.
- I. “Agency(ies)” means any governmental regulatory authority or authorities in the world responsible for granting approval(s), clearance(s), qualification(s), license(s) or permit(s) for any aspect of the research, Development, manufacture, marketing, distribution or sale of Drug Eluting Stents or Vascular Products. The term “Agency” includes, but is not limited to, the United States Food and Drug Administration (“FDA”).
- J. “Assets to be Divested” means all of Respondent Guidant’s assets, tangible and intangible, businesses and goodwill existing as of the Closing Date, that are related primarily to (with “primarily” being determined by taking into account revenues, assets, personnel, registrations and other relevant factors) the research, Development, manufacture, distribution, marketing or sale of Vascular Products, including, without limitation, the following:
1. all Vascular Intellectual Property;
 2. all Guidant Vascular Plants;
 3. all Vascular Manufacturing Technology;
 4. all Vascular Scientific and Regulatory Material;
 5. all Respondent Guidant’s books, records and files related to the foregoing or to Vascular Products;
 6. all Guidant Vascular Manufacturing Equipment;

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7. all rights, titles and interests in and to the contracts entered into in the ordinary course of business with customers, suppliers, sales representatives, distributors, agents, personal property lessors, personal property lessees, licensors, licensees, consignors, consignees, including, without limitation, all contracts with any Third Party for the supply of components used in the manufacture of Guidant Vascular Products;
8. all inventory, including raw materials, packaging materials, work-in-process and finished goods;
9. all commitments and orders for the purchase of goods that have not been shipped;
10. all rights under warranties and guarantees, express or implied; and
11. all items of prepaid expenses;

provided, however, “Assets to be Divested” does not include the name “Guidant”; *provided further, however*, “Assets to be Divested” does not include the capital stock and equity interests of EndoVascular Technologies, Inc., a Delaware corporation (“EVT”), or any subsidiary thereof or any assets of EVT or and subsidiary thereof, including all rights of Guidant, EVT and any other Guidant subsidiary with respect to the ANCURE ENDOGRAFT System.

- K. “BSC Senior Management” means the executive officers of BSC for purposes of SEC filings, excluding the three individuals who will run the CRM Business.
- L. “BSC Shares” means all shares of stock of BSC that Abbott holds or acquires pursuant to the Remedial Agreement.

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- M. “Business Day” means any day other than Saturday, Sunday, or any Federal holiday.
- N. “Cameron” means Cameron Health, Inc., a corporation organized, existing, and doing business under and by virtue of the laws of the State of Delaware, having its principal place of business located at 905 Calle Amanecer, Suite 300, San Clemente, California 92673.
- O. “Closing Date” means the date on which Respondents (or a Divestiture Trustee) and a Commission-approved Acquirer consummate a transaction to Divest the Assets to be Divested pursuant to this Order.
- P. “Commission-approved Acquirer” means the following:
1. Abbott; or
 2. an entity that receives the prior approval of the Commission to acquire the Assets to be Divested.
- Q. “Confidential Business Information” means all information owned by, or in the possession or control of, Respondents that is not in the public domain and that is related to the research, Development, manufacture, marketing, importation, exportation, supply, sales, sales support, or use of a Product.
- R. “Control” means holding fifty (50) percent or more of the outstanding voting securities of an issuer.
- S. “CRM Business” means the cardiac rhythm management business of BSC (including, after the Effective Date, Guidant).
- T. “Day(s)” means the period of time prescribed under this Order as computed pursuant to 16 C.F.R. § 4.3 (a).

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- U. “Development” means all preclinical and clinical drug and/or device development activities, including test method development and stability testing, toxicology, bioequivalency, formulation, process development, manufacturing scale-up, development-stage manufacturing, quality assurance/quality control development, statistical analysis and report writing, conducting clinical trials for the purpose of obtaining any and all approvals, licenses, registrations or authorizations from any Agency necessary for the manufacture, use, storage, import, export, transport, promotion, marketing and sale of a Product (including any governmental price or reimbursement approvals), Product approval and registration, and regulatory affairs related to the foregoing. “Develop” means to engage in Development.
- V. “Divest” or “Divestiture” means to divest, grant, license, deliver and/or otherwise convey.
- W. “Divestiture Trustee” means a trustee appointed by the Commission pursuant to the relevant provisions of this Order.
- X. “Drug Eluting Stent” means a Stent that elutes or otherwise delivers one or more drugs or pharmaceutical compositions.
- Y. “Effective Date” means the earlier of the following dates:
1. the date the Respondents close on the Acquisition Agreement; or
 2. the date the merger contemplated by the Acquisition Agreement becomes effective by filing the certificate of merger with the Secretary of State of the State of Indiana.

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- Z. “Field” means the use, manufacture, distribution, offer for sale, promotion, advertisement, research, Development, sale, importation, exportation, or to have used, made, distributed, offered for sale, promoted, advertised, researched, Developed, sold, imported, or exported Vascular Products.
- AA. “Governmental Entity” means any Federal, state, local or non-U.S. government or any court, legislature, governmental agency or governmental commission or any judicial or regulatory authority of any government.
- BB. “Guidant Drug Eluting Stent” means the everolimus eluting Stent system in Development by Guidant on the Closing Date, as approved by applicable Governmental Entities, including the FDA, and any improvements or iterations thereof approved for sale during the term of the applicable supply arrangements and of the type that could be approved by a supplement to an approved PMA rather than requiring a new PMA if such Stent were to be sold in the United States.
- CC. “Guidant Drug Eluting Stent Intellectual Property” means all Vascular Intellectual Property, including Intellectual Property available to Guidant pursuant to agreements with Third Parties and subject to the terms of those agreements, that is used in the Drug Eluting Stent program of Guidant having a priority date prior to, or otherwise existing as of, the Closing Date, including Intellectual Property relating to the bare metal and bioabsorbable stents, drugs, polymers and delivery systems used with respect to such Drug Eluting Stents.
- DD. “Guidant Vascular Employees” means all employees of Guidant involved in the research, Development, manufacture, distribution, marketing or sale of Guidant Vascular Products.

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- EE. “Guidant Vascular Manufacturing Equipment” means, unless otherwise provided in a Remedial Agreement, all assets used, to any extent, in the manufacture, research, Development or packaging of Guidant Vascular Products, including equipment located in the Jointly Held Plants, but not including any equipment at the Jointly Held Plants relating solely to the manufacture, research, Development or packaging of Retained Products.
- FF. “Guidant Vascular Plants” means all locations or properties of Guidant at which Guidant Vascular Products are researched, Developed, manufactured, distributed, warehoused or sold, including, but not limited to, the facilities owned by Guidant in Santa Clara, California and Temecula, California, the facilities leased by Guidant in Temecula, California, the facilities of Guidant located in Brussels, Belgium, and certain property located in Tokyo, Japan (as set forth in the Remedial Agreement), but not including the Jointly Held Plants, the facilities of Guidant located in Indianapolis, Indiana, or certain property located in Tokyo, Japan (as set forth in the Remedial Agreement).
- GG. “Guidant Vascular Products” mean those Vascular Products researched, Developed, manufactured or sold by Guidant as of the Effective Date.
- HH. “Intellectual Property” means all intellectual property rights of any kind, including rights in, to and concerning:
1. Patents;
 2. trademarks, service marks, trade names, trade dress, logos, domain names (collectively, Trademarks); trade secrets, know-how, techniques, software, code, data, databases and compilations of information, copyrights,

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works of authorship, inventions, formulas, processes, practices, methods and other confidential or proprietary technical, business, research, Development and other information; and

3. rights to obtain and file for Patents and registrations thereof;
- II. “Interim Monitor” means a monitor appointed by the Commission pursuant to Paragraph III of this Order.
- JJ. “Jointly Held Plants” means those manufacturing facilities of Guidant that produce Vascular Products and other Products, including, but not limited to, the Guidant plants located in Clonmel, Ireland and Dorado, Puerto Rico, but not including the facilities owned by Guidant in Santa Clara, California and Temecula, California, and the facilities leased by Guidant in Temecula, California.
- KK. “Law” means all laws, statutes, rules, regulations, ordinances and other pronouncements having the effect of law by any Governmental Entity.
- LL. “Patents” means all patents, patent applications and statutory invention registrations in which Respondents hold rights, either through assignment or license, and includes all reissues, divisions, continuations, continuations-in-part, substitutions, reexaminations, restorations, and/or patent term extensions thereof, all inventions disclosed therein, all rights therein provided by international treaties and conventions, and all rights to obtain and file for patents and registrations thereto.
- MM. “Product” means any medical device or system or pharmaceutical, biological, or genetic composition containing any formulation or dosage of a compound

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referenced as its pharmaceutically, biologically or genetically active ingredient.

NN. "Remedial Agreement" means the following:

1. the Abbott Agreement; and
2. any agreement between a Respondent(s) and a Commission-approved Acquirer (or between a Divestiture Trustee and a Commission-approved Acquirer) that has received the prior approval of the Commission to accomplish the requirements of this Order, and all amendments, exhibits, attachments, agreements, and schedules thereto, related to the Assets to be Divested, that have been approved by the Commission to accomplish the requirements of this Order.

OO. "Retained Product" means any Product(s) other than a Vascular Product.

PP. "Stent" means stents that provide intraluminal support through the use of members to form a stent scaffold, which is principally responsible for intraluminal support in the treatment of vascular disease.

QQ. "Third Party(ies)" means any private entity other than the following: (1) the Respondents, or (2) the Commission-approved Acquirer.

RR. "Transfer Date" means as to each production line of Guidant Vascular Manufacturing Equipment at a Jointly Held Plant, the date on which the production line is shut down for disassembly and transfer to the facility of the Commission-approved Acquirer.

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- SS. “Vascular Business” means the vascular intervention and endovascular solutions businesses of Guidant.
- TT. “Vascular Intellectual Property” means all Intellectual Property related primarily to (with “primarily” being determined by taking into account revenues, assets, personnel, registrations and other relevant factors) the Vascular Products including methods of manufacture, commercialization and use of Vascular Products, *provided, however*, “Vascular Intellectual Property” does not include the name “Guidant.”
- UU. “Vascular Manufacturing Technology” means all technology, trade secrets, know-how, and proprietary information (whether patented, patentable or otherwise) related to the manufacture (including all equipment used to manufacture a Product in final finished form), validation, packaging, release testing, stability and shelf life of Guidant Vascular Products, including all product specifications, processes, product designs, plans, trade secrets, ideas, concepts, manufacturing, engineering and other manuals and drawings, standard operating procedures, flow diagrams, chemical, pharmacological, toxicological, pharmaceutical, physical and analytical, safety, efficacy, bioequivalency, quality assurance, quality control and clinical data, research records, compositions, annual product reviews, process validation reports, analytical method validation reports, specifications for stability trending and process controls, testing and reference standards for impurities in and degradation of products, technical data packages, chemical and physical characterizations, dissolution test methods and results, formulations for administration, clinical trial reports, regulatory communications and labeling and all other information related to the manufacturing process, supplier lists, and supplier contracts.

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VV. “Vascular Products” means all Products used in vascular intervention and endovascular procedures, including, but not limited to, balloon catheters, atherectomy devices, guidewires, guiding catheters, stents, drug eluting stents, bioabsorbable and/or biodegradable stents, stent coatings, and embolic protection devices; *provided, however*, that except as set forth in any Remedial Agreement, Vascular Products shall not include Products related primarily (with “primarily” being determined by taking into account revenues, assets, personnel, registrations and other relevant factors) to cardiac rhythm management or cardiac surgery procedures.

WW. “Vascular Scientific and Regulatory Material” means all technological, scientific, chemical, biological, pharmacological, toxicological, regulatory and clinical trial materials and information related to Guidant Vascular Products, and full rights to use such materials, in any and all jurisdictions.

II.**IT IS FURTHER ORDERED** that:

A. Not later than immediately prior to the Acquisition, Guidant shall Divest the Assets to be Divested to Abbott, absolutely and in good faith, at no minimum price and royalty-free, pursuant to and in accordance with the Abbott Agreement (which agreement shall not vary or contradict, or be construed to vary or contradict, the terms of this Order, it being understood that nothing in this Order shall be construed to reduce any rights or benefits of Abbott or to reduce any obligations of Respondents under such agreement);

provided, however, that Respondents may include as part of a Remedial Agreement a requirement that the

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Commission-approved Acquirer make one-time fixed payments upon FDA approval and/or approval from the Ministry of Health and Welfare of Japan of a Drug Eluting Stent using everolimus;

provided further, however, that Respondents may include as part of a Remedial Agreement a requirement that the Commission-approved Acquirer pay royalties to the same extent and on the same basis that Guidant pays royalties to any Third Party. Such royalties shall be paid by the Commission-approved Acquirer directly to the Third Party and Respondents shall obtain no information about such payments except for an acknowledgment that the payment has been made;

provided further, however, that Respondents may include as part of a Remedial Agreement that BSC will obtain a license to the Guidant Drug Eluting Stent Intellectual Property, which license may provide that any rights to Guidant Drug Eluting Stent Intellectual Property granted by Abbott to a Third Party shall not extend to such Third Party's Drug Eluting Stent system if the drug used in such Drug Eluting Stent system is everolimus, and a supply of Guidant Drug Eluting Stents from the Commission-approved Acquirer;

provided further, however, that Respondents may include as part of a Remedial Agreement that BSC will obtain a license to any portion of the Vascular Intellectual Property that is used or in Development as of the Effective Date with Retained Products of Guidant, limited to use for Retained Products;

provided further, however, that at Abbott's sole discretion, Guidant may Divest to Abbott the shares in Guidant Intercontinental Trading (Shanghai) Co. Ltd. after the Effective Date;

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provided further, however, that at Abbott's sole discretion, Guidant may Divest to Abbott any other assets or interests which constitute an insubstantial portion of the Assets to be Divested after the Effective Date;

provided further, however, that at Abbott's sole discretion, Respondents need not divest to Abbott one-half of the interests in any Third Party in which Guidant holds an interest;

provided further, however, that Respondents shall not be required to divest any interest in EndoTex Interventional Systems, Inc.;

provided further, however, that Respondents shall not be required to divest any portion of the Assets to be Divested that Abbott, in its sole discretion, has affirmatively elected not to acquire in any Remedial Agreement.

- B. BSC shall not acquire Guidant until after Guidant shall have Divested the Assets to be Divested to a Commission-approved Acquirer and pursuant to a Remedial Agreement.
- C. Not later than immediately prior to the Acquisition, Guidant shall grant to Abbott a perpetual, non-exclusive, fully paid-up and royalty-free, worldwide license (with the exclusive right to license or sublicense in the Field, except that BSC may retain the right to license or sublicense "have made" rights solely on behalf of BSC in the Field) under all Intellectual Property, having a priority date prior to, or otherwise existing as of the Closing Date, that is owned or, to the extent permitted by the applicable agreement, licensed to (with the right to sublicense) or otherwise controlled by, Guidant immediately prior to the

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Acquisition that is used in the Vascular Business, but is not included in the Assets to be Divested.

- D. If, as a result of any failure by Respondents to Divest the Assets to be Divested within the time period required by this Order, Guidant loses any rights to any portion of the Vascular Intellectual Property included within the Assets to be Divested, then the Commission may require BSC to license or Divest to the Commission-approved Acquirer such portions of BSC's Vascular Intellectual Property as the Commission determines is appropriate to make up for the loss of such Vascular Intellectual Property held by Guidant prior to the Acquisition.
- E. Any Remedial Agreement shall be deemed incorporated into this Order, and any failure by Respondents to comply with any term of such Remedial Agreement shall constitute a failure to comply with this Order.
- F. Respondents, in any Remedial Agreement related to the Assets to be Divested, shall covenant to the Commission-approved Acquirer that, after the Closing Date, Respondents shall not join, or file, prosecute, continue or maintain any suit, in Law or equity, against the Commission-approved Acquirer for the research, Development, manufacture, use, import, distribution, marketing or sale of (a) any Vascular Product that is approved for sale in the U.S., Europe or Japan, manufactured by Guidant or for Guidant by any Person other than a Restricted Person as defined in the Abbott Agreement and sold by Guidant in commercial quantities as of the Closing Date, or (b) any Vascular Product in human clinical trials on the Closing Date that is manufactured by Guidant or for Guidant by any Person other than a Restricted Person as defined in the Abbott Agreement; *provided, however*, that this covenant need not

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extend to Restricted Persons as defined in the Abbott Agreement.

- G. Respondents, in any Remedial Agreement related to the Assets to be Divested, shall covenant to the Commission-approved Acquirer that, for a period of eight (8) years after the Closing Date, and thereafter with respect to any action occurring during such eight (8) year period, Respondents shall not join, or file, prosecute, continue or maintain any suit, in Law or equity, against the Commission-approved Acquirer for the research, Development, manufacture, use, import, distribution, marketing or sale of any Vascular Products manufactured by the Commission-approved Acquirer or for the Commission-approved Acquirer by any Person other than (except as provided in the Abbott Agreement) a Restricted Person as defined in the Abbott Agreement; *provided, however*, that this covenant need not extend to Restricted Persons as defined in the Abbott Agreement.
- H. Prior to the Closing Date, Respondents shall secure all consents and waivers from all Third Parties that are necessary for the transfer of the Vascular Intellectual Property of Guidant to the Commission-approved Acquirer, or for the continued research, Development, manufacture, use, import, distribution, marketing or sale of Vascular Products by the Commission-approved Acquirer, *provided, however*, that this provision shall apply only to consents and waivers that are necessary for the continued viability of the Assets to be Divested.
- I. After the Closing Date, Respondents shall not join, or file, prosecute, continue or maintain any suit, in Law or equity, against the Commission-approved Acquirer for the research, Development, manufacture, use, import, distribution, marketing or sale of (a) any Vascular Product that is approved for sale in the U.S., Europe or Japan,

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manufactured by Guidant or for Guidant by any Person other than a Restricted Person as defined in the Abbott Agreement and sold by Guidant in commercial quantities as of the Closing Date, or (b) any Vascular Product in human clinical trials on the Closing Date that is manufactured by Guidant or for Guidant by any Person other than a Restricted Person as defined in the Abbott Agreement; and for a period of eight (8) years after the Closing Date, and thereafter with respect to any action occurring during such eight (8) year period, Respondents shall not join, or file, prosecute, continue or maintain any suit, in Law or equity, against the Commission-approved Acquirer for the research, Development, manufacture, use, import, distribution, marketing or sale of any Vascular Products manufactured by the Commission-approved Acquirer or for the Commission-approved Acquirer by any Person other than (except as provided in the Abbott Agreement) a Restricted Person as defined in the Abbott Agreement; *provided, however*, that this requirement shall not extend to Restricted Persons as defined in the Abbott Agreement.

- J. No later than ninety (90) days after the Closing Date, Respondents shall segregate the Guidant Vascular Plants and the Jointly Held Plants such that Respondents' employees shall have no access to those portions of the Guidant Vascular Plants and the Jointly Held Plants involved in the research, Development, manufacture, use, import, distribution, marketing or sale of Vascular Products. At the option of the Commission-approved Acquirer (to be exercised no later than ninety (90) days after the date the Commission-approved Acquirer signs a Remedial Agreement with Respondents to effect the divestiture of the Assets to be Divested), Respondents shall include in any Remedial Agreement the following provisions, and Respondents shall satisfy the following:

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1. Respondents shall, no later than ninety (90) days after the Closing Date, file all papers and take all steps necessary to divide the plot of land on which the Clonmel, Ireland plant of Guidant is situated such that the Commission-approved Acquirer will own the new building currently being constructed at the site, together with all land, parking facilities, access roads and real property not necessary for the operations of the current facility, in fee simple.
2. Respondents shall, until the Transfer Date, provide the Commission-approved Acquirer with all services and support necessary at the Jointly Held Plants to enable the Commission-approved Acquirer to continue in the research, Development, manufacture, use, import, distribution, marketing or sale of Vascular Products at such Jointly Held Plants to the same extent that Guidant was prior to the Acquisition.
3. Respondents shall, until two (2) years after the Closing Date, or one (1) year after the Transfer Date, whichever is later, provide assistance and advice to enable the Commission-approved Acquirer to obtain all necessary licenses, registrations or approvals to manufacture and sell the Vascular Products manufactured by Guidant at the Jointly Held Plants.
4. Respondents shall enter into an agreement to supply to the Commission-approved Acquirer administrative, human resources, accounting and legal services (such legal services to be limited to providing historical information concerning legal matters) for a period not longer than three (3) years following the Closing Date.
5. Respondents shall, no later than eighteen (18) months after the Closing Date, remove all assets not being

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divested to the Commission-approved Acquirer from each of the Guidant Vascular Plants.

6. Respondents shall provide to the Commission-approved Acquirer all documents or materials in Respondent Guidant's possession, custody or control as of the Effective Date to the extent related to Vascular Products.
- K. If the Commission determines that Respondents have not complied with the requirements of Paragraphs II.J. of this Order, the Commission may require Respondents to Divest the Jointly Held Plants to the Commission-approved Acquirer. Respondents shall complete such Divestiture, if required by the Commission, within ninety (90) days of the date the Commission notifies Respondents of its determination, and shall Divest the Jointly Held Plants only in a manner that receives the prior approval of the Commission.
- L. Respondents shall:
1. not later than twenty five (25) days before the Closing Date (a) provide to the Commission-approved Acquirer a list of all Guidant Vascular Employees; (b) allow the Commission-approved Acquirer to interview any Guidant Vascular Employees; and (c) in compliance with all laws, allow the Commission-approved Acquirer to inspect the personnel files and other documentation relating to such Guidant Vascular Employees;
 2. not later than fifteen (15) days before the Closing Date provide an opportunity for the Commission-approved Acquirer: (a) to meet personally, and outside the presence or hearing of any employee or agent of Respondents, with any one or more of the Guidant Vascular Employees; and (b) to make offers of

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employment to any one or more of the Guidant Vascular Employees;

3. not interfere, directly or indirectly, with the hiring or employing by the Commission-approved Acquirer of Guidant Vascular Employees, and shall remove any impediments or incentives within the control of Respondents that may deter these employees from accepting employment with the Commission-approved Acquirer, including, but not limited to, any non-compete provisions of employment or other contracts with Respondents that would affect the ability or incentive of those individuals to be employed by the Acquirer. In addition, Respondents shall not make any counteroffer to a Guidant Vascular Employee who receives a written offer of employment from the Commission-approved Acquirer; and
4. not, for a period of one (1) year following the Closing Date without the Commission-approved Acquirer's prior written consent, directly or indirectly, solicit or otherwise attempt to induce any of the Guidant Vascular Employees to terminate their employment with the Commission-approved Acquirer; *provided however*, that Respondents may:
 - a. advertise for employees in newspapers, trade publications or other media not targeted specifically at Guidant Vascular Employees, or
 - b. hire Guidant Vascular Employees who apply for employment with Respondents, as long as such employees were not solicited by Respondents in violation of this Paragraph II.L.4;

provided further however, that this Paragraph II.L.4 shall not prohibit Respondents from making

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offers of employment to or employing any Guidant Vascular Employee after the Closing Date where the Commission-approved Acquirer has notified Respondents in writing that the Commission-approved Acquirer does not intend to make an offer of employment to that employee.

- M. Prior to the Closing Date, Respondents shall secure all consents and waivers from all Third Parties that are necessary for the Divestiture of the Assets to be Divested, and for the continued research, Development, manufacture, use, import, distribution, marketing or sale by the Commission-approved Acquirer of Vascular Products manufactured by Guidant or for Guidant by a Person other than a Restricted Person as defined in the Abbott Agreement, *provided however*, that this provision shall apply only to consents and waivers that are necessary for the continued viability of the Assets to be Divested.
- N. In the event that Respondents are unable to satisfy all conditions necessary to Divest any intangible asset that is a permit, license or right granted by any domestic or foreign Governmental Entity, Respondents shall provide such assistance as the Commission-approved Acquirer may reasonably request in the Commission-approved Acquirer's efforts to obtain a comparable permit, license or right.
- O. Respondents shall not use, directly or indirectly, any Confidential Business Information (other than as necessary to comply with the requirements of this Order or the Abbott Agreement) related to the research, Development, manufacture, use, import, distribution, marketing or sale of the Guidant Vascular Products, and shall not disclose or convey such Confidential Business Information, directly or indirectly, to any person except in connection with the Divestiture of the Guidant Vascular

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Business, to the Interim Monitor, if any, and to the Divestiture Trustee, if any; *provided however*, that:

1. This Paragraph II.O. shall not apply to any Confidential Business Information related to the Guidant Vascular Products that Respondents can demonstrate to the Commission that Respondent BSC obtained other than in connection with the Acquisition.
2. This Paragraph II.O. shall not apply to any Confidential Business Information related to the Guidant Drug Eluting Stent Intellectual Property if Respondent BSC has received a license to the Guidant Drug Eluting Stent Intellectual Property from the Commission-approved Acquirer.
3. This Paragraph II.O. shall not apply to any Confidential Business Information related to Retained Products for use with Retained Products.
4. This Paragraph II.O. shall not apply to the use of Confidential Business Information by Respondents in complying with the requirements or obligations of the laws of the United States or other countries.
5. This Paragraph II.O. shall not apply to the use of Confidential Business Information by Respondents to defend against legal claims brought by any Third Party, or investigations or enforcement actions by government authorities, provided that the Commission-approved Acquirer has consented to such use.
6. This Paragraph II.O. shall not apply to the use of Confidential Business Information by Respondents to the extent consented to by the Commission-approved Acquirer.

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Provided, however, that Respondents shall require any BSC employees or agents who as of the Effective Date or pursuant to the Abbott Agreement have access to Confidential Business Information related to the Guidant Vascular Products to enter into, no later than thirty (30) days after the Closing Date, confidentiality agreements with the Respondents and the Commission-approved Acquirer not to disclose such Confidential Business Information except as set forth in this Paragraph II.O.

- P. The purpose of the Divestiture of the Assets to be Divested to a Commission-approved Acquirer is to create an independent, viable and effective competitor in the Drug Eluting Stent market, the Coronary Guidewire market, and the PTCA Balloon Catheter market, and to remedy the lessening of competition resulting from the Acquisition as alleged in the Commission's Complaint.

III.

IT IS FURTHER ORDERED that:

- A. At any time after Respondents sign the Consent Agreement in this matter, the Commission may appoint a monitor ("Interim Monitor") to assure that Respondents expeditiously comply with all of their obligations and perform all of their responsibilities as required by this Order and the Remedial Agreement.
- B. The Commission shall select the Interim Monitor, subject to the consent of Respondent BSC, which consent shall not be unreasonably withheld. If Respondent BSC has not opposed, in writing, including the reasons for opposing, the selection of a proposed Interim Monitor within ten (10) Days after notice by the staff of the Commission to Respondent BSC of the identity of any proposed Interim

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Monitor, Respondents shall be deemed to have consented to the selection of the proposed Interim Monitor.

- C. Not later than ten (10) Days after the appointment of the Interim Monitor, Respondents shall execute an agreement that, subject to the prior approval of the Commission, confers on the Interim Monitor all the rights and powers necessary to permit the Interim Monitor to monitor Respondents' compliance with the relevant requirements of this Order in a manner consistent with the purposes of this Order.
- D. If an Interim Monitor is appointed, Respondents shall consent to the following terms and conditions regarding the powers, duties, authorities, and responsibilities of the Interim Monitor:
 - 1. The Interim Monitor shall have the power and authority to monitor Respondents' compliance with the Divestiture and related requirements of this Order, and shall exercise such power and authority and carry out the duties and responsibilities of the Interim Monitor in a manner consistent with the purposes of this Order and in consultation with the Commission.
 - 2. The Interim Monitor shall act in a fiduciary capacity for the benefit of the Commission.
 - 3. The Interim Monitor shall serve until the later of:
 - a. the completion by Respondents of the obligation to Divest the Assets to be Divested in a manner that fully satisfies the requirements of this Order and notification by the Commission-approved Acquirer to the Interim Monitor that it is fully capable of producing the relevant Product(s) acquired

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pursuant to a Remedial Agreement independently of Respondents; or

- b. the completion by Respondents of the last obligation under this Order pertaining to the Interim Monitor's service;

provided, however, that the Commission may extend or modify this period as may be necessary or appropriate to accomplish the purposes of this Order.

4. Subject to any demonstrated legally recognized privilege, the Interim Monitor shall have full and complete access to Respondents' personnel, books, documents, records kept in the normal course of business, facilities and technical information, and such other relevant information as the Interim Monitor may reasonably request, related to Respondents' compliance with their obligations under this Order, including, but not limited to, their obligations related to the Assets to be Divested. Respondents shall cooperate with any reasonable request of the Interim Monitor and shall take no action to interfere with or impede the Interim Monitor's ability to monitor Respondents' compliance with this Order.
5. The Interim Monitor shall serve, without bond or other security, at the expense of Respondents on such reasonable and customary terms and conditions as the Commission may set. The Interim Monitor shall have authority to employ, at the expense of the Respondents, such consultants, accountants, attorneys and other representatives and assistants as are reasonably necessary to carry out the Interim Monitor's duties and responsibilities.

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6. Respondents shall indemnify the Interim Monitor and hold the Interim Monitor harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Interim Monitor's duties, including all reasonable fees of counsel and other reasonable expenses incurred in connection with the preparations for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Interim Monitor.
 7. Respondents shall report to the Interim Monitor in accordance with the requirements of this Order and/or as otherwise provided in any agreement approved by the Commission. The Interim Monitor shall evaluate the reports submitted to the Interim Monitor by Respondents, and any reports submitted by the Commission-approved Acquirer with respect to the performance of Respondents' obligations under this Order or the Remedial Agreement. Within thirty (30) Days from the date the Interim Monitor receives these reports, the Interim Monitor shall report in writing to the Commission concerning performance by Respondents of their obligations under this Order.
 8. Respondents may require the Interim Monitor and each of the Interim Monitor's consultants, accountants, attorneys and other representatives and assistants to sign a customary confidentiality agreement; *provided, however,* that such agreement shall not restrict the Interim Monitor from providing any information to the Commission.
- E. The Commission may, among other things, require the Interim Monitor and each of the Interim Monitor's

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consultants, accountants, attorneys and other representatives and assistants to sign an appropriate confidentiality agreement related to Commission materials and information received in connection with the performance of the Interim Monitor's duties.

- F. If the Commission determines that the Interim Monitor has ceased to act or failed to act diligently, the Commission may appoint a substitute Interim Monitor in the same manner as provided in this Paragraph.
- G. The Commission may on its own initiative, or at the request of the Interim Monitor, issue such additional orders or directions as may be necessary or appropriate to assure compliance with the requirements of this Order.
- H. The Interim Monitor appointed pursuant to this Order may be the same person appointed as a Divestiture Trustee pursuant to the relevant provisions of this Order.

IV.**IT IS FURTHER ORDERED** that:

- A. If Respondents have not fully complied with the obligations to Divest the Assets to be Divested as required by this Order, or the Jointly Held Plants pursuant to Paragraph II.K. if required, or Abbott has not Divested the BSC Shares as required by Paragraph V., the Commission may appoint a trustee ("Divestiture Trustee") to Divest the Assets to be Divested or the BSC Shares, as the case may be. In the event that the Commission or the Attorney General brings an action pursuant to § 5(l) of the Federal Trade Commission Act, 15 U.S.C. § 45(l), or any other statute enforced by the Commission, Respondents or Abbott shall consent to the appointment of a Divestiture Trustee in such action to Divest the Assets to be Divested

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or the BSC Shares. Neither the appointment of a Divestiture Trustee nor a decision not to appoint a Divestiture Trustee under this Paragraph shall preclude the Commission or the Attorney General from seeking civil penalties or any other relief available to it, including a court-appointed Divestiture Trustee, pursuant to § 5(l) of the Federal Trade Commission Act, or any other statute enforced by the Commission, for any failure by Respondents or Abbott to comply with this Order.

- B. The Commission shall select the Divestiture Trustee, subject to the consent of Respondent BSC or Abbott, as the case may be, which consent shall not be unreasonably withheld. The Divestiture Trustee shall be a person with experience and expertise in acquisitions and divestitures. If Respondent BSC or Abbott, as the case may be, has not opposed, in writing, including the reasons for opposing, the selection of any proposed Divestiture Trustee within ten (10) Days after notice by the staff of the Commission to Respondent BSC or Abbott, as the case may be, of the identity of any proposed Divestiture Trustee, Respondents or Abbott, as the case may be, shall be deemed to have consented to the selection of the proposed Divestiture Trustee.
- C. Not later than ten (10) Days after the appointment of a Divestiture Trustee, Respondents or Abbott, as the case may be, shall execute a trust agreement that, subject to the prior approval of the Commission, transfers to the Divestiture Trustee all rights and powers necessary to permit the Divestiture Trustee to effect the Divestiture required by this Order.
- D. If a Divestiture Trustee is appointed by the Commission or a court pursuant to this Paragraph, Respondents or Abbott, as the case may be, shall consent to the following terms

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and conditions regarding the Divestiture Trustee's powers, duties, authority, and responsibilities:

1. Subject to the prior approval of the Commission, the Divestiture Trustee shall have the exclusive power and authority to Divest the Assets to be Divested or the BSC Shares, as the case may be.
2. The Divestiture Trustee shall have one (1) year after the date the Commission approves the trust agreement described herein to accomplish the Divestiture, which shall be subject to the prior approval of the Commission. If, however, at the end of the one (1) year period, the Divestiture Trustee has submitted a plan of Divestiture or believes that the Divestiture can be achieved within a reasonable time, the Divestiture period may be extended by the Commission, or, in the case of a court-appointed Divestiture Trustee, by the court; *provided, however*, the Commission may extend the Divestiture period only two (2) times.
3. Subject to any demonstrated legally recognized privilege, the Divestiture Trustee shall have full and complete access to the personnel, books, records and facilities related to the Assets to be Divested by this Order or the BSC Shares and to any other relevant information, as the Divestiture Trustee may request. Respondents or Abbott, as the case may be, shall develop such financial or other information as the Divestiture Trustee may request and shall cooperate with the Divestiture Trustee. Respondents or Abbott, as the case may be, shall take no action to interfere with or impede the Divestiture Trustee's accomplishment of the Divestiture. Any delays in Divestiture caused by Respondents or Abbott, as the case may be, shall extend the time for Divestiture under this Paragraph in an amount equal to the delay,

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as determined by the Commission or, for a court-appointed Divestiture Trustee, by the court.

4. The Divestiture Trustee shall use commercially reasonable efforts to negotiate the most favorable price and terms available in each contract that is submitted to the Commission, subject to Respondents' absolute and unconditional obligation to Divest expeditiously and at no minimum price. Each Divestiture shall be made in the manner and to an acquirer as required by this Order; *provided, however*, if the Divestiture Trustee receives bona fide offers from more than one acquiring entity, and if the Commission determines to approve more than one such acquiring entity, the Divestiture Trustee shall Divest to the acquiring entity selected by Respondents from among those approved by the Commission; *provided further, however*, that Respondents shall select such entity within five (5) Days after receiving notification of the Commission's approval.
5. The Divestiture Trustee shall serve, without bond or other security, at the cost and expense of Respondents or Abbott, as the case may be, on such reasonable and customary terms and conditions as the Commission or a court may set. The Divestiture Trustee shall have the authority to employ, at the cost and expense of Respondents or Abbott, as the case may be, such consultants, accountants, attorneys, investment bankers, business brokers, appraisers, and other representatives and assistants as are necessary to carry out the Divestiture Trustee's duties and responsibilities. The Divestiture Trustee shall account for all monies derived from the Divestiture and all expenses incurred. After approval by the Commission of the account of the Divestiture Trustee, including fees for the Divestiture Trustee's services, all

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remaining monies shall be paid at the direction of the Respondents or Abbott, as the case may be, and the Divestiture Trustee's power shall be terminated. The compensation of the Divestiture Trustee shall be based at least in significant part on a commission arrangement contingent on the Divestiture of all of the relevant assets that are required to be Divested by this Order.

6. Respondents or Abbott, as the case may be, shall indemnify the Divestiture Trustee and hold the Divestiture Trustee harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Divestiture Trustee's duties, including all reasonable fees of counsel and other expenses incurred in connection with the preparation for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Divestiture Trustee.
7. In the event that the Divestiture Trustee determines that he or she is unable to Divest the Assets to be Divested in a manner that preserves their marketability, viability and competitiveness and ensures their continued use in the research, Development, manufacture, use, import, distribution, marketing, sale or after-sales support of the relevant Product, the Divestiture Trustee may Divest such additional assets of Respondents and effect such arrangements as are necessary to satisfy the purposes and requirements of this Order.

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8. The Divestiture Trustee shall have no obligation or authority to operate or maintain the Assets to be Divested.
 9. The Divestiture Trustee shall report in writing to Respondents and to the Commission every sixty (60) Days concerning the Divestiture Trustee's efforts to accomplish the Divestiture.
 10. Respondents or Abbott, as the case may be, may require the Divestiture Trustee and each of the Divestiture Trustee's consultants, accountants, attorneys and other representatives and assistants to sign a customary confidentiality agreement; *provided, however,* such agreement shall not restrict the Divestiture Trustee from providing any information to the Commission.
- E. If the Commission determines that a Divestiture Trustee has ceased to act or failed to act diligently, the Commission may appoint a substitute Divestiture Trustee in the same manner as provided in this Paragraph.
- F. The Commission or, in the case of a court-appointed Divestiture Trustee, the court, may on its own initiative or at the request of the Divestiture Trustee issue such additional orders or directions as may be necessary or appropriate to accomplish the Divestiture required by this Order.
- G. The Divestiture Trustee appointed pursuant to this Paragraph may be the same person appointed as Interim Monitor pursuant to the relevant provisions of this Order.

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V.**IT IS FURTHER ORDERED** that:

- A. No later than thirty (30) months after the Effective Date, Abbott shall divest all BSC Shares.
- B. Pending divestiture of the BSC Shares, Abbott shall vote the BSC Shares only in proportion to all other shares voted on any matter that comes before a vote of shareholders of BSC, and shall not obtain access to any non-public information related to BSC or otherwise influence the management or operations of BSC by virtue of its stock holdings in BSC.

VI.**IT IS FURTHER ORDERED** that:

- A. For a period commencing on the date this Order becomes final and continuing for ten (10) years, Respondents shall not, without providing advance written notification to the Commission, acquire, directly or indirectly, through subsidiaries or otherwise, any ownership, leasehold, or other interest, in whole or in part, in Cameron; *provided, however,* that such requirement shall not apply to any interest in Cameron that BSC held as of the Effective Date; *provided further, however,* that in the event Respondents provide financing to Cameron in return for debt that is convertible to equity, such notification under this provision shall be required only when Respondents propose to convert such debt to equity. Said notification shall be given on the Notification and Report Form set forth in the Appendix to Part 803 of Title 16 of the Code of Federal Regulations as amended (hereinafter referred to as “the Notification”), and shall be prepared and transmitted in accordance with the requirements of that part, except that no filing fee will be required for any such

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notification, notification shall be filed with the Secretary of the Commission, notification need not be made to the United States Department of Justice, and notification is required only of Respondents and not of any other party to the transaction. Respondents shall provide two (2) complete copies (with all attachments and exhibits) of the Notification to the Commission at least thirty (30) days prior to consummating any such transaction (hereinafter referred to as the “first waiting period”). If, within the first waiting period, representatives of the Commission make a written request for additional information or documentary material (within the meaning of 16 C.F.R. § 803.20), Respondents shall not consummate the transaction until thirty (30) days after submitting such additional information or documentary material. Early termination of the waiting periods in this Paragraph may be requested and, where appropriate, granted by letter from the Bureau of Competition. Provided, however, that prior notification shall not be required by this Paragraph for a transaction for which notification is required to be made, and has been made, pursuant to Section 7A of the Clayton Act, 15 U.S.C. § 18a.

- B. Prior to acquiring Control of Cameron, BSC shall not obtain or use any information from Cameron except under the following conditions and only in connection with the exercise of any rights or obligations in any agreement between BSC and Cameron:
 - 1. With respect to the information required to be provided by Cameron to BSC under the Agreement and Plan of Merger dated November 7, 2003, as amended; the Securities Purchase Agreement dated November 7, 2003, as amended; the Convertible Promissory Note dated September 23, 2005; the Amended and Restated Investor Rights Agreement dated November 7, 2003, as amended; the Stockholder

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Option and Stock Purchase Agreement dated November 7, 2003, as amended; and any information sharing provisions under any other agreements between BSC and Cameron; and any information BSC obtains by virtue of its shareholding in Cameron (“the Cameron Information”), BSC will provide access to the Cameron Information only to four individuals and their successors at BSC: one from Business Development, one from Regulatory Affairs, one from Marketing Science and one from Clinical (“the Clean Team”). None of the Clean Team (or former members of the Clean Team) will have any other responsibilities related to cardiac rhythm management (other than cardiac ablation) for the duration of any of the agreements with Cameron or until BSC acquires Control of Cameron, whichever comes first.

2. With respect to information provided by Cameron to BSC prior to the Closing Date, BSC shall ensure that all individuals with such information send all originals and copies to a member of the Clean Team, who shall not provide that information to anyone other than a Clean Team member except as provided in this Order. *Provided, however,* that information provided by Cameron to Guidant prior to the Closing Date need not be sent to a member of the Clean Team; and *provided further, however,* that BSC and Guidant shall comply with any restrictions on the use and distribution of such information provided by Cameron to Guidant contained in any agreement between Cameron and Guidant.
3. The Clean Team will not share the Cameron Information with anyone at BSC except as provided below:
 - a. they may provide to BSC Senior Management, who will not share the information with anyone

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outside the Clean Team, outside counsel and BSC Senior Management:

- (1) information provided by Cameron under Paragraph 6.6(f)(i) of the Securities Purchase Agreement and Paragraph 3.1 of the Convertible Promissory Note; and
 - (2) on a quarterly basis, information as to whether Cameron appears to be on a product approval timeline consistent with BSC's expectations (but not the reasons therefore) and information contained in a quarterly balance sheet and income statement;
- b. they may share the Cameron Information with those BSC Senior Management (who will not share this information with anyone outside the Clean Team, outside counsel and BSC Senior Management) as necessary to conduct due diligence to determine whether to provide Cameron with additional funding if Cameron requests additional funding from BSC other than as set forth in any existing agreement between BSC and Cameron (including Section 3 of the Securities Purchase Agreement, as amended);
 - c. they may share the Cameron Information with those BSC Senior Management (who will not share this information with anyone outside the Clean Team, outside counsel and BSC Senior Management) as necessary, in the event of an initial public offering by Cameron or sale of Cameron, to determine whether to convert BSC's notes into shares pursuant to each Convertible Promissory Note executed (or to be executed)

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before BSC exercises its option to acquire Cameron.

- d. they may share the Cameron Information with six individuals, which may include individuals within the CRM Business at BSC, and with BSC Senior Management (which six individuals and BSC Senior Management will not share this information with anyone outside the Clean Team and outside counsel, and the six individuals and BSC Senior Management will agree to use this information for the sole purpose of determining whether to exercise the BSC Option):
 - (1) as necessary to conduct due diligence to determine whether to exercise the BSC Option upon BSC's receipt from Cameron of the PMA approval documents and notice from Cameron that the FDA has filed for substantive review of Premarket Approval for the implantable cardiac defibrillator without transvenous leads for the treatment of heart arrhythmias ("Cameron Product") pursuant to the definition of the "Option Period" in section 8 of the Securities Purchase Agreement of November 7, 2003; and
 - (2) for one period not to exceed 45 days, as necessary to conduct due diligence to determine whether to exercise the BSC Option prior to BSC's receipt of the PMA approval documents and notice from Cameron that the FDA has filed for substantive review of Premarket Approval for the Cameron Product; and
- e. they may share the Cameron Information with outside counsel (who will not share this

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information with anyone outside the Clean Team, BSC Senior Management (if BSC Senior Management is allowed to obtain such information pursuant to this Order), and the six individuals referenced in Paragraph VI.B.3.d. above (if such individuals are allowed to obtain such information pursuant to this Order)) for the purpose of obtaining legal advice concerning complying with this Order.

4. Only Clean Team members shall be able to exercise BSC's Board Observation Rights pursuant to Section 5.5 of the Agreement and Plan of Merger, and Section 6.5 of the Securities Purchase Agreement, subject to the restrictions on their ability to share information as provided in this Order.
5. BSC shall not exercise its rights to obtain information from Cameron pursuant to Section 5.6 of the Agreement and Plan of Merger, Section 6.7 of the Securities Purchase Agreement, or Section 7.5 of each Convertible Promissory Note executed (or to be executed) before BSC exercises its option to acquire Cameron. *Provided, however,* that if Cameron does not keep the Clean Team reasonably apprised of Cameron's general financial situation, the Clean Team may exercise BSC rights to obtain information from Cameron pursuant to Section 5.6 of the Agreement and Plan of Merger and 6.7 of the Securities Purchase Agreement. *Provided further, however,* that the Clean Team will not exercise BSC rights to obtain information from Cameron pursuant to Section 5.6 of the Agreement and Plan of Merger and 6.7 of the Securities Purchase Agreement without giving staff of the Commission thirty (30) days' advance notice. Such notice shall contain, among other information requested by staff, a detailed description of the

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information sought by the Clean Team, the information provided by Cameron to the Clean Team, a detailed description of the reasons such information provided by Cameron has not satisfied the requirement to keep the Clean Team reasonably apprised of Cameron's general financial situation, and a detailed description of all efforts by the Clean Team to obtain such information prior to invoking BSC rights to obtain information from Cameron pursuant to Section 5.6 of the Agreement and Plan of Merger and 6.7 of the Securities Purchase Agreement. *Provided further, however,* that BSC shall provide a copy of such notice to an Interim Monitor appointed pursuant to Paragraph III. of this Order at the same time it provides the notice to staff of the Commission.

6. The Clean Team members, BSC Senior Management and the six individuals referenced in Paragraph VI.B.3.d. above, shall, before they obtain any Cameron Information, enter into confidentiality agreements with BSC requiring that they keep Cameron Information confidential as set forth in this Order and use the Cameron Information only in connection with the exercise of any rights or obligations in any agreement between BSC and Cameron and on the bases set forth in this Order.
- C. Prior to acquiring Control of Cameron, BSC shall not exercise its rights under Section 6.1 of the Securities Purchase Agreement dated November 7, 2003, and shall waive the prohibition under Section 6.6(j) of the Securities Purchase Agreement dated November 7, 2003, (the "Ordinary Course Provisions") except under the following conditions:
1. BSC shall appoint Neil Dimick as proxy ("Proxy") to inform BSC as to whether BSC may exercise its right

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not to consent to (or to decline to waive, as the case may be) requests Cameron makes under the Ordinary Course Provisions. BSC shall not exercise any rights under the Ordinary Course Provisions without the express written approval of the Proxy in advance of BSC's exercise of rights. The purpose of the Proxy is to ensure that BSC makes decisions with respect to the Ordinary Course Provisions in the same manner as BSC would have made those decisions absent the Guidant transaction. The Proxy shall inform BSC that it may exercise its right not to consent (or to decline to waive, as the case may be) to requests Cameron makes under the Ordinary Course Provisions if the Proxy concludes that the failure to exercise such right could reasonably be expected to have an adverse impact on BSC's financial investment in Cameron, BSC's ability to exercise its option to acquire Cameron, or on the value of Cameron to BSC following an exercise by BSC of its option to acquire Cameron. The Proxy shall not consider the consequences on any businesses BSC acquired from Guidant. In making such determination, the Proxy will act as an ordinary, prudent corporation of the scope of BSC. The Proxy shall have access to all the Cameron Information in the possession of BSC. The Clean Team will provide the Proxy the information it provides to BSC Senior Management pursuant to Paragraph VI.B.3.a. of this Order. The Proxy shall not otherwise consult with or communicate with BSC in making his or her determination. If Cameron sends written notice to the Proxy of its intention to take some action covered by the Ordinary Course Provisions, and the notice explains why, in Cameron's view, the event is not likely to have an adverse impact on BSC's financial investment in Cameron, on BSC's ability to exercise its option to acquire Cameron, or on the value of Cameron to BSC following an exercise by BSC of its option to acquire

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Cameron, then the Proxy shall have twenty (20) Business Days (or such longer period as agreed to by Cameron) to inform BSC that it may exercise its right not to consent (or to decline to waive, as the case may be) to such request.

2. The Proxy shall be an individual and/or organization with which BSC has not done business in the last 5 years and BSC shall not do business with that individual or organization for the duration of the Proxy's term. The Proxy shall act in good faith, and shall not have any conflicting obligation (financial or otherwise) with BSC, Cameron, or any other firm engaged in the research, Development, manufacture or sale of ICDs.
3. The Proxy shall serve until the expiration of the Option Period for BSC to acquire Cameron or upon exercise of that Option.
4. Respondents shall execute an agreement that, subject to the prior approval of the Commission, sets forth the obligations of the Proxy to determine whether BSC may exercise its rights not to consent to requests Cameron makes under the Ordinary Course Provisions. The Proxy shall have access to all information BSC receives or has received from Cameron. Respondents shall require the Proxy to sign a customary confidentiality agreement pursuant to which the Proxy shall agree to use the Cameron Information only in connection with the purposes set forth in this Order; *provided, however*, that such agreement shall not restrict the Proxy from providing any information to the Commission or staff of the Commission.
5. If the Commission determines that the Proxy has ceased to act or failed to act diligently, the

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Commission may require BSC to appoint a substitute Proxy, subject to the prior approval of the Commission, in the same manner as provided in this Paragraph.

- D. Prior to acquiring Control of Cameron, BSC shall vote its shares only in proportion to all other shares voted on any matter that comes before a vote of shareholders of Cameron. *Provided, however,* that this provision shall not apply to any matter for which the Proxy has determined that BSC may exercise its rights under the Ordinary Course Provisions.
- E. If BSC does not acquire Control of Cameron prior to the expiration of the Option Period or if BSC is enjoined from acquiring Control of Cameron, then BSC shall:
 - 1. Return all the Cameron Information to Cameron within sixty (60) days of the expiration of the Option Period or the issuance of an injunction preventing BSC from acquiring Control of Cameron, as applicable, unless Cameron in its sole discretion permits BSC to retain the Cameron Information; and
 - 2. Divest its interest in Cameron within eighteen (18) months of the expiration of the Option Period or the issuance of an injunction preventing BSC from acquiring Control of Cameron, as applicable.
- F. For a period of twelve (12) months following the completion of any due diligence conducted by BSC of Cameron, the six individuals referenced in Paragraph VI.B.3.d. above shall not participate in any fashion (including without limitation management of) in the design, specification, design review, planning meeting, fabrication or manufacture of any Product in the field of subcutaneous-only implantable cardioverters and

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defibrillators, with or without pacing function and using non-transvenous leads.

- G. The purpose of this Paragraph is to maintain Cameron as a viable competitor in the research and Development of ICDs, and as a viable potential competitor in the manufacture and sale of ICDs, and to remedy the lessening of competition resulting from the Acquisition as alleged in the Commission's Complaint.

VII.**IT IS FURTHER ORDERED** that:

- A. Within five (5) Days of the Acquisition, Respondents shall submit to the Commission a letter certifying the date on which the Acquisition occurred.
- B. Within thirty (30) Days after the date this Order becomes final, and every sixty (60) Days thereafter until Respondents have fully complied with Paragraphs II.A., II.B., II.C., II.J., and all their responsibilities to render transitional services to the Commission-approved Acquirer as provided in the Remedial Agreement(s); and until Respondents have acquired Control of Cameron or divested its interest in Cameron, whichever occurs first, Respondents shall submit to the Commission a verified written report setting forth in detail the manner and form in which they intend to comply, are complying, and have complied with this Order. Respondents shall submit at the same time a copy of their report concerning compliance with this Order to the Interim Monitor, if any Interim Monitor has been appointed. Respondents shall include in their reports, among other things that are required from time to time:

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1. a full description of the efforts being made to comply with the relevant Paragraphs of this Order;
 2. a detailed plan to deliver all Confidential Business Information required to be delivered to the Commission-approved Acquirer pursuant to Paragraph II.J. and agreed upon by the Commission-approved Acquirer and the Interim Monitor (if applicable) and any updates or changes to such plan;
 3. a description of all Confidential Business Information delivered to the Commission-approved Acquirer, including the type of information delivered, method of delivery, and date(s) of delivery;
 4. a description of the Confidential Business Information currently remaining to be delivered and a projected date(s) of delivery; and
 5. a description of all technical assistance provided to the Commission-approved Acquirer during the reporting period.
- C. Within thirty (30) Days after the date this Order becomes final, and every sixty (60) Days thereafter until Abbott has divested all shares of stock of BSC that it holds or acquires pursuant to the Remedial Agreement, Abbott shall submit to the Commission a verified written report setting forth in detail the manner and form in which it intends to comply, is complying, and has complied with this Order. Abbott shall include in its reports, among other things that are required from time to time:
1. a full description of the efforts being made to comply with the relevant Paragraphs of this Order;

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2. a full description of the number of shares of stock of BSC sold since its last compliance report, and the number of share remaining to be sold.
- D. On the first anniversary of the date this Order becomes final, and annually thereafter for nine (9) years, and at such other times as staff of the Commission shall request, Respondents shall submit to the Commission a verified written report setting forth in detail the manner and form in which they intend to comply, are complying, and have complied with this Order.

VIII.

IT IS FURTHER ORDERED that Respondents shall notify the Commission at least thirty (30) Days prior to any proposed (1) dissolution of the Respondents, (2) acquisition, merger or consolidation of Respondents, or (3) any other change in the Respondents that may affect compliance obligations arising out of this Order, including, but not limited to, assignment, the creation or dissolution of subsidiaries, or any other change in Respondents.

IX.

IT IS FURTHER ORDERED that, for the purpose of determining or securing compliance with this Order, and subject to any legally recognized privilege, and upon written request with reasonable notice to Respondents made to their principal United States offices, Respondents shall permit any duly authorized representative of the Commission:

- A. Access, during office hours of Respondents and in the presence of counsel, to all facilities and access to inspect and copy all books, ledgers, accounts, correspondence, memoranda and all other records and documents in the possession or under the control of Respondents related to compliance with this Order; and

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- B. Upon five (5) Days' notice to Respondents and without restraint or interference from Respondents, to interview officers, directors, or employees of Respondents, who may have counsel present, regarding such matters.

X.

IT IS FURTHER ORDERED that this Order shall terminate on July 21, 2016.

By the Commission, Commissioner Harbour recused.

APPENDIX I**ABBOTT AGREEMENT**

**[Redacted From the Public Record
But Incorporated by Reference]**

Analysis to Aid Public Comment

ANALYSIS OF CONSENT ORDER TO AID PUBLIC COMMENT

The Federal Trade Commission (“Commission”) has accepted, subject to final approval, an Agreement Containing Consent Order (“Consent Agreement”) from Boston Scientific Corporation (“Boston Scientific”). The purpose of the proposed Consent Agreement is to remedy the anticompetitive effects that would otherwise result from Boston Scientific’s acquisition of Guidant Corporation (“Guidant”). Under the terms of the proposed Consent Agreement, Boston Scientific and Guidant are required: (a) to divest all assets (including intellectual property) related to Guidant’s vascular business to a third party, enabling that third party to make and sell drug eluting stents (“DESs”) with the Rapid Exchange (“RX”) delivery system; Percutaneous Transluminal Coronary Angioplasty (“PTCA”) balloon catheters; and coronary guidewires, and (b) to reform Boston Scientific’s contractual rights with Cameron Health, Inc. (“Cameron”) to limit Boston Scientific’s control over certain Cameron actions and the sharing of non-public information about Cameron’s Implantable Cardioverter Defibrillator (“ICD”) product.

The proposed Consent Agreement has been placed on the public record for thirty days to solicit comments from interested persons. Comments received during this period will become part of the public record. After thirty days, the Commission will again review the proposed Consent Agreement and the comments received, and will decide whether it should withdraw the proposed Consent Agreement or make it final.

Pursuant to an Agreement and Plan of Merger dated January 25, 2006, Boston Scientific proposes to acquire Guidant in exchange for cash and voting securities in a transaction valued at approximately \$27 billion. The Commission’s complaint alleges that the proposed acquisition, if consummated, would violate Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15

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U.S.C. § 45, by removing an imminent competitor from the U.S. market for DESs and by lessening competition in the U.S. markets for PTCA balloon catheters and coronary guidewires. The proposed Consent Agreement would remedy the alleged violations by requiring a divestiture that will replace the competition that otherwise would be lost in these markets as a result of the acquisition.

Boston Scientific is a worldwide developer, manufacturer, and marketer of medical devices used in a broad range of interventional medical specialties such as interventional cardiology, peripheral intervention, and vascular surgery. In 2005, Boston Scientific reported worldwide sales of approximately \$6.3 billion, with U.S. sales of \$3.8 billion.

Guidant manufactures products in three broad business units: cardiac rhythm management (“CRM”), vascular intervention, and cardiac surgery. In 2005, Guidant’s sales were \$3.6 billion globally, with U.S. sales of \$2.3 billion. Guidant’s DES program, PTCA balloon catheters, and coronary guidewires are part of the vascular intervention business unit, while its ICD products are a part of the CRM business unit.

Drug - Eluting Stents

A DES is a medical device typically consisting of a thin, metallic stent coated with an antiproliferative drug and a polymer, mounted on a delivery system. Interventional cardiologists use DESs to treat coronary artery disease, a condition caused by the build-up of plaque deposits within one or more coronary arteries, leading to reduced blood flow. DESs work by propping open the clogged artery or arteries and eluting a drug, which helps prevent the renarrowing of the artery, called restenosis. DESs are the most effective minimally-invasive method for treating coronary artery disease, and other products and procedures are not economic substitutes for DESs.

Analysis to Aid Public Comment

DESs are sold mounted on a delivery system used to deploy the DES to the blocked area of the coronary artery. The two most common types of delivery systems in the United States are over-the-wire and Rapid Exchange (“RX”). Over-the-wire delivery systems employ a long guidewire and require two operators to implant the DES. In contrast, RX delivery systems employ a shorter guidewire that can be handled by a single operator. RX delivery systems currently are strongly preferred by physicians in the United States and continue to increase in popularity. Boston Scientific and Guidant own the intellectual property rights to the RX delivery system in the United States. The companies have cross-licensed each other, and Johnson & Johnson (“J&J”) has access to the RX delivery system through an agreement with Guidant. Both DESs currently on the market, Boston Scientific’s Taxus® and J&J’s Cypher®, are available on an RX delivery system.

The relevant geographic market in which to analyze the effects of the proposed acquisition on the DES market is the United States. DESs are medical devices that are regulated by the United States Food and Drug Administration (“FDA”). Performing the necessary clinical testing and navigating the approval process for the FDA can be burdensome and time-consuming. As such, DESs sold outside the United States but not approved for sale in the United States do not provide viable competitive alternatives for U.S. consumers.

The U.S. market for DESs is highly concentrated; currently only two firms, J&J and Boston Scientific, have products on the market. Guidant’s DES program is still in development, but it is anticipated to be one of at least three entrants, along with Medtronic, Inc. (“Medtronic”) and Abbott Laboratories (“Abbott”), likely to enter the U.S. market by the end of 2007 or early 2008. Guidant is the only anticipated entrant with rights to the intellectual property necessary to market a DES with an RX delivery system – the dominant delivery system in the United States.

Analysis to Aid Public Comment

Developing and receiving FDA approval for a DES is difficult, time-consuming and expensive. It can take hundreds of millions of dollars of research and development, significant funding for clinical trials, and an extensive amount of time to reach even the stage of seeking FDA approval. The regulatory process itself can also be time-consuming because the FDA reviews the volumes of materials and data a company submits in support of its application for approval. Considering all these factors, entry into the manufacture and sale of DESs is impossible to achieve within two years.

In addition to the regulatory barriers facing firms seeking to enter the DES market, there are substantial intellectual property barriers an entrant must overcome. Firms must invent around or obtain licenses to patents covering nearly every aspect of a DES, including the design of stents, stent delivery systems, and the drugs and polymers used on DESs. Due to the difficulty of entry, firms must commit to entering the market years in advance of any anticipated entry, and timely and sufficient entry in response to a small but significant price increase is impossible.

The proposed acquisition would cause significant competitive harm in the market for DESs by eliminating Guidant as the only potential competitor to Boston Scientific and J&J with the ability to offer a DES on an RX delivery system. Guidant is the only potential entrant with access to the RX patents and freedom to commercialize its DES product in the United States. Evidence shows a third fully competitive firm – one with access to an RX delivery system – is likely to enhance competition in the DES market. Unless remedial action is taken, the acquisition of Guidant by Boston Scientific would deprive customers of the benefits of a third fully competitive entrant in the U.S. DES market.

As a third RX competitor in the DES market, Guidant likely would increase competition and reduce prices for DESs. Market

Analysis to Aid Public Comment

participants expect that the launch of Guidant's DES product would increase substantially competition in the market. Customers and analysts predict that Guidant's product would take substantial market share from both J&J's and Boston Scientific's products upon its launch. Customers – both interventional cardiologists and hospital purchasing agents – and competitors also agree that a third fully competitive entrant would significantly reduce the price of DES products and be likely to give them the full benefit of competition in the DES market. This view is reinforced by evidence showing that competition between Boston Scientific and J&J already has reduced prices for DESs.

Although two other firms, Abbott and Medtronic, are poised to enter the market in the same approximate time frame as Guidant, their lack of access to the RX delivery system makes it unlikely that either company could be a substantial competitive constraint on prices in the DES market in the near term. The proposed acquisition therefore decreases the number of potential DES suppliers with access to the RX delivery system from three to two until at least late 2008, when Guidant's key patents relating to the RX delivery system begin to expire.

PTCA Balloon Catheters and Coronary Guidewires

PTCA balloon catheters and coronary guidewires are also devices used in interventional cardiology procedures, including DES placement. A PTCA balloon catheter is a long, thin flexible tube (the catheter) with a small inflatable balloon at its tip. During an angioplasty procedure, it is inserted into a blocked coronary artery and inflated to widen the artery and improve blood flow. The PTCA balloon catheter is delivered to the lesion site over a coronary guidewire, an extremely thin wire with a flexible tip.

As with DESs, the relevant geographic market in which to analyze the effects of the proposed acquisition on the PTCA balloon catheter and coronary guidewire markets is the United States. Both are medical devices regulated by the FDA. PTCA

Analysis to Aid Public Comment

balloon catheters and coronary guidewires sold outside the United States but not approved for sale in the United States do not provide viable competitive alternatives for U.S. consumers.

Boston Scientific and Guidant are the only suppliers in the PTCA balloon catheter and coronary guidewire markets with substantial sales in the United States. In the PTCA balloon catheter market, Boston Scientific is the market leader with a market share of approximately 69 percent. Guidant has a 21 percent market share, and J&J and Medtronic combined account for the remaining 10 percent of the market. Guidant is the market leader in the coronary guidewire market with a 46 percent share of the market, while Boston Scientific has a market share of 39 percent. J&J, Medtronic, and Abbott account for the remaining 15 percent of the market.

Entry into the U.S. markets for PTCA balloon catheters and coronary guidewires is difficult, time-consuming, and expensive. FDA approval, which can take several years to obtain, is required to market both products in the United States. In addition, intellectual property barriers relating to the design of these products exist, and a new entrant would need to successfully navigate through these barriers to enter the PTCA balloon catheter or coronary guidewire market. New entry in these small markets is also unlikely because of the large sales and marketing force necessary to detail these products to physicians compared to the limited size of the likely sales opportunity.

The proposed acquisition is likely to cause competitive harm in the markets for PTCA balloon catheters and coronary guidewires by eliminating competition between Boston Scientific and Guidant and reducing the number of significant competitors in the market. The evidence has also shown that Boston Scientific's and Guidant's products are likely each others' closest competitors in the PTCA balloon catheter and coronary guidewire markets. For example, numerous industry participants consider Boston Scientific and Guidant to be the closest competitors in

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these markets, a view confirmed by the parties' own documents. Moreover, customers uniformly consider Boston Scientific and Guidant to be their first and second choices for PTCA balloon catheters and coronary guidewires. The proposed acquisition therefore likely would enable the combined Boston Scientific/Guidant to raise prices for PTCA balloon catheters and coronary guidewires unilaterally.

The Consent Agreement

The proposed Consent Agreement effectively remedies the proposed acquisition's anticompetitive effects in the markets for DESs, PTCA balloon catheters, and coronary guidewires. Pursuant to the proposed Consent Agreement, the combined Boston Scientific/Guidant is required to divest Guidant's entire vascular business, at no minimum price, to an up-front buyer before Boston Scientific's acquisition of Guidant.

Guidant's vascular business includes, among other things, its DES development program (including the RX delivery system patents) and its PTCA balloon catheter and coronary guidewire products. The parties have selected Abbott as the up-front buyer for the divestiture package. Abbott is a well-known and respected pharmaceutical and diagnostics company that has a number of vascular devices on the market already or in development. It has experience with both drugs and vascular devices, a highly regarded DES design, a strong and growing vascular sales force, and the necessary manufacturing capabilities. As such, Abbott is well-positioned to replicate Guidant's competitiveness in the DES market with the acquisition of the RX intellectual property, and in the PTCA balloon catheter and coronary guidewire markets with the addition of Guidant's product lines in those areas.

Boston Scientific's agreement with Abbott provides Boston Scientific with a license to the Guidant DES program, and Abbott and Boston Scientific will therefore share the Guidant DES program. In addition, Abbott has its own DES product in

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development upon which it will be able to use the RX delivery system patents. Abbott is poised to become a strong competitor in the DES market when it enters in the second half of 2007 or early 2008, approximately the same time as Guidant's anticipated date of entry. Access to the RX delivery system will allow Abbott to replace Guidant as the third independent competitor in the DES market with an RX delivery system. Because Abbott's DES (after acquiring the RX intellectual property in the divestiture) will resolve the competitive concerns associated with the elimination of the third RX DES, the proposed sharing of the Guidant program between Abbott and Boston Scientific is competitively neutral.

The Consent Agreement contains a number of provisions to help ensure that the divestiture to Abbott is successful. First, in purchasing all of Guidant's vascular business, Abbott will obtain four existing manufacturing facilities and one currently under construction. Although certain Guidant vascular products are manufactured in facilities that are not being transferred, the space dedicated to the Guidant vascular products in those facilities is physically separate, and the manufacturing of those products will be transferred to Abbott-owned facilities in a timely fashion. To minimize the possibility of supply disruptions and to prevent information exchanges between Abbott and Boston Scientific during the transition period, the Consent Agreement requires Abbott and Boston Scientific to enter into interim transitional service and confidentiality agreements.

Finally, Abbott has taken a small equity position (under 5 percent) in Boston Scientific as part of the financing of Boston Scientific's acquisition of Guidant. To limit any long-term entanglements between the parties, the proposed Consent Agreement requires Abbott to relinquish its voting rights (by voting its shares in the same proportion as all other shareholders in shareholder votes) and to divest its equity stake in Boston Scientific within thirty months of closing.

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Implantable Cardioverter Defibrillators

ICDs are small electronic devices installed inside the chest to prevent sudden death from cardiac arrest due to abnormal heart rhythms. They are designed to counteract fibrillation of the heart muscle and restore normal heart rhythms by applying a brief electric shock. Three firms – Medtronic, Guidant, and St. Jude Medical – account for more than 98 percent of the \$1.8 billion in annual sales in the U.S. ICD market, and have been the only competitively significant providers of ICDs in the United States for over ten years. Although Boston Scientific does not currently sell and is not developing any ICD products, it owns a ten to fifteen percent equity stake in a CRM start-up known as Cameron Healthcare Inc. More importantly, it has an option to acquire Cameron that provides certain information sharing and control rights prior to the exercise of the option. Cameron is developing a novel, “leadless” subcutaneous ICD that is on track to receive FDA approval in approximately two to three years.

As in the DES, PTCA balloon catheter, and coronary guidewire markets, additional entry into the U.S. market for ICDs is difficult, time-consuming, and expensive. FDA approval is required to market ICDs in the United States and a new entrant would need to navigate around the substantial intellectual property barriers that exist in order to make a significant market impact.

Boston Scientific’s option to acquire Cameron provides Boston Scientific with access to non-public information about Cameron and control over certain actions of Cameron that were originally intended to protect Boston Scientific’s investment. After Boston Scientific is combined with Guidant, those previously unobjectionable provisions may adversely affect competition in the ICD market because they allow the combined Boston Scientific/Guidant to receive information from and exercise control over Cameron – a potentially significant future competitor.

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To alleviate these competitive concerns, the proposed Consent Agreement imposes limits on Boston Scientific's access to Cameron information and on Boston Scientific's ability to exercise any control over Cameron. First, a firewall will be established that will limit the circumstances under which Boston Scientific will receive Cameron information, as well as the individuals at Boston Scientific who may receive such information. Second, with respect to the control provisions, Boston Scientific will relinquish its right to exercise those provisions unilaterally. Pursuant to the proposed consent order, a proxy will be appointed who will independently determine whether Boston Scientific may exercise its contractual control rights. The purpose of the proxy is to ensure that Boston Scientific makes decisions with respect to the control provisions in the same manner as it would have absent the Guidant transaction. In making that determination, the proxy will act as an ordinary, prudent corporation of the scope of Boston Scientific (prior to the acquisition of the Guidant CRM business).

Finally, with respect to the ten to fifteen percent equity stake held by Boston Scientific in Cameron, Boston Scientific has agreed to provisions similar to those governing Abbott's equity investment in Boston Scientific, namely that it will vote its shares in the same proportion as all other shareholders in any shareholder vote. Furthermore, Boston Scientific will divest its equity investment in Cameron within eighteen months if it does not acquire control of Cameron prior to the expiration of its option or if it is enjoined from acquiring Cameron.

To ensure that the Commission will have an opportunity to review any attempt by Boston Scientific to exercise its option to acquire Cameron, the proposed Consent Order contains a prior notice provision committing Boston Scientific to an H-S-R framework even if the transaction otherwise would be non-reportable.

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Appointment of an Interim Monitor and a Divestiture Trustee

The proposed Consent Agreement contains a provision that allows the Commission to appoint an interim monitor to oversee Boston Scientific's compliance with all of its obligations and performance of its responsibilities pursuant to the Commission's Decision and Order. The interim monitor is required to file periodic reports with the Commission to ensure that the Commission remains informed about the status of the divestitures, about the efforts being made to accomplish the divestitures, and the provision of services and assistance during the transition period for the divestiture.

Finally, the proposed Consent Agreement contains provisions that allow the Commission to appoint a divestiture trustee if any or all of the above remedies are not accomplished within the time frames established by the Consent Agreement. The divestiture trustee may be appointed to accomplish any and all of the remedies required by the proposed Consent Agreement that have not yet been fulfilled upon expiration of the time period allotted for each one.

The purpose of this analysis is to facilitate public comment on the proposed Consent Agreement, and it is not intended to constitute an official interpretation of the proposed Decision and Order or to modify its terms in any way.

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IN THE MATTER OF

RAMBUS INCORPORATEDOPINION OF THE COMMISSION AND ORDER IN REGARD TO
ALLEGED VIOLATIONS OF SECTION 2 OF THE SHERMAN ACT AND
SECTION 5 OF THE FEDERAL TRADE COMMISSION ACT*Docket 9302; File No. 011 0017**Opinion, July 31, 2006 – Order, July 31, 2006**Complaint, June 18, 2002 – Initial Decision, February 23, 2004*

This opinion addresses allegations that Rambus Incorporated (“Rambus”) violated federal antitrust laws by deliberately deceiving an industry-wide standard-setting organization. The complaint alleged that Rambus participated in the Joint Electron Device Engineering Council (“JEDEC”) standard-setting activities for years without disclosing to JEDEC or its members that it was actively working to develop, and possessed, a patent and several pending patent applications involving technologies ultimately adopted in the industry standards for SDRAM and DDR SDRAM. Following an administrative trial, Chief Administrative Law Judge Stephen J. McGuire dismissed the charges, ruling that Complaint Counsel had failed to sustain its burden to establish liability for the violations alleged. On appeal, the Commission overturned the Initial Decision. In a unanimous opinion, the Commission ruled that Rambus withheld material information and that its conduct was calculated to mislead JEDEC members and constituted deception under Section 5 of the FTC Act. The Commission further ruled that Rambus engaged in exclusionary conduct in violation of Section 2 of the Sherman Act, finding that Rambus’s conduct significantly contributed to its acquisition of monopoly power. The Commission also issued an order requesting additional briefing to determine an appropriate remedy for Rambus’s violations.

Participants

For the *Commission*: *Malcolm L. Catt, Robert P. Davis, Alice W. Derwiler, Michael A. Franchak, Theodore A. Gebhard, Andrew J. Heimert, Charlotte Manning, Suzanne T. Michel, Geoffrey D. Oliver, Lisa D. Rosenthal, M. Sean Royall, Sarah E. Schroeder, Jerome A. Swindell, John C. Weber, Michael A. Zito and Cary E. Zuk.*

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For the *Respondent*: *Sean C. Cunningham, John M. Guaragna, Gary, Cary, Ware & Freidenrich LLP; Peter A. Detre, Sean P. Gates, Steven M. Perry, and Gregory P. Stone, Munger Tolles & Olson LLP; and Kenneth A. Bamberger, Robert B. Bell and A. Douglas Melamed, Wilmer Cutler & Pickering.*

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Pursuant to the provisions of the Federal Trade Commission Act, and by virtue of the authority vested in it by said Act, the Federal Trade Commission (“Commission”), having reason to believe that Rambus Incorporated (hereinafter, “Rambus” or “Respondent”) has violated Section 5 of the Federal Trade Commission (“FTC”) Act, as amended, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding in respect thereof would be in the public interest, hereby issues its complaint, stating its charges as follows:

Nature of the Case

1. Through this action, the Commission challenges a pattern of anticompetitive acts and practices, undertaken by Rambus over the course of the past decade, and continuing even today, whereby Rambus, through deliberate and intentional means, has illegally monopolized, attempted to monopolize, or otherwise engaged in unfair methods of competition in certain markets relating to technological features necessary for the design and manufacture of a common form of digital computer memory, known as dynamic random access memory, or “DRAM.”

2. Rambus’s anticompetitive scheme involved participating in the work of an industry standard-setting organization, known as JEDEC, without making it known to JEDEC or to its members that Rambus was actively working to develop, and did in fact possess, a patent and several pending patent applications that involved specific technologies proposed for and ultimately adopted in the relevant standards. By concealing this information

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– in violation of JEDEC’s own operating rules and procedures – and through other bad-faith, deceptive conduct, Rambus purposefully sought to and did convey to JEDEC the materially false and misleading impression that it possessed no relevant intellectual property rights. Rambus’s anticompetitive scheme further entailed perfecting its patent rights over these same technologies and then, once the standards had become widely adopted within the DRAM industry, enforcing such patents worldwide against companies manufacturing memory products in compliance with the standards.

3. The pattern of anticompetitive conduct by Rambus that is at issue in this action has materially caused or threatened to cause substantial harm to competition, and will in the future materially cause or threaten to cause further substantial injury to competition and to consumers, absent the issuance of appropriate relief in the manner set forth below.

The Respondent

4. Rambus is a public corporation organized, existing, and doing business under and by virtue of the laws of the State of Delaware, with its office and principal place of business located at 9440 El Camino Real, Los Altos, California 94022.

5. Rambus designs, develops, licenses, and markets high-speed chip-connection technology to enhance the performance of computers, consumer electronics, and communications systems. The company licenses semiconductor companies to manufacture and sell memory and logic integrated circuits incorporating Rambus chip-connection technology and markets its solutions to systems companies to encourage them to design this technology into their products. For the fiscal year that ended on September 30, 2001, Rambus reported revenues of approximately \$117 million.

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6. Rambus is, and at all relevant times has been, a corporation as “corporation” is defined by Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44; and at all times relevant herein, Rambus has been, and is now, engaged in commerce as “commerce” is defined in the same provision.

Background on the DRAM Industry

7. Within the array of components that together comprise a typical computer, the computer’s “memory” functions to store digitally recorded information such that it is available to be accessed when needed by the central processing unit (“CPU”). Computer memory is produced in the form of semiconductor “chips,” which are connected with other computer components – such as the CPU and the chipset – via a collection of circuit lines, or a “bus,” that routes electronic signals and, in this way, communicates commands and transports data.

8. DRAM is the most common form of computer memory in use today. Another form of memory is known as static random access memory, or “SRAM.” DRAM and SRAM differ principally in the following ways: SRAM, unlike DRAM, is able to continuously hold information while power is being supplied to memory. With DRAM, on the other hand, the electronic charges that serve to hold the stored information in place dissipate over time, causing information to “leak” out of memory. To counteract this phenomenon, DRAM memory chips must be constantly “refreshed” with new electronic pulses. DRAM and SRAM also differ in that the latter generally is both faster and more expensive.

9. DRAM is an essential input into a variety of downstream products, including a wide variety of computers, such as personal computers, work stations, and servers, as well as various other types of electronic devices, such as fax machines, printers, digital video recorders, video game equipment, and personal digital assistants. Total sales of DRAM in the United States exceeded

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\$12 billion in 2000, and for the same year worldwide DRAM sales exceeded \$28 billion.

10. Over the years, a series of different architectures for designing DRAM chips has been introduced. As in most other aspects of the computer industry, over time older-generation designs have given way to newer-generation designs or to improvements on existing architectures. A driving force behind this continual process of evolution in DRAM design is the quest for improved computer performance. In particular, as the performance of other computer components and subsystems is enhanced, the marketplace demands equivalent improvements in the speed and other performance characteristics of computer memory.

11. During the late 1980s and early 1990s, developments and improvements in the performance of CPUs and other computer components were moving forward at a rapid clip. It was perceived, however, that developments in DRAM technology had not kept pace, and that performance constraints inherent in the available DRAM architectures were hindering technological progress in the computer industry, creating a virtual “memory bottleneck.”

12. It was in this environment that “synchronous” DRAM was developed. The essential innovation underlying synchronous DRAM – as compared to the prior generation of DRAM, also known as “asynchronous” DRAM – was to link memory functions to a “system clock,” allowing for more rapid sequencing of communications between the CPU and memory, thereby improving overall system performance. The system clock, in effect, consists of a continuous series of evenly spaced electronic pulses. The period of time (measured in nanoseconds) elapsing between the initiation of two succeeding pulses is referred to as a single “clock cycle.”

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13. The introduction of synchronous DRAM offered a potentially promising solution to the memory bottleneck. Yet the success of synchronous DRAM depended importantly upon the ability of the computer industry to adopt standards governing the design and implementation of synchronous DRAM.

JEDEC

14. The JEDEC Solid State Technology Association (“JEDEC”) – originally known as the Joint Electron Device Engineering Council, from which the acronym JEDEC derives – is one of several standard-setting bodies affiliated with the Electronic Industries Alliance (“EIA”), a trade association representing all segments of the electronics industry. As explained in JEDEC’s Manual of Organization and Procedure (hereinafter, the “JEDEC Manual”), the organization’s primary purpose and function is to “promote the development and standardization of terms, definitions, product characterization, test methods, manufacturing support functions and mechanical standards for solid state products.”

15. According to the JEDEC Manual, membership in JEDEC is freely available to “[a]ny company, organization, or individual conducting business in the USA that ... manufactures electronic equipment or electronics-related products, or provides electronics or electronics-related services.” To become a JEDEC member, an eligible company need only submit an application, pay membership fees, and agree to abide by JEDEC’s rules. JEDEC members, currently numbering in excess of 200, include many of the world’s top designers and manufacturers of semiconductors and related products, as well as many of the largest purchasers of such products.

16. JEDEC’s internal structure consists of a Board of Directors (formerly known as the JEDEC “Council”) and numerous operational committees, subcommittees, and task groups. Standards typically are proposed, evaluated, and

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formalized at the committee or subcommittee level and then presented for approval to the Board of Directors, which has final authority to approve or disapprove all proposed standards.

JEDEC Policies and Procedures

17. At all times relevant herein, JEDEC has steadfastly maintained a commitment to promoting free competition within the semiconductor industry. Thus, JEDEC has insisted that its members abide by all applicable laws, including but not limited to laws prohibiting anticompetitive conduct.

18. The JEDEC Manual provides that all JEDEC meetings “shall comply with the current edition of EIA Legal Guides.” These Legal Guides – which are explicitly “incorporated ... by reference” into JEDEC’s own governing rules, and currently are posted on JEDEC’s own website under the heading “Manuals” – provide that standardization programs must be “conducted under strict policies designed to promote and stimulate our free enterprise system and to make sure that laws for maintaining and preserving this system are vigorously followed.”

19. The EIA/JEDEC Legal Guides establish a “basic rule” that standardization programs conducted by the organization “shall not be proposed for or indirectly result in ... restricting competition, giving a competitive advantage to any manufacturer, [or] excluding competitors from the market.”

20. Consistent with its commitment to promoting unfettered competition, at all times relevant herein JEDEC also has maintained a commitment to avoid, where possible, the incorporation of patented technologies into its published standards, or at a minimum to ensure that such technologies, if incorporated, will be available to be licensed on royalty-free or otherwise reasonable and non-discriminatory terms. Toward this end, JEDEC has implemented procedures designed to ensure that members disclose any patents, or pending patent applications,

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involving the standard-setting work being undertaken by the organization.

21. At all times relevant herein, meetings of the pertinent JEDEC subcommittee routinely were opened with a statement by the chairperson underscoring the existence of such disclosure obligations. This practice is in conformity with requirements set forth in the JEDEC Manual, the current edition of which provides:

“The chairperson of any JEDEC committee [expressly defined to include, among other things, subcommittees] must call to the attention of all those present the requirements contained in EIA Legal Guides, and the obligation of all participants to inform the meeting of any knowledge they may have of any patents, or pending patents, that might be involved in the work they are undertaking.”

Although the above provision was first added to the JEDEC Manual in October 1993, the existence and scope of these disclosure obligations were commonly known within JEDEC before that time, and indeed throughout the entirety of Rambus’s involvement in the organization, from late 1991 through mid-1996.

22. While JEDEC does not altogether prohibit the use of patented items in the standards that it promulgates, the JEDEC Manual does mandate that the use of such items “be considered with great care.” Indeed, consistent with procedures and practices followed within JEDEC throughout the relevant time period, the JEDEC Manual, at least since October 1993, has required that no standard be drafted to include “patented items” – or “items and processes for which a patent has been applied” – absent both

(1) a well-supported technical justification for inclusion of the patented item; and

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(2) express written assurance from the patent holder that a license to the patented technology will be made available either “without compensation” or under “reasonable terms and conditions that are demonstrably free of any unfair discrimination.”

23. The JEDEC Manual, at least since October 1993, has expressly provided that the disclosure and licensing obligations discussed above apply “with equal force” when JEDEC members, subsequent to the adoption of a standard, discover new information about existing patent rights – or otherwise obtain new patent rights – involving that standard. In such situations, the JEDEC member must make the same disclosures and provide the same assurances as would be required if the member knew of such patent rights prior to adoption of the relevant standard.

24. Fairly interpreted, the policies, procedures, and practices existing within JEDEC throughout all times relevant herein imposed upon JEDEC members certain basic duties with regard to the disclosure of relevant patent-related information and the licensing of relevant patent rights:

a. First, to the extent any JEDEC member knew or believed that it possessed patents or pending patent applications that might involve the standard-setting work that JEDEC was undertaking, the member was required to disclose the existence of the relevant patents or patent applications and to identify the aspect of JEDEC’s work to which they related.

b. Second, in the event that technologies covered by a member’s known patents or patent applications were proposed for inclusion in a JEDEC standard, the member was required to state whether the technology would be made available either “without compensation” or under “reasonable terms and conditions that are demonstrably free of any unfair discrimination.” Absent the member’s agreement to one of

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these two conditions, the JEDEC rules would not allow the technology to be incorporated into a proposed standard.

JEDEC Work Involving SDRAM Standards

25. The JEDEC committee responsible for overseeing the development of standards relating to memory devices is known as the JC-42 Committee on Solid State Memories (“JC-42”), which has several subcommittees, one of which is particularly relevant for purposes of the instant complaint: the JC-42.3 Subcommittee on RAM Devices (“JC-42.3”).

26. Beginning in or around 1990, JC-42.3 commenced work on standards relating to the design and architecture of synchronous DRAM, referred to within JC-42.3 as “SDRAM.” JEDEC members involved in the SDRAM-related work of JC-42.3 have over time included virtually all leading memory designers, manufacturers, and users, whether based in the U.S. or abroad.

27. During the 1990s, JEDEC issued several SDRAM-related standards, the first of which was published in November 1993 and was identified as Release 4 of the 21-C Standard. Subsequent releases of the 21-C Standard followed after that, only small portions of which related to SDRAM, as opposed to other memory-related technologies. In August 1999, however, JEDEC published a substantially augmented SDRAM standard – Release 9 of the 21-C Standard – which introduced a second generation of SDRAM. This second-generation standard became known as “double data rate,” or “DDR,” SDRAM.

28. Although the second-generation SDRAM standard was not issued until 1999, the work that culminated in that standard commenced, at the very latest, shortly after the first-generation SDRAM standard was adopted in 1993. Indeed, it may have commenced even earlier than that, inasmuch as at least one of the technological features initially considered (but ultimately rejected) for the first-generation SDRAM standard was later

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adopted in the second-generation standard. In addition, most, if not all, of the technologies encompassed in the first SDRAM standard were carried forward in the second-generation standard as well.

29. The process through which JEDEC adopted and published these standards proceeded essentially as follows:

a. At regularly scheduled meetings of the JC-42.3 Subcommittee, which typically occurred on a quarterly basis – as well as affiliated committee and task group meetings, which were scheduled as needed – members were allowed to make presentations concerning specific concepts or technologies they proposed for inclusion in a standard under development.

b. Such presentations generally were accompanied by written materials, which, in addition to being shared with all members present at the meeting, were reproduced and attached to the official meeting minutes.

c. Before any proposal could be considered for adoption, it was necessary that it be presented a second time at a later subcommittee meeting.

d. At that point, a member could move that the proposal be presented to the subcommittee membership for approval through a formal balloting process, pursuant to which written ballots were distributed and received by mail.

e. Votes were then tabulated at the subsequent meeting of the subcommittee, at which time members voting “No” were required to explain their reasons for opposing the proposal.

f. Technically, a two-thirds majority was required, but in practice proposals rarely passed without a consensus of all voting members.

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g. Individual proposals, once approved by JC-42.3, were often held at the subcommittee level until a complete package of related proposals was ready to be forwarded to the Council for final ratification.

30. JEDEC's – specifically, the JC-42.3 Subcommittee's – work on SDRAM standards continues today, and a third-generation SDRAM standard, known as “DDR II,” is expected to be completed later this year.

Rambus and Its Proprietary RDRAM Technology

31. Rambus was founded in 1990 by two electrical engineers, Mark Horowitz and Michael Farmwald, who together developed their own, proprietary synchronous DRAM architecture. They named the new architecture Rambus DRAM, or simply “RDRAM,” and contributed the technology to the new corporation upon its formation.

32. RDRAM, as originally designed, differed from traditional DRAM architectures in several ways, including but not limited to the following:

a. First, the RDRAM architecture specified the use of many fewer bus lines than was common in traditional DRAM designs. Thus, RDRAM was said to be a “narrow-bus” architecture. By comparison to RDRAM, traditional DRAM incorporated what was referred to as a “wide-bus” or “broad-bus” design.

b. Second, in the RDRAM architecture, each bus line was capable of carrying three types of information essential to memory functionality: (1) data; (2) “address” information, specifying the location where needed data could be found, or should be placed, in memory; and (3) “control” information, specifying, among other things, the relevant command (*e.g.*,

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whether the computer should “read” data from memory or “write” new data to memory). By comparison, in traditional DRAM architectures, each bus line was generally dedicated to carrying only one of these three types of information. Thus, the RDRAM bus was sometimes said to be “multiplexed” or “triply multiplexed.”

c. Third, rather than transmitting data, address, and control information separately, as was common in a traditional DRAM architecture, RDRAM transmitted such information together in groupings, called “packets.” For this reason, RDRAM is also sometimes referred to as a “packetized” system.

33. Though Rambus has designed, and obtained patents on, various DRAM-related technological concepts or features, Rambus does not itself manufacture such technologies, choosing instead to license its designs for a fee to downstream memory manufacturers. Beginning in the early 1990s and continuing through the present, Rambus has sought to market and license its proprietary RDRAM technology to manufacturers of computer memory and related products, including a number of companies holding membership in JEDEC.

Rambus’s ‘898 Patent Application and Its Progeny

34. On April 18, 1990, Rambus filed its first DRAM-related patent application with the United States Patent and Trademark Office (“PTO”) – Application No. 07/510,898 (hereinafter, “the ‘898 application”). The application contained a 62-page specification and 15 drawings, all purporting to describe Rambus’s DRAM-related inventions. In addition, the ‘898 application contained 150 separate claims, each of which was limited to a narrow-bus, multiplexed, packetized DRAM design.

35. Patents and patent applications consist of two principal parts. The first part is a written description, whereby the patent

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applicant (or, if the application issues as a patent, the patent holder) describes the invention, through technical specifications and drawings, in a manner that would allow a person skilled in the art to which the invention applies to understand and practice the invention without undue experimentation. The second part of the patent or patent application consists of one or more “claims” defining, or delineating, the scope – or outer bounds – of the patent holder’s exclusive rights (or, in the case of an application, the exclusive rights the applicant seeks to obtain).

36. Because all 150 claims contained in Rambus’s ‘898 patent application were limited to a narrow-bus, multiplexed, packetized DRAM design, through this application Rambus was not seeking – nor, absent amendment to the application, could it obtain – any patent rights exceeding those limitations.

37. In March 1992, Rambus broke out portions of its ‘898 application into 10 divisional patent applications, each of which “claimed priority back” to the ‘898 application and to its April 1990 filing date. The original ‘898 application and these 10 divisional applications, in turn, gave rise to numerous other amended, divisional, or continuation patent applications – all technically the “progeny” of the ‘898 application – and eventually resulted in the issuance of numerous Rambus patents.

a. The process of obtaining patents or “perfecting” patent claims, otherwise known as patent prosecution, often involves amending, dividing, or continuing patent applications on file with the PTO.

b. Through an “amendment” to a pending patent application, a patent applicant may delete or alter certain claims contained in the pending application, or may add new claims, while at the same time retaining the same specification, drawings, and (to the extent not amended or deleted) claims of the previously pending application.

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c. A “divisional” application is one that carves out one of multiple distinct inventions from a prior application and seeks to obtain patent rights over that distinct invention, without adding any new matter to the written description of the invention described in the earlier application.

d. A “continuation” application is a second application, covering the same invention described in a prior application, that is filed before the earlier application either issues as a patent or is abandoned and, again, adds no new matter to the written description of the invention described in the earlier application.

e. Before issuing any patent, the PTO first seeks to determine whether the invention claimed in the relevant patent application is preceded by “prior art” – that is, by preexisting inventions or other publicly known facts or information that demonstrates the lack of novelty in the invention for which a patent is sought.

f. Generally speaking, determinations of whether prior art exists in a given case are made by reference to the date on which the patent application is filed, otherwise known as the “priority date.”

g. When a patent application is amended, divided, or continued in the manner described above, the patent applicant may “claim priority back” to an earlier-filed application – thus benefitting from the earlier filing date – but only if the amended, divisional, or continuation application “adds no new matter” to the written description of the invention described in the earlier application. As noted above, divisional and continuation applications, by definition, include no new matter not contained within the earlier-referenced application.

h. Subsequent amendments, divisionals, or continuations claiming priority back to an earlier-filed patent application are

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sometimes said to be within the same “family” as the earlier-filed application, or otherwise are said to be the prior application’s “progeny.”

i. Thus, the fact that, as stated above, each Rambus patent application in the ‘898 “family” – or each of the ‘898 application’s “progeny” – claimed priority back to the ‘898 application, means that all of the patent applications in the ‘898 family contained the same specification and drawings as were contained in the ‘898 application itself. In fact, in each amended, divisional, and continuation patent application Rambus filed claiming priority back to the ‘898 application’s April 1990 filing date, Rambus was required to – and did – expressly warrant to the PTO that the application added “no new matter” beyond what was contained in the ‘898 application’s 62-page specification and 15 drawings.

38. Though all of the Rambus patent applications in the ‘898 family contained the same specification and drawings as the ‘898 application itself, over time Rambus sought to expand the claims contained within these applications in order to obtain patent rights extending beyond the narrow-bus, multiplexed, packetized design inherent in the RDRAM design. In other words, in the course of prosecuting the ‘898 family of patent applications, Rambus made a conscious effort to withdraw the narrow-bus limitations contained in the original application’s claims, and thereby sought to significantly expand the scope of its potential patent rights, while still clinging to the ‘898 application’s April 1990 priority date.

Rambus’s Initial Involvement in JEDEC

39. Even before Rambus was formally incorporated in early 1990, its founders outlined a strategy whereby, in an effort to obtain high royalties for RDRAM, they would seek to establish RDRAM as the actual or *de facto* industry standard.

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40. Partly with this goal in mind, Rambus attended its first JEDEC meeting in December 1991, and it officially joined the organization shortly thereafter. Although JEDEC was conducting other potentially relevant work at that time, of particular relevance to Rambus was the work then underway within the JC-42.3 Subcommittee, which was in the process of developing a first generation of standards for SDRAM. From December 1991 through December 1995, Rambus representatives regularly attended JC-42.3 meetings.

41. Though Rambus attended its last JC-42.3 meeting in December 1995, it remained a member of JEDEC, and continued to receive official mailings and other information from JEDEC, until June 1996, when it formally withdrew from the organization.

Rambus's Scheme to Capture the SDRAM Standards

42. Shortly after becoming involved in JEDEC, it became apparent to Rambus that JC-42.3 was committed to developing SDRAM standards based on the traditional wide-bus, non-packetized DRAM architecture, relying to the extent possible on non-proprietary technologies. In other words, it was highly unlikely JC-42.3 would be interested in standardizing RDRAM, an architecture that was both proprietary and distinctly non-traditional.

43. Rambus, of course, would have preferred that its own RDRAM technology be adopted as the industry standard. Failing that, Rambus might have preferred to see any efforts at adopting an industry-wide SDRAM standard fail, inasmuch as industry adoption of such a standard would make it more difficult for Rambus to market its proprietary RDRAM technology. By mid-1992, however, Rambus had seized upon an alternative business plan – one that, if successful, might allow Rambus to achieve the goal of charging high royalties even if the DRAM industry were to adopt as its standard something other than RDRAM. Rambus's

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CEO, Geoff Tate, laid out this scheme in a June 18, 1992 draft of the Rambus 1992-1997 Business Plan:

“For about 2+ years a JEDEC committee has been working on the specifications for a Synchronous DRAM. No standard has yet been approved by JEDEC. Our expectation is a standard will not be reached until end of 1992 at the earliest.

* * *

[W]e believe that Sync DRAMs infringe on some claims in our filed patents; and that there are additional claims we can file for our patents that cover features of Sync DRAMs. Then we will be in position to request patent licensing (fees and royalties) from any manufacturer of Sync DRAMs. Our action plan is to determine the exact claims and file the additional claims by the end of Q3/92. Then to advise Sync DRAM manufacturers in Q4/92.”

44. In what appears to be the final draft of the same Rambus Business Plan, dated September 1992, Tate further elaborated on the scheme:

“Rambus expects the patents will be issued largely as filed and that companies will not be able to develop Rambus-compatible or Rambus-like technology without infringing on multiple fundamental claims of the patents Rambus’ patents are likely to have significant applications other than for the Rambus Interface.”

In the same document, Tate also wrote: “Sync DRAMs infringe claims in Rambus’s filed patents and other claims that Rambus will file in updates later in 1992.”

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45. In actuality, events unfolded somewhat differently than Rambus's CEO envisioned in these statements, in a manner that affected the timing, but not the core substance, of Rambus's scheme. For instance, although Rambus's '898 application was pending at the time these statements were written, not until 1996 was Rambus – through a separate application claiming priority back to the '898 application – able to obtain its first patent broad enough to arguably cover aspects of the wide-bus DRAM architecture incorporated into the JEDEC standards. In addition, Rambus ultimately elected to wait until late 1999, after DRAM manufacturers and their customers had become “locked in” to the JEDEC standards, before seeking to enforce its patents against memory manufacturers producing JEDEC-compliant SDRAM.

46. Aside from such timing issues, the Rambus business plans quoted in Paragraphs 43 and 44 set forth quite accurately the basic scheme upon which the company would embark – that is, a scheme whereby Rambus would actively seek to perfect patent rights covering technologies that were the subject of an ongoing, industry-wide standardization process, in which Rambus itself was a regular participant, without disclosing the existence of such patent rights (or the pertinent patent applications) to other participants, many of whom, by producing products compliant with the standards, would later be charged with infringing Rambus's patents.

Implementation of Rambus's Scheme

47. During the course of its participation in JEDEC, from late 1991 through mid-1996, Rambus observed multiple presentations regarding technologies, proposed for (and later included in) JEDEC's SDRAM standards, that Rambus either (1) knew or believed to be covered by claims contained in its then-pending patent applications, or (2) believed could be covered through amendments to those applications expanding the scope of the

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patent claims while adding no new matter to the underlying technical specification.

48. That is, at all times relevant herein, Rambus believed that a number of the specific technologies that were proposed for, and later incorporated in, the relevant JEDEC standards were encompassed by the 62-page technical specification and 15 related drawings common to Rambus's '898 application (filed in 1990) and the numerous amended, divisional, and continuation applications that stemmed from the '898 application. Rambus further believed that, to the extent the pending claims of the '898 application and its later-filed progeny failed to cover these technologies as proposed to be used in JEDEC's SDRAM standards, such claims could be amended to cover these technologies, while still claiming priority back to the '898 application's April 1990 filing date.

49. As Rambus's CEO described in the company's internal planning documents in mid-1992 (*see* Paragraphs 43-44 above), the initial phase of Rambus's "action plan" required that it first "determine the exact claims" in its pending applications that covered technologies being incorporated into the JEDEC standards, and then, as needed, "file ... additional claims" to perfect Rambus's patent rights over such technologies. In executing these steps, Rambus placed heavy reliance upon two individuals: Richard Crisp, Rambus's designated representative to the JC-42.3 Subcommittee, and Lester Vincent, an attorney with the law firm of Blakely, Sokoloff, Taylor & Zafman, who served as Rambus's outside patent counsel.

50. Richard Crisp, an electrical engineer, joined Rambus in 1991. He attended his first JC-42.3 meeting in February 1992 and continued to attend such meetings regularly through December 1995. (In addition to Crisp, David Mooring, at that time Rambus's vice president for business development, and Billy Garrett, another Rambus engineer, sometimes attended JC-42.3 meetings.) In May 1992, Crisp became Rambus's designated

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representative to JC-42.3. As such, he personally received any information, such as meeting minutes and ballot forms, that JEDEC furnished to Rambus by mail.

51. Throughout the duration of Crisp's participation in the JC-42.3 Subcommittee, it was his customary practice to send comprehensive reports to his superiors and others within Rambus describing in detail the technologies that were being proposed for inclusion in the JEDEC SDRAM standards. Typically, these reports were communicated via e-mails authored and sent while the JC-42.3 meetings were still in progress.

52. Lester Vincent and his law firm, Blakely, Sokoloff, were retained as patent counsel by Rambus in the summer of 1991, at which time Vincent assumed primary responsibility for prosecuting Rambus's '898 application before the PTO. For several years thereafter, Vincent and his colleagues assisted Rambus with its DRAM-related patent strategy, providing frequent advice to Rambus on patent-related issues and assuming primary responsibility for drafting, filing, and prosecuting the various continuation and divisional patent applications that stemmed from the '898 application.

53. In late March 1992, Vincent met with Crisp and Allen Roberts, the Rambus vice president with responsibility for patents, to discuss, among other things, Rambus's participation in JEDEC. At this meeting, Vincent, Crisp, and Roberts discussed whether Rambus, having joined JEDEC and participated in JEDEC meetings, was at risk of forfeiting – on grounds of equitable estoppel – its rights to enforce future patents covering aspects of the JEDEC standards. Vincent advised that there could be an equitable estoppel problem if Rambus were to convey to other JEDEC participants the false or misleading impression that it would not seek to enforce its patents or its future patents. He further advised that, in order to reduce such risks, Rambus might remain silent and abstain from voting on any proposed JEDEC standards. Rambus in fact did abstain from voting on the scores

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of JC-42.3 ballot initiatives that arose during the course of its participation in JEDEC. Richard Crisp did vote on one occasion, however, registering a “No” vote on four separate ballot items.

54. Throughout its four and one-half years of participation in the JC-42.3 Subcommittee, Rambus engaged in a continuous pattern of deceptive, bad-faith conduct. Rambus’s bad-faith participation in JEDEC, although evidenced in other ways as well, was perhaps best exemplified in the coordinated activities of Crisp and Vincent. During his four-year tenure as Rambus’s representative to JC-42.3, Crisp observed multiple presentations relating to technologies Rambus believed were covered – or, through amendment, could be covered – by pending Rambus patent applications. In fact, in a number of instances, Crisp, while participating in JC-42.3 meetings, sent e-mails back to Rambus headquarters expressing a belief that Rambus had pending applications covering certain technologies being discussed in such meetings, or otherwise suggesting that Rambus’s pending patent applications be reviewed, and if necessary amended, to ensure they covered such technologies. On several occasions, Crisp – based in part on information learned through attending JC-42.3 meetings – developed specific proposals for amending Rambus’s pending patent claims and communicated such proposals directly (or via a Rambus colleague) to Vincent. Likewise, in some cases, Vincent sent copies of draft amendments to Rambus’s patent applications to Crisp, among others, soliciting his input before finalizing such amendments. Plainly, in light of Rambus’s failures to disclose pertinent patent-related information to JEDEC, the activities described in this paragraph constituted bad faith.

55. As underscored elsewhere in this complaint, Rambus never disclosed to JEDEC the fact that, throughout the duration of its membership in the organization, Rambus had on file with the PTO, and was actively prosecuting, patent applications that, in its view, either covered or could easily be amended to cover elements of the existing and future SDRAM standards.

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Technologies Impacted by Rambus's Scheme

56. Among other specific technologies adopted or proposed for inclusion in the SDRAM standards during the period of Rambus's participation in JEDEC, which Rambus believed were covered by its then-pending patent applications or could be covered through amendments to such applications, were the following: (1) programmable CAS latency; (2) programmable burst length; (3) on-chip PLL/DLL; and (4) dual-edge clock.

57. Column address strobe (or "CAS") latency refers to the amount of time it takes for the memory to release data after receiving a signal, known as the column address strobe, in connection with a read request from the CPU. The technology known as programmable CAS latency allows memory chips to be programmed such that this aspect of the memory's operation can be tailored to facilitate compatibility with a variety of different computer environments.

58. Burst length generally refers to the number of times information (or data) is transmitted between the CPU and memory in conjunction with a single request or instruction. The technology known as programmable burst length allows memory chips to be programmed to adjust this aspect of the memory's operation in order to facilitate compatibility with a variety of different computer environments.

59. From December 1991 through May 1992, Crisp and other Rambus representatives observed multiple JC-42.3 presentations pertaining to programmable CAS latency and programmable burst length, both of which were proposed to be incorporated in the first JEDEC SDRAM standard. Soon thereafter, in the summer of 1992, Crisp received, and voted upon, a ballot calling for inclusion of both technologies in the standard. This was the only time that Crisp voted on a JEDEC ballot, and he voted "No," for technical reasons that he was called upon to, and did, explain, but

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without saying anything to suggest that Rambus might possess relevant intellectual property.

60. At the time of these events, Crisp and others within Rambus believed that both programmable CAS latency and programmable burst length were encompassed by the inventions set forth in the specification and drawings of the '898 application and related applications that were then pending at the PTO, and that Rambus – by amending the claims in those pending applications – had the ability to perfect patent rights covering such technologies as used in the SDRAM standard. Indeed, beginning in May 1992, Crisp, Roberts, and other Rambus representatives began a series of consultations with Vincent for the purpose of drafting new claims, linked to the '898 application, that would cover use of certain technologies in the wide-bus architecture adopted by the SDRAM standard. Programmable CAS latency and programmable burst length were both among the technologies discussed for inclusion in these new wide-bus claims.

61. In March 1993, a Rambus representative attended the JC-42.3 meeting at which both programmable CAS latency and programmable burst length were approved for inclusion in the first SDRAM standard and were forwarded to the JEDEC Council, along with a collection of other approved technologies, as part of a comprehensive standard proposal. Despite Rambus's belief that these technologies were subject to pending Rambus patent claims, the Rambus representative remained silent throughout the meeting. In May 1993, the Council formally adopted the proposed SDRAM standard, which was published in November of that year. (Both of these technologies were later carried forward in the second-generation SDRAM standard published in August 1999.) Also in May 1993, Vincent's law firm (Blakely, Sokoloff) first filed patent claims on behalf of Rambus intended to cover use of DRAM technologies in a wide-bus architecture. From that time through the present, Rambus has continued its efforts to perfect patent rights covering use of

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programmable CAS latency and programmable burst length as incorporated in the SDRAM standards.

62. The design objectives served by inclusion of programmable CAS latency and programmable burst length technologies in the first- and second-generation JEDEC standards likely could have been accomplished through use of alternative DRAM-related technologies available at the time these standards were developed. At a minimum, there would have been uncertainty at that time regarding the potential to identify or develop feasible alternative technologies. In either event, had Rambus disclosed to the JC-42.3 Subcommittee that it possessed pending patent applications purporting to cover – or that could be amended to cover – programmable CAS latency and burst length technologies in a wide-bus synchronous DRAM architecture, such disclosures likely would have impacted the content of the SDRAM standards, the terms on which Rambus would later be able to license any pertinent patent rights, or both.

63. Phase lock loop (“PLL”) and delay lock loop (“DLL”) are closely related technologies, both of which are used to synchronize the internal clock that governs operations within a memory chip and the system clock that regulates the timing of other system functions. The former, PLL, synchronizes the two clocks by adjusting the internal clock’s frequency to match the system clock’s frequency, whereas the latter, DLL, achieves synchronization by delaying the internal clock. “On-chip” PLL/DLL refers to the approach of placing these technologies on the memory chip itself, as opposed to the alternative approach of placing these technologies on, for instance, the memory module or the motherboard – the latter being known as “off-chip” PLL/DLL.

64. Beginning in September 1994, Crisp observed presentations and other work in the JC-42.3 Subcommittee involving proposals to include on-chip PLL in the second generation of the SDRAM standard. At that time, Crisp and others within Rambus believed that on-chip PLL was

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encompassed by the inventions set forth in the specification and drawings of the '898 application and related applications then pending at the PTO, and they had already discussed with Vincent their desire to perfect patent rights covering use of this technology in SDRAMs. Indeed, in June of 1993 Vincent's law firm filed, on Rambus's behalf, an amendment to a pending patent application – Application No. 07/847,692 – adding claims that, on their face, covered use of on-chip PLL/DLL technology in either a wide-bus or narrow-bus DRAM architecture. From June 1993 through the present, Rambus has continued its efforts to perfect patent rights covering use of on-chip DLL technology as ultimately incorporated in the second-generation SDRAM standard published in August 1999.

65. The design objectives served by inclusion of on-chip DLL technology in the second-generation JEDEC standard likely could have been accomplished through use of alternative DRAM-related technologies available at the time these standards were developed. At a minimum, there would have been uncertainty at that time regarding the potential to identify or develop feasible alternative technologies. In either event, had Rambus disclosed to the JC-42.3 Subcommittee that it possessed pending patent applications purportedly covering – or that could be amended to cover – on-chip PLL/DLL technologies in a wide-bus synchronous DRAM architecture, such disclosures likely would have impacted the content of the SDRAM standards, the terms on which Rambus would later be able to license any pertinent patent rights, or both.

66. Dual-edge clock is a technology that permits information to be transmitted between the CPU and memory twice with every cycle of the system clock, thereby doubling the rate at which information is transmitted compared to the first generation of SDRAM, which incorporated a “single-edge clock” and hence permitted information to be transmitted only once per clock cycle.

67. Between December 1991 and April 1992, Crisp and other Rambus representatives attended JC-42.3 meetings at which they

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observed presentations and other work involving dual-edge clock technology and a closely related technology known as “toggle-mode.” Ultimately, the JC-42.3 Subcommittee decided not to incorporate these technologies into the first-generation SDRAM standard. At the time this decision was reached, however, certain JC-42.3 members expressed the view that such technologies would be appropriate for reconsideration in connection with the next generation of SDRAM. Dual-edge clock technology was again discussed by the JC-42.3 Subcommittee in May 1995. Soon thereafter, in October 1995, a survey ballot relating in part to dual-edge clock technology was distributed to JC-42.3 members, and the same ballot was later discussed at a JC-42.3 meeting in December 1995. A formal proposal to include dual-edge clock technology in the second-generation SDRAM standard was made at a JC-42.3 Subcommittee meeting in March 1996. Following Rambus’s withdrawal from JEDEC in June 1996, dual-edge clock technology was the subject of further presentations, and the technology ultimately was incorporated into the second-generation SDRAM standard.

68. In September 1994, Vincent’s law firm, on behalf of Rambus, filed an amendment to Rambus’s Patent Application No. 08/222,646, adding dual-edge clock claims that were not limited to a narrow-bus RDRAM design, but rather purported to cover use of dual-edge clock technology in any synchronous DRAM architecture, including a wide-bus architecture of the sort that was the focus of JEDEC’s SDRAM standards. This application, as amended to include dual-edge clock claims, issued as U.S. Patent No. 5,513,327 (hereinafter, “the ‘327 patent”) in April 1996, while Rambus was still a member of JEDEC. From September 1994 through the present, Rambus has continued its efforts to perfect patent rights covering use of dual-edge clock technology as used in a wide-bus synchronous DRAM architecture.

69. The design objectives served by inclusion of dual-edge clock technology in the second-generation SDRAM standard likely could have been accomplished through use of alternative

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DRAM-related technologies available at the time these standards were developed. At a minimum, there would have been uncertainty at that time regarding the potential to identify or develop feasible alternative technologies. In either event, had Rambus disclosed to the JC-42.3 Subcommittee that it possessed patents or pending patent applications arguably covering (or that, with respect the applications, could be amended to cover) dual-edge clock technology in a wide-bus synchronous DRAM architecture, such disclosures likely would have impacted the content of the SDRAM standards, the terms on which Rambus would later be able to license any pertinent patent rights, or both.

Rambus's Limited and Misleading Disclosures to JEDEC

70. At no time during its involvement in JEDEC did Rambus ever disclose to the organization the fact that it possessed an issued patent – the '327 patent discussed in Paragraph 68 above – that purported to cover use of a specific technology proposed for inclusion in the JEDEC SDRAM standards. Nor did Rambus ever disclose to JEDEC that it had on file with the PTO various pending patent applications that purported to cover, or could be amended to cover, a number of other technologies included or proposed for inclusion in the JEDEC SDRAM standards. More generally, Rambus never said or did anything to alert JEDEC to (1) Rambus's belief that it could claim rights to certain technological features not only when used in the context of its proprietary, narrow-bus, RDRAM designs, but also when used in the traditional wide-bus architecture that was the focus of JEDEC's SDRAM standard-setting activities; or (2) the fact that Rambus, while a member of JEDEC, was actively working to perfect such patent rights.

71. On the contrary, Rambus's very participation in JEDEC, coupled with its failure to make required patent-related disclosures, conveyed a materially false and misleading impression – namely, that JEDEC, by incorporating into its SDRAM standards technologies openly discussed and considered

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during Rambus's tenure in the organization, was not at risk of adopting standards that Rambus could later claim to infringe upon its patents.

72. On at least two occasions during Rambus's involvement in JEDEC, Crisp was asked by JEDEC representatives whether Rambus had any patent-related disclosures to make pertaining to technologies discussed within JC-42.3. In neither instance did Rambus elect to make such disclosures. One of these instances, however, prompted Rambus to present a letter to the JC-42.3 Subcommittee, dated September 11, 1995, which stated in part:

“At this time, Rambus elects to not make a specific comment on our intellectual property position Our presence or silence at committee meetings does not constitute an endorsement of any proposal under the committee's consideration nor does it make any statement regarding potential infringement of Rambus intellectual property.”

73. Beyond these statements, the September 1995 letter said nothing concerning Rambus's patent position. In particular, it made no reference to the fact that Rambus possessed pending patent applications that purported to cover, or were being amended to cover, both (1) technologies included in already published JEDEC standards, and (2) additional technologies then being considered for inclusion in future JEDEC standards. Moreover, the episode that gave rise to Rambus's September 1995 letter involved discussion of a narrow-bus, multiplexed, packetized SDRAM design – known as “SyncLink” – that bore a strong resemblance to Rambus's own narrow-bus, multiplexed, packetized RDRAM design. As explained elsewhere in this complaint, the wide-bus, non-packetized synchronous DRAM design adopted by JEDEC differed significantly from Rambus's RDRAM design, and hence from the SyncLink design as well. Thus, to the extent Rambus's September 1995 letter could be interpreted to suggest that Rambus might possess relevant

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intellectual property rights, JEDEC's members would naturally have understood that any such rights related to the SyncLink design, not to the use of certain technologies in the JEDEC standards.

74. In connection with the same incident that gave rise to this September 1995 letter, Crisp and others within Rambus internally debated the extent to which, and manner in which, Rambus should consider making patent-related disclosures to JEDEC or to individual JEDEC members. In this regard, on May 24, 1995, Crisp sent an e-mail to Rambus's CEO, Geoff Tate, as well as other Rambus executives, suggesting a possible bifurcated approach to disclosure. As to any "really key" technologies, Crisp suggested that Rambus should consider making disclosures. But "[i]f it is not a really key issue," Crisp stated, "then ... it makes no sense to alert them to a potential problem they can easily work around."

75. In the same e-mail, Crisp outlined a second possible approach to dealing with the disclosure issue:

"We may want to walk into the next JEDEC meeting and simply provide a list of patent numbers which we have issued and say 'we are not lawyers, we will pass no judgment of infringement or non-infringement, but here are our issued patent numbers, you decide for yourselves what does and does not infringe.'"

Although Rambus in this particular instance did not adopt this approach to disclosure, Crisp's suggestion foreshadowed quite closely the manner in which Rambus would later announce its withdrawal from JEDEC roughly a year later, in June 1996 (*see* Paragraphs 81-88 below).

76. Prior to withdrawing from the organization in June 1996, Rambus did make one patent-related disclosure to JEDEC. In

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September 1993, Rambus informed JEDEC of the issuance of U.S. Patent No. 5,423,703 (hereinafter, “the ‘703 patent”). Although the ‘703 patent claimed priority back to Rambus’s ‘898 application and thus contained the same specification and drawings, the claims of the ‘703 patent related to a specific clocking technology, unique to RDRAM, that differed significantly from any clocking technology considered by JEDEC. For this reason, the patent rights conferred upon Rambus by the ‘703 patent – as reflected in the patent’s claims – did not relate to or involve JEDEC’s work on SDRAM standards. Furthermore, Rambus’s disclosure of this patent did nothing to alert JEDEC’s members to Rambus’s belief that the specification and related drawings common to the ‘703 patent and all other patent applications in the ‘898 family provided a basis upon which it could claim additional patent rights covering technologies incorporated in the SDRAM standards.

77. Other than the foregoing, Rambus made no patent-related disclosures to JEDEC or to the JC-42.3 Subcommittee prior to withdrawing from JEDEC in June 1996. While Rambus was a member of JEDEC, however, some JEDEC members obtained (or viewed) copies of one or more foreign patent applications filed by Rambus, which contained the same specification and drawings as the ‘898 application and its progeny. In light of the various information (identified in, *inter alia*, Paragraphs 54-55, 60, 64, 68, 70, 73, and 76 above) that Rambus failed to disclose to JEDEC, simply viewing these foreign patent applications would have done nothing to alert JEDEC’s members to the fact that Rambus believed the specification and related drawings common to the foreign applications and the ‘898 family of U.S. patent applications permitted it to claim additional patent rights covering the SDRAM standards.

78. Finally, before, during, and after its tenure as a JEDEC member, in connection with its ongoing efforts to market and license RDRAM, Rambus made limited, private disclosures about its technology to some of the companies participating in JC-42.3.

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Upon information and belief, these disclosures were made pursuant to agreements prohibiting the company receiving such information from disclosing it to others. In any event, these limited, private disclosures concerning Rambus's proprietary, narrow-bus RDRAM technology were not adequate to satisfy Rambus's disclosure obligations, nor did such disclosures do, or convey, anything to place individual JEDEC members on notice of Rambus's belief that it could claim patent rights over technologies used in the JEDEC SDRAM standards.

Rambus's Violations of the JEDEC Disclosure Duty

79. As discussed above, upon joining JEDEC, Rambus became subject to the same basic disclosure duty applicable to all JEDEC members – the duty to disclose the existence of any patents or pending patent applications it knew or believed “might be involved in” the standard-setting work that JEDEC was undertaking, and to identify the aspect of JEDEC's work to which they related. (*See* Paragraphs 21 and 24 above.)

80. Rambus violated this duty repeatedly, notwithstanding the limited patent-related disclosures discussed above. The fact is that Rambus, while participating as a JEDEC member, possessed a variety of patent applications – and at least one issued patent – that covered, or were designed to cover, technologies involved in the JEDEC standard-setting work, as well as additional applications that Rambus believed could be amended to cover such technologies without the addition of any new matter. Rambus never disclosed these critical facts to JEDEC.

Rambus's Withdrawal from JEDEC

81. In December 1995, Vincent learned of, and discussed with Anthony Diepenbrock, an in-house Rambus attorney, the Commission's proposed consent order in *In re Dell Computer Corporation*, which involved allegations of anticompetitive unilateral conduct occurring within the context of an industry-

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wide standard-setting organization. In January 1996, Vincent advised Rambus that it should terminate “further participation in any standards body,” including JEDEC.

82. On June 17, 1996, Rambus formally withdrew from JEDEC via a letter addressed to Ken McGhee, an EIA employee who at the time served as Secretary of JEDEC’s JC-42 Committee. The letter was originally drafted by Richard Crisp; however, the final version reflected input from Lester Vincent, among others. Other than McGhee, the letter was sent to no one else within JEDEC, including no members of the JC-42.3 Subcommittee.

83. The letter opened by informing Mr. McGhee that Rambus would not be renewing its membership in the various JEDEC committees and subcommittees in which it had participated, including JC-42.3, and that it therefore was returning its membership invoices unpaid. The remainder of the letter stated as follows:

“Recently at JEDEC meetings the subject of Rambus patents has been raised. Rambus plans to continue to license its proprietary technology on terms that are consistent with the business plan of Rambus, and those terms may not be consistent with the terms set by standards bodies, including JEDEC. A number of major companies are already licensees of Rambus technology. We trust that you will understand that Rambus reserves all rights regarding its intellectual property. Rambus does, however, encourage companies to contact Dave Mooring of Rambus to discuss licensing terms and to sign up as licensees.

To the extent that anyone is interested in the patents of Rambus, I have enclosed a list of Rambus U.S. and foreign patents. Rambus

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has also applied for a number of additional patents in order to protect Rambus technology.”

84. Although it attached a list of 23 Rambus patents, Rambus’s June 1996 withdrawal letter said nothing to inform JEDEC how, if at all, the 23 listed patents – and the vague reference to additional, unspecified patent applications – might relate to the work of the JC-42.3 Subcommittee. The unstated message, as Crisp had suggested roughly a year earlier, was: “[H]ere are our issued patent numbers, you decide for yourselves what does and does not infringe.” (*See* Paragraph 75 above.)

85. The list of 23 Rambus patents attached to this letter consisted of 21 U.S. and two foreign (one Taiwanese and one Israeli) patent numbers, with no accompanying explanation.

a. Of the 21 U.S. patents on the list, five fell within the ‘898 family and the remaining 16 fell outside the ‘898 family.

b. Of the latter group of 16, several related to discrete designs for generic electronic circuits – that is, they did not relate uniquely to DRAM design or specifically to Rambus’s RDRAM architecture. Several other patents included within this group of 16 did relate in some way to DRAM design but did not bear any direct connection to either Rambus’s narrow-bus RDRAM architecture or the wide-bus architecture incorporated into the JEDEC SDRAM standards. The remaining few patents from this group of 16 related to specific implementations of Rambus’s narrow-bus architecture. There is no indication that any of these 16 patents related to any specific technology or technological feature adopted or considered for adoption in the SDRAM standards.

c. The five U.S. patents that did fall within the ‘898 family included the ‘703 patent discussed in Paragraph 76 above, which Rambus had previously disclosed to JEDEC. Of the remaining four, three of the listed patents – like the ‘703 patent – contained only claims that either (1) were expressly

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limited to the narrow-bus RDRAM architecture, or (2) dealt with a specific aspect of the Rambus RDRAM architecture unrelated to JEDEC's work. The final patent within this group – U.S. Patent No. 5,473,575 – contained claims that, although potentially broader in scope than the other four, were limited to the low-voltage design used in Rambus's RDRAM architecture, which materially differed from the higher-voltage designs that had been the focus of JEDEC's work.

d. The remaining two Rambus patents on the list of 23 were the two foreign patents. Beyond the fact that one of these was written in Chinese, these foreign patents, had they been reviewed by JEDEC's members, would not have sufficed to place them on notice of Rambus's patent rights, or potential patent rights, for reasons discussed above.

86. More important than what the June 1996 withdrawal letter said is what it failed to say. Among other things, the letter made no mention of the fact that Rambus possessed pending patent applications covering, or that could be amended to cover, specific technologies included, or proposed for inclusion, in the JEDEC SDRAM standards. Nor did the letter say anything to alert JEDEC to Rambus's belief that it could claim rights to certain technological features not only when used in the context of its proprietary, narrow-bus, RDRAM designs, but also when used in the traditional wide-bus architecture that was the focus of JEDEC's SDRAM standard-setting activities.

87. But this was not all the June 1996 letter failed to disclose. As of June 1996, when Rambus submitted its formal withdrawal letter to JEDEC, the company actually possessed 24 issued patents, not 23. That is, one – but only one – of Rambus's issued patents was omitted from the list attached to the June 1996 withdrawal letter. The omitted patent was Rambus's '327 patent, which issued in April 1996, two months before Rambus's withdrawal from JEDEC. As discussed in Paragraph 68 above, the '327 patent contained claims purporting to cover use of dual-

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edge clock technology in any synchronous DRAM architecture. As such, it was the only patent actually obtained by Rambus while a member of JEDEC that arguably covered use of a specific technology included, or considered for inclusion, in JEDEC's wide-bus SDRAM standards.

88. Even after withdrawing from JEDEC, Crisp and others within Rambus continued to closely monitor JEDEC's ongoing work on SDRAM standards, including work involving specific technologies on which Rambus sought to perfect patent rights.

Industry Adoption of the JEDEC Standards

89. In the years following the issuance of JEDEC's first SDRAM standard in November 1993, DRAM manufacturers and their customers began designing, testing, and ultimately manufacturing memory and memory-related products incorporating, or complying with, JEDEC's standardized SDRAM designs. By 1995, JEDEC-compliant SDRAM had begun to replace older-generation, asynchronous DRAM architectures. Thereafter, the shift to the more modern SDRAM technology progressed rapidly. By 1998, total worldwide sales of JEDEC-compliant SDRAM, on a revenue basis, exceeded sales of asynchronous memory. And by 1999, JEDEC-compliant SDRAM had largely replaced asynchronous DRAM in virtually all relevant uses. Toward the end of this period – roughly 1999 to 2000 – some DRAM manufacturers and their customers also began using RDRAM, but only in very limited end uses, accounting for a relatively small portion (*i.e.*, in the range of 5%) of overall DRAM production.

90. Leading up to and following the issuance of JEDEC's second-generation SDRAM standard – or DDR SDRAM – in August 1999, DRAM manufacturers and their customers began designing, testing, and (to a limited extent) producing memory and memory-related products incorporating, or complying with, the DDR SDRAM standard. By 2000, DDR SDRAM was

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beginning to be manufactured in increasing volumes. This trend continued during 2001, and a number of DRAM manufacturers and their customers began to replace first-generation SDRAM and RDRAM with DDR SDRAM for certain high-end uses. Current projections indicate that total sales of DDR SDRAM, on a revenue basis, may account for as large as 40% of all DRAM produced worldwide in 2002, and by 2004 this figure is expected to exceed 50%.

Success of Rambus's Scheme

91. Throughout the late 1990s, as the DRAM industry became increasingly locked in to use of JEDEC-compliant SDRAM, and subsequently DDR SDRAM, Rambus continued the process of perfecting patent rights on certain technologies incorporated within the JEDEC SDRAM standards. By the late 1990s, Rambus had succeeded in obtaining numerous patents, not expressly limited to a narrow-bus RDRAM architecture, that purported to cover, among other technologies encompassed by the JEDEC standards, programmable CAS latency, programmable burst length, on-chip DLL, and dual-edge clock.

92. In late 1999, Rambus began contacting all major DRAM and chipset manufacturers worldwide asserting that, by virtue of their manufacture, sale, or use of JEDEC-compliant SDRAM, they were infringing upon Rambus's patent rights, and inviting them to contact Rambus for the purpose of promptly resolving the issue.

93. Thereafter, Rambus entered into license agreements with seven major DRAM manufacturers: Matsushita Electric Industrial Co., Ltd.; Elpida Memory, Inc.; Samsung Electronics Co.; NEC Corporation; Toshiba America Inc.; Oki Electric Industry Co.; and Mitsubishi Electronics America Inc. Pursuant to these licenses, Rambus allowed each company to use those aspects of its technology necessary for the design and manufacture of JEDEC-compliant SDRAM. In exchange, each

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company agreed to pay Rambus ongoing royalties reflecting 0.75% of revenues associated with the manufacture and sale of SDRAMs and 3.5% of revenues associated with the manufacture and sale of DDR SDRAMs. By comparison, Rambus typically licenses all the information needed to develop Rambus-compatible RDRAM memory at royalty rates ranging up to a maximum of approximately 2.5% of revenues.

94. After disclosing its patents, Rambus stated publicly that it would demand even higher royalties from any DRAM manufacturer that refused to license the Rambus patents and instead chose to litigate. Rambus also publicly threatened that it might simply refuse to license its patents to any DRAM manufacturer that was unsuccessful in litigation.

95. In January 2000, Rambus filed the first in a series of patent infringement suits. That suit, which was filed in federal district court in Delaware and named only one defendant – Hitachi – was subsequently settled, conditioned upon Hitachi's agreement to submit to Rambus's license terms.

96. With the signing of the Hitachi license, combined with the seven additional licenses discussed above, Rambus had succeeded in obtaining licenses covering roughly 50% of total worldwide production of synchronous DRAM technology. At current market prices for SDRAM, such licenses entitle Rambus to royalties in the range of \$50-100 million per year, a number that could increase significantly in the event Rambus were to prevail in the ongoing litigation and secure licenses from the remaining manufacturers of SDRAMs. Indeed, under such circumstances, Rambus's SDRAM-related patent rights could allow Rambus to extract royalty payments well in excess of a billion dollars from the DRAM industry over the life of the patents.

97. In August 2000, Rambus filed suit against another DRAM manufacturer – Infineon – in federal district court in Virginia, accusing Infineon of patent infringement. Infineon later asserted

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various affirmative defenses and counterclaims. In April 2001, the case proceeded to trial, resulting in a jury finding of fraud against Rambus relating to its involvement in the standard-setting activities of JC-42.3 and a legal ruling that Rambus's patents were not infringed by Infineon's use of the SDRAM standards. These and other legal issues are currently pending on appeal before the U.S. Court of Appeals for the Federal Circuit, which heard oral argument June 3, 2002. (Infineon's antitrust claim against Rambus was dismissed due to a technical failure of proof concerning the relevant geographic market. This ruling has not been appealed.)

98. Also in August 2000, Rambus itself was sued, in federal district court in California, by another DRAM manufacturer – Hynix – seeking a declaratory judgment that its manufacture and sale of JEDEC-compliant SDRAM did not infringe Rambus's patents. In addition to seeking declaratory relief, Hynix accuses Rambus of, among other things, antitrust violations, unfair competition, and breach of contract. Meanwhile, Rambus counterclaimed, alleging patent infringement, and the suit was subsequently stayed pending a ruling by the Federal Circuit in the *Infineon* litigation.

99. In a second suit filed against Rambus in August 2000, in federal district court in Delaware, another major DRAM manufacturer – Micron – seeks a declaratory judgment that its manufacture and sale of JEDEC-compliant SDRAM does not infringe Rambus's patents. In addition to seeking declaratory relief, Micron accuses Rambus of monopolization, attempted monopolization, fraud, and inequitable conduct. As in the *Hynix* suit, Rambus has asserted counterclaims against Micron, accusing it of patent infringement, and the suit has been stayed, at least for purposes other than discovery, pending resolution of the *Infineon* appeal.

100. In the *Infineon*, *Hynix*, and *Micron* lawsuits combined, Rambus has asserted that a dozen or more of its patents have been

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infringed through the production and sale of JEDEC-compliant SDRAM by these three companies. Each of the patents upon which Rambus has sued stems from, and claims priority back to, Rambus's '898 application.

101. Upon information and belief, Rambus also possesses additional patents and patent applications, some claiming priority back to the '898 application, that it has not yet sought, but could in the future seek, to enforce against memory manufacturers producing JEDEC-compliant SDRAM, absent issuance of the relief requested below.

102. In addition to the foregoing, Rambus is involved in other litigation in various foreign countries relating to foreign patents that cover, or purport to cover, many of the same DRAM-related technologies that are at issue in the U.S. litigation.

103. Notably, while Rambus has licenses covering roughly 50% of the synchronous DRAM industry, Rambus asserts in litigation that all or virtually all synchronous DRAM produced worldwide incorporates Rambus technology and that those synchronous DRAM manufacturers that are not paying royalties to Rambus are liable in damages. In addition to facing the threat of potential damages, those companies that have chosen to litigate against Rambus have been forced to incur substantial litigation costs, reaching into the millions, if not tens of millions, of dollars. Unless they prevail against Rambus in litigation, such companies also face the prospect of being denied licenses to Rambus's patents, or otherwise being required to pay royalties significantly in excess of the amounts paid by the memory manufacturers that acquiesced to Rambus's licensing demands without resort to litigation.

104. Rambus also has licensed companies, such as Intel, that do not produce memory chips but do produce related computer components – in Intel's case, chipsets – that are designed to be compatible with synchronous DRAMs.

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**Inability of DRAM Industry to Work Around Rambus's
Patents**

105. Given the extensive degree to which the DRAM industry has become locked in to the JEDEC SDRAM standards, it is not economically feasible for the industry to attempt to alter or work around the JEDEC standards in order to avoid payment of royalties to Rambus. Any such effort would face innumerable practical and economic impediments, including but not limited to the out-of-pocket costs associated with redesigning, validating, and qualifying SDRAM products to conform with a revised set of standards. On top of this, such manufacturers could be forced to absorb potentially massive revenue losses if, as a result of modifying the JEDEC standards, their introduction of new products were delayed.

106. Agreeing upon revised SDRAM standards could in itself be a very costly and time-consuming process. Indeed, it is unclear whether the industry would be able to reach any such consensus, given complications inherent in the current market environment, including the fact that some DRAM manufacturers have acquiesced to Rambus's licensing demands while others have not.

107. Added to these complications is the fact that purchasers and other users of JEDEC-compliant SDRAM technology – including manufacturers of computers, chipsets, graphics cards, and motherboards – have themselves become locked in to the JEDEC standards. For this and other reasons, even if the DRAM industry were otherwise able to undertake the complicated and costly task of revising the JEDEC standards to work around Rambus's patent claims, it is unclear whether downstream purchasers of synchronous DRAM would welcome or accept such an action, given the costs that they would be forced to incur in order to conform their own product designs and manufacturing processes to a revised set of standards. Nor is it

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clear whether downstream purchasers and other users of SDRAM technology would tolerate the delay in the introduction of new products that likely would result from the process of changing the standard.

108. Any effort to revise the JEDEC standards on a going-forward basis could also interfere with the ability of DRAM designers, manufacturers, and users to maintain the backwards compatibility among successive generations of synchronous DRAM that JEDEC has sought to preserve.

109. For these and other reasons, the DRAM industry has had little or no practical ability to work around Rambus's patent claims, and it is not at all clear the industry could do so in the future.

Relevant Product Markets

110. Synchronous DRAM is produced throughout the world by various memory manufacturers located or doing business in the U.S. and various foreign countries. Synchronous DRAMs, and products incorporating synchronous DRAMs, are imported and exported throughout the world in large volumes.

111. Commercial DRAM chip manufacturers wishing to design and produce synchronous DRAM chips, wherever they may be located throughout the world, are practically limited to using one of two alternative architectures: the JEDEC-compliant SDRAM architecture or Rambus's own proprietary RDRAM architecture, itself a synchronous DRAM technology. No other synchronous DRAM architectures have been developed and made available for wide-spread commercial use.

112. The RDRAM and JEDEC-compliant SDRAM architectures, in turn, each consist of a variety of subsidiary technologies – or technological features – that are necessary in order successfully to design and manufacture a synchronous

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DRAM chip. These subsidiary technologies may be regarded as essential technology inputs into the design and manufacture of synchronous DRAMs.

113. As in other aspects of engineering, electrical engineers involved in the design of synchronous DRAM chips select from among alternative technological features, concepts, or approaches in order to address or solve issues, or problems, that arise in the course of developing such chips. The alternative technologies available to address a given technical issue arising in the course of synchronous DRAM design together may comprise a separate, well-defined product market. At least four such markets are relevant for purposes of the instant complaint, including the following:

a. The market for technologies used to specify the length of time – or “latency” period – between the memory’s receipt of a read request and its release of data corresponding with the request (hereinafter, the “latency technology market”). This market includes programmable CAS latency and any alternative technologies that may be economically viable substitutes for the use of programmable CAS latency in synchronous DRAM design.

b. The market for technologies used to specify the number of times information (data) is transmitted between the CPU and memory – *i.e.*, the “burst length” – associated with a single request or instruction (hereinafter, the “burst length technology market”). This market includes programmable burst length and any alternative technologies that may be economically viable substitutes for the use of programmable burst length in synchronous DRAM design.

c. The market for technologies used to synchronize the internal clock that governs operations within a memory chip and the system clock that regulates the timing of other system functions (hereinafter, the “clock synchronization technology

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market”). This market includes on-chip DLL technology and any alternative technologies that may be economically viable substitutes for the use of an on-chip DLL in synchronous DRAM design.

d. The market for technologies used to accelerate the rate at which data are transmitted between the CPU and memory (hereinafter, the “data acceleration technology market”). This market includes dual-edge clock technology and any alternative technologies that may be economically viable substitutes for the use of a dual-edge clock in synchronous DRAM design.

114. Technologies used in the design of synchronous DRAM chips, to solve separate but related design issues, may be viewed as economic complements. The complementary nature of such design technologies is evidenced by, among other things, the fact that they sometimes are licensed together in a package, as is the case with respect to the patented Rambus technologies encompassed by each of the aforementioned product markets. Where such close relationships exist among a group of technologies, all of which are necessary inputs into the design or manufacture of a common downstream product, one may appropriately define a product market encompassing the group of complementary technologies and their close substitutes. Thus, in addition, or in the alternative, to the four product markets identified above, there is a fifth well-defined product market that is relevant for purposes of this complaint – namely, a market comprising, collectively, all technologies falling within any one of these narrower markets (hereinafter, the “synchronous DRAM technology market”).

Geographic Scope of Relevant Product Markets

115. Technologies encompassed within each of the foregoing product markets are used on a worldwide basis. Technologies originating outside the United States frequently are

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considered for and used in JEDEC standards, and indeed have been used in both the first- and second-generation SDRAM standards promulgated by JEDEC. The technologies selected for inclusion in these JEDEC standards, in turn, have been incorporated and used by synchronous DRAM manufacturers throughout the world.

116. Both proprietary and non-proprietary technologies have been used in synchronous DRAM design. To the extent such technologies are non-proprietary, they are free to be used, on a non-royalty-incurring basis, by any synchronous DRAM manufacturer or downstream user worldwide. On the other hand, to the extent such technologies are proprietary, inasmuch as they are subject to patents or potential patent claims in one or more jurisdictions, the use of such technologies by synchronous DRAM manufacturers or downstream users may depend upon the user's agreement to specific license terms negotiated with the patent holder. In the event that patent rights are similar in most relevant jurisdictions, however, there is no apparent legal or economic impediment that would preclude licenses from being made available on a multi-national or worldwide basis. Indeed, Rambus, which holds synchronous DRAM-related patents issued in the United States and numerous foreign countries, commonly grants licenses to companies in the U.S. and abroad encompassing rights to use Rambus's patented technologies worldwide.

117. For these and other reasons, each of the technology-related product markets identified above is worldwide in scope.

118. Alternatively, or in addition, the geographic scope of such product markets might appropriately be defined as the United States if, for example, Rambus's U.S. patent rights differed significantly from rights recognized in various foreign jurisdictions, or if Rambus otherwise had the ability to vary royalty rates from one jurisdiction to another.

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Anticompetitive Effects of Rambus's Conduct

119. The foregoing conduct by Rambus, during and after its involvement in JEDEC's JC-42.3 Subcommittee, has materially caused or threatened to cause substantial harm to competition and will, in the future, materially cause or threaten to cause further substantial injury to competition and consumers, absent the issuance of appropriate relief in the manner set forth below.

120. The threatened or actual anticompetitive effects of Rambus's conduct include but are not limited to the following:

- a. increased royalties (or other payments) associated with the manufacture, sale, or use of synchronous DRAM technology;
- b. increases in the price, and/or reductions in the use or output, of synchronous DRAM chips, as well as products incorporating or using synchronous DRAMs or related technology;
- c. decreased incentives, on the part of memory manufacturers, to produce memory using synchronous DRAM technology;
- d. decreased incentives, on the part of DRAM manufacturers and others, to participate in JEDEC or other industry standard-setting organizations or activities; and
- e. both within and outside the DRAM industry, decreased reliance, or willingness to rely, on standards established by industry standard-setting collaborations.

Rambus's Knowing Destruction of Documents

121. Rambus has engaged in a systematic effort – blessed if not orchestrated by its most senior executives – to destroy

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documents and other information. Upon information and belief, among other pertinent files destroyed as a result of this campaign were notes and other documentation relating to, among other things, Rambus's involvement in the JC-42.3 Subcommittee. Upon information and belief, this document-destruction campaign was undertaken, wholly or in substantial part, with the purpose of avoiding or minimizing the adverse legal repercussions of the anticompetitive conduct described in the instant complaint. Partly as a consequence of these document-destruction activities, in combination with other bad-faith litigation conduct, Rambus was required by the federal district court presiding over the *Infineon* litigation to pay a sanction exceeding \$7 million.

First Violation Alleged

122. As described in Paragraphs 1-121 above, which are incorporated herein by reference, Rambus has willfully engaged in a pattern of anticompetitive and exclusionary acts and practices, undertaken over the course of the past decade, and continuing even today, whereby it has obtained monopoly power in the synchronous DRAM technology market and narrower markets encompassed therein – namely, the latency, burst length, clock synchronization, and data acceleration markets discussed above – which acts and practices constitute unfair methods of competition in violation of Section 5 of the FTC Act.

Second Violation Alleged

123. As described in Paragraphs 1-121 above, which are incorporated herein by reference, Rambus has willfully engaged in a pattern of anticompetitive and exclusionary acts and practices, undertaken over the course of the past decade, and continuing even today, with a specific intent to monopolize the synchronous DRAM technology market and narrower markets encompassed therein, resulting, at a minimum, in a dangerous probability of monopolization in each of the aforementioned

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markets, which acts and practices constitute unfair methods of competition in violation of Section 5 of the FTC Act.

Third Violation Alleged

124. As described in Paragraphs 1-121 above, which are incorporated herein by reference, Rambus has willfully engaged in a pattern of anticompetitive and exclusionary acts and practices, undertaken over the course of the past decade, and continuing even today, whereby it has unreasonably restrained trade in the synchronous DRAM technology market and narrower markets encompassed therein, which acts and practices constitute unfair methods of competition in violation of Section 5 of the FTC Act.

Notice

Notice is hereby given to the Respondent that the eighteenth day of September, 2002, at 10:00 a.m., or such later date as determined by an Administrative Law Judge of the Federal Trade Commission, is hereby fixed as the time and Federal Trade Commission offices, 600 Pennsylvania Avenue, N.W., Room 532, Washington, D.C. 20580, as the place when and where a hearing will be had before an Administrative Law Judge of the Federal Trade Commission, on the charges set forth in this complaint, at which time and place you will have the right under the FTC Act to appear and show cause why an order should not be entered requiring you to cease and desist from the violations of law charged in the complaint.

You are notified that the opportunity is afforded to you to file with the Commission an answer to this complaint on or before the twentieth (20th) day after service of it upon you. An answer in which the allegations of the complaint are contested shall contain a concise statement of the facts constituting each ground of defense; and specific admission, denial, or explanation of each fact alleged in the complaint or, if you are without knowledge

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thereof, a statement to that effect. Allegations of the complaint not thus answered shall be deemed to have been admitted.

If you elect not to contest the allegations of fact set forth in the complaint, the answer shall consist of a statement that you admit all of the material facts to be true. Such an answer shall constitute a waiver of hearings as to the facts alleged in the complaint and, together with the complaint, will provide a record basis on which the Administrative Law Judge shall file an initial decision containing appropriate findings and conclusions and an appropriate order disposing of the proceeding. In such answer, you may, however, reserve the right to submit proposed findings and conclusions under § 3.46 of the Commission's Rules of Practice for Adjudicative Proceedings and the right to appeal the initial decision to the Commission under § 3.52 of said Rules.

Failure to answer within the time above provided shall be deemed to constitute a waiver of your right to appear and contest the allegations of the complaint and shall authorize the Administrative Law Judge, without further notice to you, to find the facts to be as alleged in the complaint and to enter an initial decision containing such findings, appropriate conclusions, and order.

The ALJ will schedule an initial prehearing scheduling conference to be held not later than 14 days after the last answer is filed by any party named as a respondent in the complaint. Unless otherwise directed by the ALJ, the scheduling conference and further proceedings will take place at the Federal Trade Commission, 600 Pennsylvania Avenue, N.W., Room 532, Washington, D.C. 20580. Rule 3.21(a) requires a meeting of the parties' counsel as early as practicable before the prehearing scheduling conference, and Rule 3.31(b) obligates counsel for each party, within 5 days of receiving a respondent's answer, to make certain initial disclosures without awaiting a formal discovery request.

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Notice of Contemplated Relief

Should the Commission conclude from the record developed in any adjudicative proceedings in this matter that Respondent's conduct violated Section 5 of the Federal Trade Commission Act as alleged in the complaint, the Commission may order such relief as is supported by the record and is necessary and appropriate, including but not limited to:

1. Requiring Respondent to cease and desist all efforts it has undertaken by any means, including without limitation the threat, prosecution, or defense of any suits or other actions, whether legal, equitable, or administrative, as well as any arbitration, mediation, or any other form of private dispute resolution, through or in which Respondent has asserted that any person or entity, by manufacturing, selling, or otherwise using JEDEC-compliant SDRAM and DDR SDRAM technology (including future variations of JEDEC-compliant SDRAM and DDR SDRAM technology), infringes any of Respondent's current or future United States patents that claim priority back to U.S. Patent Application Number 07/510,898 filed on April 18, 1990 or any other U.S. Patent Application filed before June 17, 1996.
2. Requiring Respondent not to undertake any new efforts by any means, including without limitation the threat, prosecution, or defense of any suits or other actions, whether legal, equitable, or administrative, as well as any arbitration, mediation, or any other form of private dispute resolution, through or in which Respondent has asserted that any person or entity, by manufacturing, selling, or otherwise using JEDEC-compliant SDRAM and DDR SDRAM technology (including future variations of JEDEC-compliant SDRAM and DDR SDRAM technology), infringes any of Respondent's current or future United States patents that claim priority back to U.S. Patent Application Number 07/510,898 filed on April 18, 1990 or any other U.S. Patent Application filed before June 17, 1996.

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3. Requiring Respondent to cease and desist all efforts it has undertaken by any means, including without limitation the threat, prosecution, or defense of any suits or other actions, whether legal, equitable, or administrative, as well as any arbitration, mediation, or any other form of private dispute resolution, through or in which Respondent has asserted that any person or entity, by manufacturing, selling, or otherwise using JEDEC-compliant SDRAM and DDR SDRAM technology (including future variations of JEDEC-compliant SDRAM and DDR SDRAM technology), for import or export to or from the United States, infringes any of Respondent's foreign patents, current or future, that claim priority back to U.S. Patent Application Number 07/510,898 filed on April 18, 1990 or any other Patent Application filed before June 17, 1996.
4. Requiring Respondent not to undertake any new efforts by any means, including without limitation the threat, prosecution, or defense of any suits or other actions, whether legal, equitable, or administrative, as well as any arbitration, mediation, or any other form of private dispute resolution, through or in which Respondent has asserted that any person or entity, by manufacturing, selling, or using JEDEC-compliant SDRAM and DDR SDRAM technology (including future variations of JEDEC-compliant SDRAM and DDR SDRAM technology), for import or export to or from the United States, infringes any of Respondent's foreign patents, current or future, that claim priority back to U.S. Patent Application Number 07/510,898 filed on April 18, 1990 or any other Patent Application filed before June 17, 1996.
5. Requiring Respondent to employ, at Respondent's cost, a Commission-approved compliance officer who will be the sole representative of Respondent for the purpose of communicating Respondent's patent rights related to any

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standard under consideration by any standard-setting organization of which Respondent is a member.

6. Such other or additional relief as is necessary to correct or remedy the violations alleged in the complaint.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this eighteenth day of June, 2002, issues its complaint against said Respondent.

By the Commission.

Initial Decision

INITIAL DECISION

By: Stephen J. McGuire, Chief Administrative Law Judge

PART ONE: INTRODUCTION

This Initial Decision is divided into four parts. Part One is the introduction, which includes a summary of the allegations contained in the Complaint; the defenses asserted in Respondent's Answer; the issues presented; the procedural background; a comment on the evidence; and a summary of the decision. Part Two contains the separately numbered findings of fact. Part Three contains the analysis and conclusions of law, which provides an overview of the legal theories asserted by Complaint Counsel; sets forth the applicable law on each of the elements necessary to find a violation; and then applies the law to the facts established at trial. Part Four contains the summary of the conclusions of law and the Order of the Court.

I. FEDERAL TRADE COMMISSION COMPLAINT

The Federal Trade Commission ("FTC") issued its Complaint in this matter on June 18, 2002. The Complaint charges that Respondent, Rambus Inc., a corporation, violated Section 5 of the Federal Trade Commission Act ("FTC Act"), as amended. 15 U.S.C. § 45.

The Complaint charges Respondent with three violations. The first violation charges that Respondent engaged in a pattern of anticompetitive and exclusionary acts and practices, whereby it obtained monopoly power in the synchronous DRAM technology market and narrower markets encompassed therein, in violation of Section 5 of the FTC Act. (Complaint ¶ 122). The second violation charges that Respondent engaged in a pattern of anticompetitive and exclusionary acts and practices with a specific intent to monopolize the synchronous DRAM technology market and narrower markets encompassed therein, resulting, at a

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minimum, in a dangerous probability of monopolization in each of the markets, in violation of Section 5 of the FTC Act. (Complaint ¶ 123). The third violation charges that Respondent engaged in a pattern of anticompetitive and exclusionary acts and practices, whereby it unreasonably restrained trade in the synchronous DRAM technology market and narrower markets encompassed therein, which acts and practices constitute unfair methods of competition in violation of Section 5 of the FTC Act. (Complaint ¶ 124).

The Complaint alleges that Respondent participated in the work of the JEDEC Solid State Technology Association (“JEDEC”), an industry standard setting organization in which Respondent was a regular participant, without making it known to JEDEC or to its members that Respondent sought to obtain patents on technologies adopted in the relevant JEDEC standards. (Complaint ¶¶ 2, 43, 44, 45, 46). Respondent’s alleged scheme further entailed perfecting its patent rights over these same technologies and then, once the standards had become widely adopted within the DRAM industry, enforcing such patents worldwide against companies manufacturing memory products in compliance with the JEDEC standards. (Complaint ¶¶ 2, 43, 44, 45, 46).

Respondent is alleged to have concealed information in violation of JEDEC’s operating rules and procedures which Complaint Counsel argue imposed upon JEDEC members an obligation to “disclose any patents, or pending patent applications, involving the standard-setting work.” (Complaint ¶¶ 20, 21, 24, 79). In addition, the Complaint alleges a “basic rule” of JEDEC to avoid anticompetitive activity and a commitment to avoid, where possible, incorporation of patented technologies. (Complaint ¶¶ 17, 18, 19, 20, 22). The Complaint alleges that Respondent violated these duties by conveying to JEDEC the materially false and misleading impression that it possessed no relevant intellectual property rights. (Complaint ¶¶ 2, 80).

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The Complaint further alleges that Respondent's conduct caused anticompetitive effects including increased royalties, increase in the price of synchronous DRAM and products incorporating synchronous DRAM, decreased incentives to produce memory using synchronous DRAM technology, and harms to standard setting organizations and activities. (Complaint ¶¶ 119, 120).

II. RESPONDENT'S ANSWER

In its Answer filed on July 29, 2002, Respondent alleged as an affirmative defense that the Complaint failed to state a claim under Section 5 of the FTC Act. The Answer denied the material allegations of the Complaint and asserted that the evidence would show that JEDEC's rules and policies did not impose, and were not commonly understood to impose, the disclosure obligations set out in the Complaint. (Answer, pp. 1-2).

Respondent asserted in its Answer that the evidence would show that it did not have, until after it left JEDEC, any undisclosed patents or patent applications that contained claims reading on devices manufactured in accordance with any JEDEC standard. (Answer, p. 2). Respondent also asserted in its Answer that the evidence would show that JEDEC did not rely on any purported silence on Respondent's part at JEDEC meetings and instead chose to adopt certain technologies because of the cost/performance advantages of those technologies and the absence of reasonable alternatives. (Answer, p. 2).

Respondent's Answer asserted that in light of the absence of a duty to disclose, in light of the absence of pending claims reading on JEDEC standards, and in light of the other evidence to be considered at trial, it would be clear that Respondent's alleged failure to disclose its potential intellectual property claims had no anticompetitive effect in any market and that Respondent had not violated Section 5. (Answer, pp. 1-3).

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III. ISSUES PRESENTED

The issues presented in this case are:

- (1) whether Respondent engaged in a pattern of deceptive, exclusionary conduct by subverting an open standards process;
- (2) whether Respondent utilized such conduct to capture a monopoly in technology-related markets;
- (3) whether Respondent's challenged conduct violated principles of antitrust law; and
- (4) whether Respondent's conduct resulted in anticompetitive injury.

IV. PROCEDURAL BACKGROUND

On June 18, 2002, the Commission issued its Complaint. This case was initially assigned to Administrative Law Judge ("ALJ") James P. Timony. Rambus filed a motion to stay the proceeding until the Federal Circuit issued its decision in *Rambus Inc. v. Infineon Technologies*, an appeal of a jury verdict against Rambus. The Federal Circuit reversed the jury verdict of fraud and remanded the case, as discussed more fully in Part III, Section I.C. An Order Denying Motion for Stay was issued in this case on July 18, 2002. On July 29, 2002, Rambus filed its Answer in this matter.

On February 26, 2003, ALJ Timony issued an Order On Complaint Counsel's Motions For Default Judgment and For Oral Argument which imposed seven rebuttable presumptions against Rambus based on a finding of intentional destruction of evidence. This Order is discussed in Part III, Section I.B.

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On February 28, 2003, ALJ Timony retired from federal service. Stephen J. McGuire was subsequently appointed FTC Chief Administrative Law Judge and assigned the Rambus matter.

Trial in this proceeding commenced on April 30, 2003. The 54 day administrative hearing produced a voluminous evidentiary record including 44 live witnesses, 1,770 admitted exhibits, nearly 12,000 pages of trial transcript, and hundreds of pages of deposition transcripts. The last day on which testimony was received was August 1, 2003. The parties then filed Post-Trial Briefs, Proposed Findings of Fact, and Conclusions of Law, and replies thereto. Closing arguments and oral examination by the Court was conducted on October 8, 2003. Following the closing arguments, the hearing record was closed pursuant to Commission Rule 3.44(c), by Order dated October 9, 2003. Due to the exceptional circumstances of the complexity of the issues presented, the volumes of evidence introduced at trial, and review of the comprehensive proposed findings of fact and post-hearing briefs, it was necessary to extend the deadline for filing the Initial Decision within one year of the issuance of the Complaint. By Order dated December 23, 2003, the Commission also extended the time for filing the Initial Decision within 90 days of the close of the hearing record until February 17, 2004.

V. EVIDENCE

The Initial Decision is based on the transcript of the testimony, the exhibits properly admitted in evidence, and the proposed findings of fact, briefs, conclusions of law, and replies thereto filed by the parties. Once a finding of fact is established, it is cited to in subsequent sections or in the analysis by the designation "F."¹

¹ This opinion uses the following abbreviations for citations:

Comp. - Complaint
F. - Finding of fact

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The parties submitted extensive post-trial briefs and reply briefs. The Initial Decision addresses only material issues of fact and law. Proposed findings of fact not included in the Initial Decision were rejected, either because they were not supported by the evidence or because they were not dispositive to the determination of the allegations contained in the Complaint. The Commission has held that Administrative Law Judges are not required to discuss the testimony of each witness or all exhibits that are presented during the administrative adjudication. *In re Amrep Corp.*, 102 F.T.C. 1362, 1670 (1983). Further, administrative adjudicators are “not required to make subordinate findings on every collateral contention advanced, but only upon those issues of fact, law, or discretion which are ‘material.’” *Minneapolis & St. Louis Ry. Co. v. United States*, 361 U.S. 173, 193-94 (1959).

Many of the documents and parts of the oral testimony were received into the record *in camera*. Where an entire document or where certain trial testimony was given *in camera* treatment for trial, but the portion of the document or the trial testimony utilized in this Initial Decision does not rise to the level necessary for *in camera* treatment, such information is disclosed in the public version of this Initial Decision, pursuant to Commission Rule 3.45(a) (the ALJ “may disclose such *in camera* material to the extent necessary for the proper disposition of the proceeding”). In

CX - Complaint Counsel Exhibit
RX - Respondent Exhibit
JX - Joint Exhibit
Tr. - Transcript of Testimony before the Administrative Law Judge
Dep. - Transcript of Deposition
Stip. - Stipulation
CCPFF - Complaint Counsel's Proposed Findings of Fact
CCPHB - Complaint Counsel's Post-Hearing Brief
CCPHRB - Complaint Counsel's Post-Hearing Reply Brief
RPHB - Respondent's Post-Hearing Brief
RPHRB - Respondent's Post-Hearing Reply Brief

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accordance with 16 C.F.R. § 3.45(f), material that has been given *in camera* treatment is indicated in bold font and braces in the *in camera* version. Where *in camera* material had been redacted from the public version of the Initial Decision, braces precede the redacted material.

VI. SUMMARY OF THE DECISION

Complaint Counsel have failed to sustain their burden of proof with respect all three of the violations alleged in the Complaint. First, the evidence at trial establishes that Complaint Counsel failed to prove the facts they alleged in the Complaint. Second, an analysis of the legal theories advanced by Complaint Counsel demonstrates that there is no legal basis for finding a violation of Section 5 of the Federal Trade Commission Act, either as based on other antitrust laws or solely as an unfair method of competition. Third, an application of the facts established at trial to the legal theories asserted leads to the conclusion that Complaint Counsel have failed to prove their case.

The evidentiary record demonstrates that: (1) the EIA/JEDEC patent policy encouraged the early, voluntary disclosure of essential patents and Respondent did not violate this policy; (2) the case law upon which Complaint Counsel rely to impose antitrust liability is clearly distinguishable on the facts of this case; (3) Respondent's conduct did not amount to deception and did not violate any "extrinsic duties," such as a duty of good faith to disclose relevant patent information; (4) Respondent did not have any undisclosed patents or patent applications during the time that it was a JEDEC member that it was obligated to disclose; (5) amendments to broaden Respondent's patent applications while a member of JEDEC were not improper, either as a matter of law or fact; (6) by having a legitimate business justification for its actions, Respondent did not engage in exclusionary conduct; (7) Respondent did not intentionally mislead JEDEC by knowingly violating a JEDEC disclosure rule; (8) there is no causal link between JEDEC standardization and

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Respondent's acquisition of monopoly power; (9) members of JEDEC did not rely on any alleged omission or misrepresentation by Respondent and, if they had, such reliance would not have been reasonable; (10) the challenged conduct did not result in anticompetitive effects, as Complaint Counsel did not demonstrate that there were viable alternatives to Respondent's superior technologies; (11) the challenged conduct did not result in anticompetitive effects as the challenged conduct did not result in higher prices to consumers; and (12) JEDEC is not locked in to using Respondent's technologies in its current standardization efforts.

For these reasons, Complaint Counsel have failed to sustain their burden to establish liability for the violations alleged. Accordingly, the Complaint is **DISMISSED**.

PART TWO: FINDINGS OF FACT**I. DRAM AND THE INVENTIONS OF DRS. FARMWALD AND HOROWITZ****A. DRAM Applications in Computer Systems****1. DRAM Defined**

1. DRAM stands for "dynamic random access memory." (Rhoden, Tr. 266). DRAM is a type of electronic memory. (Rhoden, Tr. 266). DRAM is "dynamic" because it needs to be refreshed every fraction of a second. (Rhoden, Tr. 266-67).

2. The primary use for DRAM is in computer systems. (Rhoden, Tr. 267-68; Gross Tr. 2272-73).

3. DRAMs are also used in a wide range of other products involving computer systems. (Sussman, Tr. 1362). These products include printers, PDAs (personal digital assistants), and cameras.

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(Kellogg, Tr. 4986-87; Tabrizi, Tr. 9126-27; Krashinsky, Tr. 2770-71; Farmwald, Tr. 8206-07; Gross, Tr. 2272-73).

4. Typically, multiple DRAM chips are placed on a memory module, which is a small printed circuit board. (Rhoden, Tr. 272-73). The module containing the DRAM chips connects to a motherboard. (Rhoden, Tr. 270, 273). In some applications, such as graphics cards, the DRAM chips are not put in memory modules. (Wagner, Tr. 3871-72).

5. A DRAM is made up of a number of cells. (Rhoden, Tr. 359). Information is stored in the cell capacitor as either a high or low voltage. (Rhoden, Tr. 359). The cells of the DRAM are divided into an array via a series of rows and columns with the cells located at the intersections of those rows and columns. (Rhoden, Tr. 359-60). Access to the cell capacitor is made by activating a transistor, which transfers the voltage in the capacitor to a column, also known as a bit line. (Rhoden, Tr. 359-60).

6. In order for a DRAM to have any value, it must be compatible and interoperable with the other components in the same specific system that include the DRAM. (Peisl, Tr. 4410; CX 1075 at 1; Heye, Tr. 3655-65; Jacob, Tr. 5562-66).

2. The Production of DRAMs

a. The DRAM Manufacturing Process

7. The starting point in the manufacturing process is a bare silicon wafer. (Becker, Tr. 1116-17).

8. During the course of the manufacturing process, successive layers are built up on the silicon wafer. (*See generally* Becker, Tr. 1116-32). DRAMs require as many as twenty-two distinct layers. (Becker, Tr. 1131). Each layer requires a series of manufacturing steps. (Becker, Tr. 1131-32). Processing the wafer takes about four hundred manufacturing steps. (Becker, Tr. 1118, 1131).

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9. The manufacturing process is nonlinear, meaning that a wafer will reenter different processing areas of the fab a number of times. (Becker, Tr. 1118). A processed wafer contains hundreds of individual DRAM chips. (Becker, Tr. 1117).

10. The processed wafer is electrically tested in order to find the good chips. (Becker, Tr. 1132-34). Such testing, however, does not identify all of the die with disqualifying defects. More stringent testing is only possible after the die have been packaged. (Geilhufe, Tr. 9570).

11. After testing, the wafer is cut into individual DRAMs. (Becker, Tr. 1132-34). The individual chips are then bonded to a metal lattice like structure called a lead frame and are covered with a black hard plastic mold compound. (Becker, Tr. 1132-34).

12. After packaging, the good chips are built into components and tested again. (Becker, Tr. 1135-36).

13. The tested components may also be assembled onto circuit boards to create modules and are further tested. (Becker, Tr. 1135; *see generally* Becker, Tr. 1132-36 (describing the process of how the chips are built into components and connected to modules)).

14. The largest part of a DRAM, approximately ninety percent of the active area, consists of the memory array, that is the memory cells and related circuitry. (Geilhufe, Tr. 9560). The remaining ten percent consists of peripheral circuitry. (Geilhufe, Tr. 9560). Circuitry for implementing the four features at issue here – programmable column address strobe (“CAS”) latency, programmable burst length, dual edge clocking, and on-chip delay lock loop (“DLL”) – are found in the peripheral circuitry. (Geilhufe, Tr. 9559).

15. The vast majority of DRAM development costs is spent on the memory array portion of the DRAM, including the manufacturing process and equipment development. (Geilhufe,

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Tr. 9560-61). Development costs for the peripheral circuitry are much lower. (Geilhufe, Tr. 9560-61).

b. The Various Phases of DRAM Development

16. The development of the DRAM proceeds along a number of “phases” and milestones. Those are the design phase, the layout phase, the simulation phase, the verification phase, tape out, initial silicon, the validation phase, internal qualification phase, and the production phase. (Shirley, Tr. 4141-42; Reczek, Tr. 4306-41).

17. In the design phase, the DRAM designers implement the DRAM specification as a set of circuit designs or schematics. (Shirley, Tr. 4142-43).

18. In the layout phase, the layout designers take the circuit designs created in the first step and create a representation of the circuit designs. (Shirley, Tr. 4143).

19. In the simulation phase, the design engineers simulate the designs in order to verify that the chips will perform as intended before they are first manufactured. (Shirley, Tr. 4144).

20. The verification phase involves ensuring that the schematics created in the design phase are in fact represented by the work done in the layout phase. (Shirley, Tr. 4144-45; Reczek, Tr. 4309).

21. Tape out involves the process of transferring the DRAM layout onto masks that will be used in the fabrication of the DRAM. (Shirley, Tr. 4145). The collection of individual masks necessary to fabricate a DRAM design comprises a mask set. (Shirley, Tr. 4147).

22. A mask contains an image that is transferred to the wafer through a process of using light to expose the wafer to the image

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pattern in the mask and using gasses to etch the resulting pattern into the wafer. (Becker, Tr. 1122-24).

23. At some DRAM manufacturers, including Micron Technologies, Inc. (“Micron”), the physical creation of masks is done by specialized firms that provide the service to the DRAM manufacturers. (Shirley, Tr. 4145-46). Other DRAM manufacturers, including Infineon Technologies (“Infineon”), produce their own masks. (Reczek, Tr. 4312).

24. The mask set, once it is received, is used to create the first physical manifestation of the DRAM chips on wafers. Those wafers represent a milestone and are referred to as “initial silicon.” (Shirley, Tr. 4147).

25. Initial silicon is then tested in the validation and internal qualification phases to ensure that the DRAM on the wafers operate the way they were intended (the validation phase) and that the DRAM on the wafers operate appropriately in the expected environments (the qualification phase). (Shirley, Tr. 4148-49).

c. Design Modification During DRAM Production

26. The DRAM industry transitions between different versions of DRAM quite frequently. As a witness from Micron explained:

Switching from one product to another, while still using the same core technology, involves only changing priorities in design and product engineering and may mean some differences in our assembly and test equipment purchases. SDRAM, SLDRAM, nDRAM all use the same fab equipment and core DRAM technology. *In short, while the flavors might change, it's still a DRAM.*

(RX 836 at 3) (emphasis added).

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B. The Memory Bottleneck Problem

27. Dr. Michael Farmwald, one of the two founders of Rambus, received his bachelor's degree in mathematics from Purdue University in 1974. (Farmwald, Tr. 8058). He then earned a Ph.D. in computer science from Stanford University in 1981. (Farmwald, Tr. 8059). While a graduate student at Stanford, Dr. Farmwald was in charge of a supercomputer project at Lawrence Livermore National Labs. (Farmwald, Tr. 8059). After obtaining his Ph.D, he continued to work at Livermore for four years and then founded a company called FTL (which stood for "Faster Than Light"), whose goal was to build very fast computers. (Farmwald, Tr. 8060-61). In 1988, Dr. Farmwald went to the University of Illinois to teach in the computer science department. (Farmwald, Tr. 8063-64).

28. While working as a professor at the University of Illinois, Dr. Farmwald realized, and it was a general perception in the DRAM industry, that developments in microprocessor technology would lead to significant speed increases in microprocessors while memory chip performance would not keep up. (Farmwald, Tr. 8063, 8067). He recognized that the result of these trends would be a "bottleneck" – memory technology would limit computer system performance. (Farmwald, Tr. 8068-69).

29. Moore's law, named after Gordon Moore, founder of Intel Corp. ("Intel"), predicts that processor speeds will increase by a factor of four every three years. (Farmwald, Tr. 8068). This "law" has held true for over the last two decades. (Farmwald, Tr. 8068). The performance of DRAMs, however, was increasing at a lesser rate; while DRAMs were fast in comparison to microprocessors in the early 1980s, as an historical matter, DRAM performance had increased very slowly over time. (Farmwald, Tr. 8072).

30. Graphing predicted microprocessor speeds against memory performance, Dr. Farmwald predicted an ever increasing

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gap between microprocessor performance and DRAM performance. (Farmwald, Tr. 8071-73).

31. Assuming that the predicted DRAM speeds were not improved, Dr. Farmwald projected that the number of DRAMs needed to support future microprocessors would become extremely large over time. (Farmwald, Tr. 8073).

32. The increasing number of DRAMs needed to support faster computers was also consistent with Dr. Farmwald's experience that microprocessors were demanding higher and higher bandwidth memory systems ("bandwidth" being the amount of information that can be transferred over a specific period of time). (Farmwald, Tr. 8076-79).

33. Dr. Farmwald also plotted the projected price for computers, which showed that the cost for computer systems was dropping over time. (Farmwald, Tr. 8074-75). Comparing these projected costs with the number of DRAMs that would be required to support the bandwidth needs of faster microprocessors, Dr. Farmwald knew that "there was something broken" – the costs of the thousands of DRAMs needed at higher microprocessor speeds would prevent the decline of computer system prices. (Farmwald, Tr. 8075-76).

34. Later, a 1992 Rambus "Corporate Backgrounder" described the issue: "[o]ne of the most serious problems is the chronic speed mismatch between processors and main memory. Designers refer to this as the memory bottleneck. The data transfer rates of memory ICs [integrated circuits] lag far behind a processor's ability to handle the data." (RX 81 at 4).

35. To meet the higher bandwidth needs of microprocessors without the overwhelming cost of thousands of DRAMs, DRAM performance had to increase at a higher rate. (Farmwald, Tr. 8076).

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36. Years later, Dr. Farmwald's 1988 observations were recognized by others in the industry. For example, an April 1992 internal memorandum of Siemens AG ("Seimens") states that "[a]s a result of the trend toward increasingly faster RISC and CISC processors, the DRAM interface has become more and more of a problem for system developers. In order to eliminate this data transmission rate bottleneck, various competing concepts regarding the design of newer DRAMs have emerged" (RX 285A at 1).

37. Similarly, an October 1992 article published in the Institute of Electrical and Electronic Engineers, Inc. ("IEEE") Spectrum warned, "[i]f the price-to-performance ratio of computer systems is to keep improving, the gap in speed between processors and memory must be closed." (RX 329 at 1). IEEE Spectrum is the overall general magazine for the IEEE, a professional organization of electronic and electrical engineers. (Prince, Tr. 8972-73). The article went on to explain that "the accepted dynamic RAM (DRAM) architectures and solutions have been pushed to their limits. A basic change in architecture seems the only way to obtain an urgently needed increase in memory speed." (RX 329 at 1). This article reflected a general discussion within the industry in 1992 that computer companies needed faster DRAMs. (Prince, Tr. 8977-78).

38. Another article in the October 1992 IEEE Spectrum stated, "[i]f dynamic RAMs and processors are to trade data at close to top speed, the interface between them must be re-engineered. . . . None of the types of interfaces now popular can do this while conserving power and cost to the desired degree." (RX 333 at 1).

39. In February 1994, Dr. Betty Prince, a long-time consultant in the DRAM industry and the author of five books on DRAM technologies (Prince, Tr. 8970-72), wrote in an article published in IEEE Spectrum that "the mismatched bandwidths of fast processors and the slower memory chips they must employ are a problem of long standing. Processors now as always require more

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data per unit time than many standard memory chips have been designed to provide.” (RX 465 at 1). She also provided a graph showing that this performance gap was increasing over time. (RX 465 at 1). Dr. Prince agreed that the performance gap she wrote about created a bottleneck. (Prince, Tr. 8990-91).

40. Intel saw the memory bottleneck coming in 1995, and the recognition of this bottleneck prompted Intel to investigate various memory technologies in an effort to remedy the situation. (MacWilliams, Tr. 4929-30).

C. Farmwald’s and Horowitz’s Inventions Solve the Memory Bottleneck Problem by Addressing Numerous Issues

41. In 1988, Dr. Farmwald conceived the general idea of a new memory interface and protocol (an organization of the bits and timing of bits transferred by a memory chip) that would allow a single DRAM chip to have higher performance than a board Dr. Farmwald had designed containing 320 existing DRAM chips. (Farmwald, Tr. 8086-88).

42. In order to progress beyond his initial ideas Dr. Farmwald realized that he needed the assistance of an expert in circuit design. (Farmwald, Tr. 8089). Dr. Farmwald sought the help of a former colleague – Dr. Mark Horowitz, a professor at Stanford. (Farmwald, Tr. 8089-90).

43. Dr. Horowitz had completed both his bachelors and masters degrees in electrical engineering from MIT in four years, receiving the degrees in 1978. (Horowitz, Tr. 8477). After working for a year at Signetics, he then earned a Ph.D. in integrated circuit design from Stanford University in 1983. (Horowitz, Tr. 8477-80). Dr. Horowitz has been a professor in the electrical engineering and computer science departments at Stanford University since the mid-1980’s. (Horowitz, Tr. 8476).

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Dr. Horowitz currently holds two endowed chairs at Stanford. (Horowitz, Tr. 8482).

44. Dr. Farmwald convinced Dr. Horowitz to take a year's leave from Stanford to further explore their ideas. (Farmwald, Tr. 8092-93). Starting in the spring of 1989, the two worked from Dr. Horowitz's Palo Alto home. (Farmwald, Tr. 8093-94).

45. Dr. Horowitz's goal was to build the fastest possible DRAM interface. (Horowitz, Tr. 8486). Drs. Horowitz and Farmwald determined that 500 megahertz ("MHz") DRAM operation might be possible, and they worked toward that goal. (Horowitz, Tr. 8505-06).

46. In creating their inventions, Drs. Farmwald and Horowitz had to solve numerous problems. (Horowitz, Tr. 8487). They realized that current memory interfaces could not run at high speeds as a result of electrical issues, clocking issues, and issues relating to the protocol, and that they would need innovations in each of these areas in order to meet their goal. (Horowitz, Tr. 8487-88).

1. Electrical Issues

47. With respect to electrical issues, Drs. Farmwald and Horowitz needed to develop driver and receiver circuitry that could generate very high-speed signals, and they also needed to develop a bus that would allow the signals to propagate. (Farmwald, Tr. 8118-20; Horowitz, Tr. 8488).

48. Drs. Farmwald and Horowitz developed a number of solutions to the electrical issues that arose. First, they realized that reflected signals from the end of the bus lines would be a serious problem at high speeds and conceived the idea of introducing resistors to "terminate" the bus lines and reduce reflections. (Horowitz, Tr. 8492-93).

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49. Second, Drs. Farmwald and Horowitz realized that the high voltage signaling then in use would generate too much power at high speeds, and they developed low voltage signaling using a particular kind of driver called a “current mode” or “current source” driver. (Farmwald, Tr. 8119, 8144-45; Horowitz, Tr. 8494-95; RX 82 at 9).

50. Third, Drs. Farmwald and Horowitz realized that they could not build a 500 MHz DRAM with current technology and so, to transmit data at the highest possible speed, they conceived the idea of transmitting and receiving data on both edges of a 250 MHz clock. (Farmwald, Tr. 8118; Horowitz, Tr. 8495-97).

2. Clocking Issues

51. With respect to clocking issues, Drs. Farmwald and Horowitz realized from personal experience that, although current memory chips were asynchronous, they would have to develop a synchronous device with mechanisms for exercising very tight control over timing with respect to the clock to make sure that each bit of data – traveling at a very high speed – was sampled at the right time. (Horowitz, Tr. 8488-89; *see infra* F. 52-53, 284 for discussion of asynchronous versus synchronous devices).

52. Drs. Farmwald and Horowitz decided to design a synchronous system since the timing reference provided by a clock could be used to limit timing uncertainties in the system and allow for high speed performance. (Horowitz, Tr. 8499-502).

53. Even in a synchronous system there remain some timing uncertainties; for example, expected delays of the buffers may vary from DRAM to DRAM due to differences in their fabrication. (Horowitz, Tr. 8503-04). In order to have the highest speed possible, Drs. Farmwald and Horowitz wanted to minimize this remaining uncertainty to the extent possible; they therefore came up with the idea of using a delay locked loop (DLL) or a

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phase locked loop (PLL) on-chip. (Farmwald, Tr. 8118; Horowitz, Tr. 8504).

3. The Memory Interface Protocol

54. With respect to the design of the protocol, additional optimizations developed for high speed operation included returning a variable amount of data in response to a request rather than a single bit of data and by putting registers and associated control circuitry directly on the DRAM. (Farmwald, Tr. 8115; Horowitz, Tr. 8489-90).

55. With respect to the protocol, Drs. Farmwald and Horowitz again came up with various innovations. As one example, they decided to put registers on the DRAM to make the interface more efficient. (Farmwald, Tr. 8115-16; Horowitz, Tr. 8506). These registers would be programmed with parameters, such as the address range that a particular DRAM would respond to or the access time of the DRAM. (Horowitz, Tr. 8507, 8509-10).

56. Drs. Farmwald and Horowitz wanted to make the access time variable for two reasons. First, if the bus were improved so that it could operate at a faster clock frequency, the access time of the DRAM could be adjusted so that it would operate with that faster clock. Second, a variable access time would allow the access times of all the DRAMs in a system to be adjusted to have the same access time. (Horowitz, Tr. 8510-11).

57. As another example of an innovation related to the protocol, Drs. Farmwald and Horowitz allowed the response to a request to include a variable amount of data, a feature known as “variable block size” or “variable burst length.” (Farmwald, Tr. 8116-17, 8146; Horowitz, Tr. 8512; RX 82 at 9).

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II. RAMBUS: COMPANY DEVELOPMENT AND PUBLIC PROMOTION OF TECHNOLOGY**A. The Founding of Rambus**

58. Drs. Farmwald and Horowitz founded “Rambus Inc.” in March of 1990. (CX 545 at 5; RX 81 at 19). By 1992, its headquarters were located in Mountain View, California, in Silicon Valley. (RX 81 at 1, 3).

59. Rambus is, and at all relevant times has been, a corporation as “corporation” is defined by Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44; and at all relevant times has been and is now engaged in commerce as “commerce” is defined in that same provision. (Answer, ¶¶ 5, 6).

60. Rambus designs, develops, licenses, and markets both nationally and internationally, high-speed chip connection technology to enhance the performance of computers, consumer electronics, and communications systems. (Answer, ¶ 5). Rambus is a pure-play licensing company; it does not manufacture DRAM, but rather uses research and development to invent new DRAM technologies and makes its money by licensing its technology to others. (Teece, Tr. 10350-51).

61. For the fiscal year that ended on September 30, 2001, Rambus reported revenues of approximately \$117 million. (Comp., ¶ 5; Answer, ¶ 5).

62. Rambus’s founders intended to improve memory performance through multiple inventions based on modifications of standard DRAMs (*see* CX 533 at 2), which could be used separately or in combination(s). The greatest performance gains would be realized by using these inventions in combination. Rambus DRAM or “RDRAM” is the name for the “revolutionary DRAM architecture and high speed chip-to-chip data transfer technology” that incorporates several of Rambus’s inventions,

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including its proprietary bus technology. (RX 81 at 3). Each of the various generations of RDRAM are manufactured in accordance with specifications established through a collaboration among Rambus and its DRAM partners. (Farmwald, Tr. 8149, 8241).

63. Early on, Rambus realized that it was important to its business strategy to protect the intellectual property rights to its technology. (CX 535 at 1). Part of its early strategy to do this was to pursue an application for “a basic, broad patent filed in all major industrial nations” and thereafter “follow up with additional patents on inventions created during the development of the technology.” (CX 535 at 1). It was also important to Rambus to enter into nondisclosure agreements with companies exposed to its technology. (CX 535 at 1).

64. The only business model that “made any sense” to Rambus co-founder Michael Farmwald “was to patent [the technology], convince others to build it, and charge them royalties” because “[w]hen we were first formed, it was my view that we could not possibly raise enough money to build DRAMs. DRAM fabs cost, even back then they cost, [sic] order of a billion dollars. You couldn’t really build DRAMs without owning your own fab, and so a business plan which involved actually building and selling DRAMs was hopeless, and so from the very beginning we were a royalty-based company.” (Farmwald, Tr. 8095; CX 2106 at 27 (Farmwald, Dep.)).

65. Rambus’s primary objective was to commercialize the revolutionary inventions Drs. Farmwald and Horowitz had created in the form of an open industry *de facto* standard, and to ensure that the standard “didn’t go off in incompatible directions.” (Farmwald, Tr. 8110, 8125-26, 8148).

66. Rambus contemplated that it would earn its income by working with DRAM companies to implement the Rambus interface in their products, and, for that work, get paid consulting fees (for the time its engineers spent working with partners) and

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royalties for the use of Rambus's intellectual property that would be incorporated into DRAM companies' products. (Farmwald, Tr. 8150).

67. To become and remain a viable company, it intended to charge low single digit royalties, which it believed to be fair in light of the importance of Rambus's intellectual property contribution to the product and the large size of the DRAM market. (Farmwald, Tr. 8128; CX 1282 at 5).

68. Rambus founder Farmwald knew that companies never like to pay royalties unless they have to and they can not "get out of it." (CX 2106 at 27 (Farmwald, Dep.)).

1. Securing Venture Capital Funding

69. In an effort to receive funding for the start-up of Rambus Inc., the founders approached various venture capital firms: Kleiner Perkins, one of the largest venture capital firms in the world; Merrill Pickard Anderson and Eyre; and Mohr Davidow. (Farmwald, Tr. 8099). As part of the meetings with the venture capital firms, the founders prepared presentations and showed them documents, such as early business plans. (Farmwald, Tr. 8100). These meetings occurred around the time of a June 1989 RamBus Business Plan. (Farmwald, Tr. 8100-01; *see* CX 533).

70. The start-up had significant financial considerations and according to the June 1989 business plan, "RamBus" founders (Michael Farmwald, Mark Horowitz), were able to invest \$75,000 in "seed money" and were seeking an additional \$1.5 million in equity investment. (CX 533 at 4). This amount would only fund the company through "the completion of a prototype and to the development of [its] initial DRAM vendor partnerships." (CX 533 at 4). Until it signed with its revenue producing partners, estimated expenses were \$100,000 per month. (CX 533 at 5).

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71. In March 1990, Rambus Inc. was born after receiving venture capital funding of \$1.86 million from three firms. (CX 545 at 5; RX 81 at 19).

2. Early Business Plan for the Farmwald/Horowitz Inventions

72. As a 1989 draft business plan explained, Farmwald and Horowitz hoped to establish a *de facto* standard “by offering all interested DRAM and central processing unit (“CPU”) vendors a sufficiently low licensing fee (2%) that it will not be worth their time and effort to attempt to circumvent or violate the patents.” (RX 15 at 9).

73. Dr. Farmwald explained, “[w]e were going to try and find customers for our parts, big customers, and we were going to try and license all the DRAM makers to build our part to supply those customers,” which would lead to *de facto* standardization. (Farmwald, Tr. 8124-25).

74. The founders intended to use a program of phased licensing and promotion of its proprietary RDRAM technology in order to convince the industry to adopt its proprietary technology as the industry standard. (Farmwald, Tr. 8297).

75. The plan was for their technology to be an “open standard”; they refused to license its technology on exclusive terms. (Farmwald, Tr. 8185; RX 25 at 16).

76. An “open standard” in the DRAM industry is a standard for which any patents that apply to it are available on reasonable and nondiscriminatory terms. (Bechtelsheim, Tr. 5897; CX 2112 at 190-91 (Mooring Dep.)).

77. Farmwald and Horowitz wanted to avoid what happened to the Sony Betamax, which was hampered in the market by restrictive licensing. (Farmwald, Tr. 8165-66). Instead, their goal

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was to license the technology “openly and fairly to everybody so everyone is on equal footing with a relatively low royalty.” (Farmwald, Tr. 8165-66).

78. Their early business plans indicate that they were aware that it would be necessary early on to charge lower royalties in order to foster acceptance of their proprietary technology. They recognized that there was a “trade-off of royalty size vs. incentive to develop alternatives” to their technology. (CX 533 at 14).

79. To ensure that the Farmwald/Horowitz technology was standardized, i.e., that parts from one manufacturer were interchangeable with parts from another manufacturer, the inventors planned to cooperate with their partners (i.e., the licensees who would manufacture the devices) to ensure that feedback was propagated to all partners so that everyone would use the same good ideas instead of creating customized parts. (Farmwald, Tr. 8148; *see* RX 82 at 17).

80. Farmwald and Horowitz believed that they had compelling, revolutionary ideas, that their patents would be significant, and that a small royalty would be palatable given the performance leap of the technology. (Farmwald, Tr. 8112-13).

81. The key to success for Farmwald and Horowitz was that they “had to find a number of high-volume customers and high-volume producers to produce the part so that it became the part that everybody was using” in order for their technology to become a *de facto* standard. (Farmwald, Tr. 8140; CX 1750 at 1).

82. To this end, the inventions were designed to be produced using existing DRAM manufacturing technology. (Farmwald, Tr. 8142-43; RX 82 at 6).

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B. The RDRAM Technology

83. Because from the start the founders believed that “[r]oyalties are the lifeblood of Rambus” (CX 2106 at 221 (Farmwald, Dep.)), Rambus placed great importance on promoting and protecting its proprietary technology. The Rambus founders “felt we had a very significant invention. We felt that the only way to protect and to extract value from that invention was to patent it.” (CX 2106 at 28 (Farmwald, Dep.)).

84. Rambus saw its proprietary Rambus DRAM (“RDRAM”) technology as offering dramatic improvements over existing memory technology of the time. In 1992 it claimed that RDRAM technology “achieves a ten-fold increase in component throughput” and would result in “dramatically increasing system price/performance.” (RX 81 at 3). In addition, Rambus claimed that use of the RDRAM technology “assures a smaller system with fewer components, and provides the user with a modular, scalable solution.” (RX 81 at 3).

85. The high-speed chip-to-chip data transfer RDRAM technology was intended to be used not only in memory chips themselves, but also to be implemented in other chips including memory controllers, processors, graphics/video chips and other high performance components used in virtually every computer system. (RX 81 at 3). The proprietary Rambus technology was targeted at mainstream applications from consumer digital video products to desktop computers and graphics up to massively parallel computers. (RX 81 at 3).

86. The RDRAM technology in the early 1990’s included numerous inventions relating to the bus, the interface between the bus and computer chips, and the DRAM. The 1992 Corporate Backgrounder makes clear that the Rambus “solution is comprised of three main elements: the Rambus Channel, the Rambus Interface, and the RDRAM.” (RX 81 at 6). The Rambus Channel refers to the bus, while the Rambus Interface and

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RDRAM refer to other Rambus innovations separate from the bus. (RX 81 at 7). Each of these elements contain a number of independent inventions. (RX 81 at 8-11).

87. RDRAM narrow bus technology contemplates the use of circuitry on the chips at either end of the bus connection to optimize the signals flowing across the connection. (Horowitz, Tr. 8488-90). This circuitry contains high-level logic which implements a protocol for the chip-to-chip information transfer. (Horowitz, Tr. 8489-90).

88. One of the ways that RDRAM technology achieves a high-speed data transfer over the narrow bus is through “multiplexing,” which means that the bus can carry different pieces of information at different points in time. (Horowitz, Tr. 8620-21). This aspect of the RDRAM interface protocol means that over several clock cycles the bus can carry a combination of address and control and data signals on one or more of the same bus lines. (Horowitz, Tr. 8620-21; *see* Rhoden, Tr. 402-03).

89. Another aspect of the RDRAM technology is the use of a “packetized” data transfer protocol. (Horowitz, Tr. 8621; Rhoden, Tr. 403-05). This term means that information is bundled and the bundle may be sent over multiple clock cycles rather than transmitted all at once. (Jacob, Tr. 5465; Rhoden, Tr. 403-04).

90. The RDRAM technology also contains various other distinctive aspects, including a clocking system, sometimes referred to as a loop clock, to assist in controlling the synchronization of the data transfer between chips (Rhoden, Tr. 404; Horowitz, Tr. 8647), and a method of physically packaging the RDRAM memory chips so that multiple chips could be vertically mounted on one another to occupy a small space. (Horowitz, Tr. 8623).

91. The RDRAM technology was sufficiently distinctive that it was widely considered “revolutionary” in the industry and was

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promoted as such by Rambus. (Horowitz, Tr. 8571; Gross, Tr. 2291; Heye, Tr. 3686-87).

C. The 1990 Business Plan

92. Early Rambus investors were informed that “[t]he primary business of the RamBus Company” would be to license proprietary technology “to manufacturers of DRAM chips and microprocessors”; that “[t]he DRAM market is . . . highly sensitized to the concept of standardization”; and that market conditions were such that there is “the ability to set world wide standards for the next generation of DRAM chips and memory systems.” (CX 533 at 9).

93. The purpose of this early draft of its business plan was to encourage investment by explaining to investors why Rambus’s technology would enable Rambus to be successful in the existing and future DRAM market. (*See generally* CX 533 at 9-10).

94. Investors were told that “the patented RamBus technology . . . has the opportunity to establish a single high performance DRAM standard,” that in part due to “[t]he DRAM industry’s penchant [sic] for standardization,” once the Rambus technology was licensed to “all major vendors,” it would be “extremely unlikely that any potential competitor would be able to gain critical mass enough to challenge” Rambus; and that such considerations, including the existence of “strong barriers to entry” restraining “potential competitors,” made Rambus an “exceptionally attractive investment opportunity.” (CX 533 at 9).

95. The strength of Rambus’s business model depended also on the strength of its technological innovations. Indeed, Rambus’s early filed broad patent application and the advantage its technology was seen to enjoy by virtue of being “faster, denser, lower power and cheaper than any other approach” were touted to investors as the most significant barriers to entry for potential, follow-on competitors. (CX 533 at 9). It was the “stiff

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competition” presented by Rambus innovative technology as well as its marketing strategy of licensing all of the major vendors that it claimed made it less pervious to competitors than other potential investment opportunities. (CX 533 at 9).

96. Rambus hired its first (and to date only) Chief Executive Officer – Geoffrey Tate – who joined Rambus in May 1990. (CX 545 at 5).

D. RDRAM Promotion and Licensing Strategy

97. By November 1990, Rambus had begun its efforts to promote and protect its technology. (CX 535 at 4-5). At that date Rambus had filed for, but not yet obtained, a base patent on its technology (CX 535 at 3) and had entered into license contracts that compelled partners to use Rambus technology patents and trade secrets only for use in RDRAM-compatible chips. (CX 535 at 4-5).

98. By June 1992, Rambus had signed technology license agreements with NEC Corp. (“NEC”), Toshiba Corp. (“Toshiba”), and Fujitsu Laboratories, Ltd. (“Fujitsu”). (CX 543A at 11). By January 1994, Rambus had signed license agreements with Hitachi, Ltd. (“Hitachi”), Oki Electric Industry Co. (“Oki”), Lucky Goldstar, and Intel. (CX 547 at 12). These agreements involved substantial interaction between Rambus and the licensees. (Farmwald, Tr. 8241).

99. In the course of negotiating with DRAM manufacturers and others, Rambus encountered resistance to its business model, and specifically to royalties. (CX 711 at 13, 61). “A few systems companies and IC [integrated circuit] companies have had a very negative reaction to our business model. Some believe that it is not ‘fair’ that we are wanting to charge a royalty on ICs that incorporate our technology. Others believe our royalty will make ICS incorporating our technology ‘too expensive.’ Two specific examples are Sun and Tseng.” (CX 543A at 14).

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100. Rambus limited the use of its license agreements to so-called RDRAM compatible uses only. Most companies accepted this term. Samsung Electronics Co., Ltd. (“Samsung”), however, insisted on an agreement without field of use restrictions. (CX 767).

101. In 1994, Samsung recognized that Rambus’s inventions could be used in non-compatible Rambus parts, i.e. in parts without Rambus’s proprietary bus technology. (CX 767). Moreover, Rambus made it clear to Samsung that Rambus’s intellectual property rights were not limited to the RDRAM product. (CX 2078 at 116 (Karp, Dep.)).

E. Presentation of the Rambus Inventions to the DRAM Industry

1. Rambus Visits to DRAM Manufacturers and Systems Companies

102. In 1989-90, Drs. Farmwald and Horowitz made visits to many DRAM manufacturers and systems companies to try to convince them about the benefits of their approach and to get feedback from them. (Horowitz, Tr. 8515).

103. Among the DRAM manufacturers that Drs. Farmwald and Horowitz visited in 1989-90 were Texas Instruments, IBM, Toshiba, Fujitsu, Mitsubishi Electric Corp. (“Mitsubishi”), NEC, Matsushita Elect. Indus. Co., Ltd. (“Matsushita”), Micron, and Siemens (whose former semiconductor division is now Infineon Technologies). (Horowitz, Tr. 8515; Farmwald, Tr. 8166).

104. Among the systems companies that Drs. Farmwald and Horowitz visited in 1989-90 were IBM (both a DRAM manufacturer and a systems company), Sun Microsystems (“Sun”), Motorola, Apple Computer (“Apple”), SGI, and Tandem. (Horowitz, Tr. 8515; Farmwald, Tr. 8166-67).

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105. The response to the early presentations in 1989-90 was “just disbelief” that Drs. Farmwald and Horowitz would be able to achieve a 500 megabit per second DRAM data rate. (Horowitz, Tr. 8516). People who listened to these presentations were also skeptical about many of the specific features of the technology. For example, it was felt that putting registers on a DRAM was too expensive for a commodity part and that one could not put a phase locked loop or a delay locked loop on the DRAM itself. (Horowitz, Tr. 8517).

106. The four inventions at issue in this case were described in these early presentations. For example, one of the early presentations that Dr. Horowitz gave, with slides dated January 31, 1990, states that the Rambus interface “allows ‘block mode’ transfer from an individual DRAM” with “1-1024 byte long blocks supported.” (RX 29 at 9; Horowitz, Tr. 8518-20). This describes variable block size or variable burst length. (Horowitz, Tr. 8520).

107. The January 31, 1990 presentation also describes the use of a delay locked loop on the DRAM to reduce clock skew. (RX 29 at 33-34; Horowitz, Tr. 8521-22).

108. The January 31, 1990 presentation also refers to the dual-edge clock or double data rate technique. (RX 29 at 34; Horowitz, Tr. 8522-23).

2. Preparation and Description of the Rambus Inventions Through Various Technical Publications

109. In the 1990-91 period, Dr. Horowitz prepared detailed technical descriptions of the Rambus technology. (Horowitz, Tr. 8523). These documents were for Rambus’s internal use and were also used with customers and potential customers to convince them of the merits of Rambus technology and to help them build it. (Horowitz, Tr. 8523-24). These documents disclose all four of the relevant product markets in this case: dual-edge clocking, on-

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chip DLL, programmable CAS latency, and programmable burst length.

a. The May 1990 Technical Description

110. One of these technical descriptions is dated May 7, 1990 and was generated at about that time. (RX 63; Farmwald, Tr. 8168-69; Horowitz, Tr. 8524-25).

111. The May 7, 1990 technical description described all four of the technological features at issue in this case. (Horowitz, Tr. 8525-29).

112. For example, the technical description described dual-edge clocking in a figure with two input receivers, one clocked by a signal designated “CLK” (clock) and the other clocked by the complement of CLK (clock bar), a signal that is zero when clock is one and vice versa. (RX 63 at 10; Horowitz, Tr. 8525-26). This means that one receiver samples an input when the clock goes high (the rising edge of the clock) and the other when the clock goes low (the falling edge). (Horowitz, Tr. 8526).

113. The May 7, 1990 technical description also described a delay-locked loop on the DRAM (on-chip DLL feature). (Horowitz, Tr. 8527-28). A figure in the technical description shows two delay locked loops generating the internal clocks for Rambus’s design. (RX 63 at 14; Horowitz, Tr. 8527).

114. The May 7, 1990 technical description also described programmable latency. (Horowitz, Tr. 8528). In the “device registers” section of the document, an “access time” or latency register is listed. (RX 63 at 18; Horowitz, Tr. 8528). “Latency” refers to the time between request and response. (Horowitz, Tr. 8530). The document explains that a fixed value for latency “does not allow for technology improvements,” and, consequently, the Rambus system “set[s] the time between request and response during system reset.” (RX 63 at 5-6; Horowitz, Tr. 8530-31). In

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other words, the value in the access time or latency register would be fixed when the system was started up and probably would not be changed after that time. (Horowitz, Tr. 8531).

115. The May 7, 1990 technical description also described variable burst length. (Horowitz, Tr. 8528-29). The document contains a table showing a variable number of bytes in the block size or burst length depending on the value in the “BlockType” field. (RX 63 at 21; Horowitz, Tr. 8528-29).

b. The November 1990 Technical Description

116. A later Rambus technical description, dated November 5, 1990, was generated around that time. (RX 94; Farmwald, Tr. 8169; Horowitz, Tr. 8535).

117. The November 5, 1990 technical description was sent to Siemens (now Infineon). (RX 99; Farmwald, Tr. 8169-70).

118. The November 5, 1990 technical description described dual-edged clocking. First, the document contains the same figure relating to inputting data on both edges of the clock as in the May 7, 1990 description. (RX 63 at 10; RX 94 at 15; Horowitz, Tr. at 8535-36). Second, the document shows that the output data is also being transmitted on both edges of the clock. (RX 94 at 19; Horowitz, Tr. 8536).

119. The November 5, 1990 technical description described two alternatives for the DRAM clock circuitry. One alternative was to use a phase locked loop. (RX 94 at 45; Horowitz, Tr. 8536-37). The other alternative was to use delay locked loops. (RX 94 at 46; Horowitz, Tr. 8537).

120. The November 5, 1990 technical description described variable latency using a data delay field in the request packet. (RX 94 at 59; Horowitz, Tr. 8537-38).

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121. The November 5, 1990 technical description described variable block size or burst length with a table similar to that in the May 7, 1990 technical description. (RX 63 at 21; RX 94 at 60; Horowitz, Tr. at 8538).

**c. Siemens Responds With a List of Questions
About Rambus Technology**

122. Both Dr. Farmwald and Dr. Horowitz received feedback from Siemens regarding the November 5, 1990 technical description. (RX 102; RX 117; Farmwald, Tr. 8171-72; Horowitz, Tr. 8541-42).

123. A fax from K. Horninger of Siemens to Dr. Farmwald, dated December 7, 1990, contained a detailed list of questions relating to the November 5, 1990 technical description. (RX 102; Farmwald, Tr. 8171-73).

124. A fax from H.J. Neubauer of Siemens to Dr. Horowitz, dated January 29, 1991, stated "Dear Dr. Horowitz, concerning the RAMBUS Technical Description some basic items remained open. In the following we present a list of detailed questions to you which we would like to get answered." (RX 117 at 2; Horowitz, Tr. 8542).

125. A number of the questions in the fax that Siemens sent to Dr. Horowitz related to the four features of Rambus technology at issue in this case. (*See* RX 117).

126. Question number one in the Siemens fax asked about the details of how eight bits of data would be transmitted by the DRAM and relates to Rambus's variable block size feature. (RX 117 at 2; Horowitz, Tr. 8543-44).

127. Question number two in the Siemens fax asked about the implementation of variable latency in the Rambus technology. (RX 117 at 2; Horowitz, Tr. 8544).

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128. Another question in the Siemens fax referenced Figure 13 on internal page 14 of the November 5, 1990 technical description. (RX 117 at 4). That figure showed dual-edge clocking or double data rate on the output. Dr. Horowitz's understanding was that Siemens's question related to the implementation of the double data rate drivers as shown in the November 5, 1990 technical description. (RX 94 at 19; RX 117 at 4; Horowitz, Tr. 8546).

129. Another question in the Siemens fax referenced Figure 28 on internal page 41 of the November 5, 1990 technical description. (RX 117 at 4). That figure shows a delay locked loop and Siemens's question was about the delay locked loop. (RX 94 at 46; RX 117 at 4; Horowitz, Tr. 8546).

d. The April 1991 Technical Description

130. A still later Rambus technical description was released on April 1, 1991 and was a more complete version with many more technical details. (RX 130; Farmwald, Tr. 8171; Horowitz, Tr. 8538).

131. The April 1, 1991 technical description described dual-edged clocking. (RX 130 at 36; Horowitz, Tr. at 8539).

132. The April 1, 1991 technical description described using a phase locked loop on the DRAM. (RX 130 at 56; Horowitz, Tr. 8539).

133. The April 1, 1991 technical description described programmable latency through the use of a "read delay" or latency register. (RX 130 at 94; Horowitz, Tr. 8539-40).

134. The April 1, 1991 technical description described variable block size or burst length, with the value in a "count" field representing the number of bytes to be transferred. (RX 130 at 64; Horowitz, Tr. at 8539).

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F. The March 1992 Press Events

135. On March 9, 1992, Rambus held simultaneous events in the Silicon Valley and in Tokyo to publicly announce its technology and its business plan. (Farmwald, Tr. 8182-84; RX 67 at 1). Prior to this date, Rambus had presented its technology to companies on an individual basis and had secured licenses from three of the top five DRAM manufacturers: Fujitsu, NEC, and Toshiba. (RX 67 at 2).

136. The press release announcing these events stated that Rambus's revolutionary technology would offer a tenfold improvement over traditional DRAMs and would solve the memory bottleneck. (RX 67 at 1). The press release also described Rambus's business plan as licensing its technology in return for license fees and royalties. (RX 67 at 2). By controlling the Rambus interface standard, Rambus would ensure compatibility. (RX 67 at 2). The press release also made it clear that Rambus's "open standard" would be "available for license by any IC [Integrated Circuit] company." (RX 67 at 2; *see also* Farmwald, Tr. 8185).

137. At the events, Rambus made available a "Corporate Backgrounder" that provided an overview of Rambus's business strategy and its technology. (RX 81; Farmwald, Tr. 8186). The Backgrounder explicitly detailed Rambus's intellectual property strategy: "Rambus Inc. is fully protecting the intellectual property rights of its technology by filing basic, broad patents in all major industrial nations around the world." (RX 81 at 3).

138. Later in this same public document, there are descriptions of Rambus's technology. (RX 81 at 8-11). The Backgrounder states that Rambus's "dramatic performance improvements were achieved through numerous technical breakthroughs" and then proceeds to describe "some of the major technical highlights of the Rambus solution." (RX 81 at 8). The technology descriptions

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included the use of dual-edge clocking: “[a]n innovative electrical interface permits the Rambus Channel to operate at 500 Megabytes/second by using both edges of a 250 MHz clock.” (RX 81 at 8). Moreover, the technology descriptions explicitly state that Rambus used the on-chip PLL/DLL technology: “[c]lock skew and capacitive loading are minimized by a phase lock loop circuit on board both the master and the RDRAM.” (RX 81 at 8).

139. The Backgrounder also made it clear that Rambus’s technology was divided into three distinct elements of the memory system: the Rambus Channel (the high-speed bus); the Rambus Interface (the circuitry that connects a device, such as a controller or DRAM, to the bus); and the Rambus DRAM (the memory itself). (RX 81 at 7; Farmwald, Tr. 8188-90).

140. The Backgrounder also stated that Rambus’s business strategy was to license its technology, work with the licensee to help implement the technology, and to receive fees and royalties in return. (RX 81 at 3; *see also* Farmwald, Tr. 8186-87).

141. Later that year, at the invitation of Betty Prince, a long-time consultant in the DRAM industry (Prince, Tr. 8970-72, 8986-87), Dr. Farmwald and David Mooring of Rambus published an article in the October 1992 issue of IEEE Spectrum, which gave a brief description of the Rambus technology and stated that the “technology behind the architecture can be licensed for a royalty fee comparable to that for other patented technologies.” (RX 332 at 1).

142. During the early 1990’s Rambus’s business model was well known in the industry. Brett Williams, a JEDEC Solid State Technology Association (“JEDEC”) representative for Micron testified that in 1992, “I knew it was [Rambus’s] business model to patent their technology, and that’s how they would gain their revenues.” (Williams, Tr. 857). Similarly, Martin Peisl of Infineon stated that he was aware of Rambus’s business model in the early

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1990's and expected Rambus to get patents to cover its technology. (Peisl, Tr. 4505).

143. According to Andreas Bechtelsheim, formerly of Sun Microsystems, Rambus made very clear to Sun that it intended to seek patent coverage for all of its inventions and developments, and Rambus explained to various companies, including Sun, that it was seeking patent coverage for its inventions because it intended to obtain revenue or earn revenue through licensing its technology to both memory manufacturers and system manufacturers. (Bechtelsheim, Tr. 5819).

G. Press Coverage: The March 1992 Microprocessor Report Article

144. In connection with the public announcement of Rambus's technology and its business plan in March 1992, Rambus provided information to the press regarding Rambus's inventions, and numerous articles about Rambus appeared. (RX 1446).

145. Many of these articles provided a significant amount of technical detail. For example, an article entitled "Rambus Unveils Revolutionary Memory Interface" in the March 4, 1992 Microprocessor Report describes Rambus's technology in some depth and described three of the four features of Rambus technology at issue here, as well as aspects of the fourth. (RX 1446 at 22-26).

146. The article states that the "Rambus Channel is a 500-Mbyte/s interface, operating with a 250-MHz clock and transferring a byte of data on each clock edge" and that a "phase-locked loop on each Rambus device limits clock skew within the chip." (RX 1446 at 22, 23).

147. The article also states that the "six-byte request packet encodes a 36-bit address, a 4-bit operation code, and 8-bit transfer

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length count (in bytes). Byte addressing and block sizes of up to 256 bytes are supported.” (RX 1446 at 24).

148. The article also notes that “control registers” on the DRAM can be used to specify certain parameters. (RX 1446 at 23).

H. Rambus’s Disclosure of Inventions Through Public Documents

1. The 1992 Marketing Brochure

149. In early 1992, Rambus produced and distributed its first marketing brochure about Rambus technology. (RX 2183; Horowitz, Tr. 8547). The 1992 marketing brochure describes the four features of Rambus technology at issue here. (Horowitz, Tr. 8547-48).

150. The 1992 marketing brochure states that the “heart of [the Rambus] Interface is high performance PLL (phase-locked-loop) circuitry which provides the clocks for transmitting and receiving Rambus Channel data.” (RX 2183 at 6).

151. The 1992 marketing brochure describes variable burst length, because data transfers could involve a variable amount of data, indicating: “[t]ransfers of 1 to 256 Bytes per Request.” (RX 2183 at 7).

152. The 1992 marketing brochure describes dual-edge clocking, stating that “[d]ata effectively transferred on both edges of the clock.” (RX 2183 at 9).

153. The 1992 marketing brochure describes programmable latency, stating that “the Read Data Packet is returned a time ReadDelay after the Request Packet” and that this delay value is “programmed into the configuration registers of all devices during system initialization.” (RX 2183 at 11).

2. Publications Describing the First Rambus DRAM

154. The first Rambus DRAM was a 4.5 megabit Rambus DRAM produced by Toshiba in the 1991-92 time frame. (Horowitz, Tr. 8548-49).

155. A paper about the Toshiba 4.5 megabit Rambus DRAM was presented at the 1992 International Symposium on VLSI Circuits (VLSI Circuits Symposium) and published in the proceedings of that symposium. (RX 301 at 76-77; Horowitz, Tr. 8552-54).

156. The VLSI Circuits Symposium is held annually and is one of the top two conferences in the world for circuit designers. (Horowitz, Tr. 8552). The “technical program committees” of the Symposium read all the papers submitted and choose the better ones for publication at the conference. (Horowitz, Tr. 8552-53). The technical program committees for the 1992 VLSI Circuits Symposium that selected the paper about the Toshiba 4.5 megabit Rambus DRAM included representatives from IBM; Texas Instruments; Siemens AG; Sun Microsystems; Intel; Hitachi; Samsung; Matsushita; Mitsubishi; Fujitsu Laboratories, Ltd.; Sanyo Electric Co., Ltd.; Oki; and NEC. (RX 301 at 5).

157. The paper published in the proceedings of the 1992 VLSI Circuits Symposium about the Toshiba 4.5 megabit Rambus DRAM discusses the four features of Rambus technology at issue in this case. (Horowitz, Tr. 8554). Figure 2 of the paper shows a block size transfer and read latency. (RX 301 at 77; Horowitz, Tr. 8555). Figure 3 of the paper shows double data rate input receivers. (RX 301 at 77; Horowitz, Tr. 8555). The paper also states that “[t]o eliminate skew caused by the internal circuitry, the DRAM contains two PLLs.” (RX 301 at 76; Horowitz, Tr. 8555).

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158. At the end of the 1992 VLSI Circuits Symposium, the authors of the top papers were invited to provide a longer version to be published in the Journal of Solid State Circuits. (Horowitz, Tr. 8555-56). The Journal of Solid State Circuits is the most widely read journal for circuit designers. (Horowitz, Tr. 8555-56). The paper about the Toshiba 4.5 megabit Rambus DRAM was selected, and a longer version of that paper was published in the Journal of Solid State Circuits in April 1993. (RX 385; Horowitz, Tr. 8556).

I. Presentations of the Proprietary RDRAM Technology and Nondisclosure Agreements

159. Continuing for many years, Rambus pursued a strategy of actively promoting its proprietary RDRAM technology to companies that were in a position to manufacture memory chips or related chipsets. Rambus also promoted RDRAM to others, including systems companies. (*See* Crisp, Tr. 2931; CX 543A at 1, 3, 7-8).

160. Rambus's efforts to promote adoption of its proprietary RDRAM technology included making presentations concerning the proprietary RDRAM technology to memory chip manufacturers and other firms. (*E.g.* CX 2107 at 63 (Oh, Dep.); Bechtelsheim, Tr. 5818-19; Kellogg, Tr. 5052-53).

161. In connection with such efforts, Rambus commonly entered into nondisclosure agreements that prohibited the firms from disclosing information concerning the proprietary Rambus technology to others without the consent of Rambus. (Bechtelsheim, Tr. 5818-19; Rhoden, Tr. 521; Kellogg, Tr. 5052-53). Rambus's presentations often included a discussion of the patent protection Rambus was seeking for its inventions. (CX 2079 at 83 (Mooring, Dep.); CX 2111 at 314-15, 316-18, 319-20, 320-21, 322-24 (Tate, Dep.)).

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162. In April 1992, Gordon Kelley of IBM attended a presentation by Rambus at IBM comparing the proprietary Rambus RDRAM technology with Synchronous Dynamic Random Access Memory (“SDRAM”). (G. Kelley, Tr. 2535).

163. Desi Rhoden was employed at Hewlett-Packard (“HP”) when he began to learn about the Rambus technology in the early 90’s. (Rhoden, Tr. 396). Rambus came to HP to give a presentation about its new memory that it was developing. (Rhoden, Tr. 396). The presentation was made pursuant to a nondisclosure agreement between Rambus and HP. (Rhoden, Tr. 521). Although Rambus did not say anything at that presentation about pending Rambus patent applications, Rhoden assumed that Rambus probably did have patent applications. (Rhoden, Tr. 521).

164. Andreas Bechtelsheim, a Vice-President for technology at Sun (Bechtelsheim, Tr. 5752), was involved in presentations and discussions with Rambus and understood that Rambus had patent rights that covered its proprietary RDRAM technology. (Bechtelsheim, Tr. 5828-29; 5841-42). Rambus “made clear [to Bechtelsheim] that they were going to protect any patent on their memory technology because that was their business model.” (Bechtelsheim, Tr. 5829).

165. Mark Kellogg, an employee of IBM, learned about Rambus technology through a presentation by Rambus to IBM in the early 1990’s. (Kellogg, Tr. 5017, 5052-53).

166. Terry Lee, an employee at Micron, learned about Rambus technology in part from a meeting with Rambus held in 1995. (Lee, Tr. 6601-02). Following the meeting, he and a colleague, Kevin Ryan, reviewed selected patent abstracts. (Lee, Tr. at 6607-08). Lee concluded that the patents appeared to apply specifically to the RDRAM bus structure. (Lee, Tr. at 6610-11). In March of 1997, Lee expressed concerns to the JEDEC JC 42.3 committee that a double data rate SDRAM (“DDR SDRAM”)

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presentation “looked like” one of the Rambus patents he had reviewed in 1995. (Lee, Tr. 6956-59).

J. The June 1992 Business Plan

167. By June 1992, Rambus CEO Geoffrey Tate transmitted to the Rambus Board of Directors a comprehensive five-year business plan, which, he explained, was based on “inputs from all of the executives.” (CX 543A at 1). As reflected in the “Executive Summary” of this June 1992 Business Plan, Rambus’s strategy was to:

develop a breakthrough technology with high value added in a large percentage of computer, communications, and consumer digital systems products;

establish strong intellectual property barriers; . . .

to license the technology for integration onto high volume ICs of all major IC companies and to have license fees cover the costs of technology and market development;

to establish Rambus as the new interface standard for systems requiring high performance at low cost; . . .

to establish a very high profit stream of technology royalties; [and]

to continually improve on Rambus Technology through minor and major enhancements

(CX 543A at 3).

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K. Rambus Patent Applications**1. The '898 Patent Application**

168. Rambus filed patent application serial no. 07/510,898 (the '898 application) in the United States Patent and Trademark Office ("PTO") on April 18, 1990. (CX 1451 at 1-2; Nusbaum, Tr. 1507). The '898 patent application included a descriptive portion, called the "specification," that was sixty-two pages long, and included fifteen original drawings. (CX 1451 at 3-63, 140-50). The '898 patent application contained one-hundred fifty claims. (CX 1451 at 64-125).

169. In connection with the prosecution of its '898 patent application, Rambus was issued a communication by the patent examiner at the PTO containing a restriction requirement. (Nusbaum, Tr. 1511).

170. A restriction requirement reflects that the examiner has reviewed the application and determined that the application contains claims describing multiple "independent and distinct inventions." The applicant is required to elect which of the claimed inventions it wishes to pursue in the application. (Nusbaum, Tr. 1510).

171. The restriction requirement received by Rambus was an eleven-way restriction requirement; Rambus responded by restricting its original application and filing ten divisional patent applications on March 5, 1992, all of which claimed priority based on the filing date of the original '898 application, April 18, 1990. (Nusbaum, Tr. 1511-12; First Set of Stipulations, Stip. 22).

172. Over time, Rambus filed numerous additional continuation and divisional patent applications claiming priority based on the filing date of the original '898 application. (*See* First Set of Stipulations, Stip. 22).

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173. Prior to June 1996, Rambus filed a total of seventeen continuation and divisional patent applications claiming priority based on the filing date of the original '898 application, and had been issued six United States patents on such applications. (First Set of Stipulations, Stip. 22).

174. As of April 2003, Rambus had filed sixty-three continuation and divisional patent applications claiming priority based on the filing date of the original '898 application, of which ten were still pending. (First Set of Stipulations, Stip. 22).

175. As of April 2003, at least 43 United States patents had been issued to Rambus from continuation and divisional applications claiming priority to the original '898 application. (First Set of Stipulations, Stip. 13).

176. Over time, various of the Rambus continuation and divisional patent applications claiming priority to the '898 application embodied changes and amendments to the claims made in the original '898 application and came to describe aspects of the original invention. (*See, e.g.*, Crisp, Tr. 2927-28).

177. The patents that Rambus has asserted against DRAM manufacturers have all issued from applications that are continuations or divisionals stemming from the original '898 application and all share a specification with that original application. (First Set of Stipulations, Stip. 22; Nusbaum, Tr. 1513-14).

178. Pursuant to the "written description" requirement for a patent's validity, the PTO determined that the claims of these patents were supported by the specification of the original '898 application. (Nusbaum, Tr. 1611-14).

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2. The '703 Patent

179. Rambus's first United States patent, U.S. Patent No. 5,243,703 ("the '703 patent"), issued on September 7, 1993. (RX 425). Rambus disclosed the '703 patent to JEDEC during a committee meeting in September 1993. (First Set of Stipulations, Stip. 11). The '703 patent was subsequently added to the "patent tracking list" maintained by JEDEC, where it was described as involving a "Sync Clock." (JX 18 at 18).

180. The '703 patent can be traced back to a divisional application of the original '898 application. (RX 425 at 1; Fliesler, Tr. 8812).

181. The written description and drawings of the '703 patent, like all the issued patents that claim priority to the '898 application, are substantially the same as the written description and drawings in the '898 application. (RX 425 at 1; CX 1451 at 1; Fliesler, Tr. 8812, 8817). Thus, the '703 patent contains the same descriptions of technologies as in the '898 application and PCT application. (RX 425 at 7, 8, 9, 14-17, 21; Fliesler, Tr. 8819-20).

182. In addition to listing the original '898 application, the '703 patent's written description also contains a list of the nine other divisional applications stemming from the '898 application that were pending at the time. (RX 425 at 11; Fliesler, Tr. 8813-14).

3. The PCT Application

183. On April 16, 1991, Rambus filed an international patent application pursuant to the Patent Cooperation Treaty (the "PCT application"). (CX 1454 at 1).

184. The PCT application is identical in all material respects to the '898 application. In particular, the PCT application contains

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the same written description, drawings, and claims as the '898 application. (CX 1451; CX 1454; Fliesler, Tr. 8811).

185. The PCT application was published and made publicly available as of October 31, 1991. (CX 1454 at 1; First Set of Stipulations, Stip. 8). Several JEDEC members obtained the PCT application in the early 1990's, including Mitsubishi and IBM. (RX 379A at 1; RX 201 at 1).

4. The '898 and PCT Applications Describe Numerous Inventions

186. The '898 and PCT applications each contain a lengthy disclosure consisting of a sixty-two page written description, fifteen drawings, and one hundred and fifty claims. (CX 1451, CX 1454).

187. The written description of the '898 and PCT applications contain numerous headings and subheadings, such as "Device Address Mapping," "Bus," "Protocol and Bus Operation," "Retry Format," "Bus Arbitration," "System Configuration/Reset," "ECC," "Low Power 3-D Packaging," "Bus Electrical Description," "Clocking," "Device Interface," "Electrical Interface - Input/Output Circuitry," and "DRAM Column Access Modification." (CX 1451 at 18, 20, 21, 30, 32, 37, 40, 43, 45, 47, 54; CX 1454 at 18, 20, 21, 30, 32, 37, 41, 44, 46, 48, 55).

188. Although the applications describe how an entire system is to be put together, they also describe numerous technical features that can be used independently of one another and of the system. (Fliesler, Tr. 8788-89).

189. The '898 and PCT applications note that, although a preferred implementation of the invention contains 8 bus data lines, "[p]ersons skilled in the art will recognize that 16 bus data lines or other numbers of bus data lines can be used to implement the teaching of this invention." (CX 1451 at 10; CX 1454 at 10).

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190. A person of ordinary skill in the art to which the '898 and PCT applications pertain would have an electrical engineering degree and at least two to three years of experience in designing computer memory circuits. (Fliesler, Tr. 8779-80; Nusbaum, Tr. 1613).

191. It was Dr. Horowitz's understanding when the patent application was filed that the various solutions to problems described in the application could be used independently of one another. Thus, if one did not want quite the level of performance that Drs. Farmwald and Horowitz envisioned, one could use only a subset of the techniques described in the patent application. (Horowitz, Tr. 8514-15).

192. Dr. Farmwald never thought of his ideas as implementing a "narrow" bus. (Farmwald, Tr. 8143). Rambus originally used a 9-bit wide bus because that corresponded to the number of pins that could fit on the edges of the chips that existed at the time; later Rambus used wider buses because more pins could be placed on the chip. (Farmwald, Tr. 8143-44). While some of the inventions of Drs. Farmwald and Horowitz might enable narrower busses to work better, the inventions are not specific to a particular bus width. (Farmwald, Tr. 8144).

193. A March 12, 1993 Mitsubishi memorandum begins by stating that a "need has arisen to evaluate in detail all of the claims in a patent being applied for by Rambus (1 patent, a total number of claims is 150)." (RX 2214A at 1). The memorandum goes on to list guidelines for this evaluation, including "1) Do not discuss Rambus interface. 2) Determine whether or not any other areas contain technologies that will be important in increasing memory speed in the future." (RX 2214A at 1).

194. A June 10, 1993 Mitsubishi document with the heading "RAMBUS Patent (summary of responses)" states: "[i]n addition to the technologies of narrower bus width and communication by

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protocol that are described above, the RAMBUS patent includes a variety of requirements such as memory system configuration, packaging method, and device configuration, and it can be achieved through a combination of these factors.” (RX 406 at 4). The document continues: “[t]he individual technologies that appear in the RAMBUS patent will be used independently in the future.” (RX 406 at 4).

a. Description of Access Time Registers

195. The ‘898 application and the PCT application describe access time registers that store latency, that is the amount of time between receiving a request and driving data onto the bus in response to that request. (CX 1451 at 16, 23; CX 1454 at 16, 23; Jacob, Tr. 5481). The applications state that “each slave may have one or several access-time registers,” where “slave” can refer to a DRAM. (CX 1451 at 16; CX 1454 at 16; Jacob, Tr. 5649).

196. In common use, programmable CAS latency in the mode register of an SDRAM is set at initialization. (Jacob, Tr. 5648-49). The ‘898 application and PCT application state with respect to the access time registers (and other registers): “[m]ost of these registers can be modified and preferably are set as part of an initialization sequence.” (CX 1451 at 16; CX 1454 at 16).

197. A Mitsubishi document headed “Assessment of Rambus Patents (Second Half)” states next to the numbers 95, 97 and 103: “Modifiable Access Time Register (Similar to SDRAM latency control).” (RX 2213A at 25, 27). Claim 103 of the PCT application (and ‘898 application) refers to a “modifiable access-time register.” (CX 1451 at 104; CX 1454 at 105).

198. In a claim-by-claim analysis of the PCT application produced by Mitsubishi, a marginal note identifies claim 103 of the application as relating to latency and SDRAM. (RX 2213A at 7, 9). The analysis further indicates that Mitsubishi determined that this claim relating to latency in SDRAMs was particularly

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important, for Claim 103 was marked “A.” (RX 2213A at 7, 9). A later page of the document explains that an “A” grade means that a technology is “important for increasing DRAM speed.” (RX 2213A at 27).

b. Description of Block Size

199. The ‘898 application and the PCT application describe varying the “block size,” that is the amount of data transmitted in response or received in response to a request. (CX 1451 at 29-30; CX 1454 at 29-30; Jacob, Tr. 5477-78). The applications each state that “BlockSize [0:3] specifies the size of the data block transfer.” (CX 1451 at 29; CX 1454 at 29). The applications each contain a table showing the “Number of Bytes in Block” corresponding to the value in the “BlockSize” field. (CX 1451 at 30; CX 1454 at 30).

200. “Burst length,” as the term is used in SDRAMs, refers to the amount of data to be transferred per read or write transaction. (Rhoden, Tr. 379-80; Jacob, Tr. 5396-97.) Likewise, “block size,” encodes the amount of data to be transferred per read or write transaction. (Jacob, Tr. 5477). The two terms describe the same function and are used interchangeably. (Horowitz, Tr. 8661-62; Geilhufe, Tr. 9643).

c. Description of Bus Clock

201. The ‘898 and PCT applications state: “[c]lock distribution problems can be further reduced by using a bus clock and device clock rate equal to the bus cycle data rate divided by two, that is, the bus clock period is twice the bus cycle period. Thus, a 500 MHz bus preferably uses a 250 MHz clock rate.” (CX 1451 at 49; CX 1454 at 50). If clock rate is half the data rate on the bus, both edges of the clock must be used to transmit data. (Fliesler, Tr. 8801-02).

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202. Figure 10 in the '898 and PCT applications shows two input receivers clocked by "clock" and "clock bar" as in the Rambus technical descriptions. (CX 1451 at 147; CX 1454 at 148; Fliesler, Tr. 8799). If "clock bar" is high when "clock" is low, and vice versa, data is input on both the rising and falling edges of clock. (Fliesler, Tr. 8799-800).

203. Figure 13 in the '898 and PCT applications shows a timing diagram with data being input, as indicated by the arrows along the bottom of the figure, on both the rising and falling edges of the clock. (CX 1451 at 149; CX 1454 at 150). Howard Sussman, the JEDEC representative for Sanyo and formerly the JEDEC representative of NEC, testified that Figure 13 of the PCT application shows to him that "input being sampled on the high and low edge of the clock" and that is "double data rate input." (Sussman, Tr. 1322, 1467-68).

d. Description of Variable Delay Circuitry With a Feedback Loop

204. Figure 12 of the '898 and PCT applications describes variable delay circuitry and a feedback loop. (CX 1451 at 148; CX 1454 at 149; Jacob, Tr. 5649-50).

205. When Joel Karp, then of Samsung, reviewed Rambus's PCT application in 1991, Figure 12 "jumped out" at him as evidencing a DLL. (CX 2078 at 119 (Karp Micron Dep.); CX 2114 at 276-77 (Karp Dep.)).

206. In its license negotiations with Rambus in 1994, Joel Karp felt that Samsung was motivated to seek a non-assertion provision for non-Rambus-compatible uses of Rambus's inventions because of the on-chip DLL shown in Rambus's PCT application. (CX 2078 at 107-08, 119-20 (Karp, Micron Dep.)).

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5. Review of the '898 or PCT Application Should Have Raised Concerns That Rambus Might Be Able to Obtain Claims Over the Four Technologies at Issue

207. A person of ordinary skill in the art or a patent lawyer reviewing the '898 application or PCT application would have realized that Rambus might have claims broad enough to cover programmable CAS latency, programmable burst length, dual-edge clocking, and on-chip DLL. (Fliesler, Tr. 8784-85, 8810-11).

208. An experienced DRAM designer reviewing the PCT application would reach the conclusion that there is considerable similarity in form and function between programmable latency, variable burst length, dual-edge clocking, and on-chip DLL as described in the PCT application and the corresponding features in SDRAMs or DDR SDRAMs. (Geilhufe, Tr. 9556-57).

209. If an experienced DRAM designer working on designing an SDRAM incorporating programmable latency and burst length in the early 1990's had reviewed the PCT application, he likely would have become concerned that Rambus might have claims to those features and would have raised the issue with management. (Geilhufe, Tr. 9558).

210. A manager faced with this issue, in light of the potential for substantial economic consequences if a DRAM design infringes a patent, would likely have gathered additional technical analysis from specialists and, if there remained a concern, would have taken the issue to corporate counsel for a careful review. (Geilhufe, Tr. 9558-59).

211. When Mitsubishi reviewed the PCT application, it undertook an in-depth study. A March 3, 1993 Mitsubishi memorandum requests cooperation on evaluating Rambus's PCT patent application because they "realized that the technology is

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related not only to stand-alone semiconductor devices but also to systems.” (RX 379A at 1).

212. A June 10, 1993 Mitsubishi document stressed the need for expert analysis of Rambus’s patent application to determine the scope of the claims, particularly as to individual technologies disclosed in the patent application: “[t]here is a need to examine the specifications of the patent claims to determine whether individual technologies used independently will infringe on the RAMBUS patent, and for that we will have to obtain the views and interpretations of experts.” (RX 406 at 4; *see also* RX 416A at 1).

213. An August 16, 1993 Mitsubishi document again raised the issue of whether Rambus could have claims on features separate from any particular bus architecture. (RX 419A at 1).

214. A January 11, 1996 memorandum indicates that Mitsubishi subsequently conducted an “investigation of the US patents owned by Rambus” that were granted by the end of October 1995 and that eighteen patents met that criteria. (RX 528A at 1).

215. Mitsubishi also maintained a chart tracking all of Rambus’s issued U.S. patents. For example, one version of this chart begins with Rambus’s first issued U.S. Patent No. 5,243,703, at number one and concludes with U.S. Patent No. 5,578,940 which issued on November 26, 1996 at number twenty-seven. (RX 2216 at 2, 4). Rambus’s ‘327 patent is listed at number twenty-three on the chart. (RX 2216 at 3).

216. A later version of the Mitsubishi chart contains thirty-seven Rambus patents and includes patents that issued in early 1998. (RX 2218 at 3-6).

217. A Mitsubishi analysis of the claims of the PCT application specifically calls out the modifiable access time

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register and notes its similarity to SDRAM latency control. (RX 2213A at 27).

218. An August 24, 1996 report on a Rambus meeting states: “Rambus’ patents. Issued: 16, filed: 80. For example, data is transferred at both edges.” (RX 756A at 1).

219. As Complaint Counsel concede, Rambus has obtained patent claims that cover programmable CAS latency, variable burst length, dual-edge clocking, and on-chip DLL as those features are used in SDRAMs and/or DDR SDRAMs. (Complaint, ¶ 91). Rambus has asserted claims covering these four features against SDRAMs and DDR SDRAMs. (Complaint, ¶ 92).

III. JEDEC IS A COLLABORATIVE STANDARD SETTING BODY FOR THE SEMICONDUCTOR INDUSTRY

A. Early History of JEDEC

220. JEDEC was founded in 1958 and originally named the “Joint Electron Device Engineering Council.” (CX 302 at 10; J. Kelly, Tr. 1773-74 (“JEDEC has been active within an EIA organization under the name JEDEC since approximately 1958, and under other names with slightly different functions for a number of years prior to that, probably dating back to the 1940s.”)).

221. The current name of JEDEC is the “JEDEC Solid State Technology Association.” (J. Kelly, Tr. 1750-51).

222. Between 1991 and 1996, JEDEC was an activity within the Electronic Industries Association (“EIA”) Solid State Products Division, which was itself a division of the EIA’s Components Group. (CX 3092 at 14, 27; J. Kelly, Tr. 2075).

223. EIA is a “broad-based association that represents the electronics industry in the United States, and it engages in a

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variety of different activities in support of that industry.” (J. Kelly, Tr. 1750; CX 302 at 28).

224. In 1998, EIA changed its name to the Electronic Industries Alliance and JEDEC became a separate division of EIA. (CX 302 at 11). In 1999, JEDEC became independently incorporated. (CX 302 at 11).

225. Both EIA and JEDEC are headquartered in Arlington, Virginia. (J. Kelly, Tr. 1751).

B. The Purpose and Function of JEDEC

226. JEDEC seeks to create consensus based standards which reflect the interests of DRAM manufacturers and exists because of an industry need for standardization. (CX 2767 at 1; J. Kelly, Tr. 1784; Landgraf, Tr. 1685).

C. The Organization of JEDEC

1. Member Companies

227. A company becomes a member of both JEDEC and EIA by completing and submitting an application and paying dues. (CX 601; J. Kelly, Tr. 1801-02; Rhoden, Tr. 294-95). “Eligible organizations can become members of JEDEC by joining the EIA Solid State Products Division or by joining JEDEC directly,” and paying annual dues. (CX 208 at 7).

228. During the time Rambus was a JEDEC member, dues were paid to EIA. (CX 602 at 6, 7).

229. There was no contractual relationship between JEDEC and Rambus. (J. Kelly, Tr. 2075).

230. During the 1990’s, JEDEC had approximately two hundred fifty member companies who sent approximately 1800

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individuals to participate in approximately fifty committees. (J. Kelly, Tr. 1774-75).

231. In 1992, when Rambus joined JEDEC, the membership application stated that: “JEDEC Committee membership is limited to companies and independent entities of companies that (1) manufacture solid state products, or provide related services or equipment, and (2) participate in the United States market.” (CX 602 at 2).

232. JEDEC’s membership includes companies from around the world. (Rhoden, Tr. 294 (noting companies from Korea, Germany, Taiwan and Japan); *see* CX 302 at 8).

233. Membership entitles companies to attend meetings, receive minutes, vote, and receive copies of standards and other publications. (J. Kelly, Tr. 1805-06).

234. Companies not interested in the outcome of a particular issue were encouraged to abstain from voting. (Rhoden, Tr. 303-04).

235. During the early and mid-1990’s, JEDEC minutes were regularly circulated to all members. (Crisp, Tr. 3139). The minutes were also available in the early 1990’s to non-members, with the possible exception of a Russian company. (G. Kelley, Tr. 2622-23).

236. JEDEC manual 21-H gives committee chairs discretion to allow guests to attend meetings: “[a]ll JEDEC Committee meetings are open to members, their designated alternatives, and guests invited by the Committee. Others may attend meetings only with prior approval of the Chairman.” (RX 1211 at 10).

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2. The JEDEC Council, Board of Directors and Officers

237. Today, the JEDEC Board of Directors is the governing body of JEDEC. (J. Kelly, Tr. 1768; CX 214 at 1, 14). Prior to 1999, the JEDEC Council was the governing body of JEDEC. (J. Kelly, Tr. 1768).

238. Prior to 1998, the JEDEC Council could not unilaterally set or change policies without approval of the EIA Engineering Department Executive Council (“EDEC”). (*See* J. Kelly, Tr. 2078, 2105).

239. The chairman of the board of directors is elected by JEDEC members. (Rhoden, Tr. 286).

240. The JEDEC chairman is responsible for “the business aspect of JEDEC, trying to make sure that we [JEDEC] have office space, staff, relationships with other organizations, and to make sure that we take care of the business aspects of the corporation itself.” (Rhoden, Tr. 286-87).

241. Desi Rhoden is the current Chairman of the JEDEC Board of Directors. (Rhoden, Tr. 283).

242. John Kelly is the current President of JEDEC. (J. Kelly, Tr. 1750-51).

243. John Kelly has also been the General Counsel of EIA since 1990. (J. Kelly, Tr. 1754).

244. The EIA General Counsel is “the legal counsel for all of the operating units within EIA, including JEDEC.” (J. Kelly, Tr. 1754). The EIA General Counsel is the person responsible for interpreting EIA rules and the JEDEC rules, including the JEDEC patent policy. (J. Kelly, Tr. 1939; Sussman, Tr. 1348-49).

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245. While the General Counsel may interpret the policies and rules, EDEC establishes what the policies and rules are. (J. Kelly, Tr. 2078).

246. Today, JEDEC employs a staff of ten persons to facilitate the meetings of JEDEC committees. (J. Kelly, Tr. 1792-93). During the early to mid-1990's, the size of JEDEC's staff was considerably smaller than the current size. (J. Kelly, Tr. 1795).

3. The JC 42 Committee

247. JEDEC is organized into committees and subcommittees. (Landgraf, Tr. 1687).

248. The members of each committee or subcommittee elect a chairman. (J. Kelly, Tr. 1794).

249. The JC 42 committee is concerned with developing standards for memory products. The JC 42 membership consists of "[a]lmost all of the DRAM memory companies, SRAM memory companies, logic companies, customers of memory, as well as interconnect companies, such as socket manufacturers," and testing companies. (Williams, Tr. 765-66; Rhoden, Tr. 288).

250. The JC 42 Chairman is responsible for coordinating all the activities in the JC 42 committee and subcommittees, including the scheduling of meetings. (Rhoden, Tr. 288).

251. The JC 42 committee had several subcommittees focusing on particular specialized subject matters. (J. Kelly, Tr. 1769; Rhoden, Tr. 285 (JC 42 included subcommittees devoted to DRAM (42.3), SRAM (42.2), memory modules (42.5), flash memory and other types of programmable devices)).

252. JEDEC's JC 42.3 subcommittee develops standards relating to DRAM products. (Peisl, Tr. 4381; Rhoden, Tr. 283-84).

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253. In late 1991, approximately forty to fifty companies were represented on the JC 42.3 subcommittee. (Rhoden, Tr. 340-41; JX 10 at 1-2).

254. The JC 42 committee and its related subcommittees typically meet between four and eight times per year. (Rhoden, Tr. 340).

255. Minutes of JC 42 committee and its subcommittees are prepared by Ken McGhee, a staff person. (Rhoden, Tr. 327). There is a review process that goes on before the minutes are made official and distributed to members. (Rhoden, Tr. 591).

256. The minutes of JC 42 and its subcommittees record the key decisions that are made during the standard development process, including motions and votes. (Rhoden, Tr. 327-28). The minutes were intended to be a chronological statement of the events and occurrences in the meeting, although they were not a transcript. (Rhoden, Tr. 590-91).

D. The Standard Development Process

257. The standard development process begins with discussions among the participants at a JEDEC meeting concerning subjects that members may feel should be considered as possible standards. (Rhoden, Tr. 406-07).

258. JEDEC entertains a number of proposals by members when working toward a standard for a new device. (Rhoden, Tr. 415).

259. JEDEC members decide which of these ideas to pursue. (Rhoden, Tr. 415-416).

260. There is a first showing or first presentation when proposals typically receive an item number. (Calvin, Tr. 1025).

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261. In some cases, discussions of possible features generate a survey ballot that requests the members to give their views concerning different solutions. (Rhoden, Tr. 481, 516).

262. Following the conclusion of the second or subsequent presentations, the committee decides if it wants to create a ballot to vote on the substance of a proposed standard. (Rhoden, Tr. 406-07).

263. JEDEC participants often had significant differences of opinion concerning the development of a standard. These differences of opinion drove heated debates concerning the merits of the various solutions to the technical challenges facing the JEDEC participants. (*E.g.*, CX 711 at 14; CX 711 at 33; CX 711 at 47; CX 680 at 1; CX 680 at 2; Rhoden, Tr. 434-35 (“if you give ten engineers a problem, you’ll probably get 12 or 14 solutions, and the same is true inside the discussions inside the committee”)).

264. From time to time, ballots failed or were put on hold in the JEDEC committees because the committees did not reach a consensus. (JX 12 at 6, 12; JX 19 at 10; JX 26 at 5).

265. If it preferred, a committee could pass items individually but place the individual items on hold until an entire list of related items that were needed to define a single standard was complete, and once that group of ballots was complete and passed, then together the committee could motion them to go to Council for publication. (G. Kelley, Tr. 2554).

266. After a JEDEC committee approves a standard, the proposed standard is sent by a ballot to the JEDEC board of directors, which then has to again by a consensus approve the ballot in order for the proposal to become a JEDEC standard. (J. Kelly, Tr. 1785; Rhoden, Tr. 406-07).

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267. JEDEC's consensus based process means that the board of directors will consider any committee votes that were cast in opposition to the proposed standard. (J. Kelly, Tr. 1786).

268. JEDEC's consensus based process often requires years in order to adopt a new standard or change an existing standard. (Polzin, Tr. 3977; Peisl, Tr. 4453 ("JEDEC is traditionally a very slowly moving consortium, and there's a reason for that, because there's so many companies involved, it's basically the whole industry that produces parts for the PC and the laptop and the server business, so to try to reach consensus at JEDEC, based on my experience, have been incredibly hard and tough. In the last decade, essentially there were only two standards that emerged for SDR and DDR.")).

269. In order to create common parts that are plug compatible during the 1990's, JEDEC standards became more detailed. (CX 35 at 14-15; G. Kelley, Tr. 2390).

270. Formal standardization in the DRAM industry benefits the entire industry. (Prince, Tr. 9016-17).

271. JEDEC standards are very valuable to manufacturers. (CX 707 at 1 ("JEDEC is a big deal to them [Samsung] because it [JEDEC] represents the big users."); Peisl, Tr. 4383-84; Bechtelsheim, Tr. 5790).

E. Rambus's Involvement in JEDEC

1. Rambus's Participation in JEDEC

272. The first Rambus employee to attend a JEDEC meeting on behalf of the company was William Garrett, who first attended a meeting in early December 1991 at the invitation of Toshiba. (CX 670 at 1). Garrett was later replaced as the Rambus primary representative at the JC 42.3 Committee by Richard Crisp, who then became Rambus's representative at JEDEC. (Crisp, Tr. 2929).

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273. In February 1994 Rambus renewed its JEDEC membership for the 1994 calendar year and in April 1995 Rambus paid its dues to renew its JEDEC membership for the 1995 calendar year. (CX 602 at 6-7).

274. The final JEDEC meeting attended by Rambus was the meeting in December 1995. (CX 2104 at 853-54 (Crisp, Micron Dep.)). Rambus did not renew its membership for 1996. (CX 887).

2. Rambus Representatives Learn [*103] About the EIA/JEDEC Patent Policy

275. Jim Townsend, JC 42 Chairman and IBM representative, made a presentation concerning the patent policy and showed the patent tracking list at most JEDEC meetings attended by Crisp. (JX 12 at 5, 28-29; JX 13 at 4; CX 42A at 2; JX 15 at 4; JX 16 at 5; JX 17 at 3; JX 18 at 3, 15-18; JX 19 at 4; JX 20 at 4, 15-18; JX 21 at 4, 14-18; JX 22 at 3, 12-16; JX 25 at 3, 18-26; CX 88A at 2; JX 27 at 4, 20-25).

276. At the May 1992 JEDEC meeting, Chairman Townsend showed a copy of the new American National Standards Institute (“ANSI”) patent policy implementation guide and secretary Ken McGhee spoke concerning the EIA patent policies. (CX 34 at 3, 10-11; CX 34A at 2, 7).

277. At the September 1993 JEDEC meeting, Townsend showed a draft of portions of the revised JEP 21-I Manual. (JX 17 at 12; *see also* CX 2092 at 63-64 (Crisp, Infineon Trial Tr.)). The draft stated only that “the committee Chairperson must have received written notice from the patent holder” that the license would be made available on a reasonable and nondiscriminatory basis. (JX 17 at 12). The draft did not impose an obligation to disclose intellectual property and did not advise the Chairperson to call attention to such an obligation. (JX 17 at 12).

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3. Rambus Continued to Stay Abreast of JEDEC and SyncLink Activities

278. The minutes of JC 42.3 meetings are publicly available. (G. Kelley, Tr. 2623).

279. Several sources provided information to Rambus about JEDEC meetings after Rambus withdrew from JEDEC. (Crisp, Tr. 3413).

280. In 1997, Richard Crisp, Rambus's principal JEDEC representative, received information about JEDEC's activities from a source called "deep throat." (Crisp, Tr. 3414; CX 929 at 1; CX 932 at 1 (Crisp June 1997 email: "My 'deep throat' (DT) source told me that the DDR bandwagon is moving fast within JEDEC with all companies participating.")).

281. Crisp also received unsolicited information relating to proceedings at JEDEC from an anonymous source called "Mixmaster," a reporter Crisp called the "Carroll contact," and a source known as "Secret Squirrel." (Crisp, Tr. 3414-17; CX 935 at 1).

282. Crisp shared JEDEC-related information he received from Deep Throat, the Carroll Contact, Mixmaster, and other sources with Rambus executives and engineers. (Crisp, Tr. 3413-17; CX 935 at 1; CX 929 at 1; CX 973 at 1; CX 979 at 1; CX 1014 at 1).

283. After June 1996, Rambus continued to follow SyncLink's activities. (Crisp, Tr. 3388-89; Crisp, Tr. 3395-96; CX 711 at 183).

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**IV. EARLY DEVELOPMENT AND ADOPTION OF JEDEC
DRAM STANDARDS****A. The Initial SDRAM Standard****1. Demand for a New Generation of Memory**

284. “Asynchronous DRAM” is a term that is used to describe DRAMs that are driven off the row address strobe (“RAS”) and column address strobe (“CAS”) signals where the RAS and CAS actually control the operation of the DRAM rather than a clock. (Jacob, Tr. 5394).

285. Page mode and extended data out (“EDO” DRAMs) are types of asynchronous DRAM. (Sussman, Tr. 1469; Polzin, Tr. 4031). In the late 1980’s page mode and EDO DRAMs were commonly used in the industry. (Sussman, Tr. 1361). Page mode and EDO DRAMs were standardized at JEDEC. (Sussman, Tr. 1362; Prince, Tr. 9020-21).

286. In order to respond to the rising demand for performance and to ensure that the new JEDEC standard would result in common parts that were plug compatible, the JC 42.3 subcommittee began to standardize certain aspects of DRAM performance and design relationships. (CX 35 at 14; G. Kelley, Tr. 2388-91). Prior to that time, JC 42.3 work had generally focused on standardizing the location of pins, also known as pin-out diagrams. (G. Kelley, Tr. 2388).

287. The JC 42.3 subcommittee subsequently exceeded those boundaries and began standardizing certain technologies that are unrelated to interoperability. An on-chip DLL, for example, as included in the DDR SDRAM standard is not required for interoperability. Rather, as Complaint Counsel’s technical expert, Professor Jacob, explained, the DLL used in DDR SDRAMs is transparent to the DRAM interface. (Jacob, Tr. 5617-18).

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288. A new generation of memory was needed because the industry anticipated that microprocessor and computer speeds would increase and the industry demanded memory that could operate at the same speeds. (CX 2088 at 291-92 (Meyer, Infineon Trial Tr.)).

289. One option considered by the JC 42.3 subcommittee was to continue to develop a new generation of EDO DRAMs. (CX 711 at 1).

290. Subsequently, “Burst EDO” was also developed and standardized at JEDEC in mid-1995. (Williams, Tr. 873, 879-80; RX 585 at 1).

291. Burst EDO failed in the marketplace in competition with SDRAM. (Williams, Tr. 829). As Dr. Oh of Hyundai Electronics Industries Co., Ltd. (“Hyundai”) testified regarding [*107] Burst EDO: “this is enhanced version of EDO, and we wanted to convince our customers the advantages of this part, but was not accepted by our customers.” (CX 2108 at 236 (Oh Dep.)).

292. JEDEC also began to consider a DRAM that had been developed by IBM called “High Speed Toggle.” (G. Kelley, Tr. 2584-85). High speed toggle is also known as “HST.” (G. Kelley, Tr. 2441).

293. According to the definition provided by Complaint Counsel’s expert, HST was an asynchronous part. Professor Jacob testified that an asynchronous DRAM is one where asynchronous RAS and CAS signals control the operation of the DRAM rather than a clock. (Jacob, Tr. 5394). Since RAS and CAS were *asynchronous* in HST, it follows from Professor Jacob’s definition that HST was asynchronous. (Rhoden, Tr. 568; Kellogg, Tr. 5173). Indeed, a January 1992 document written by Willi Meyer of Siemens states: “IBM presented generic high speed toggle mode in Sep ‘90 which was asynchronous.” (CX 2431 at 1; Kellogg, Tr. 5173).

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294. In HST, IBM proposed to transfer data on both edges of the toggle signal. (Kellogg, Tr. 5173; Sussman, Tr. 1381; Rhoden, Tr. 436-37; CX 2080 at 242 (Karp, Micron Dep.)). While some witnesses loosely referred to this toggle signal as a “clock,” it was not a free running clock like the system clock in a synchronous memory such as SDRAM or DDR SDRAM. (Rhoden, Tr. 437; Sussman, Tr. 1471).

295. IBM and Siemens made HST presentations at JEDEC during 1990 and 1991 which were included in survey ballots. (JX 2 at 92; JX 3 at 56-57; JX 3 at 7; CX 316 at 1; CX 314).

296. At the May 9, 1991 JC 42.3 meeting, the subcommittee passed a motion to ballot the IBM HST presentation. (JX 5 at 12). At the same meeting Siemens also made a HST presentation that was like the IBM HST except it used a G/pin instead of a new toggle pin. (JX 5 at 12).

2. Proposal of a Fully Synchronous DRAM

297. At the JEDEC JC 42.3 meeting in May 1991, Howard Sussman of NEC proposed a fully synchronous DRAM to JEDEC for the first time. (Sussman, Tr. 1364; CX 2088 at 272-75 (Meyer, Infineon Trial Tr.)).

298. It is unclear whether Sussman proposed during his initial proposal to use a single edge clock to input and output data and a programmable mode register to set CAS latency and burst length. (Sussman, Tr. 1365-67 and 1373-75). There was no documentation about the NEC proposal attached to the May 1991 minutes. (*See* JX 5).

299. In 1991, Sussman held an unofficial meeting of JEDEC members in Boxborough, Massachusetts to discuss his synchronous DRAM proposal. (Sussman, Tr. 1369-70; CX 20). A report about that meeting prepared by Sussman was intended to provide “a consensus of where we were.” (Sussman, Tr. 1370).

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The description of the features of Sussman's synchronous DRAM proposal does not include any mention of a mode register, programmable CAS latency, or programmable burst length. (CX 20 at 1). A report about the Boxborough meeting prepared by Gordon Kelley of IBM makes clear that Sussman was proposing a *fixed* CAS latency at this time. (RX 173 at 3). Kelley's list of the main features of the NEC proposal makes no mention of a mode register or programmable burst length. (See RX 173 at 3).

300. At the JC 42.3 meeting on September 18, 1991, the subcommittee voted in favor of the IBM HST technology. There were four no votes and a number of comments. (JX 7 at 8). NEC and Samsung commented that the use of a separate toggle signal can limit speed. (JX 7 at 8). The subcommittee decided to put the ballot on hold until more resolution to the comments could be made. (JX 7 at 9).

301. Also at the JC 42.3 meeting on September 18, 1991, Sussman made a second presentation of NEC's SDRAM proposal. (JX 7 at 13 and 160-62; CX 2088 at 276 (Meyer, Infineon Trial Tr.)).

302. A number of other companies also presented synchronous DRAM proposals at this meeting, including Texas Instruments, Toshiba, and Hewlett-Packard. (JX 7 at 13, 163-77).

303. At the September 1991 JEDEC meeting, NEC's second showing of the synchronous DRAM proposal does not mention a mode register, programmable CAS latency, or programmable burst length. (JX 7 at 160-62).

304. It was not until October 1991, at a second unofficial meeting of JEDEC members in Portland, Oregon, that Sussman's presentation materials indicated that latency and burst length should be programmable. Both programmable CAS latency and programmable burst length are included in a list of key features of the proposed device. (JX 10 at 50; Sussman, Tr. 1373-75). A

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timing diagram, a version of which had been used by Sussman at the August 1991 non-JEDEC meeting as well as the September 1991 JEDEC meeting, had the following language *added* to the right-hand column when it was used at the non-JEDEC meeting in October 1991: “Latency is programmable.” (*Compare* JX 10 at 51 *with* CX 20 at 3 and *with* JX 7 at 160).

305. Toshiba also made a presentation for a synchronous DRAM including programmable CAS latency (JX 10 at 67), causing Howard Kalter of IBM to remark that “programmable latency was the cleverest item Toshiba ever created.” (RX 199 at 2). By this time, Toshiba was a Rambus licensee and was working on the design of the first RDRAM chip. (Horowitz, Tr. 8548-49).

306. At the JEDEC JC 42.3 meeting on December 4-5, 1991 (the first JEDEC meeting attended by Rambus), Mark Kellogg of IBM made a presentation comparing HST to synchronous DRAMs. (JX 10 at 5 and 84; Kellogg, Tr. 5172-73).

307. Also at the JC 42.3 meeting of December 4-5, 1991, Howard Sussman presented the results of a non-JEDEC meeting that had been held in Portland, Oregon on October 24, 1991 to discuss high bandwidth DRAM. (JX 10 at 4; Sussman, Tr. 1373). The conclusion from that meeting was that a fully synchronous DRAM with all signals referenced to a single positive clock edge would best meet system requirements. (JX 10 at 50).

308. At the JC 42.3 meeting held on February 27-28, 1992, NEC, Hitachi, Fujitsu, Toshiba, Mitsubishi and Sun all made presentations regarding synchronous DRAM devices. (JX 12 at 39, 42, 60, 69, 76, 94, 110).

309. These companies continued to also make presentations regarding asynchronous DRAMs that they proposed to develop as well. For example, at the February 1992 JC 42.3 meeting, Toshiba made two presentations regarding “address compression” for asynchronous DRAMs, Fujitsu made a presentation regarding an asynchronous DRAM in a new kind of packaging, and NEC made

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a presentation regarding an asynchronous DRAM with a “revolutionary pinout.” (JX 12 at 11).

310. No further action on HST was taken at the February 1992 JC 42.3 meeting. High Speed Toggle items continued to be listed, however, on an active items list presented at the February 1992 meeting by the Subcommittee Chairman. (JX 12 at 19; JX 12 at 20).

311. At a DRAM Task Group meeting on April 9-10, 1992, NEC, Fujitsu, Toshiba, Samsung, Hitachi and Mitsubishi presented proposals for a fully synchronous DRAM. (CX 34 at 30, 33-36).

312. At the April 1992 DRAM Task Group meeting, IBM proposed a slightly modified version of its HST technology. (CX 34 at 32; Kellogg, Tr. 5175).

313. Following the April 1992 DRAM Task Group meeting, the JC 42.3 subcommittee decided to pursue a fully synchronous DRAM rather than IBM’s toggle mode. (G. Kelley, Tr. 2515). The JC 42.3 subcommittee also continued to develop various asynchronous DRAMs while it was standardizing synchronous DRAMs.

314. By the time Rambus attended its first JEDEC meeting in December 1991, Howard Sussman was reporting the consensus that a “fully synchronous DRAM with all signals referenced to a single (positive) clock edge would best meet system requirements.” (JX 10 at 50).

315. The only evidence of consideration of dual-edge clocking that Complaint Counsel presented after this time is HST which actually proposed an asynchronous DRAM with output data on both edges of a “toggle signal.” (See CX 2431 at 1; Kellogg, Tr. 5173).

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3. Inclusion of Programmable CAS Latency and Burst Length

316. At the JC 42.3 meeting of December 4-5, 1991, NEC presented the results of a separate meeting in Portland, concluding that the latency of data to the clock and the burst length should be programmable. (JX 10 at 50).

317. At the same meeting, Texas Instruments made a revised presentation of its SDRAM proposal that also included programmable CAS latency and programmable burst length. (JX 10 at 4, 56; Rhoden, Tr. 419-20).

318. Toshiba made a second showing that included programmable CAS latency and burst length. (JX 10 at 67; Rhoden, Tr. 424). Wrap length and burst length are the same thing. (Rhoden, Tr. 419-20; Williams, Tr. 812-13; Sussman, Tr. 1374-75). Neither of the “first showings” at the September 1991 meeting included programmable CAS latency and programmable burst length. (*See* JX 7 at 163-77).

319. The JC 42.3 Subcommittee considered a number of alternative methods of determining the CAS latency and burst length, including using a fixed burst length, using pins to set the CAS latency and burst length, and using fuses to set CAS latency and burst length. (Rhoden, Tr. 425-34; Kellogg, Tr. 5099-102 and 5130-31). The alternative methods considered at JEDEC were rejected. Complaint Counsel did not present sufficient evidence to find that they ever made it past the “first showing” stage. (*See* JX 10 at 5, 64, 71; Rhoden, Tr. 425-34; Kellogg, Tr. 5099-102).

320. At the December 1991 JC 42.3 meeting, Samsung presented a proposal for SDRAMs that included fixed CAS latency and burst length. Samsung proposed using a single CAS latency of 2 and a single burst length of 8. (JX 10 at 71; Rhoden, Tr. 425-28; Kellogg, Tr. 5099-101). The Samsung proposal also

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included a fuse option to select between two different burst options. (JX 10 at 71; Rhoden, Tr. 427-28).

321. At the December 1991 JC 42.3 meeting, Mitsubishi presented a proposal for an SDRAM that would use two pins, BT and WP, to set the burst length and burst type. (JX 10 at 74; Kellogg, Tr. 5102). In its proposal, Mitsubishi provided for two burst length options, a burst length of 4 and 8. (JX 1 at 74; Rhoden, Tr. 430-34). The Mitsubishi presentation was designated as a “first time presentation.” (JX 10 at 5).

322. At the December 1991 JC 42.3 meeting, Texas Instruments presented a proposal using the WCBR cycle to program the mode register to determine burst length and CAS latency. (JX 10 at 50, 56).

323. WCBR indicates a situation where the write signal is low and a CAS signal is sent before the RAS signal. While common in a test or refresh operation, CAS before RAS differs from a normal read or write operation where the RAS would be sent before the CAS. (Kellogg, Tr. 5107-09).

324. At the JC 42.3 meeting of February 27-28, 1992, NEC, Hitachi, Fujitsu, Toshiba and Mitsubishi all made SDRAM proposals that included programmable CAS latency and burst length. (JX 12 at 39, 42, 60, 69, 76, 91, 94; Sussman, Tr. 1382-83). At the same meeting, Sun presented comments on what features it would like to see included in SDRAMs, including programmable CAS latency and burst length. (JX 12 at 110).

325. At a DRAM Task Group meeting of April 9-10, 1992, NEC, Fujitsu, Toshiba, Samsung, Hitachi, Mitsubishi and IBM presented proposals that included programmable burst length. (CX 34 at 30, 32-35).

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326. At the next meeting of JC 42.3 on May 7, 1992, the minutes of the April DRAM Task Group's meeting were presented to the full JC 42.3 subcommittee. (CX 34 at 4 and 30-37).

327. At the May 1992 meeting of the JC 42.3 Subcommittee, Samsung, NEC, Toshiba, Hitachi and Mitsubishi all made SDRAM presentations that included programmable CAS latency and burst length. (CX 34 at 44, 63, 83, 85, 99, 108, 140).

328. At the May 1992 JC 42.3 meeting, Cray Corporation ("Cray") gave a presentation that proposed the use of fuses to select between a set of features for a single bank configuration and a set of features for a dual bank configuration, where the feature set included, *inter alia*, the CAS latency value and burst length value. The Cray presentation was not identified as a first showing in the minutes (*see* CX 34 at 3-12), and there is no evidence that it ever progressed to a first showing. (*See* Sussman, Tr. 1388; Kellogg, Tr. 5103-05).

329. On June 11, 1992, four SDRAM ballots were sent out to all members. (CX 252A at 1). One ballot sought approval for use of a particular implementation of a mode register which was used to program CAS latency and burst length, as well as other features. (CX 252A at 1, 3; Crisp, Tr. 3075-76; Rhoden, Tr. 448; Williams, Tr. 811-12).

330. Richard Crisp was present at the July 1992 JC 42.3 meeting and participated for Rambus in the discussion and the vote on the proposals, including the mode register proposal. (JX 13 at 1, 9-10). David Mooring of Rambus also was present. (JX 13 at 2). Rambus voted "no" to the proposals. (JX 13 at 9-10; CX 2112 at 78-79 (Mooring, Dep.)). Rambus's comments cited technical reasons for voting against it. (JX 13 at 9-11). These were the only votes cast by Rambus for or against any JEDEC proposals.

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331. The results of the vote on the mode register ballot were presented at the next JC 42.3 meeting on July 21, 1992. (JX 13 at 9-12; Sussman, Tr. 1393). The initial tally showed fourteen members in support of the proposal, five against and seven abstentions. (JX 13 at 10). Various subcommittee members offered comments, especially with respect to the need for a CAS latency of 4. (JX 13 at 10-11). Finally, it was agreed to re-ballot the mode register proposal with an optional latency mode of 4. (JX 13 at 11).

332. At the September 16-17, 1992 JC 42.3 meeting, Sun made an SDRAM presentation that included programmable CAS latency and burst length. (CX 42 at 39-40).

333. On January 21, 1993, the DRAM Task Group made minor technical edits to the NEC mode register that included programmable CAS latency and burst length and had previously been balloted as "Proposed Standard for 16M Bit x 4 Sync DRAM Mode Register" JC 42.3-92-85 (item 376.3). The DRAM Task Group decided that a re-ballot was not necessary and added the ballot to the pass-hold category. (CX 47 at 3).

4. Presentations of Additional Technologies

a. Low Voltage Swing Signaling

334. During 1992, JEDEC work included a number of presentations that included low voltage swing signaling. At the February 27, 1992 JC 42.3 meeting, NEC, Fujitsu, Mosaid Technologies Inc. ("Mosaid"), Sun and Intel all made proposals that included low-voltage swing signaling. (JX 12 at 39, 76, 104, 111, 113; Crisp, Tr. 3045-46). At this same meeting, the JC 42.3 Committee discussed GTL technology for use with SDRAM. (JX 12 at 36, 56-58, 60, 101-02, 104, 111).

335. At the April 8, 1992 Special SDRAM Task Group meeting, the JC 42.3 Subcommittee considered SDRAM proposals that included low voltage swing signaling. (CX 34 at 32

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(IBM), 33 (NEC, Fujitsu), 35 (Samsung, Hitachi), 36 (Mitsubishi)).

336. At the May 7, 1992 JC 42.3 meeting, the Subcommittee considered SDRAM proposals that included low voltage swing signaling. (CX 34 at 59 (NEC), 122-123 (Fujitsu)).

337. At the September 16-17 1992, JC 42.3 meeting, the Subcommittee considered Sun's 15 meg SDRAM specification which included low voltage swing signaling. (CX 42 at 31).

338. Complaint Counsel did not present evidence sufficient to find that these low voltage swing signaling presentations were ever balloted or that they were incorporated into the SDRAM standard.

b. Dual Bank Design

339. During 1992 and 1993, JEDEC work included a number of presentations that included dual bank design. At the February 1992 JC 42.3 meeting, the Subcommittee addressed the topic of multiple active subarrays in two presentations (JX 12 at 34, 37) and multibank or dual bank design in other presentations. (*See, e.g.*, JX 12 at 60). The Subcommittee considered proposals for multibank, or dual bank, design from NEC, Mitsubishi, Fujitsu, and Sun. (JX 12 at 39, 60, 76, 110).

340. At the May 7, 1992 JC 42.3 meeting, the Subcommittee considered SDRAM proposals that included dual bank design. (CX 34 at 59 (NEC), 122-123 (Fujitsu)).

341. During that meeting, Kelley of IBM, prompted by Meyer of Siemens, asked Crisp whether Rambus might have patent claims that related to dual bank design. (CX 2089 at 130, 133-37 (Meyer, Infineon Trial Tr.). "The way how Mr. Kelley formulated the question was: Do you want to give a comment on this?" (CX

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2089 at 136 (Meyer, Infineon Trial Tr.)). Rambus declined to comment. (CX 2089 at 136 (Meyer, Infineon Trial Tr.)).

342. At the September 16-17 1992, JC 42.3 meeting, the Subcommittee considered Sun's 15 meg SDRAM specification which included a dual bank design. (CX 42 at 30 ("The 4M x 4 device is organized internally as two banks.")).

343. Complaint Counsel did not present evidence sufficient to find that these dual bank design presentations were ever balloted or that they were incorporated into the SDRAM standard.

c. Auto-Precharge

344. At a number of meetings during the course of 1992, the JC 42.3 Subcommittee discussed using the auto-precharge technology in the SDRAM standard. (February 1992: JX 12 at 37, 39 (NEC), 76 (Fujitsu), 94 (Toshiba), 108 (Sun); April 1992: CX 34 at 32 (IBM), 33 (NEC), 35 (Hitachi); May 1992: CX 34 at 6, 150).

345. At the September 16-17, 1992 JC 42.3 meeting, the Subcommittee considered Sun's 15 meg SDRAM specification which included an "autoprecharge" option. (CX 42 at 45). Auto-precharge was incorporated as a feature in the JEDEC SDRAM 21-C standard, issued in November 1993. (JX 56 at 115).

346. Complaint Counsel did not present evidence sufficient to find that these auto precharge presentations were ever balloted or that they were incorporated into the SDRAM standard.

d. Source Synchronous Clocking

347. At the April 1992 JC 42.3 Special Task Group meeting, the DRAM Task Group discussed the issue of source synchronous clocking. (CX 1708 at 2 ("Hitachi brought up the issue of source synchronous clocking."); Crisp, Tr. 3053-54 (recalling that a

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discussion on source synchronous clocking had taken place at this meeting)).

348. Complaint Counsel did not present evidence sufficient to find that this discussion of source synchronous clocking was ever balloted or incorporated into the SDRAM standard.

e. Externally Supplied Reference Voltage

349. At the February 27, 1992 JC 42.3 meeting, Samsung proposed an externally supplied reference voltage. (JX 12 at 58; Crisp, Tr. 3043).

350. Complaint Counsel did not present evidence sufficient to find that this presentation was ever balloted or incorporated into the SDRAM standard.

5. Adoption of the SDRAM Standard

351. At the JC 42.3 meeting on March 3-4, 1993, the subcommittee voted unanimously to send 14 SDRAM ballots to Council to become approved as a standard for SDRAMs intended for publication as Release 4 of the 21-C standard. (JX 15 at 14; JX 16 at 5). The ballots were in fact sent to Council after the vote. (G. Kelley, Tr. 2554-55; JX 16 at 5).

352. The subcommittee agreed to issue a press release stating that the Sync DRAM standard has been approved by subcommittee. (JX 15 at 14; G. Kelley, Tr. 2555). A copy of the release was attached to the minutes of the March meeting. (JX 15 at 99). Among the features included in this standard was programmable CAS latency and burst length. (JX 56 at 114).

353. At the JC 42.3 meeting on May 19-20, 1993, Gordon Kelley of IBM reported to the full JC 42.3 subcommittee that the SDRAM ballots had gone to Council and that all council members, apart from AT&T, had supported the ballots. He

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attached to the minutes a letter responding to AT&T's concern by proposing additions to the Mode Register. (JX 16 at 5 and 36-37). G. Kelley also distributed copies of the ballots to the subcommittee. (JX 16 at 5; G. Kelley, Tr. 2557-58).

354. On May 24, 1993 the JEDEC Council formally approved adoption of the standard in Release 4 of the 21-C standard. (CX 54 at 8-10; G. Kelley, Tr. 2559-60).

355. In November 1993 JEDEC published the SDRAM standard as JEDEC Standard No. 21-C Release 4. (JX 56; Williams, Tr. 801). The standard included a programmable mode register that includes programmable CAS latency and burst length. (JX 56 at 114; Rhoden, Tr. 456-58; Williams, Tr. 801-03; Sussman, Tr. 1399-400).

356. JEDEC published its standard for SDRAM as part of Release 4 of JEDEC Standard 21-C in November 1993. (First Set of Stipulations, Stip. 19). Since 1993, JEDEC has published several revisions of the JEDEC standard governing SDRAMs, JEDEC Standard 21-C. (First Set of Stipulations, Stip. 20).

357. For a manufacturer to produce JEDEC-compliant SDRAMs, the standard requires the manufacturer to design and produce SDRAMs with programmable CAS latency and burst length on a mode register. (Sussman, Tr. 1399-401).

358. The first published SDRAM standard showed a pinout for three different configurations of SDRAM. (JX 56 at 106). The x4 configuration shown had 11 address lines (A0-A11), 4 data lines (DQ0-DQ3), and 5 control lines (W, CE, RE, S, DQM, and CKE, where CE is equivalent to CAS and RE to RAS). (JX 56 at 106; *see* JX 56 at 18-22). The remaining pins consist of a clock pin, power pins and "no connect" pins. (JX 56 at 106). The x8 configuration added four data lines. (JX 56 at 106). The x9 configuration added an additional data line, bringing the total number of bus lines to 26. (JX 56 at 106). No configuration of

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SDRAM with more than 26 bus lines is shown in the standard as initially published in November 1993. (*See* JX 56).

6. Subsequent Proposals: Costs, CAS Latency and SDRAM Lite

359. As late as 1995, asynchronous DRAMs continued to make up approximately 97% of the market, with Fast Page Mode approximating 87.2% and EDOs 9.9% of the market. (Rapp, Tr. 10248).

360. JEDEC members noted that SDRAMs were not being produced due to their overhead and yield issues. (JX 27 at 12-13).

361. JC 42.3 members showed a continued interest in asynchronous DRAMs and at the January 5, 1995 JC 42.3 meeting, Micron made a presentation of an asynchronous DRAM called Burst EDO that was based upon a page mode DRAM. (JX 23 at 69-79; Williams, Tr. 821, 825-26).

362. Although Burst EDO was standardized by JEDEC (Williams, Tr. 873, 879-80; RX 585 at 1), it failed in the marketplace in competition with SDRAM. (Williams, Tr. 829; CX 2108 at 236 (Oh, Dep.) (“this is enhanced version of EDO, and we wanted to convince our customers the advantages of this part, but was not accepted by our customers.”)).

363. Other JEDEC members made proposals aimed at reducing the costs of SDRAMs. At the March 15, 1995 JC 42.3 meeting, TI proposed reducing test cost by making CAS latency of 1 optional. The proposal retained the then-current features of SDRAM, including a mode register with programmable CAS latency and burst length. (JX 25 at 14, 107).

364. At the May 24, 1995 JC 42.3 meeting, TI made a second showing of its proposal to make CAS latency of 1 optional. (JX 26 at 9). The proposal continued to retain a mode register with

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programmable CAS latency and burst length from the SDRAM standard. (JX 26 at 62). A motion to ballot the TI proposal was unanimously accepted. (JX 26 at 9). Crisp sent an email from the meeting stating that “TI would prefer to eliminate the requirement for supporting CAS latency = 1 to reduce cost of speed testing by removing some testing permutations.” (CS 711 at 70).

365. At the September 11, 1995 JC 42.3 meeting, NEC made an SDRAM Lite presentation that proposed an SDRAM with a reduced feature set aimed at saving costs. (Rhoden, Tr. 475-76; Lee, Tr. 6625-27). That proposal suggested using a fixed CAS latency of 3 and two burst lengths of 1 and 4. (JX 27 at 13, 66; Lee, Tr. 6626, 6629-30, 6632, 11,017; Sussman, Tr. 1416-17; CX 91A at 33). The minutes of the meeting at which the presentation was made confirm that NEC wanted to retain burst length of both 1 and 4 in SDRAM Lite. (JX 27 at 13).

366. There was initial support for SDRAM Lite at the meeting, with twenty-three members voting that an SDRAM Lite standard was needed and four voting against. (JX 27 at 12). It was agreed at the meeting that Desi Rhoden would prepare a survey ballot that JEDEC would issue. (JX 27 at 14).

367. At the JC 42.3 meeting on December 6, 1995, SDRAM Lite was further discussed. (JX 28 at 6; CX 711 at 191-92). The discussion indicated that “PC users” would not be satisfied with a single CAS latency of 3. (CX 711 at 191).

368. On January 31, 1996, there was an interim meeting of JC 42.3 where results of the SDRAM Lite survey ballot were discussed. Included in the discussion was having fixed CAS latency and burst length. (JX 29 at 13, 14; Lee, Tr. 6630, 6632, 11018-19). The survey ballot also asked members if they wanted to include auto-precharge in the reduced specification. (JX 29 at 15). The results of the survey ballot indicate that more respondents wanted to retain multiple CAS latency and burst length values than not. (JX 29 at 13).

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369. According to Terry Lee of Micron, the SDRAM Lite proposal lost support and was abandoned because it was recognized that the cost added in the full SDRAM technology was not as great as initially thought and because members were frustrated at the length of time it was taking to get a standard. (Lee, Tr. 6634-35; see also Sussman, Tr. 1416-17).

370. SDRAMs began selling in volume in 1997, accounting for 33.5% of the DRAMs sold, and became the dominant product in the market in 1998, accounting for 60.8% of DRAMs sold. By that stage, full page mode DRAMs had declined to 8.8% and EDO to 27.6% of DRAMs sold. (Rapp, Tr. 10248-49).

B. DDR SDRAM – The Next Generation SDRAM**1. Work Within and Outside of JEDEC**

371. Work formally began on the DDR SDRAM standard with a first presentation given by Fujitsu in December 1996. (CX 375 at 1; JX 35 at 6, 34-42; Rhoden, Tr. 1197-98).

372. Desi Rhoden was chairman of the 42.3 subcommittee is currently chairman of the JC 42 committee and chairman of the JEDEC Board of Directors. (Rhoden, Tr. 1190-91). In 1998, Rhoden was very actively involved in the DDR SDRAM standardization process within the JEDEC JC 42 committee. (Rhoden, Tr. 1191-92).

373. On March 9, 1998, Rhoden sent an email to Ken McGhee, the JEDEC Secretary, for forwarding to all JC 42 members. (Rhoden, Tr. 1192-93; CX 375). The email was an effort by Rhoden to recap what had transpired in the DDR SDRAM standardization process. (Rhoden, Tr. 1195).

374. Rhoden's email dates the first presentation to JEDEC of a DDR SDRAM proposal as December 1996 and states that the

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DDR device was being developed “outside of JEDEC” in 1996. (CX 375 at 1).

375. Rhoden’s email also states that the decision to “finally get serious” about DDR SDRAM was not made until March 1997. (Rhoden, Tr. 1201). “Real, focused, dedicated work” on the DDR SDRAM standard did not take place until April 1997. (Rhoden, Tr. 1202). The DDR SDRAM standard did not take “its basic shape” until September 1997. (Rhoden, Tr. 1202).

376. There is other contemporaneous evidence that work on the DDR SDRAM device did not begin, even outside of JEDEC, until the summer of 1996. In an April 1997 presentation, Rhoden stated: “DDR & SLDRAM were Introduced In JEDEC in Dec 1996.” (RX 911 at 3).

377. An IBM presentation on DDR SDRAM dated March 17, 1997 notes that “Industry has been working on DDR definition for 6-9 months,” that is, beginning at some point between approximately mid-June and mid-September 1996. (RX 892 at 1). Initially, this work consisted of “small supplier consortiums and individual supplier/user meetings.” (RX 892 at 1). Consistent with Rhoden, the IBM document dates the first “Official DDR presentations” at JEDEC to December 1996, referring (again) to the first showing by Fujitsu. (RX 892 at 1).

378. A March 10, 1997 Mitsubishi memorandum regarding “DDR SDRAM Specification Planning History and Recent Trends” confirms that DDR efforts began outside of JEDEC in the summer of 1996. “To counter Intel’s move toward adopting Rambus, eight companies have been meeting once every 2 weeks to quickly plan DDR specifications.” (RX 885A at 1). The Mitsubishi memorandum’s first mention of JEDEC work relating to DDR SDRAM is the first showing by Fujitsu in December 1996. (RX 885A at 1).

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379. A July 1997 official JEDEC ballot form regarding a proposed DDR SDRAM pinout states: “DDR SDRAMs has been under discussion within JEDEC since September 1996.” (RX 967 at 1).

380. JC 42.3 committee approval of the DDR SDRAM standard was made in March 1998, but was not published until 2000. (*See* CX 375 at 1; JX 57).

381. The DDR SDRAM standard received JEDEC Board of Director approval in 1999. (Rhoden, Tr. 743).

382. The first time that a balloted item was approved as part of the JEDEC DDR SDRAM standard was June 1997. (CX 375 at 2).

2. Future Synchronous SDRAM Features

383. Despite detailed minutes taken at each JEDEC meeting about what presentations were made and what topics discussed, there is little evidence regarding any discussion of “next generation SDRAM” until late 1995, when a “Future Synchronous DRAM (SDRAM) Features” survey ballot was issued. (*See* CX 260 at 1).

384. Complaint Counsel presented a March 1995 email from Crisp which quotes Wiggers, a JEDEC representative from Hewlett-Packard, as saying that JEDEC had been working for over two years to standardize a high-speed interface. (CX 711 at 54). In the next line Crisp states that “[t]his servers [sic] to further underscore the fact that the JC 16 committee (led by Farhad Tabrizi of Hyundai) is not delivering on its responsibilities.” (CX 711 at 54). Thus, Wiggers’s statement was in reference to the work of JC 16, *not* in reference to some undefined new kind of SDRAM within the JC 42.3 subcommittee. (Crisp, Tr. 3520-21).

385. The testimony of Peter MacWilliams of Intel, who testified that he “first heard about DDR in ‘95” (MacWilliams, Tr.

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4815), says nothing about JEDEC. MacWilliams may have been referring to what Rhoden had described as “private and independent work outside of JEDEC for most of 1996 . . .” (CX 375 at 1).

386. Moreover, since the JEDEC future SDRAM survey ballot was not issued until late 1995, with the results not presented at JEDEC until December 1995, it is unlikely that MacWilliams was aware in any JEDEC-related context, prior to that time, of what features might be in a next generation standard. (See CX 260; JX 28 at 6).

a. Presentation of Programmable CAS Latency and Burst Length

387. In October 1995, JEDEC staff distributed to subcommittee members, including Rambus, a survey ballot requested at the September 1995 JC 42.3 meeting. (CX 260). The subject of the survey was “Future Synchronous DRAM (SDRAM) Features.” (CX 260 at 1). The ballot asked whether members thought it important to add any additional latency values to those already available. (CX 260 at 9).

388. The results of the SDRAM Features Survey Ballot that had issued on October 30, 1995 were tallied at the same meeting on December 6, 1995. (JX 28 at 36-48). Mosaid made a presentation on the results of the survey. (JX 28 at 6). The CAS latency portion of the survey results showed that JC 42.3 members strongly supported adding into the mode register CAS latencies in excess of four. (JX 28 at 42).

389. At the March 20, 1996, JC 42.3 meeting, the RAM features and functions subcommittee made a presentation that included use of programmable CAS latency and burst length. (JX 31 at 64).

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390. At the June 5, 1996, JC 42.3 meeting, two presentations were made by Oki on behalf of EIAJ that included programmable CAS latency and burst length. (JX 33 at 7, 41-46 and JX 33 at 47-49). The presentations for 100-150 MHz SDRAM included three required burst length values and four required CAS latency values. (JX 33 at 41, 45, 47, 48).

391. At the September 10, 1997 JC 42.3 meeting, the subcommittee voted unanimously to send a DDR mode register to Council. (JX 40 at 7-8; Lee, Tr. 6640-41). That mode register included programmable CAS latency (CX 234 at 150; JX 57 at 12; Lee, Tr. 6641) and burst length (CX 234 at 150; JX 57 at 12).

392. The mode register was approved by Council and included in Release 9 of the 21-C standard published by JEDEC in August 1999 and subsequently in the consolidated DDR SDRAM Specification (JESD79) that was published by JEDEC in June 2000. (JX 57 at 12).

b. Discussion of PLL/DLL

393. There was recognition in the mid-1990's among JEDEC members that, as bus speed increased, an on-chip PLL or DLL would become necessary. (Soderman, Tr. 9408-10; Rhoden, Tr. 546).

394. PLLs are similar to DLLs in that they can be used for similar purposes in some applications. (Jacob, Tr. 5617). They are, however, different types of circuits: a PLL uses a voltage controlled oscillator while a DLL uses variable delay lines. (Jacob, Tr. 5616-17).

395. Rhoden testified that the JEDEC subcommittee members used the terms PLL and DLL interchangeably. (Rhoden, Tr. 492). Once JEDEC chose a DLL, the contemporaneous evidence shows it was always referred to as a "DLL," never as a "PLL." (*See, e.g.*, CX 234 at 176).

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396. When Rambus first presented its technology to DRAM manufacturers in the 1989-90 time frame, many felt that it was not possible to put a PLL on a DRAM. (Horowitz, Tr. 8517). As late as 1997, well after Rambus had proven that PLLs and DLL could be placed on DRAMs and very high data transfer rates achieved, many DRAM manufacturers remained daunted by the difficulties involved. In a November 1997 email, for example, Hans Wiggers of Hewlett-Packard explained that DLLs would be “essential” for the data rates that they hoped to achieve, while recognizing that “I know everyone is afraid of DLLs.” (RX 1040).

397. At the September 13-14, 1994 JC 42.3 meeting, NEC made a presentation regarding PLLs on SDRAMs. NEC’s presentation showed an on-chip PLL circuit and proposed to include a PLL-enable bit in the mode register in order to enable on-chip PLLs. (JX 21 at 87, 91, 92; Rhoden, Tr. 466; G. Kelley, Tr. 2569-70).

398. As both Complaint Counsel’s technical expert and Rambus’s technical expert made clear, PLLs and DLLs are implemented differently – the former uses a voltage controlled oscillator, while the latter uses variable delay lines. (Jacob, Tr. 5443, 5617; Soderman, Tr. 9401).

399. In October 1995, JEDEC staff distributed to subcommittee members, including Rambus, the survey ballot requested at the September 1995 JC 42.3 meeting. (CX 260). The subject of the survey was “Future Synchronous DRAM (SDRAM) Features.” (CX 260 at 1). Question 3.9-1 asked members whether they believed that use of an on-chip PLL or DLL was important to reduce the access time from the clock for future generations of SDRAMs future generations of DRAMs. (CX 260 at 12).

400. At the JC 42.3 meeting of December 6, 1995, the tally of the votes cast in the Future SDRAM Features Survey Ballot was announced. Eleven members voted “yes” and four members “no”

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to the question as to whether their company believed that “on chip PLL or DLL is important to reduce the access time from the clock for future generations of SDRAMs.” (JX 28 at 45). On-chip PLL/DLL was included among issues with “strong support” in the conclusion of the SDRAM Feature Survey Ballot. (JX 28 at 35).

401. Mosaid presented the results of the survey. In response to a question from Hyundai Electronics Industries (“Hyundai”), Mosaid disclosed a pending patent application with claims relating to on-chip DLL technology, but stated that the patent likely to result from the application may not be necessary to use a standard but rather would be an implementation patent. (JX 28 at 6; CX 711 at 192). Mosaid agreed to comply with the patent policy if the patent ends up as a “concept patent,” not if it ends up as an “implementation patent.” (CX 711 at 192).

402. At the January 31, 1996 JC 42.3 interim meeting, Micron presented a proposal discussing the potential use of on-chip PLL/DLLs and echo clocks in Future SDRAMs. (JX 29 at 17). Micron proposed using a single PLL on the controller or clock chip and echo clocks rather than on-chip PLLs. (JX 29 at 18; Rhoden, Tr. 487).

403. At the JC 42.3 meeting of March 20, 1996, Desi Rhoden, on behalf of the JC 42.3C RAM Features and Functions Letter Committee, made a presentation that included on-chip PLL/DLL. (JX 31 at 64; Rhoden, Tr. 492). The presentation provided information regarding what features might be required in the future and confirmed the general knowledge that to achieve high data transfer rates, an on-chip PLL or DLL would be required. (JX 31 at 64).

404. Samsung also made a future SDRAM proposal that included discussion of alternatives to on-chip PLL/DLL. (JX 31 at 68-72; Rhoden, Tr. 513-14; Lee, Tr. 6691). The Samsung presentation related to “alternatives to on-chip PLL/DLL” as it proposed a PLL on the memory controller. (JX 31 at 71)).

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405. During the course of its work relating to what ultimately became the DDR SDRAM standard, the JC 42.3 subcommittee also considered, as an alternative to on-chip PLL/DLL, the use of vernier circuits. (JX 36 at 58, 64; CX 367 at 3; Kellogg, Tr. 5168).

406. During the course of its work relating to what ultimately became the DDR SDRAM standard, the JC 42.3 subcommittee also considered, as an alternative to on-chip PLL/DLL, the use of an edge-aligned, bi-directional data strobe. (CX 368 at 1, 4; CX 370 at 2, 3; CX 2713 at 2). Although DDR SDRAMs have a “bidirectional data strobe (DQS),” they still use a DLL to align the strobe with the clock. (JX 57 at 5).

407. By the time of the JC 42.3 meeting of December 9-10, 1997, the subcommittee had decided to include an on-chip DLL in the DDR standard that could be turned on or off. (Lee, Tr. 6680-81). At this meeting the subcommittee discussed the timing of a device where the on-chip DLL was disabled or enabled. (JX 41 at 18; Lee, Tr. 6680-81).

c. Consideration of Dual Edge Clocking

408. Dual edge clocking can refer to a number of technologies and implementations and is not limited to capturing data off both edges of the clock. (*See* Lee, Tr. 6688).

409. In a DDR SDRAM, the clock is all but ignored during writes to the DRAM; the DRAM samples incoming data not with respect to the system clock, but with respect to another signal known as the DQS data strobe. (Jacob, Tr. 5642).

410. In a DDR SDRAM read operation, data is driven by a data strobe which is not a “clock.” A “clock” is a “free-running” signal, that is running all the time, while the data strobe in DDR SDRAMs is not free-running. (Macri, Tr. 4634).

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411. IBM and other JEDEC members made further High Speed Toggle (“HST”) proposals in 1990 and 1991. (G. Kelley, Tr. 2584-85). HST did not transfer data on both edges of the clock signal, but instead on both edges of a “toggle” signal. While some witnesses loosely referred to this toggle signal as a “clock,” it was not a free running clock like the system clock in a synchronous memory such as SDRAM or DDR SDRAM. (Rhoden, Tr. 437; Sussman, Tr. 1471).

412. At the JC 42.3 Subcommittee meeting held on December 4-5, 1991, Mark Kellogg of IBM made a presentation comparing High Speed Toggle to synchronous DRAMs. (JX 10 at 5, 84; Kellogg, Tr. 5172-73).

413. Although IBM held patents on HST (G. Kelley, Tr. 2715), there is no evidence that they disclosed them in connection with DDR SDRAM.

414. At a special meeting of the JC 42.3 Subcommittee Task Force held on April 14, 1992, IBM proposed a “slightly modified version of its HST technology.” This proposal was for an asynchronous DRAM. (CX 34 at 32).

415. At a meeting of the JC 42.3 subcommittee held on May 24, 1995, Hyundai, Texas Instruments and Mitsubishi all made presentations relating to the SyncLink technology. (JX 26 at 10-11, 95-112).

416. In October 1995, JEDEC staff distributed to subcommittee members, including Rambus, a survey ballot requested at the September 1995 JC 42.3 meeting. (CX 260). The subject of the survey was “Future Synchronous DRAM (SDRAM) Features.” (CX 260 at 1). Question 3.9-4 asked members whether they believed future generations of DRAMs could benefit from using both edges of the clock for sampling inputs. (CX 260 at 12). This question related to dual edge clocking. (Calvin, Tr. 1033; Lee, Tr. 6689).

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417. At a meeting of the JC 42.3 Subcommittee held on December 6, 1995, the results of the survey ballots were tabulated and announced. No clear consensus on the proposed use of dual edge clock in the next generation standard was reached, with seven members responding that the next generation of SDRAMs would benefit from using dual-edge clock technology and nine members responding that it would not. (JX 28 at 45). Two specific comments relating to dual edge clock technology were recorded in the results of the survey ballot, both supportive of using the technology. (JX 28 at 45).

418. At a meeting of the JC 42.3 Subcommittee held on March 20, 1996, Samsung made a presentation proposing to use dual edge clock technology in the future SDRAM standard. (JX 31 at 71; Rhoden, Tr. 512; Calvin, Tr. 1035; Landgraf, Tr. 1719-20; G. Kelley, Tr. 2581-82; CX 2114 at 85 (Karp, Dep.)). There is no evidence that the Samsung presentation ever progressed any further.

419. At the same meeting in March 1996, JEDEC considered running a single-edged clock faster in order to double the data rate. (Rhoden, Tr. 542-43; *see* JX 31 at 64). Rhoden's presentation was not a proposal for a device; it simply provided information regarding what features would be required in the future if certain clock speeds were eventually implemented. (Rhoden, Tr. 542-43; *see* JX 31 at 64).

420. During the course of its work relating to what ultimately became the DDR SDRAM standard, the JC 42.3 Subcommittee also considered, as a possible alternative to dual edge clocking, the use of a single edged clock. (CX 371 at 3; Lee, Tr. 6710-13).

421. At the September 10, 1997, JC 42.3 meeting the subcommittee voted to send a ballot including using both edges of a data strobe to Council. (JX 40 at 8; Lee, Tr. 6714-15).

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422. In 1999-2000, JEDEC considered the possibility of interleaving SDRAM chips on the module in order to double the data rate. (CX 150 at 109-17). In December 1999, Kentron Technologies, Inc. (“Kentron”) made a proposal to JEDEC to interleave SDRAM chips on the module. (CX 150 at 115).

3. Subsequent Proposed Features

a. Externally Supplied Reference Voltage

423. At the May 1994 JC 42.3 meeting and the March 1995 JC-16 meeting, there were presentations regarding externally supplied reference voltage. (CX 711 at 25, 27; CX 711 at 52, 54).

424. Some SDRAM pinouts included an optional VREF pin, making it clear that an externally supplied reference voltage was not required for the SDRAM standards; DDR SDRAM pinouts contain a VREF pin. (Lee, Tr. 11035).

b. Source Synchronous Clocking

425. During the March 15, 1995 JC 42.3 meeting, Crisp recorded a Fujitsu representative’s suggestion that it would be necessary to use two clocks, a clock-in and clock-out, for high speed operation. (CX 711 at 58). In an email Crisp stated, “[i]t appears that they are starting to figure out that we have a very good idea with respect to source synchronous clocking. Of course they may get into patent trouble if they do this.” (CX 711 at 58).

426. JEDEC included a bidirectional data strobe, or DQS strobe, as part of the DDR SDRAM standard. (CX 234 at 164). The data strobe might be considered to be a form of source synchronous clocking, but it is not a well-defined technology. (Lee, Tr. 6682).

4. Adoption of the DDR SDRAM Standard

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427. In August 1999, JEDEC issued Release 9 of the 21-C standard. (CX 234).

428. Users requested that JEDEC take everything that related to DDR out of Release 9 and put it in a separate specification. (Rhoden, Tr. 1293-94). In response to user requests, JEDEC took all of the DDR specifications that had previously issued in Release 9 of the 21-C standard (CX 234) and put them together in one document. (Rhoden, Tr. 1293-94). That document, entitled “Double Data Rate (DDR) SDRAM Specification” and numbered “JESD79” was published in June 2000. (JX 57; Rhoden, Tr. 1293-94).

429. Apart from the possibility of some slight updating and clean-up, JESD79 contains the same DDR related material as in Release 9 of the 21-C standard. (Rhoden, Tr. 1294).

5. Features Incorporated into the Standard

430. The DDR SDRAM Standard incorporated in Release 9 of 21-C and JESD79 included many features that had been previously adopted in the first generation SDRAM standard as well as new features such as dual edge clocking and on-chip DLLs. (Sussman, Tr. 1428-29; McWilliams, Tr. 4822; Bechtelsheim, Tr. 5871-72; CX 2451 at 20).

a. On-Chip DLL

431. The DDR SDRAM standard utilizes the use of on-chip DLLs. (CX 234 at 176; CX 234 at 197; JX 57 at 8; Lee, Tr. 6643; Rhoden, Tr. 564).

b. Dual Edge Clocking

432. The DDR SDRAM requires a particular implementation of dual edged clocking in which read data is aligned with the rising and falling edges of the clock, but write data is not. The JESD79 DDR SDRAM specification covers SDRAMs that have

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dual edge clocking. (JX 57 at 5, 21; Sussman, Tr. 1427; Kellogg, Tr. 5172).

c. Programmable CAS Latency and Burst Length

433. The DDR standard requires a particular implementation of programmable CAS latency and burst length according to which these values are programmed in specific bits of a mode register. (CX 234 at 150; Geilhufe, Tr. 9742-44; Lee, Tr. 6625). In June 2000, JEDEC published a Double Data Rate (DDR) SDRAM Specification (JESD79), which was unique to DDR SDRAM. It continued to include a programmable mode register to define CAS latency. (JX 57 at 12).

C. Interoperability: The Effect of JEDEC's Specifications versus Manufacturers' Specifications

434. The JEDEC SDRAM and DDR SDRAM standards determined what features were required to be present in JEDEC compliant DRAMs. (Peisl, Tr. 4384).

435. The JEDEC SDRAM and DDR SDRAM standards were sometimes insufficient to ensure interoperability, forcing other industry participants, primarily Intel, to issue specifications used by the DRAM manufacturers in place of the JEDEC standards. (MacWilliams, Tr. 4908-09; *see also* Krashinsky, Tr. 2814-15).

V. RAMLINK AND SYNCLINK, THE SYNCLINK CONSORTIUM, INTEL AND DRAM MANUFACTURERS

436. In addition to the Rambus and JEDEC efforts to develop standards for next generation DRAM technology, there were other similar efforts during the 1990's. Among these were the Ramlink, SyncLink and SyncLink Consortium efforts, which did not result in commercially viable DRAM standards. (F. 437-86).

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A. The IEEE RamLink and SyncLink Working Groups**1. The IEEE Membership Requirements and Lack of Patent Disclosure Obligations**

437. The Institute of Electrical and Electronic Engineers, Inc. (“IEEE”) was a professional organization that engaged in various activities, including standard setting activities. (Tabrizi, Tr. 9117; RX 668 at 2; RX 2011 at 1).

438. Membership in the IEEE was not by company; rather, individuals belonged to IEEE in their individual capacity. (Tabrizi, Tr. 9117; RX 579). There was significant overlap between IEEE and JEDEC, including, for example, individuals from five companies attended both the August 21, 1995 IEEE 1596.6 meeting and the September 11, 1995 JEDEC 42.3 meeting. (First Set of Stipulations, Stip. 21).

439. The IEEE procedures did not impose any obligation on companies with respect to patent disclosure. (Tabrizi, Tr. 9122; Crisp, Tr. 3283-84; JX 27 at 26).

2. RamLink Was Developed to Standardize a New Future Memory Bus

440. RamLink was being developed by the 1596.4 working group within the IEEE. (Gustavson, Tr. 9280). According to a trip report regarding the February 22, 1995 Ramlink II Working Group, “[t]he Ramlink concept is to use super high speed serial link to transfer the memory (not necessary DRAM) data to processor.” (RX 535 at 1).

441. RamLink developed as an effort to standardize a new generic bus to which one could connect any kind of memory. (Tabrizi, Tr. 9117).

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442. IEEE was balloting the RamLink proposal for standardization as of June 1995. (Gustavson, Tr. 9283).

3. The IEEE SyncLink Project Emanated From and Modified the Proposed RamLink Standard

443. SyncLink developed as a subset of RamLink. (Tabrizi, Tr. 9117; Gustavson, Tr. 9280-82). Whereas RamLink was intended to be a generic bus to which one could connect any kind of memory, SyncLink was intended to be specific to synchronous DRAMs. (Tabrizi, Tr. 9117).

444. The SyncLink project thus modified the RamLink protocol. (Gustavson, Tr. 9284; *see also* RX 589 at 1). The resulting SyncLink architecture was partially multiplexed; command and address information were sent on a single bus, but data was sent on a separate bus. (Tabrizi, Tr. 9119).

445. RamLink consisted of a high speed bus protocol that permitted access, based on scheduling of events, to the bandwidth that already existed inside DRAMs. (JX 26 at 95).

446. Richard Crisp attended some of the meetings of the IEEE RamLink and SyncLink working groups. (Crisp, Tr. 3528; RX 579 at 6; RX 590 at 3).

4. Presentation of the RamLink/Synclink Architecture at JEDEC – Rambus Elects Not to Comment On Its Intellectual Property Position

447. In May 1995, Hyundai, Texas Instruments, and Mitsubishi presented the RamLink and SyncLink architectures at JEDEC. (JX 26 at 10-11, 95-113). The Mitsubishi presentation of SyncLink included a description of dual edge clocking. (JX 26 at 112; Rhoden, Tr. 471-72; Kelley, Tr. 2574-75; Sussman, Tr. 1408-09).

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448. Gordon Kelley asked whether any companies had patent issues regarding SyncLink. (CX 711 at 72).

449. When Crisp, the Rambus JEDEC representative, did not respond to this inquiry at the May 1995 meeting, Kelley asked Crisp to go back to Rambus and then report back to the Committee whether Rambus knew of any patents, especially Rambus patents, that may read on the SyncLink technology. (CX 711 at 73; Crisp, Tr. 3267-68).

450. At the September 1995 meeting of the JEDEC Committee, Crisp provided the Committee a letter from Rambus stating “Rambus elects not to make a specific comment on our intellectual property position relative to the SyncLink proposal” and that “[o]ur presence or silence at committee meetings does not constitute an endorsement of any proposal under the committee’s consideration nor does it make any statement regarding potential infringement of Rambus intellectual property.” (CX 829).

5. Richard Crisp Indicates That the SyncLink Proposal May Infringe Rambus Patents But Declines To Comment Regarding Rambus Intellectual Property

451. In June 1995, Reese Brown posted a copy of the ballot for the proposed IEEE RamLink standard on the JEDEC reflector. (CX 711 at 76-77).

452. Thereafter, Crisp wrote an email to Brown stating in part that the proposed IEEE standard had patent issues associated with it. (CX 711 at 79-80; Crisp, Tr. 3282-83). Brown forwarded Crisp’s email to Hans Wiggers, the Chairman of the RamLink working group as of mid-1995. (Crisp, Tr. 3283; Gustavson, Tr. 9282).

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453. Wiggers wrote to Crisp because, as Chairman of the RamLink working group, he took Crisp's comment about patent issues "very seriously." (CX 711 at 90-91; Wiggers, Tr. 10595). Wiggers stated that he assumed Crisp had attended the IEEE working group meetings in "good faith," and if Crisp knew of any way in which the proposed RamLink standard violated patents held by Rambus or others, he thought Crisp had a "moral obligation" to bring to his attention information about which patents were being violated. (CX 711 at 90-91; Crisp, Tr. 3284-86).

454. Crisp replied to Wiggers by email:

Regarding patents, I have stated to several persons that my personal opinion is that the Ramlink/Synlink proposals will have a number of problems with Rambus intellectual property. We were the first out there with high bandwidth, low pincount; DRAMs, our founders were busily at work on their original concept before the first Ramlink meeting was held, and their work was documented, dated and filed properly with the US patent office.

...

If you want to search for issued patents held by Rambus, then you may learn something about what we clearly have covered and what we do not. But I must caution you that there is a lot of material that is currently pending and we will not make any comment at all about it until it issues.

(CX 711 at 104-05).

455. Wiggers wrote to Crisp again in July 1995, stating that as part of submitting the RamLink standard to the IEEE Standards Board, he had to certify that there were no patent issues

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outstanding. He stated that he had to report his previous communications with Crisp. (CX 711 at 130-31; Crisp, Tr. at 3291-92).

456. Wiggers ultimately related to the working group only a short statement to the effect that Crisp expressed a personal opinion that the SyncLink proposal may infringe Rambus patents that date as far back as 1989. (CX 711 at 146; *see also* Crisp, Tr. 3296-97).

457. The Secretary of the SyncLink Consortium, Dr. Gustavson, and two other engineers subsequently undertook to review the claims in Rambus's pending patent applications and came to the conclusion that the SyncLink device would infringe those patents, if they issued. (Gustavson, Tr. 9286-87).

458. The IEEE thereafter requested that the 1596.4 working group redesign the RamLink standard so that it wouldn't violate any Rambus patent claims. (Gustavson, Tr. 9296-97).

459. After Gustavson reviewed the claims of certain of Rambus's pending patent applications, he concluded that there was no way to work around the claims that he saw, since they related to things that the working group had been doing for ten years or so. (Gustavson, Tr. 9286-87). Nevertheless, Gustavson thought the Rambus patent claims should not block the balloting of the proposed RamLink standard. (Gustavson, Tr. 9294).

460. Gustavson concluded, "[w]e discussed the situation re patents in general, and seem to be in agreement that standards ought to make no assurance to the eventual user that no patent conflicts are involved, . . . because that is impossible. Firstly, the writers may not become aware of conflicting patents until long after the standard is finished, due to the various pipeline delays and imperfect communication. As far as I could tell, Crisp and Rambus's positions were entirely reasonable in this regard, and so I expect they won't try to interfere with the standardization

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process (they are going to great lengths to separate themselves from it now. . . .)” (RX 593 at 2).

461. Although the IEEE later issued the proposed RamLink standard, no product implementing the RamLink standard ever came to market. (Prince, Tr. 9012).

6. Hyundai Negotiates “Other DRAM” Provision As Part of Its RDRAM License Agreement

462. After Hyundai became aware that Rambus might have patents covering aspects of SyncLink, it negotiated an “Other DRAM” provision in its license agreement with Rambus as a kind of “insurance program.” A draft amendment to the license agreement was sent by Rambus to Hyundai and expressly listed SDRAM and DDR SDRAM as examples of “Other DRAM” under the agreement. (RX 2275 at 1). This “Other DRAM” provision permitted Hyundai to use Rambus technology in DRAMs other than RDRAMs, on the condition that Hyundai complied with its contractual obligations, including an itemization of all products subject to royalties, the marking of all such products with Rambus proprietary markings, providing royalty reports showing shipments of all such products each quarter, and ongoing payments of royalties for such products. (CX 1599 at 12-14, ¶¶ 5.3, 5.5).

463. Hyundai and Rambus signed a license agreement in December 1995. Included in the Hyundai-Rambus license agreement is an “Other DRAM” provision that granted Hyundai the right to use Rambus technology in DRAMs other than RDRAMs, subject to payment of a 2.5% royalty. (CX 1599 at 3, 12; Crisp, Tr. 3320-22; *see also* CX 2107 at 84-85, 91-92 (Oh Dep.)).

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B. The SyncLink Consortium**1. Formation and Purpose of the Consortium**

464. In August 1995, Hyundai, Mitsubishi, Mosaid, Texas Instruments, Micron, Samsung, and Apple formed the SyncLink Consortium. (RX 591 at 1; RX 610 at 1). Companies joining later or sending attendees included Hitachi, Fujitsu, NEC, Hewlett-Packard, IBM, Panasonic, Molex, VIS, AMP, and Vanguard International. (RX 2090 at 7-8). Members included not only DRAM suppliers, but also customers and other companies. (Tabrizi, Tr. 9177-78). Of the thirty-four companies that attended at least one SyncLink/SLDRAM Inc. meeting in 1996 or 1997, thirty-one also attended a JEDEC 42.3 meeting in that same time period. (Respondent's Submission Regarding Company Attendance at SyncLink and JEDEC 42.3 Meetings (October 28, 2003)).

465. The SyncLink Consortium was intending to develop the next generation main memory architecture that could be used in various applications, including personal computers, servers, workstations and various other segments of the market. (Tabrizi, Tr. 9126-27; *see also* RX 591 at 2).

466. While the SyncLink Consortium represented to the public that it was “developing an open, royalty-free industry standard,” the Consortium members had agreed among themselves that the SyncLink-related patents would only be freely available to members of the Consortium and its corporate successors, SLDRAM Inc. and Advanced Memory, Inc. (“AMI2”). (*Compare* RX 765 at 1 (9/9/96 press release referencing a “royalty-free standard”), *with* RX 591 at 2 (8/22/95 SyncLink minutes stating that patents will be “freely available to Consortium members”)).

467. The SyncLink Consortium received a patent on the SyncLink pinout itself – the very specification that had been standardized by JEDEC. (Rhoden, Tr. 1211; *see* RX 2086).

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468. Moreover, AMI2 Chairman and JEDEC President Desi Rhoden, who is a named inventor on the SyncLink “pinout patent,” testified that when SyncLink announced that SDRAM would be “royalty free,” that did not mean free. (Rhoden, Tr. 1214).

469. In fact, the Consortium’s corporate successor has offered to license the patents at reasonable royalty rates. (RX 1858 at 1).

470. The SyncLink Consortium was formed as a consortium outside of the IEEE in part because the Consortium members did not consider the IEEE rules regarding disclosure of patents to be satisfactory. Because individual members in the IEEE represented only themselves and not any company, there was no obligation of patent disclosure. (Tabrizi, Tr. 9120, 9122).

471. The SyncLink Consortium members shared know-how and design experience relating to the SyncLink architecture. (Tabrizi, Tr. 9128-29).

472. The SyncLink Consortium members also shared the cost of development of the first chip and the expenses associated with other projects. SDRAM Inc. levied special assessments of its members as needed for different projects. (Tabrizi, Tr. 9128).

2. Concern About Patents of Non-Members

473. The SyncLink Consortium applied for and held patents in its own name. (Tabrizi, 9124-25; Gustavson, Tr. 9314).

474. Consortium members used the patents to encourage companies to join the Consortium (and its successor, AMI2) and to discourage members from resigning from the Consortium. (See RX 1100 at 2; RX 1362 at 1 (*in camera*)).

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475. Members of the SyncLink Consortium were particularly concerned about avoiding Rambus's patents. (CX 488 at 2; *see also* Gustavson, Tr. 9302-03).

3. SyncLink's Activities With Respect to Rambus Patent Applications and Intel's Announced Support of RDRAM

476. As previously noted, the SyncLink Consortium Secretary, Dr. David Gustavson, reviewed Rambus's pending European patent applications along with two other Consortium representatives and determined that the SyncLink device *would* infringe, *if* the applications ever issued as patents. (Gustavson, Tr. 9286-87). Gustavson did not, however, believe that the patents would issue, (Gustavson, Tr. 9286-87), and Hans Wiggers, the chair of the Ramlink Committee, believed that Rambus was simply trying to "torpedo" the Ramlink and SyncLink standards. (Wiggers, Tr. 10589).

477. Similarly, in April 1997, Micron JEDEC representatives and JEDEC Council member Terry Walther thought "that is old technology." (RX 920 at 1). Another Micron JEDEC representative, Terry Lee, testified that when he learned that Rambus planned "to request royalties on all DDR memory efforts" (RX 920 at 2) in April 1997, he "didn't believe this was true," and he did nothing to follow up. (Lee, Tr. 6981).

478. Certain JEDEC members, especially the leadership of the 42.3 committee, held views that the Patent Office often issued patents for "old technology," as Walther put it, and the 42.3 committee even considered offering its services as "a source of expert opinions on memories to the patent office." (JX 32 at 2). JEDEC 42.3 members therefore, might well have believed that any Rambus patents on features as on-chip PLL or dual edge clocking would be invalid because of prior art. (*See, e.g.*, CX 711 at 37).

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479. In late 1996, Intel announced that its future chipsets for main system memory in personal computers would support exclusively Rambus's RDRAM. (Tabrizi, Tr. 9134-35). As a result of that decision, DRAM manufacturers expected SyncLink to be relegated to non-PC applications, including servers, Apple-based computers, and systems using UNIX-based processors. (Tabrizi, Tr. 9134-35, 9137).

480. Following Intel's announcement of its decision to support only RDRAMs for main memory in future PC systems, Tabrizi organized a meeting of executives representing the SyncLink Consortium members in January 1997 to determine the future of the SyncLink Consortium. (Tabrizi, Tr. 9138-39; RX 808 at 1-2).

481. At the meeting, the level of support for the SyncLink Consortium varied from company to company; the participants agreed to continue at least to support the SyncLink Consortium's development work, but not to commit major resources to it. (Tabrizi, Tr. 9139-40).

482. Because Intel supported Rambus, Hyundai executive, Dr. Oh believed he had no choice but to produce RDRAM. (CX 2107 at 117 (Oh, Dep.)). In order to produce RDRAMs, Dr. Oh believed that Hyundai needed to have support from Rambus. (CX 2107 at 118-19 (Oh, Dep.)).

483. Dr. Oh thereafter instructed Tabrizi to resign from the competing SyncLink Consortium. (CX 2107 at 117 (Oh, Dep.)).

484. By the fall of 1998, Intel informed Tabrizi that "they would like to start working on Intel next generation memory solution beyond RDRAM as soon as possible," and that they wanted to develop that post-Rambus device *with the DRAM manufacturers*, instead of continuing to develop further generations of Rambus memory. (RX 1361 at 1).

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485. In a December 1998 email to Dr. Oh, Tabrizi said: “I am no longer head of SLDRAM Inc. as of 12/17/98, and I believe the organization will die slowly from here on. Job accomplished.” (RX 1361 at 1).

486. The SyncLink architecture was not accepted within the industry and never went into volume production. (Appleton, Tr. 6319; Tabrizi, Tr. 9184; Peisl, Tr. 4492). An IBM engineer had pointed out as early as 1996, the SyncLink device appeared to be “vaporware compared to Rambus.” (RX 839 at 1).

C. Rambus’s Relationships With Intel and DRAM Manufacturers

1. Rambus Sought Licenses and Support for RDRAM From DRAM Manufacturers After Intel Endorsed RDRAM Technology

487. In late 1995, Intel made an internal decision that it would support the proprietary Rambus RDRAM technology with the next generation of Intel microprocessors. (RX 1532 at 1). The decision was followed by a lengthy period of meetings and negotiations with Rambus and with DRAM manufacturers. (RX 1532 at 1-2).

488. Intel and Rambus signed a contract in November 1996 and Intel announced that its future desktop PC chipsets would only work with RDRAM. (RX 1532 at 2; Tabrizi, Tr. 9135; Crisp, Tr. 3432-33; CX 2634 at 1). During this time, Intel controlled about eighty percent of the market for microprocessors used in personal computers. (Tabrizi, Tr. 9138-39).

489. During the beginning of the Rambus-Intel partnership, Intel hoped that Rambus would be a “value-added part of this whole industry infrastructure.” (MacWilliams, Tr. 4870-71). Intel envisioned an industry infrastructure where DRAM vendors built DRAMs, Intel built chipsets, and “Rambus provide[d] all of the

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glue to make the enabling pieces work and therefore would be perceived as valuable.” (MacWilliams, Tr. 4871).

490. Projected demand for RDRAM increased sharply after Intel announced it would produce chipsets that used RDRAM. (Hampel, Tr. 8677-78).

491. According to an April 21, 1996 Microprocessor Report article: “Intel’s move was motivated by the incessant need to provide more system-level performance” and “Rambus had a proven track record of delivering cheap, high-bandwidth systems.” (CX 2634 at 1).

492. In the Microprocessor Report article, Rambus’s royalties were noted as being:

an emotional issue for many in the DRAM industry, yet these royalty relationships are commonplace in the DRAM industry. Texas Instruments, for example, currently derives more income from its DRAM patent portfolio than Rambus can reasonably expect to generate within the next decade. The aggravating issue is not so much royalties *per se*, but new and blatantly aboveboard royalties. Also, because Rambus is an intellectual-property company, its licensing relationships do not have the same sense of reciprocity and *quid pro quo* as do other licensing arrangements in the industry.

(CX 2634 at 3).

493. Micron Chairman Steve Appleton was surprised about Intel’s decision to endorse Rambus. (Appleton, Tr. 6344).

494. After Intel’s support of RDRAM, Micron engaged in licensing negotiations with Rambus because “the probabilities of

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customers in the marketplace actually using it increased quite a bit, and as a result, we also then believed that some customers would use RDRAM and that we needed to then engage to negotiate for a license.” (Appleton, Tr. 6345-46).

495. [redacted] (CX 2699 at 1 (*in camera*)).

496. In February 1997, Mitsubishi signed a license agreement with Rambus covering Direct RDRAM. (CX 1609 at 1-19). The subject matter of the Mitsubishi agreement was limited to Rambus-compatible DRAMs, interfaces and matters such as design and development support. (CX 1609 at 1-2).

497. In March 1997, Hyundai amended its RDRAM license agreement with Rambus to include Direct RDRAM. (CX 1612 at 1-7; CX 1599 at 1-23; CX 1600 at 1-22). Hyundai’s new agreement included royalties on Direct RDRAM ranging from 1.5% to 2.0% depending on the sale date and the relative revenue for the sales. (CX 1612 at 5).

498. In March 1997, Micron signed a license agreement with Rambus covering Direct RDRAM. (CX 1646 at 1-20). Micron agreed to pay a royalty rate up to 2% on next generation RDRAM and included a provision to buy down the royalty rate. (CX 1646 at 11).

499. Micron decided to sign a license agreement for Direct RDRAM because “we felt that with Intel’s endorsement, that there would be a customer base that would use the product, and we needed to be in a position to make whatever product that the customer decided that they were going to use for their platforms.” (Appleton, Tr. 6346-47).

500. In July 1997, Siemens signed a license agreement with Rambus covering RDRAM. (CX 1617 at 1-22; CX 2088 at 62 (Tate, Infineon Trial Tr.)).

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2. Intel and RDRAM Royalty Rates

501. Intel wanted to keep the cost of RDRAM low so that DRAM vendors would be motivated to build RDRAM. (MacWillaims, Tr. 4849-50).

502. Intel's contract with Rambus capped the royalty rate that Rambus could charge for RDRAM technology at two percent. (CX 2634 at 3-4).

503. Intel sought to persuade Rambus to keep its royalty rates low throughout the 1996-1998 time frame. (CX 936 at 1; CX 912 at 2; CX 952 at 2; Farmwald, Tr. 8404).

504. In September 1997, Rambus CEO Geoffrey Tate and Rambus Vice President David Mooring met with Intel executives Gerry Parker and Pat Gelsinger. (CX 952 at 1). Intel requested that Rambus, among other things, lower its RDRAM royalties even further to help overcome DRAM maker resistance to producing RDRAM devices. (CX 952 at 2). Intel explained that if Rambus did not lower its RDRAM royalties, this could cause DRAM makers "to find alternate solutions to avoid paying rambus a royalty" and could cause Intel to "rearchitct things to be completely different if necessary." (CX 952 at 2).

505. In October 1997, Rambus CEO Geoffrey Tate had a meeting with Pat Gelsinger, the senior Intel executive responsible for the Rambus relationship. The purpose of the meeting was to follow up on Gelsinger's earlier request that Rambus "lower our rdram royalties to <0.5%," and his suggestion that if Rambus failed to do so DRAM makers would insist on developing alternatives to RDRAM. (CX 961 at 1).

506. The October 1997 Rambus-Intel meeting focused in part on the extent to which DDR had "GAINED ground" with PC manufacturers and thus was a "threat" to RDRAM. (CX 961 at 2-3). Intel believed that at least one DRAM maker was promoting

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DDR because of Rambus's royalty rates on RDRAM. (CX 961 at 5).

507. Intel did not believe that there was a problem with Rambus's business model other than the fact that many of the DRAM manufacturers disliked it. (CX 1016 at 3-4).

3. Design, Manufacture, and Supply of Memory Architectures by Micron and Other DRAM Manufacturers

508. From approximately 1996-1999, some companies, such as Micron and Hynix felt the DRAM industry was developing different memory architectures for different market segments. Companies planned to use RDRAM as main memory in mid-range and high end personal computers; DDR as main memory in servers and for graphic applications; and SyncLink as the possible next generation main memory in PCs. (CX 2718 at 45; Lee, Tr. 6727-28; CX 2297 at 3, 81).

509. Hyundai made commitments to deliver RDRAM to customers based on customer needs. (CX 2303 at 7; Tabrizi, Tr. 9164-66). However, in 1998, Hyundai's RDRAM production commitments were not met. (Gross, Tr. 2327-29).

510. Compaq planned to transition to RDRAM because of Intel's roadmap and planned to introduce RDRAM throughout its product line. (Gross, Tr. 2318, 2326-27).

511. Micron's CEO Steve Appleton, testified that Micron devoted many resources to developing RDRAM after Micron signed a license for Direct RDRAM in 1997. (Appleton, Tr. 6354-57). He stated that Micron formed a large design team to work on RDRAM and offered the team cash incentives to meet certain milestones. (Appleton, Tr. 6355-56).

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512. In October 1998, however, Micron proposed to other DRAM manufacturers that they agree to a “common roadmap” that the manufacturers would then provide to chipset companies and PC original equipment manufacturers (“OEMs”). (RX 2191 at 1; RX 2192 at 3; Soderman, Tr. 9354). The “main target” of such a joint roadmap would be to remove the “current uncertainty about the supply situation” among the chipset companies and PC OEMs. (RX 2191 at 1). A proposed joint market forecast was later circulated to numerous DRAM manufacturers by Micron. (RX 1423 at 1-2).

513. In an April 1999 email exchange among Micron Vice President Bob Donnelly, Micron DRAM Marketing Manager Jeff Mailloux, and Micron JEDEC representatives Kevin Ryan and Terry Lee, an article was attached describing Samsung’s plans to produce as much as forty million Rambus devices in 1999. (RX 1444 at 3). In response, Ryan complained that Samsung had “broken ranks with the other suppliers and sold their soul to the devil.” (RX 1444 at 1). One of the recipients of the email, Mike Seibert, responded that “these guys [Rambus] are big trouble for us all. If this thing gets into an oversupply mode with RDRAM things could get really ugly.” (RX 1444 at 1). Seibert then asked Micron Vice-President Bob Donnelly if Samsung understood “what the Rambus/Intel biz model will do to our autonomy?” (RX 1444 at 1). Vice-President Donnelly responded that he had “certainly made the point with the officers that Intel . . . ultimately could control the DRAM industry.” (RX 1444 at 1).

514. In April 1999, Micron completed its higher 144Mb Rambus design and taped out the part, meaning Micron sent it off for fabrication. (CX 2735 at 24, 29; Lee, Tr. 6744-45). Micron indicated that it expected to release its 144Mb samples in June 1999. (CX 2735 at 31). However, according to an Intel analysis of Micron’s RDRAM performance as of May 1999, “[t]echnically, they are well behind.” (RX 1453 at 1). As a result, Intel felt, Micron was only “marginally able to ship anything at all in ‘99.” (RX 1453 at 1).

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515. Intel concluded in May of 1999 that Micron's plan was intended to "create as much turmoil to prevent r dram as possible." (RX 1453 at 1). The Intel analysis stated:

Marketing - they [Micron] are aggressively rallying the industry on alternate technologies. They are clearly driving the Sdram-133 alternatives, they are strongly driving ddr and the only player left driving sync-link. Their advertising implies that the rest of the industry is blindly following the Intel roadmap (sheep, communism etc). Should make you mad...

Relationship - we've tried to broker a deal with rambus (fixing contract in area of ip pooling, royalties and marketing) and per earlier mails, with their advertising and aggressive drive to alternatives, they pissed rambus off enough that any hope of an agreement is pretty dead. They have also ignored our attempts to work with them on enabling, design reviews, roadmap alignment etc.

(RX 1453 at 1).

516. By October 1999, an Intel manager explained to Intel's Peter MacWilliams, "[s]o far all our discussions with Appleton have had zero benefit for us. . . . [w]e have gone out of our way to help them resolve Rambus contract issues and in return we have gotten nothing but deception. Micron is working very hard to do everything against RDRAM." (RX 1515 at 2).

4. Cost Issues Associated With RDRAM

517. In the 1998 time frame, DRAM manufacturers estimated that RDRAM would be more costly to produce than other

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DRAMs. (Gross, Tr. 2364-66). This impression had come from DRAM suppliers and Intel. (Gross, Tr. 2367-68).

518. Hyundai executive Tabrizi admitted at trial that in October 1998, Hyundai gave RDRAM production forecasts to Intel that were deliberately inflated. “Intel was not happy with our ramp up, so we gave them a very optimistic number on our side. (Tabrizi, Tr. 9092; *see also* RX 1295 at 1 (internal Hyundai email, copied to Tabrizi, that states that, from the perspective of the Hyundai America marketing group, “we can overstate our Direct Rambus production so Intel can feel we are more aggressive on the ramp up.”)).

519. In a February 2000 email asking Micron to supply it with RDRAM, Dell similarly stated that it was “committed to Rambus” but that its ability to incorporate Rambus devices in its PCs was “clearly limited by supply.” (RX 1560 at 1). Looking ahead to the second half of 2000, Dell projected that with lower pricing, up to forty percent of its market demand would be satisfied with RDRAM technology. (RX 1560 at 1).

520. Several factors might have contributed to the high cost of producing RDRAM including “the packaging, handlers, burn-in equipment, die size, licensing, and test. Some of these areas will require the purchase of new manufacturing equipment, and some areas have an inherently higher manufacturing cost.” (CX 2716 at 1; CX 2083 at 132-33). However, this does not explain why DDR SDRAM prevailed in the marketplace in lieu of RDRAM, for all of these issues were present in connection with the product introduction of the DDR device, as Micron CEO Appleton confirmed in an analyst call in September 2002. (*See* RX 2067 at 7).

521. As Craig Hampel, Technical Director of Rambus explained, test cost analyses that focus on capital expenditures depend in large part on the volume of devices tested. Assuming equivalent volume production of the RDRAM and SDRAM

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devices, test costs would be at least equivalent, and because of the high speeds at which the Rambus device could be tested, could even be less for the RDRAM devices. (Hampel, Tr. 8703-04).

522. Dell understood that the RDRAM cost premium inhibited the development and production of RDRAM. (CX 2180 at 1, 4).

523. As Compaq executive Gross testified, and as Compaq's documents show, OEMs were facing a shortage of RDRAM created because the "suppliers have not invested to support current Rambus demand for 1999." (RX 1287 at 4; Gross, Tr. 2346).

524. Intel had concerns about the cost of RDRAM. (CX 974 at 1). In or around 1998, Intel had concerns regarding whether the cost of manufacturing RDRAM would ever be comparable to the cost of making SDRAM because the price of SDRAM had dropped significantly. (CX 2541 at 1; CX 2887 at 1; RX 1532 at 2).

525. Elpida Memory, Inc. ("Elpida") expected lower projected RDRAM costs than DDR costs in 2002 and 2003. (RX 1762 at 42). The same Elpida presentation described RDRAM as the most competitive leading process available. (RX 1762 at 43).

5. Actions by DRAM Manufacturers

526. In September 1996, Hyundai executive and SyncLink Consortium chairman Farhad Tabrizi wrote an email that expressed a concern that "the real motive of Intel is to control DRAM manufacturers . . ." (RX 778 at 1). According to Tabrizi, Intel's actions would give it "control of DRAMs and other CPU makers. We will become a foundry for all Intel activities and if Intel would like and desires to do business with us then we may get a small share of the their total demand." (RX 778 at 1). Tabrizi concluded his email stating: "I urge you to please educate others

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and get their agreement to say ‘NO TO RAMBUS AND NO TO INTEL DOMINATION.’” (RX 778 at 1).

527. Tabrizi sent this email to Jim Sogas at Hitachi, for comments. (RX 778 at 1; Tabrizi, Tr. 9035, 9037-38).

528. In December 1996, at a SyncLink Consortium meeting attended by various manufacturers, Tabrizi stated that “[m]any suppliers are paranoid over the prospect of a single customer, e.g., Intel, having control of market. We can’t resist such a possibility individually. We need some united strategy.” (RX 808 at 2).

529. At that same meeting, the assembled manufacturers agreed to hold a meeting of DRAM manufacturer executives in Japan in January 1997. (Tabrizi, Tr. 9041). Prior to the meeting, Tabrizi sent an email to other DRAM manufacturers that stated that the “Intel decision to go on a Rambus route was pure political and domination and control over the DRAM suppliers and not technical.” (RX 802 at 3; Tabrizi, Tr. 9041-42). He then stated: “As I have mentioned many times before, Intel does not make DRAMs, we do. And if all of us put our resources together, we do not have to go on this undesirable path. The path of control and domination by Intel.” (RX 802 at 3). He urged the DRAM manufacturers to “stick together on this matter.” (RX 802 at 3; Tabrizi, Tr. 9042-43).

530. Tabrizi’s January 1997 presentation also stated that if Rambus became the next generation memory solution, “ALL DRAM COMPANIES WILL BECOME FOUNDRIES for a single source CPU manufacturer.” (RX 849 at 44). The phrase “single source CPU manufacturer” was a reference to Intel. (Tabrizi, Tr. 9046).

531. Micron engineer Terry Lee participated in the January 1997 DRAM executive meeting; his notes reflect that Siemens stated that “[c]ontrol concerns are realistic.” (CX 2250 at 2; Tabrizi, Tr. 9047-48). Lee’s notes were later made available to all members of the SyncLink Consortium (which was renamed the

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“SLDRAM Consortium” around this time). (Tabrizi, Tr. 9050; RX 855 at 1).

532. After the January 1997 DRAM executive meeting, Tabrizi set up an email “reflector” so that the DRAM supplier executives could communicate with each other. (Tabrizi, Tr. 9052-53; RX 938 at 1).

533. In February 1998, Jeff Mailloux of Micron wrote an email to Tabrizi stating that Mailloux had spoken to a reporter for an industry publication called EE Times. (RX 1105 at 1). Mailloux stated that “I told him that at any density, and any process that is available in 1999, RDRAM is at least 30% cost adder for Micron,” and then encouraged Tabrizi to call the reporter with Hyundai’s views. (RX 1105 at 1).

534. Two months later, Mailloux sent another email to Tabrizi, attaching an article in an industry publication that had been written by Tabrizi’s boss at Hyundai, Mark Ellsberry. (RX 1155 at 1; Tabrizi, Tr. 9055-56). His email states, “Mark seems to give a message at the end here, he only refers to DDR as a ‘long shot’ and does not even mention SLDRAM. Hope Hyundai has not caved in to the ‘dark side.’” (RX 1155 at 1).

535. In April 1998, Bert McComas, an industry consultant, gave an exclusive seminar for DRAM manufacturers about Intel’s selection of RDRAM. (RX 1138 at 1; Tabrizi, Tr. 9061-62). McComas pre-cleared his seminar invitation and list of topics with Tabrizi. (Tabrizi, Tr. 9064).

536. McComas’s invitation asked its recipients not to forward the invitation to Rambus or Intel. (RX 1138 at 1).

537. During his April 1998 seminar presentation to the DRAM manufacturers, McComas stated that a manufacturer that chose to build RDRAMs was making a “guaranteed bad bet for margin enhancement,” and he stated that RDRAM deepens the

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manufacturer's financial dilemma. (RX 1482 at 12, 26). As a "possible strategy[y]," McComas suggested that DRAM manufacturers "[t]ape out but do not fully productize or cost reduce" the RDRAM device, in an effort to "resist popular deployment" of RDRAM. (RX 1482 at 34-35).

538. After the seminar, McComas accepted an invitation to speak at the next SLDRAM Consortium Executive Meeting, so-called because company executives attend in addition to engineers and marketing personnel. (Tabrizi, Tr. 9066-68). In an April 17, 1998 email extending the invitation, Roberto Cartelli of Texas Instruments wrote to McComas, "I personally believe that your story on Intel and its relationship to Rambus, is an excellent 'case for action' story to stimulate discussion among industry executives." (RX 1166 at 1; Tabrizi, Tr. 9068).

539. McComas spoke at the June 25, 1998 SLDRAM Executive Summit about the problems faced by DRAM manufacturers. One of the tactical issues he identified was how to "Manage Price Competition, Profitability." (RX 1188 at 1). He also talked about how manufacturers could "Respond to the Strategic Threat of Intel/Rambus," and he asked the question, "Who will control the DRAM industry?" (RX 1188 at 1). McComas stated that "Intel/Rambus are using your money to take control of the DRAM industry" and that Intel would "[o]rchestrate early oversupply situation," and he emphasized that "[f]ragmented competition undermines all DRAM manufacturers." (RX 1188 at 2, 6; Tabrizi, Tr. 9073).

540. Another industry consultant, Victor de Dios, also gave a presentation at the June 25, 1998 SLDRAM Executive Summit. (Tabrizi, Tr. 9071-72). De Dios told the assembled executives that "many of the problems are industry problems, not company problems. Competition will not resolve them." (RX 1204 at 4 (capitalization omitted)).

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541. During his presentation at the June 1998 “Executive Summit,” McComas suggested that the DRAM manufacturers share their RDRAM production plans to determine whether there would be a demand-supply imbalance. (Tabrizi, Tr. 9073-74).

542. In an August 1998 email to Tabrizi, McComas sent a draft message to DRAM manufacturers which stated that “[d]uring the critical production ramp-up phase of Direct Rambus, DRAM vendors will need a constant flow of information to help make wise decisions and to walk the fine line between a pleasant shortage and a disastrous over-supply.” (RX 1232 at 1).

543. Tabrizi agreed that a shortage of RDRAM would please DRAM manufacturers because “[p]rices go up.” (Tabrizi, Tr. 9077).

544. The PC OEMs recognized that for RDRAM to succeed, output of RDRAM had to increase. They tried to influence the DRAM manufacturers to increase RDRAM output. (RX 1287 at 4 (“Intel and major users have been trying to influence improve [sic] RDRAM output”). As Gross of Compaq testified, Intel, Compaq, and other PC OEMs were trying to influence DRAM manufacturers to increase output of RDRAM and to align roadmaps with Intel’s roadmap. These OEMs wanted an RDRAM production ramp-up so that they would have sufficient availability and lower RDRAM prices. (Gross, Tr. 2318-20).

545. It was important to Intel and to the PC OEMs that the DRAM vendors increase the volume of RDRAM because the highest volume parts have a cost advantage. (RX 1532 at 1).

546. In response, DRAM manufacturers agreed to manufacture RDRAM in larger volume. For example, in 1998, Hyundai committed to produce 30,000 RDRAM units for Compaq. (RX 1302 at 6). Similarly, Micron committed to produce 15,000 RDRAM units for Compaq. (RX 1302 at 6). Neither company, however, met these commitments. (Gross, Tr. 2327-29).

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According to Compaq, the DRAM manufacturers would not “increase their output at the rate at which we needed to support our systems.” (Gross, Tr. 2345-46).

547. Tabrizi, in 1998, believed that Intel would not change course unless RDRAM failed to obtain market penetration. (Tabrizi, Tr. 9082-83). He admitted that one way to cause RDRAM to fail to obtain market acceptance was if the OEMs were convinced that even if volumes went up, prices would not fall. (Tabrizi, Tr. 9083). If the OEMs were convinced of this, they would not adopt RDRAM. (Tabrizi, Tr. 9083).

548. In the fall of 1998, Hyundai gave RDRAM price projections to its customers that were significantly higher than those reflected in its internal pricing documents. (Tabrizi, Tr. 9085-90; RX 1280; RX 1293A). “Intel was telling everybody [that RDRAM is] only going to be a 5 percent premium I wanted to make sure my OEM knows it’s going to cost them more than 5 percent . . .” (Tabrizi, Tr. 9091-92).

549. A report prepared by an Infineon engineer about an October 1998 meeting reportedly attended by Tabrizi, along with engineers from Micron and Infineon, states that “[a]ccording to Farhad Tabrizi, Hyundai has given Rambus ASP projections for end of next year of 2 to 3 times of today’s SDRAM prices; they also gave to Intel a production projection of three times their actual plans => They encourage every DRAM manufacturer to do the same in order to let Intel not generate a Rambus oversupply.” (RX 2192 at 2). Tabrizi denied at trial that he had made the statements attributed to him in the Infineon trip report. (Tabrizi, Tr. 9097).

550. In January 1999, Desi Rhoden sent a proposal to all of the major DRAM manufacturers regarding the transformation of the former SyncLink Consortium (by then called “SLDRAM Inc.”) into a marketing-oriented organization called Advanced Memory Inc. (“AMI2”). (RX 1373 at 1-3). Rhoden became the

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President and Chief Executive Officer of AMI2. (Rhoden, Tr. 260, 696-97, 1235). Rhoden stated that the focus of the new organization would be to “co-ordinate instead of developing new technology.” (RX 1373 at 3). He also stated that “[i]n the DRAM industry, we are clearly stronger together than we are individually.” (RX 1373 at 1).

551. In a July 1999 email, Mario Martinez of Hyundai recommended to Tabrizi and others at Hyundai that “[w]ith Samsung building significant amounts of product, we need to work with them to limit the supply in the market, otherwise we both will be competing for market share which will result in an oversupply. We have to meet with Samsung and discuss our and their production plan, TAM analysis and targeted market share.” (RX 1487 at 4; Tabrizi, Tr. 9103).

552. Another Hyundai employee responded in the same email: “[I] have connection in samsung, if i know, what time you are available, i will try setup meeting with key persion [sic] in samsung in seoul korea. [A]nd i will try persuade them. [A]ctually they also have same idea for rambus business compare with you.” (RX 1487 at 4; Tabrizi, Tr. 9104).

553. Tabrizi admitted at trial that he had told Sang Park, then the President and Chief Operating Officer of Hyundai, that he wanted to “kill” Rambus and force RDRAM from the market. (Tabrizi, Tr. 9105-07). Tabrizi subsequently testified that what he meant by “killing” Rambus was really just “Rambus suicide, [with] me watching on the sideline.” (Tabrizi, Tr. 9109). In his June 2000 email to Park, Tabrizi stated: “[i]f Intel does not invest in us, I really want to ask you to let me go back to my old mode of RDRAM killing. I think we were very close to achieving our goal until you said we are absolutely committed to this baby.” (RX 1661 at 2).

554. Gross of Compaq subsequently testified that because the price of RDRAM did not decrease and because Compaq did not

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believe that it would decrease in the future, Compaq decided to abandon its plans and to shift to DDR. (Gross, Tr. 2339).

555. Similarly, Advanced Micro Devices (“AMD”) shelved plans to adopt RDRAM because, based on what they were told by DRAM manufacturers, it was clear that DDR, not RDRAM would become a commodity product. (Polzin, Tr. 4013).

556. By May 2000, the situation had not improved, and Dell was considering moving into “a low key Rambus mode.” (RX 1636 at 1). The Dell “message” was “pretty straightforward”:

Dell has booked our products over the last year around the assumption that RDRAM prices would decline and close on SDRAM. This would help us create demand The memory vendors have shown no desire to drop prices, therefore we are reevaluating our strategies ... so the message to them is drop prices or we will continue to decrease our RDRAM forecasts and we will architect next generation systems around DDR ... we will give the memory vendors till the end of May to reply to our request ... if they still have no desire to drop prices, we should push ahead rearchitecting chipsets around DDR.

(RX 1636 at 1).

557. RDRAM failed to command significant market share despite the fact that it was considered by some to be the “best solution.” (RX 1762 at 5). As Peter MacWilliams of Intel put it:

[redacted]

(MacWilliams, Tr. 5075 (*in camera*)).

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558. Subsequently, in a November 26, 2001 email, a Micron manager named Kathy Radford described the efforts of Infineon and Samsung to raise DDR prices, and stated that Micron intended to try to raise its prices to all of the OEM customers. (RX 1922A at 1). Radford then reported that “[t]he consensus from all suppliers is that if Micron makes the move, all of them will do the same and make it stick.” (RX 1922A at 1).

559. Prices did, in fact, increase in the months after Radford’s email. On March 1, 2002, [redacted] (RX 1991 at 1 (*in camera*)).

6. The DRAM Industry’s Approach to Addressing RDRAM Problems

560. Intel and Rambus executives discussed ways to fix Rambus’s relationship with the DRAM manufacturers. (MacWilliams, Tr. 4871-72). Rambus “seemed to be sensitive to the fact that they needed to fix” problems with DRAM manufacturers. (MacWilliams, Tr. 4873).

561. In 1998, Intel continued its work to make RDRAM a market success by investing in DRAM companies that developed and supplied RDRAM. (CX 1006 at 1; CX 2522 at 2-3).

562. Intel did not succeed in mending the relationship between Rambus and the DRAM manufacturers. (MacWilliams, Tr. 4874).

7. By 1998 the Rambus-Intel Relationship Was Deteriorating

563. On April 14, 1998, Rambus CEO Geoffrey Tate and Chairman William Davidow met with Pat Gelsinger of Intel to discuss Intel’s concerns about Rambus. (Farmwald, Tr. 8402; CX 1016 at 1; CX 2109 at 175-76 (Davidow, Dep.)). The basic message of the meeting was that in the intermediate term Intel would continue to support RDRAM, but Intel might support a competing architecture for the next generation. (CX 1016 at 1-4).

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564. After the April 14, 1998 Rambus-Intel meeting, Tate began strategizing about how to address Intel's announcement that it would compete with Rambus. (CX 1016 at 1-4).

565. On April 15, 1998, Farmwald responded to Tate's concerns about Intel's commitment to RDRAM emailing: "I'm not even sure we want to agree to work together on the next generation memory interface." (Farmwald, Tr. 8406-07; CX 1021 at 1).

566. On April 16, 1998, Rambus Chairman William Davidow responded to Farmwald's email by urging a more measured approach. (Farmwald, Tr. 8407; CX 1022 at 1). Davidow suggested that Rambus "try to negotiate something" with Intel. (CX 1022 at 2).

8. Technical Problems and Product Delays With RDRAM

567. During this period, the Camino Chipset, also called the Intel 820 Chipset, "was the first chipset that Intel was developing to interface between their processor and direct Rambus." (MacWilliams, Tr. 4853; Tabrizi, Tr. 9166, 9185). The Camino Chipset was intended to interface exclusively with RDRAM. (Tabrizi, Tr. 9185-86).

568. In the second half of 1998, Intel encountered electrical issues with RDRAM. (RX 1532 at 2; MacWilliams, Tr. 4852-53). Technical problems with RDRAM forced Intel to delay the Camino Chipset launch several times. (MacWilliams, Tr. 4852-53; Tabrizi, Tr. 9185).

569. Similarly, the design and ramp up phases of DDR SDRAM's launch experienced delays and difficulties. (Reczek, Tr. 4349-51 (transition to DDR was a major change, and Infineon had to implement three major redesigns before it could achieve

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acceptable performance); Shirley, Tr. 4208-09 ([redacted]) (*in camera*)).

570. In April 1999, Intel's microprocessor rival, AMD, suspended development work on its RDRAM product due to continuing bad news about RDRAM. (CX 2158 at 1-2). Steven Polzin, of AMD, testified that the information regarding RDRAM costs and yields came from what he was hearing from the memory manufacturers. (Polzin, Tr. 4013). In late summer or fall of 1998, AMD shifted its focus to DDR because AMD believed Rambus was going to fail as a commodity part, and that ultimately even Intel would have to go DDR. (Heye, Tr. 3704-05, 3799).

571. In May 1999, Intel's customers were skeptical that the cost and availability issues with RDRAM could be resolved although some were waiting to see progress. (CX 2529 at 1; MacWilliams, Tr. 4884)).

572. In May 1999, Intel considered adding DDR SDRAM to Intel's server memory roadmap because it was concerned that RDRAM would not achieve the cost points in time to be competitive for the server products. (MacWilliams, Tr. 4883-84; CX 2529 at 1).

9. Intel's Announcement That It Would No Longer Support RDRAM

573. By mid-October 1999, Intel's road map included SDRAM and DDR SDRAM solutions as well as RDRAM. (CX 2540 at 1).

574. In late October 1999, Intel told Rambus that it wanted to have a comprehensive review of their business relationship. (CX 2887 at 1).

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575. Intel announced in its October 26, 1999 letter to Rambus that its chipset roadmap now included alternatives to RDRAM. (CX 2541 at 2; CX 2887 at 2-3).

576. In June 1999, Intel publicly ceased its exclusive support of RDRAM and announced that the Pentium III chipset would support SDRAM. (Tabrizi, Tr. 9201-03; CX 2338 at 57 (*in camera*)).

577. This was the first time Intel indicated that SDRAM could compete with RDRAM as the interface with Pentium III. (Tabrizi, Tr. 9201-03).

578. In August 1999, Intel confirmed that it would provide support for SDRAM in the Pentium III chipset. (Tabrizi, Tr. 9201-03).

579. After Intel announced its support of SDRAM, Rambus's percentage of market penetration dropped because customers could choose between SDRAM and Rambus's technologies. (CX 2338 at 57 (*in camera*); Tabrizi, Tr. 9203-08).

580. During 1999 and 2000, Intel revised downward its estimates for the total available market for RDRAM multiple times. (CX 2338 at 79 (*in camera*)).

581. Intel reduced its estimates for the total available market for RDRAM the second and third quarters of 2000. (CX 2338 at 79 (*in camera*); Tabrizi, Tr. 9193-97).

582. Micron never introduced RDRAM into the market for commercial sale. (Appleton, Tr. 6371-74).

583. On September 2001, Micron Vice-President Sadler [redacted] (RX 1883 at 1 (*in camera*)).

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584. As projections for RDRAM declined in the 1999-2000 time frame, the anticipated market share shifted to SDRAM and DDR SDRAM. (Tabrizi, Tr. 9214-15).

585. Samsung, the world's largest DRAM producer, began commercialization and full production of RDRAM. (Appleton, Tr. 6373).

586. In February 2001, nearly a year and half later, Intel was still announcing that its memory strategy was to shift from SDRAM to RDRAM for desktop space. (RX 1762 at 4). According to Intel's presentation at the Intel Developer Forum, Spring 2001, RDRAM was the best solution, the best technology for the Intel Pentium 4 Processor Platform, and "RDRAM Remains the Primary Desktop Memory Solution." (RX 1762 at 5). In its summary, Intel stated, "RDRAM Provides the Best Pentium 4 Processor Platform Now and in the Future." (RX 1762 at 24). According to Pete MacWilliams of Intel, this statement accurately summarized Intel's position as of February 2001. (MacWilliams, Tr. 4935).

VI. EIA/JEDEC PATENT POLICY

A. Good Faith Obligations

587. Complaint Counsel rely on the EIA Legal Guides, Section C, for their contention that JEDEC participants were required to act in good faith. (CCPFF 310 *citing* CX 204, CX 206).

588. The EIA Legal Guides Section C, labeled "Basic Rules For Conducting Program," states that "[a]ll EIA standardization programs shall be conducted in accordance with the following rules: (1) They shall be carried on in good faith under policies and procedures which will assure fairness and unrestricted participation; . . ." (CX 204 at 5; CX 202 at 6 (earlier version of same document)).

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589. Section C continues by requiring that participation be extended to all technically qualified members of the industry and that programs serve the public interest objectives of EIA. (CX 204 at 5). The balance of Section C prohibits collusion and price fixing and limits representatives to technical personnel without marketing responsibilities. (CX 204 at 5).

590. The EIA Legal Guides explicitly address patents in Section B, which states that “[s]tandards are proposed or adopted by EIA without regard to whether their proposal or adoption may in any way involve patents on articles, materials, or processes.” (CX 205 at 4).

591. Given the context of Section C, especially when compared with Section B, it is apparent that the “good faith duty” is not directed to individual members, but rather is a general directive to the administrators who “conduct” the EIA’s standardization activities, directing them to adopt “policies and procedures which will assure fairness and unrestricted participation.” (*See* CX 204 at 5).

592. Complaint Counsel rely on “An Overview of JEDEC Patent Policy” written by John Kelly and dated March 26, 2002 to further support their contention that a good faith duty required Respondent to disclose intellectual property. (CCPFF 310 *citing* CX 449).

593. This 2002 Overview is not persuasive in interpreting JEDEC patent policy during the time period at issue as it was written after the fact and cites JEDEC Manual 21K, published after Rambus withdrew from JEDEC. (*See* CX 449 at 1-2).

594. No contemporaneous documents were provided by Complaint Counsel to support their contention that JEDEC members had a duty of good faith or a duty to comply with the spirit of the patent policy. (*See* CCPFF 310-315).

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595. At trial, JEDEC members testified that there was a good faith duty imposed on members of JEDEC. (J. Kelly, Tr. 1841 (“companies need to participate in the process openly and honestly and fairly and in good faith and not in bad faith, because bad faith undermines the confidence of everyone in the process.”); G. Kelley, Tr. 2397 (“my mind translated [good faith] to fair treatment for all members”); Rhoden, Tr. 305-06 (“The term ‘good faith’ as used in [the Legal Guides] is that the people . . . are coming under the premise that they’re going to . . . work toward the benefit of the end user of the industry itself, and operating in good faith means that you would expect other people to do the same thing.”); Sussman, Tr. 1330 (“Good faith, we’re all competitors, we’re all about ready to dice each other in the marketplace, but seeing we’re talking about or about to talk on intellectual property, I trust you to do something, and I expect that same set of trust back.”)).

596. Despite their trial testimony, some JEDEC members, including those in leadership positions, did not always conduct themselves in a manner consistent with a duty to disclose intellectual property or to act in good faith. (*See* F. 686-717). For example, G. Kelley, IBM representative and JC 42.3 Committee Chair, on multiple occasions, indicated that IBM would not disclose patents to JEDEC (F. 691-93) and JEDEC Chairman Rhoden failed to disclose a patent application on which he was listed as an inventor. (F. 711-17).

597. Viewing the trial testimony in conjunction with the conduct of JEDEC members and leaders, there is not sufficient evidence to find a duty of good faith imposed on participants of JEDEC. (F. 587-96).

B. Open Standards

598. The goal of JEDEC is to develop open standards. (CX 419; Rhoden, Tr. 301, 536; J. Kelly, Tr. 1776-78, 1782, 1787).

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599. Open standards may, and often do, include patented features or technologies. The EIA Legal Guides, which governed JEDEC, provide that “[s]tandards are proposed or adopted by EIA without regard to whether their proposal or adoption may in any way involve patents on articles, materials, or processes.” (*See* CX 204 at 4; CX 206 at 6; J. Kelly, Tr. 1829-30).

600. JEDEC Chairman Rhoden testified that “open standards inside of JEDEC essentially means that we want to set up a mechanism where everyone can participate that wants to, and in the end, the end product is then available to everybody in the world. So, open participation, open accessibility, if you will.” (Rhoden, Tr. 300-01).

601. JEDEC does not include known patented material in JEDEC standards without written assurances from the owner of the intellectual property that it will grant licenses on reasonable and nondiscriminatory (“RAND”) terms to all applicants. (CX 203A at 11; CX 208 at 19; JX 54 at 9; CX 2191 at 8; *see also* F.1536-81).

602. JEDEC does not determine what is a reasonable royalty rate because JEDEC does not “have the expertise to be able to determine what’s commercially reasonable in the context of any industry, no less semiconductors. . . That expertise resides in the industry. So, that’s why in the first instance we leave it to the parties themselves to work out what’s reasonable.” (J. Kelly, Tr. 1882-83; *see also* CX 2089 at 174-75 (Meyer, Infineon Trial Tr.)).

603. Determination of a reasonable royalty rate is left to negotiation and market forces or the courts. (CX 2089 at 174-75 (Meyer, Infineon Trial Tr.); J. Kelly, Tr. 1882-83, 2073-74).

604. Hans Wiggers, a JEDEC representative from Hewlett-Packard in the early to mid-1990’s, testified that it was his understanding that the JEDEC patent policy was that, as long as a

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company licensed its patents after they issued on RAND terms to all interested parties, the company had no obligation to disclose its intellectual property. (Wiggers, Tr. 10591).

605. In 1996, in its correspondence to the Commission regarding the *Dell* case, EIA recognized that by “allowing standards based on patents, American consumers are assured of standards that reflect the latest innovation and high technology the great technical minds of this country can deliver. . . . There is a positive and pro-competitive benefit to incorporating intellectual property in standards.” (RX 669 at 2-3).

C. Manuals

1. JEP 21-H

606. JEDEC Manual of Organization and Procedure 21-H (“JEP 21-H”), dated July 1988, which was still in effect when Rambus joined JEDEC in 1992, contains the following legend: “Electronic Industries Association. Engineering Department.” (CX 205 at 1).

607. JEP 21-H includes in Appendix D a non-liability disclaimer to be incorporated into JEDEC standards. This disclaimer states that “JEDEC standards are adopted without regard to whether or not their adoption may involve patents on articles, materials or processes. By such action JEDEC does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the Standards.” (CX 205 at 20).

608. JEP 21-H states that “[a]ll meetings of the JEDEC Solid State Products Engineering Council and its associated Committees, Subcommittees, Task Groups and other units shall be conducted within the current edition of EIA Legal Guides adopted by the EIA Board of Governors and incorporated herein by reference.” (CX 205 at 14).

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609. The 21-H Manual does not provide any guidance regarding intellectual property rights or an obligation to disclose patents, patent applications, or the intent to file patent applications. (*See* CX 205).

2. JEP 21-I

610. JEDEC Manual of Organization and Procedure 21-I (“JEP 21-I”), dated October 1993, contains the following legend: “Electronic Industries Association. Engineering Department” and displays the trademarks of both JEDEC and EIA. (CX 208 at 1).

611. Section 9.1, JEP 21-I states: “[a]ll meetings of the JEDEC Solid State Products Engineering Council and its associated committees, subcommittees, task groups and other units shall be conducted within the current edition of EIA legal guides adopted by the EIA Board of Governors and incorporated herein by reference.” (CX 208 at 18).

612. Section 9.3, JEP 21-I discusses the use of patented products in EIA Standards as follows:

EIA and JEDEC standards and nonproduct registrations (e.g., package outline drawings) that require the use of patented items should be considered with great care. While there is no restriction against drafting a proposed standard in terms that include the use of patented item [FN 1] if technical reasons justify the inclusion, committees should ensure that no program of standardization shall refer to a product on which there is a known patent unless all the relevant technical information covered by the patent is known to the formulating committee[,], subcommittee, or working group. If the committee determined that the standard requires the use of

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patented items, then the committee chairperson must receive a written assurance from the organization holding rights to such patents that a license will be made available without compensation to applicants desiring to implement the standard, or written assurance that a license will be made available to all applicants under reasonable terms and conditions that are demonstrably free of any unfair discrimination. Additionally, when a known patented item is referred to in an EIA/JEDEC standard, a cautionary note, as outlined in this document, shall appear in the EIA/JEDEC standard (see 9.3.1.).

All correspondence between the patent holder and the formulating committee, subcommittee, or working group, including a copy of the written assurance from the patent holder discussed above, shall be transmitted to the EIA Engineering Department and the EIA General Counsel at the earliest possible time and, in any case, before the standard is otherwise ready for subcommittee or committee ballot circulation. (See the Style Manual, EP-7-A, 3.4 for the required language in an EIA Standard that cites a product with a known patent.)

[FN 1]: For the purpose of this policy, the word “patented” also includes items and processes for which a patent has been applied and may be pending.

(CX 208 at 19).

613. Section 9.3 of JEP 21-I describes the requirements of incorporating known patented products in EIA/JEDEC standards

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– namely, that all technical information should be known and RAND assurances obtained. (CX 208 at 19).

614. Although this section, through a footnote, defines “patented” to include pending patents, the section also expressly recognizes that it only applies to “known patents.” (CX 208 at 19).

615. This section does not impose an obligation to disclose intellectual property. Rather, it explains the procedure and information necessary for including a known patent into a standard. (CX 208 at 19).

616. Section 9.3.1, JEP 21-I states:

9.3.1 Committee Responsibility Concerning Intellectual Property

The Chairperson of any JEDEC committee, subcommittee, or working group must call to the attention of all those present the requirements contained in the EIA Legal Guides, and call attention to the obligation of all participants to inform the meeting of any knowledge they may have of any patents, or pending patents, that might be involved in the work they are undertaking. Appendix E (Legal Guidelines Summary) provides copies of viewgraphs that should be used at the beginning of the meeting to satisfy this requirement. Additionally, all participants must be asked to read the statement on the back of each EIA Sign-in/Attendance Roster.

(CX 208 at 19).

617. Section 9.3.1 of JEP 21-I is ambiguous because it refers to the EIA Legal Guides immediately before and immediately

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after mentioning an “obligation to inform the meeting of . . . patents, or pending patents.” (CX 208 at 19). The EIA Legal Guides to which this section refers, however, do not support such an obligation. (*See* CX 208 at 26-29; CX 204).

618. To satisfy the requirement to call attention to the obligation to disclose patents and patent applications, section 9.3.1 refers to Appendix E and the EIA sign-in/attendance roster. (CX 208 at 19).

619. Appendix E, JEP 21-I explains that “[t]he following material may be made into viewgraphs that can be shown at JEDEC meetings to summarize EIA legal guidelines covering the areas of improper activities and programs, patents, and copyright protection. More detailed information in each area is available from the EIA Legal Office.” (CX 208 at 26).

620. Appendix E, JEP 21-I includes the following procedure for incorporating patented technology in standards:

EIA/JEDEC PATENT POLICY SUMMARY

Standards that call for use of a patented item or process may not be considered by a JEDEC committee unless all of the relevant technical information covered by the patent or pending patent is known to the committee, subcommittee, or working group. In addition, the committee Chairperson must have received written notice from the patent holder or applicant that one of the following conditions prevails:

* A license shall be made available without charge to applicants desiring to utilize the patent for the purpose of implementing the standards(s),or

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* A license shall be made available to applicants under reasonable terms and conditions that are demonstrably free of any unfair discrimination.

In either case, the terms and conditions of the license must be submitted to the EIA General Counsel for review.

An appropriate footnote shall be included in the standard identifying the patented item and describing the conditions under which the patent holder will grant a license.

(CX 208 at 27).

621. Appendix E of JEP 21-I, which describes itself as an “EIA/JEDEC Patent Policy Summary,” indicates that “a patented item or process may not be considered . . . unless all of the relevant technical information covered by the patent or pending patent is known” and that RAND assurances must be obtained. (CX 208 at 27). This statement does not impose a duty to disclose upon members. Rather, it explains the procedure to follow in utilizing known patented items consistent with the requirements of section 9.3.

622. Appendix E does not distinguish between EIA and JEDEC patent policies; it is labeled the “EIA/JEDEC patent policy.” (CX 208 at 27).

623. Appendix F, JEP 21-I states:

*F1. PATENT POLICY APPLICATION
GUIDELINES*

The following points describe the application of the JEDEC patent policy:

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* Committee discussion of pending or existing patents is a permissible activity and is encouraged when the committee feels that the patented item or process represents the best technical basis for a standard.

* Discussion of a pending or existing patent does not constitute an acknowledgment of the validity of the patent, because validity is based on prior art and determination of who first made the invention or applied for the patent. The committee's concern is with technical merits and whether the technical proposal is a sound basis for standardization.

* By its terms, the EIA Patent Policy applies with equal force to situations involving: 1) the discovery of patents that may be required for use of a standard subsequent to its adoption, and 2) the initial issuance of a patent after the adoption of a standard. Once disclosure is made, the holder is obligated to provide the same assurances to EIA as are required in situations where patents exist or are known prior to approval of a proposed standard.

Thus, if notice is given of a patent that may be required for use of an already approved EIA Standard, a standards developer may wish to make it clear to other standards-making participants that the JEDEC procedures require the patent holder to provide the assurances contained in the

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Patent Policy or suffer the withdrawal of EIA's approval of the standard as an EIA Standard and, ultimately, as an American National Standard.

(CX 208 at 29).

624. Appendix F of JEP 21-I recognizes that (1) discussion of intellectual property issues is allowed, (2) a disclaimer that such discussions do not constitute an acknowledgment of the validity of the patents, and (3) the policy applies to (a) the discovery of patents after a standard is adopted and (b) the issuance of a patent after the standard is issued. This section makes clear that EIA will pursue the same procedure in these situations as if the patent were known during the standardization procedure. Finally, this section provides the penalty for failure to provide RAND assurances: that the standard may be withdrawn. (CX 208 at 29).

625. At the September 1993 JC 42.3 meeting, the committee chairman showed a viewgraph containing proposed language from an appendix to the not-yet-published JEP 21-I manual. This viewgraph was expressly marked "DRAFT" and contained a footnote stating that the "material is a proposed revision" that "has not been approved by JEDEC." (JX 17 at 12). Although this draft did refer to a "patent or pending patent," it did not mention an obligation to disclose intellectual property, nor did it instruct the chairperson to call attention to such an obligation. (JX 17 at 12).

626. The committee chairman also showed a different draft of the 21-I Manual at the December 1992 JEDEC JC 42.3 meeting similarly marked as a draft. (Crisp, Tr. 2983-88; *see* JX 14 at 3, 25).

627. It is not clear that JEP 21-I was ever formally adopted by JEDEC. John Kelly, EIA Legal Counsel, testified that JEP 21-I needed a final stamp of approval from EIA's EDEC and that he

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did not know whether JEP 21-I ever received that approval. (J. Kelly, Tr. 2104-05).

628. Complaint Counsel did not provide sufficient evidence to find that JEP 21-I received the approval from EDEC necessary for JEP 21-I to become the controlling manual.

629. Rambus did not receive a copy of 21-I until the summer of 1995. (Crisp, Tr. 3475).

630. JEDEC did not maintain a log of who received copies of manuals and it was not the practice of JEDEC to mail all documents as they were revised. (CX 317 at 1; Grossmeier, Tr. 10944-45).

631. Although JEP 21-I refers to an obligation to disclose intellectual property, it does not provide a basis for the obligation, or a discussion of the extent of the obligation. Moreover, it is facially inconsistent with the EIA sections to which it refers. (*See* CX 208 at 19).

632. JEP 21-I is ambiguous and can not be construed to impose a clear obligation to disclose intellectual property. (*See* CX 208).

3. EIA Legal Guides

633. The EIA Legal Guides include a non-liability disclaimer that “[s]tandards are proposed or adopted by EIA without regard to whether their proposal or adoption may in any way involve patents on articles, materials, or processes. By such action, EIA does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting EIA standards.” (CX 204 at 4).

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634. The EIA Legal Guides do not contain any specific reference to any disclosure obligation in connection with a member's intellectual property. (*See* CX 204).

4. EP-3-F and EP-7-A

635. The October 1981 EIA manual known as "EP-3-F" provides the following procedure for using patented items in standards:

8.3 Reference to Patented Products In EIA Standards

Requirements in EIA Standards which call for the use of patented items should be avoided. No program of standardization shall refer to a product on which there is a known patent unless all the technical information covered by the patent is known to the Formulating committee, subcommittee, or working group. The Committee Chairman must have also received a written expression from the patent holder that he is willing to license applicants under reasonable terms and conditions that are demonstrably free of any unfair discrimination. Additionally, when a known patented item is referred to in an EIA Standard, a Caution Notice, as outlined in the Style Manual, EP-7, shall appear in the EIA Standard.

(CX 203A at 11).

636. The 1990 EIA manual known as "EP-7-A" provides information about obtaining RAND assurances:

3.4 Patented Items or Processes

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Avoid requirements in EIA standards that call for the exclusive use of a patented item or process. No program [of] standardization shall refer to a patented item or process unless all of the technical information covered by the patent is known to the formulating committee or working group, and the committee chairman has received a written expression from the patent holder that one of the following conditions prevails:

- (1) a license shall be made available without charge to applicants desiring to utilize the patent for the purpose of implementing the standard, or
- (2) a license shall be made available to applicants under reasonable terms and conditions that are demonstrably free of any unfair discrimination.

. . . An appropriate footnote shall be included in the standard identifying the patented item and describing the conditions under which the patent holder will grant a license (*see* 6.5.2).

(JX 54 at 9-10).

637. The EP-3-F manual and the EP-7-A manual, which were in effect when Rambus joined JEDEC, both contain a requirement that no standard shall refer to a product on which there is a known patent unless all the technical information covered by the patent is known to the committee or working group. (CX 203A at 11-12; JX 54 at 9).

638. The EP-3-F manual and the EP-7-A manual make no explicit reference to an obligation on the part of EIA members or others to disclose patents or patent applications. (*See* J. Kelly, Tr. 1824-25, 1905-06, 2082-83; CX 203A; JX 54).

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5. ANSI Patent Policy

639. The ANSI Patent Policy Guidelines were attached to the May 1992 JC 42.3 meeting minutes and were circulated to JC 42.3 members in 1994. (CX 34 at 19).

640. J. Kelly circulated the ANSI Guidelines to JC 42.3 members in 1994 because he “thought they provided insight into the proper interpretation of the EIA and JEDEC patent policy.” (J. Kelly, Tr. 1950).

641. J. Kelly was a member of the ANSI patent policy working group from 1990 until 2002 and was personally involved in the discussions and deliberations leading to the final approval of the ANSI guidelines. (J. Kelly, Tr. 1950-51).

642. At the time that the ANSI Guidelines were circulated to JC 42.3 members in 1994, the language of the EIA patent policy and the ANSI patent policy was essentially identical. (J. Kelly, Tr. 2077-78).

643. The ANSI patent policy guidelines “seek to encourage the early disclosure and identification of patents that may relate to standards under development.” (RX 1712 at 6).

644. The ANSI patent policy guidelines specify that “it is desirable to encourage disclosure of as much information as possible concerning the patent, including the identity of the patent holder, the patent’s number, and information regarding precisely how it may relate to the standard being developed.” (RX 1712 at 8).

645. The ANSI patent policy guidelines indicate that “a standards developer may wish to encourage participants to disclose the existence of pending U.S. patent applications relating to a standard under development. Of course, in such a situation

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the extent of any disclosure may be more circumscribed due to the possible need for confidentiality and uncertainty as to whether an application will mature into a patent and what its claimed scope will ultimately be.” (RX 1712 at 8).

D. Committee Forms**1. Membership Application**

646. The application completed by Rambus upon joining JEDEC does not impose an obligation on members to disclose intellectual property. (CX 601 at 1-2). Indeed, there is no mention of intellectual property in the application. (CX 601 at 1-2).

647. Complaint Counsel did not present sufficient evidence to support their allegation (Complaint ¶ 15) that the JEDEC membership application included an obligation to abide by JEDEC’s rules. (*See* CX 601).

2. Meeting Attendance Roster (Sign-In Sheet)

648. Participants at each JEDEC meeting were required to record their names on the sign-in sheet or meeting attendance roster. (CX 306; CX 3136 at 135).

649. Sign-in/attendance rosters were not considered an “official form” because they “vary from division to division and almost year-to-year.” (CX 317 at 1).

650. The sign-in/attendance roster states in relevant part: “Subjects involving patentable or patented items shall conform to EIA Policy (reverse side). Consult the EIA General Counsel about any doubtful question.” (CX 306 at 1).

651. The sign-in/attendance roster states on the reverse side:

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*REFERENCE TO PATENTED PRODUCTS IN
EIA STANDARDS*

Requirements in EIA Standards that call for the use of patented items should be considered with great care. While there is no objection in principle to drafting a proposed standard in terms that include the use of a patented item, if it is considered that technical reasons justify this approach, Committee Chairmen should ensure that no program of standardization shall refer to a product on which there is a known patent unless all relevant and reasonably necessary technical information covered by the patent is known to the formulating committee, subcommittee, or working group. The Committee Chairmen must have also received a written assurance from the patent holder that a license will be made available without compensation to the applicants desiring to utilize the license for the purpose of implementing the standard; or a written assurance that a license will be made available to applicants under reasonable terms and conditions that are demonstrably free of any unfair discrimination.

Additionally, when a known patent item is referred to in an EIA Standard, a Caution Notice, as outlined in the Style Manual, EP-7, shall appear in the EIA Standard.

All correspondence between the patent holder and the formulating committee, subcommittee, or working group, including a copy of the written assurance from the patent holder mentioned above, shall be transmitted to the EIA Engineering Department and the EIA General Counsel at the earliest possible time, but no later than the point

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when the EIA Standard Proposal is ready for Committee ballot. (See the Style Manual for EIA Publications, EP-7, Section 3.4 for required language in an EIA Standard that cites a known patented product).

(CX 306 at 2).

652. The sign-in/attendance roster was modified to include the term “patentable” in the early 1990’s around the time of the *Wang* litigation. (J. Kelly, Tr. 1934-35). For discussion of the *Wang* litigation, see *infra* F. 689-90.

653. The reference to “patentable or patented items” on the front page of the sign-in/attendance roster is ambiguous because it refers to the EIA guides. The EIA Guides which appear on the reverse side, however, apply only to issued patents. (CX 306 (EIA Legal Guides use the terms: “patented items,” “known patent,” “technical information covered by the patent,” and “patent holder”)).

3. Committee Ballots

654. The committee ballots used by JEDEC to record votes on standardization proposals contained a variety of voting options, including an option which read: “I do not approve the content of the [ballot topic]. Attached are my detailed reason(s) for this disapproval. (We need your reason(s) in order to understand your view on this matter.) MANDATORY.” (CX 252A at 2).

655. The committee ballots also stated: “If anyone receiving this ballot is aware of patents involving this ballot, please alert the Committee accordingly during your voting response.” (CX 252A at 2).

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656. When this language regarding patents was first added to the committee ballots, a JEDEC member asked during a JEDEC meeting about the purpose of the new language. The minutes of the JC 42.1 meeting held on September 13, 1989 state that:

Council discussed patent issue at their June meeting [sic] at the request of JC-42.3. The result was not to change EIA legal requirements as outlined in document EP-7, but to add some wording on JEDEC ballot voting sheets about informing the Committee if any patent covers the balloted material.

TI was concerned that Committee members could be held liable if they didn't inform Committee members correctly on patent matters. Committee responded that the question was added on ballot voting sheets for information only and was not going to be checked to see who said what.

(CX 3 at 6).

657. Sussman explained the options on ballots as follows:

Yeah, I can approve the ballot. I can not approve the ballot. I can abstain on the ballot. I can approve it with comments. And the bottom one is saying that regardless of what I do, ignoring any of the above things, I can also point out that I know of or I believe there might be a patent that could read on the – on this concept, on this ballot.

(Sussman, Tr. 1391).

658. It is clear from the plain language of the committee ballot that a no vote mandates an explanation, while patent disclosure is only requested on a voluntary basis. (See CX 252 at 2).

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4. Members' Manual

659. The introduction to the "JC 42 Members' Manual," dated September 1994, states that "[t]his manual was compiled to assist new (and established) members in achieving full effectiveness [sic] in the standards making process." (RX 507 at 2).

660. The members' manual was a document created by Jim Townsend, JC 42 Chairman, and does not display the JEDEC or EIA trademarks or otherwise purport to be an official EIA publication. (RX 507).

661. The members' manual was not approved by the JEDEC Council and the meeting minutes indicate that "[s]ome of this material is not approved by JEDEC . . . It should be clear that this manual is not a publication of JEDEC because it has not been balloted by Committee or Council." (JX 31 at 4).

662. The members' manual patent policy section states: "Committees adhere rigidly to the EIA patent policy as given in EIA publication EP-7-A, August 1990, Pars. 3.4 & 3.5 and in EIA Publication EP-3-F, October 1981, Par 8.3 which require intellectual property disclosure and discussion if proposed [*213] standards are affected." (RX 507 at 15).

663. The members' manual states that "[a]ll first presentations must be accompanied by written handouts for all companies present giving complete details of the material being presented. In addition, the presenter must reveal any known or expected patents, within his company, on the material presented." (RX 507 at 15).

664. The members' manual is ambiguous because it states that the committee "adheres rigidly to the EIA patent policy" which it describes as requiring intellectual property disclosure. (RX 507 at

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15). However, the EIA patent policy to which it refers does not *require* disclosure of intellectual property. (See F. 633-38).

665. The members' manual is also ambiguous because the patent policy section suggests a requirement of intellectual property disclosure without indicating who is required to disclose, while the "First Presentation" section limits disclosure to those making presentations. (*See* RX 507 at 15).

5. Patent Tracking List

666. A patent tracking list, which was a compilation of patents and patent applications of which Townsend had been made aware through the course of the work inside JEDEC, was maintained by Chairman Townsend. (Rhoden, Tr. 325; Sussman, Tr. 1355).

667. Townsend "began the patent tracking list . . . in May of 1991." (G. Kelley, Tr. 2407). The patent tracking list had multiple purposes, including record-keeping, a reminder to other participants of the patent issues that were on, and as an educational tool for those who were newcomers to the committee. (G. Kelley, Tr. 2407-08).

668. The patent tracking list was an informal, incomplete list of patents and patent applications disclosed to the JC 42.3 committee. (G. Kelley, Tr. 2408). Rhoden explained that it "was Mr. Townsend's personal list, and I'm not sure that everything was included in it." (Rhoden, Tr. 334-35).

669. The cover sheet accompanying the patent tracking list included the term "patentable matters" which JEDEC Chairman Rhoden testified he understood to mean "anything that would be in the patent process. Essentially if you believe that you have ownership of a particular topic or a particular item, then that is what he's referring to. Patentable, whether a patent had actually been applied for or not." (Rhoden, Tr. 336).

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E. Contemporaneous Correspondence**1. The McGhee Memorandum**

670. ETSI is the European Telecommunications Standards Institute. As indicated in the EIA letter to the Federal Trade Commission commenting on the *Dell* consent order, ETSI undertook efforts “to force compulsory licensing on an extraterritorial basis.” (RX 669 at 3).

671. On March 29, 1994, JEDEC Secretary Ken McGhee sent a memorandum to JC 42 Chairman Jim Townsend regarding the “ETSI Policy within JEDEC” that stated that JEDEC’s legal counsel had said that:

[H]e didn’t think it was a good idea to require people at JEDEC standards meetings to sign a document assuring anything about their company’s patent rights for the following reasons:

- (1) It would have a chilling effect at future meetings
- (2) A general assurance wouldn’t be worth that much anyway
- (3) It needs to come from a VP or higher within the company – engineers can’t sign such documents
- (4) It would need to be done at each meeting slowing down the business at hand.

(RX 486 at 1).

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2. Correspondence Regarding the Dell Consent Agreement

672. The Commission issued a complaint and entered into a consent agreement with Dell Computer Corporation (“Dell”) which prohibited Dell from enforcing its patent rights against computer manufacturers using the VL-bus. The Commission placed upon the public record the executed consent decree with a request for public comments. *In re Dell Computer Corp.*, 121 F.T.C. 616, 619 (May 1996).

673. In January 1996, a letter was submitted to the FTC on behalf of EIA and its unincorporated divisions and departments (including JEDEC), as well as on behalf of the Telecommunications Industries Association (“TIA”), in response to the *Dell* action. EIA General Counsel J. Kelly’s name and title appear in the signature block. (RX 669 at 5; J. Kelly, Tr. 2092-93).

674. The EIA’s January 1996 comment letter to the Commission states in relevant part:

Both EIA and TIA encourage the early, voluntary disclosure of patents that relate to the standards in work. Committee and subcommittee chairs ask during the meetings whether any parties are aware of any patents that relate to the contributions under discussion. When potential patents are disclosed, EIA and TIA staff contact the patent holders to ensure that essential patents will be licensed in accordance with the EIA, TIA and ANSI IPR policies.

(RX 669 at 3).

675. The EIA’s January 1996 comment letter to the FTC clarifies that the “EIA, TIA and ANSI IPR policies relate to

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essential patents” and that “even if knowledge of a patent comes later in time due to the pending status of the patent while the standard was being created, the important issue is the license availability to all parties on reasonable, non-discriminatory terms.” (RX 669 at 3, 4).

676. In July 1996, the FTC, in a letter signed by FTC Secretary Donald Clark, responded to the EIA’s January 1996 letter. The FTC’s letter states in relevant part that: “EIA and TIA, following ANSI procedures, encourage the early, voluntary disclosure of patents, but do not require a certification by participating companies regarding potentially conflicting patent interests.” (RX 740 at 1).

677. The FTC’s statement distinguishing the EIA’s patent policy from the policy at issue in the *Dell* matter, and the FTC’s explanation that the differences in the two patent policies meant that the “expectations of participants in the two standard-setting processes differ,” indicate that FTC Secretary Clark interpreted the EIA’s January 1996 letter to mean that the EIA encouraged, but did not require, the disclosure by members of intellectual property interests. (RX 740 at 2; *see* RX 669 at 2).

678. On July 10, 1996, JEDEC Secretary Kenneth McGhee sent a memorandum to Jim Townsend, addressed to “JEDEC Council Members and Alternates,” regarding the FTC’s Final Consent Order in the *Dell* case, which stated in part that: “the FTC emphasized that it was not intending to signal a general duty to search for patents when a company engages in standards setting (ANSI and EIA do however, encourage early, voluntary disclosure of any known essential patents.)” (RX 742 at 1).

679. These letters clearly state JEDEC’s patent policy was limited to encouraging early, voluntary disclosure of any known essential patents. (RX 669; RX 742).

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3. Correspondence Regarding Micron Disclosure

680. On January 28, 2000, Micron drafted a written disclosure of a patent application relating to a proposed standard under consideration in the JC 42.4 subcommittee. (RX 1559 at 2).

681. On February 1, 2000, JEDEC Secretary McGhee sent an email to members of the subcommittee stating, "I would like to point out that this letter is well intentioned, but lacks a patent number, so it does not complete the requirements for JEDEC patent policy. If, however, a follow-up letter is issued after the patent is issued, then it would comply with JEDEC's patent policy." (RX 1559 at 1).

682. Upon receiving McGhee's email that Micron had not complied with the patent policy because Micron's disclosure did not include a patent number term, Terry Walther of Micron caused the matter to be placed on the agenda for the next JEDEC board meeting. (RX 1568 at 25).

683. The minutes of the February 2000 meeting of the JEDEC Board of Directors state:

D. Disclosure on Patents Pending

Mr. Walther noted that Micron had sent a letter indicating they have patents pending on items that may affect committee standards. The issue was whether companies should make public that a patent is pending. The BoD discussed it and noted they encourage companies to make this kind of disclosures even though they were not required by JEDEC by laws.

(RX 1570 at 13).

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684. In an email written a few days after the February 2000 board meeting, JEDEC Secretary Ken McGhee, who had been present at the meeting (RX 1570 at 2), reported to a JEDEC subcommittee that the JEDEC Board had discussed Micron's "patent pending" disclosure. Secretary McGhee stated that:

The JEDEC patent policy concerns items that are known to be patented that are included in JEDEC standards. Disclosure of patents is a very big issue for Committee members and cannot be required of members at meetings. However, if a company gives early disclosure on a patent they are working on, it definitely gives a lot of assurance to the Committee members regarding development of any standards affecting it.

Therefore, in Micron's letter, by giving early disclosure, they have gone one step beyond the patent policy and have complied with the spirit of the law. JEDEC encourages this type of activity from any member.

(RX 1585 at 1).

685. Disclosure of patent applications, or pending patents, was "not required" by JEDEC in 2000 even though disclosure was "encouraged." (RX 1570 at 13). The "spirit of the law" is to disclose patent applications even though disclosure "cannot be required of members." (RX 1585 at 1).

F. Conduct of Parties in JEDEC

1. SEEQ Issue

686. A company named SEEQ proposed a JEDEC standard called silicon signature. (Sussman, Tr. 1338). SEEQ owned two patents related to the technology, but disclosed and offered to

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license only one. (Sussman, Tr. 1338-39 (SEEQ “was telling us about silicon signature and offering it as a royalty-free license to anyone who wanted it, hoping that just as soon as we standardized this, the second patent, which would be die trace, which he had not said anything about, but because it was almost identical, would be insisted upon by the customers, and [SEEQ] could put a tax on us.”)).

687. Upon learning of SEEQ’s second patent, the committee was willing to standardize the SEEQ technology, provided that SEEQ agreed to reasonable licensing terms. (CX 3 at 4).

688. When the committee learned that the second patent was not included in the patent release, JEDEC chose to standardize on a different technology. (Sussman, Tr. 1338-39).

2. WANG Litigation

689. The *Wang* litigation involved allegations of a failure to disclose a patent application on the part of a company that had promoted its technology for standardization. (CX 711 at 188). Wang was “part of the committee, they had helped set a standard, and then they went out and enforced their patents against everybody in the industry who used a SIMM module.” (Williams, Tr. 787).

690. Wang failed to disclose a patent relating to memory modules and later attempted to enforce the patent against the industry which “ended up in a rather lengthy litigation, crossed multiple houses and cost the industry millions of dollars before the patent was found to be invalid.” (Sussman, Tr. 1338; *see also* Landgraf, Tr. 1697-98; JX 20 at 4).

3. IBM’s Patent Position

691. The minutes of the March 1993 meeting of JC 42.3 state in part that “IBM noted that their view has been to ignore [the]

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patent disclosure rule because their attorneys have advised them that if they do then a listing may be construed as complete.” (JX 15 at 6).

692. In an August 1993 memo to JEDEC leaders entitled “BGA Patent/License Rights,” IBM JEDEC representative (and JEDEC 42.3 subcommittee chair) Gordon Kelley stated that:

IBM Intellectual Property Law attorney’s [sic] have informed me that we will not use JEDEC as a forum for discussing this subject. It is the responsibility of the producer to evaluate the subject and to workout the proper use of rights. So, I can not confirm or deny any IPL rights.

(RX 420 at 2).

693. The December 1993 JEDEC 42.3 minutes state in part that “[a]s a side issue, IBM noted that in the future they will not come to the Committee with a list of applicable patents on standards proposals. It is up to the user of the standard to discover which patents apply.” (JX 18 at 8).

694. Between December 1993 and December 1995 (Rambus’s last meeting), no IBM patent or patent application was added to the “patent tracking list” maintained by JC 42 Chairman Jim Townsend. (*See* JX 18 at 14-21; JX 19 at 17-23; JX 20 at 15-18; JX 21 at 14-18; JX 22 at 12-17; JX 25 at 18-26; JX 26 at 15-24; JX 27 at 20-25; JX 28 at 12-23).

695. Regarding IBM, Cray representative Grossmeier testified that “IBM said they didn’t feel they had the resources to review their entire patent portfolio every time a proposal was made to see if there was anything in there that was applicable. So, they would not disclose any patents that they had that were related to the standard.” (Grossmeier, Tr. 10956). His opinion was that “I think

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they all understood the policy. I think they just elected not to practice it.” (Grossmeier, Tr. 10956-57).

696. A Hewlett-Packard representative to JEDEC, Hans Wiggers, testified that he had attended a JEDEC meeting where IBM representative and Committee Chair Gordon Kelley said:

Look, I cannot disclose – my company would not let me disclose all the patents that IBM is working on because, you know, I just can’t do that. The only thing we will do is we will follow the JEDEC guidelines and – or rules on whatever and we will make them available.

(Wiggers, Tr. 10592-93).

697. This is consistent with Gordon Kelley’s testimony. G. Kelley testified that he did not disclose IBM patents relating to “toggle mode” in 1990 in part because IBM was “prepared to meet the requirements of the JEDEC committee” to license the patents on reasonable and nondiscriminatory terms. (G. Kelley, Tr. 2715-16).

698. Complaint Counsel did not present sufficient evidence from which to find that IBM was ever sanctioned for announcing its refusal to disclose the company’s intellectual property.

4. Hewlett Packard’s Patent Position

699. Hewlett Packard’s representative, Wiggers, testified that when JC 42.3 Chair G. Kelley stated his position at the JEDEC meeting regarding IBM’s nondisclosure of patent applications, Wiggers told the meeting attendees that HP took the same position. (Wiggers, Tr. 10593-94).

700. Complaint Counsel did not present sufficient evidence from which to find that Hewlett-Packard was ever sanctioned for

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announcing its refusal to disclose the company's intellectual property.

5. Texas Instruments' QUAD CAS Issue

701. On March 9, 1994, Texas Instruments presented a letter to JEDEC regarding ambiguities in the JEDEC patent policy. This letter began "Texas Instruments believes that the JC 42.3 Committee on RAM Memories should review and clarify its interpretation of the JEDEC Patent Policy." The letter further states that "TI is concerned that the committee, or at least some of its members, have interpreted the scope of the JEDEC Patent Policy in a manner that is not only incorrect but unworkable as well. The resulting confusion has made it impossible for TI and other members to determine the appropriate course of conduct." (CX 352 at 1).

702. A memorandum to JC 42 committee members dated May 12, 1994 says that TI's request for clarification of the patent policy was referred to EIA's legal counsel J. Kelly for response. The memorandum attached a copy of J. Kelly's response. (CX 355 at 1).

703. John Kelly's response indicates that "[w]ritten assurances must be provided by the patent holder when it appears to the committee that the candidate standard *may require* the use of a patented invention." (CX 355 at 2 (emphasis in original)).

704. The meeting minutes indicate that at the close of a discussion on patents at the March 1994 Committee meeting, the committee felt the patent policy was clear and that discussion would be closed on the subject. (JX 19 at 4-5; Kellogg, Tr. 5028-30).

705. Gordon Kelley indicated: "I believe that the litigation between Micron and Texas Instruments was resolved, and I believe that the ballots that were on hold were removed from hold

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and the ballots that were in recision were reconstituted.” (G. Kelley, Tr. 2483). In addition, he stated that Texas Instruments “apologized for their representative who had not disclosed – I personally know that they removed him from the committee, he did not come back, and they settled their dispute with Micron and as far as the committee was concerned, the issue was at this point resolved.” (G. Kelley, Tr. 2485).

706. Cray representative Grossmeier testified that “some members agreed that [TI] didn’t need to [disclose] and other[s] felt that they were in violation of the JEDEC policy by not [disclosing].” (Grossmeier, Tr. 10955).

707. This is clear evidence that by 1994, the patent policy was ambiguous. Indeed, in 1994 Texas Instruments explicitly recognized the “confusion” created when some members of the committee “interpreted the scope of the JEDEC Patent Policy in a manner that is not only incorrect but unworkable as well.” (CX 352 at 1).

6. Micron’s Presentation on Burst EDO

708. Brett Williams, of Micron, put together a presentation on Burst EDO that was presented at a January 1995 JEDEC DRAM task group meeting. (JX 23 at 68-77; Williams, Tr. 825-26). Williams was present at the meeting and was aware that Micron’s Burst EDO patent application, on which he was a named inventor, was not on the patent tracking list. (JX 23 at 1; Williams, Tr. 963-64). Nevertheless, Williams did not disclose the pending patent application on Burst EDO in connection with that presentation and vote. (Williams, Tr. 936-37; *see* RX 585 at 3-4).

709. It was not until April 1996 that Micron’s Burst EDO patent application was disclosed to JEDEC when Micron offered to license the patents under reasonable terms and conditions, demonstrably free of any unfair discrimination, if the patents were

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issued and were required for use of the standard. (CX 364; Williams, Tr. 937).

710. At trial, Williams was questioned about the potential perception of his actions:

Q: Okay, So once the patent issued in June of '96, if somebody had gone back and looked at that patent, they would have seen – by just looking at the patent, they would have seen, well, Micron cited as prior art early JEDEC meetings, and Micron applied for the patent in December '94, after some of the early meetings and before – right before the January '95 presentation that you and Mr. Fusco attended, and the patent issued in June of '96, and Micron made the disclosure to JEDEC in April of '96. That's the facts they would have seen.

A: Yes.

Q: And to your knowledge, nobody seeing those facts, no JEDEC member, came to Micron and said, you guys acted in a way inconsistent with the JEDEC policy, did they?

A: I'm not sure if anybody talked to Micron about that or not. Nobody talked to me about it.

(Williams, Tr. 941-42.)

7. Hyundai and Mitsubishi's Presentation on SDRAM

711. On May 24, 1995, Hyundai and Mitsubishi made presentations at a meeting of the JC 42.3 subcommittee regarding a type of DRAM known as SDRAM. (JX 26 at 10-11; Rhoden, Tr. 469-71). The minutes note that “[t]he proposal was brought to JEDEC for a pinout standard.” (JX 26 at 10). The Mitsubishi

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presentation showed the pinout for an SLD RAM. (JX 26 at 111; Rhoden, Tr. 471).

712. At a JEDEC meeting on December 9-10, 1997, the SLD RAM pinout standard ballot was approved by the JC 42.3 subcommittee. (JX 41 at 22, 24; RX 1114 at 1; Rhoden, Tr. 1206-08).

713. United States Patent No. 6,442,644 (the '644 patent) issued on August 27, 2002. (RX 2086 at 1). Among the inventors named on the patent were JEDEC representatives Hans Wiggers of Hewlett-Packard, Kevin Ryan and Terry Lee of Micron, and JEDEC Chairman Desi Rhoden, formerly of VLSI. (RX 2086 at 1).

714. Rhoden testified that claim 3 of the patent claims the SLD RAM pinout that had been standardized by JEDEC. (RX 2086 at 41; Rhoden, Tr. 1211).

715. The '644 patent claims priority to a number of provisional applications, including provisional application 60/069,092 which was filed on December 10, 1997, the very same day that the JEDEC meeting approving the SLD RAM patent was being held. (RX 2086 at 1; RX 2099-43).

716. Wiggers, Ryan and Rhoden were all present at the December 1997 JC 42.3 subcommittee meeting where the SLD RAM pinout standard was balloted and approved. (JX 41 at 2). They were each involved in or affiliated with the "SLD RAM Consortium" or SLD RAM Inc., which subsequently became AMI2, and was assigned the '644 patent. (RX 870 at 1; Rhoden, Tr. 696-97, 1235; RX 2086 at 1).

717. The minutes of the meeting do not indicate that any of the three disclosed the '092 provisional application, (*see* JX 41 at 22, 24), even though Rhoden testified at trial that even non-member guest scientists or engineers from foreign countries were

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“absolutely” obligated to disclose patents and patent applications that were related in some general way to a subject being discussed at JEDEC. (Rhoden, Tr. 624-25).

G. Trial Testimony**1. A Policy in Transition**

718. The evidence suggests an unsuccessful attempt by some members of JEDEC to redefine the patent policy after SEEQ and *Wang*. (See CX 46 at 9). Complaint Counsel, however, did not produce evidence sufficient to find an announced, formal change in policy.

719. Some members of the committee treated the spirit of the policy as the actual policy. Williams testified that between late 1991 to 1993, “[i]t was discussed how to revise the wording to ensure that the patent policy was clear so that new members, when they came on board, would know exactly the spirit of the patent policy.” (Williams, Tr. 791).

2. Creation of Ambiguity and Confusion Regarding the Policy

720. IBM’s representative Mark Kellogg disclosed, at least twice, an intention on the part of IBM to file a patent application related to a product or feature under consideration for standardization at JEDEC. At his deposition, Kellogg testified that he did not believe the disclosure was required under the JEDEC patent policy. He contradicted this testimony at trial:

A: I would appreciate a chance to clarify because there’s a written policy, there was an in-process modified policy, there is an expected policy, there are – there are – so in answer to your question, this refers to the written policy at the time in this document.

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Q: In the deposition?

A: And I do apologize for differing interpretations of policy.

Q: When I asked you in the deposition whether you believed your disclosure was required under the JEDEC patent policy, what JEDEC patent policy were you referencing when you answered no?

A: The written policy at the time.

Q: Were there more than one JEDEC patent policy that related to the obligations to disclose intent to file patent applications?

A: I believe so.

(Kellogg, Tr. 5306-07).

721. Cray representative Grossmeier was unclear on JEDEC's patent disclosure rules, as evidenced by his trial testimony that in the 1991-96 time frame "[i]t was not real clear on the definition of what patents should be disclosed. Clearly if the *sponsor* presented information that they were developing and patenting, they would disclose it, but other parties, it was pretty vague." (Grossmeier, Tr. 10947 (emphasis added)).

722. Intel representative Sam Calvin testified that:

There was – and I don't know when it occurred or how early it occurred, but there was a concern about not only patents, but applications for patents. And I'm then real foggy on this, because I knew it was an issue, but when exactly it went from an issue to understanding that to be JEDEC policy is unclear in my mind.

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(Calvin, Tr. 1006).

723. The JEDEC patent policy was not clear. (Kellogg, 5306 (“there’s a written policy, there was an in-process modified policy, there is an expected policy”); Grossmeier, Tr. 10947 (patent policy was “not real clear . . . it was pretty vague”); Calvin, Tr. 1006 (describing patent policy as “unclear”)). This lack of clarity stemmed from an unsuccessful attempt, by some, to redefine the patent policy.

3. Unsuccessful Efforts to Expand the Patent Policy

724. The February 1991 minutes from the 42.5 subcommittee meeting note that “Townsend made a presentation on patent issues in general and made some suggestions as to what could be done in the future to avoid these problems.” (CX 13 at 4).

725. Attached to the meeting minutes were handwritten notes. These notes include a section labeled “Expectations of Participants” which includes as the only expectation regarding disclosure that “[f]ull disclosure of *sponsors* regarding restrictions on intellectual property at conceptual phase of draft standard.” (CX 13 at 31 (emphasis added)).

726. The notes include a section labeled “Possible Solutions on Intellectual Property” which includes the following suggestions:

Require each member and alternate, each year, to sign an affidavit that they will disclose all knowledge of patents affecting a draft ballot.

Requiring a legal statement from the sponsoring company’s Intellectual Property counsel to be attached to an approved ballot when submitted to Council for final approval.

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Expulsion from JEDEC of a company who attempts to achieve commercial advantage from standardization if they have not disclosed at the beginning their patent position, intention, and royalty objectives on a draft 'patent.'

Censure by the supplier community of any such company.

Establish equivalent standards to provide royalty-free alternatives to the industry.

(CX 13 at 32).

727. In a March 11, 1991 letter copied to John Kelly, John Kinn, Vice President of Engineering at JEDEC, in response to a letter from Jim Townsend regarding JEDEC's patent policy, indicated that "[t]he basic documents containing our policy on patents are: EP-3, EP-7, The JEDEC Manual JEP-21-H, and the EIA Legal Guide." (CX 317).

728. Kinn attached a draft revision of the ANSI policy, indicating that it was "arrived at following two years of discussion among legal representatives, from Standard developers and users. Many individuals feel they do not go far enough – others feel they go too far – a classic case of our inability to harmonize conflicting opinions in areas outside those that must obey the laws of physics." (CX 317 at 1).

729. Kinn noted a discussion from the previous council meeting although "no definitive conclusions were reached other than to await the results of the ANSI work." (CX 317 at 1). Kinn stated "I agree this issue should be continually reviewed at Council level until we arrive at the best possible policy given modern circumstances and technology. Perhaps JEDEC should sponsor a special workshop . . . and perhaps achieve a consensus on future directions for our policy." (CX 317 at 2).

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730. Meeting minutes from the May 9, 1991 JC 42.3 meeting indicate, regarding intellectual property, that:

Toshiba noted that some of the procedure documents have been issued a long time ago but because of high Committee turnover many reps don't know what the policies are. Toshiba recommended that at each meeting a showing be made to explain what the intellectual property policies are. Toshiba would also like to have a note on each ballot before it goes to Council from the company lawyer. It was a Council issue, but Toshiba wanted the Committee to deal with it.

(JX 5 at 3).

731. G. Kelley, JC 42.3 Chair, testified that "Jim Townsend had suggested that we begin to include patent applications in the concept of a patent and that was brought to the committee in May of 1991 and the vote was taken to agree that the committee would work to that new definition of patents," although there is no evidence of such a vote in the May 1991 minutes. (G. Kelley, Tr. 2691; *see* JX 5).

732. JEDEC Council Minutes from May 18-19, 1992 state that a "discussion was held concerning patent policy. The Secretary outlined the genesis for changes and the fact that a new set of policy statements and guidelines have been written that will be circulated to Council for review and comment." (CX 35 at 9).

733. "Consensus was expressed that more strength is needed in our policy, however under existing laws, it seemed difficult to do. This item will be discussed further in the revision of 21-H," according to the minutes of the January 19-20, 1993 JEDEC Council meeting. (CX 46 at 9).

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734. Some members wanted to redefine the patent policy to include patent applications and the intent to file patent applications. “Consensus was expressed that more strength is needed in our policy” was understood by JC 42.3 Chair G. Kelley to mean “the more strength concept to be the inclusion of patent applications and material that might become patents to the concept of patent requirements within the previous document.” (G. Kelley, Tr. 2421).

735. Existing EIA policy, which controlled JEDEC policy, did not permit such an expansive definition. “However, under existing laws, it seemed difficult to do” was interpreted by JC 42.3 Chair G. Kelley as follows: “[i]n my understanding, the difficulty was that the EIA Legal Guides did not include the patent application and material that might become patents concept, and the question before council was could we expand the definition under JEDEC Council control without endangering our position under the EIA control.” (G. Kelley, Tr. 2422).

736. This helps explain why the possible solutions on intellectual property were never implemented. (*See* CX 13 at 32).

737. Instead of explicitly and formally changing the JEDEC policy from the EIA policy, the Council unsuccessfully attempted to redefine the word “patent.” JC 42.3 Chair G. Kelley stated that “[a]t the JEDEC council, which was struggling with the change in wording of the JEDEC policy, we discussed the conflict between the EIA wording of their patent policy and the change that we were making, which was patents and patent applications, and we believed as a group that the concept of patents includes patent applications, that the concept of patents is a concept which says avoid patents or material that could become patents, and if you can’t avoid them, then you must deal with the RAND requirements.” (G. Kelley, Tr. 2696).

738. This attempted redefinition of the policy marked a departure both from established JEDEC policy and from EIA

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patent policy and caused confusion by creating ambiguity in the policy. (See F. 606-38, 718-47).

739. Toshiba representative and JEDEC JC 42 Chairman Jim Townsend led the unsuccessful attempt to redefine JEDEC's patent policy. Townsend was described as "a general with a flagpole patent" (G. Kelley, Tr. 2401-02), as "very sensitized by the WANG case" (Sussman, Tr. 1353), and as someone on "a personal crusade." (CX 2079 at 38 (Karp Micron Dep.)). Townsend and the rest of the board wanted to ensure that *Wang* never happened again, so that "the industry was not held hostage again." (Williams, Tr. 786-87).

4. Changes in Policy Language

a. EIA Patent Policy

740. Between 1991 and 1996, JEDEC "was an activity within the EIA engineering department" (J. Kelly, Tr. 2075) also described as "until early 2000, JEDEC was part of the EIA corporate structure." (J. Kelly, Tr. 1915). "If there was a conflict, the broader rules of EIA would govern." (J. Kelly, Tr. 1916). J. Kelly testified that in the event of a conflict, any JEDEC manual would be subordinate to the EIA manuals. (J. Kelly, Tr. 1915-6).

741. Gordon Kelley, who was the chair of the JEDEC Council and of the JC 42.3 subcommittee during much of the relevant time, testified that he understood there to be a basic conflict between the JEDEC and EIA manuals, for the EIA manuals intended the word "patents" to mean simply "patents," while the JEDEC manual (at least by 1993) allegedly intended the word "patents" to mean "patents and patent applications." (G. Kelley, Tr. 2686-87; 2695-97). Up until late 1996, G. Kelley understood that EIA's definition of "patent" had not changed. (G. Kelley, Tr. 2697).

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742. This contradicted testimony by EIA General Counsel John Kelly that EIA rules and JEDEC rules concerning disclosure and licensing of patents were consistent. (J. Kelly, Tr. 1915-16, 1919-20). J. Kelly testified that he believes that EIA's interpretation has always been that the term "patents" as used within EIA and JEDEC includes patent applications. (J. Kelly, Tr. 1887).

743. JEDEC manuals regarding the patent policy consistently refer the reader to the EIA Legal Guides and both JEP 21-H and JEP 21-I state that EIA Legal Guides are controlling. Nothing in the EIA Guides indicates that patents refers to anything other than issued patents. (F. 633-38).

b. Changes Found in JEP 21-I

744. Both Gordon Kelley and John Kelly testified that the textual change in the 21-I manual to include a reference to pending patents "was a restatement of the patent policy, and it in no way varied the policy itself." (J. Kelly, Tr. 1925; *see also* G. Kelley, Tr. 2415-16).

745. However, G. Kelley contradicted his own testimony regarding whether 21-I represented a change in policy, stating that in January of 1992, "[t]he council was dealing with this revision of 21-I, and some major changes were going to be taking place in the committees as a result of this revision." He indicated that the changes included "the inclusion of patent applications in the wording of the patent section." (G. Kelley, Tr. 2411). G. Kelley later explained that the expanded wording "did not change the substance of the practice that we had been performing to this point, it just brought this document up to date to that practice." (G. Kelley, Tr. 2423). Later he explained, "[w]e were including the words in this document which added the requirement of disclosing patent applications to the document as we had been practicing in JC-42 for several years at this point." (G. Kelley, Tr. 2431).

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746. G. Kelley explained this contradiction as based on the ambiguous definition of the word “patent.” When initially asked about his understanding in 1993 of the EIA patent policy as it related to patent applications, G. Kelley stated: “[t]he reason I’m struggling is that I understood after the beginning of 1991 that the concept of patent included material that might become published patents and that changing the document [ie 21-I] to include patent applications was just a clarification but not a change in the policy, whether it was JEDEC, EIA or ANSI.” (G. Kelley, Tr. 2679). He explained “what happened with me is my definition of ‘patents’ changed. . . . [T]he patent policy in the JEDEC manuals, EIA manuals and ANSI manuals only specified ‘patents,’ which in my mind before 1991 meant issued patents. However, beginning in early 1991, it was very clear on the committee that the committee considered the issue of patents to be issued patents as well as material that might become issued patents.” (G. Kelley, Tr. 2694-95).

747. According to JEDEC Chairman Rhoden, the footnote in JEP 21-I which states that “the word ‘patented’ also includes items and processes for which a patent has been applied and may be pending” was “added to further emphasize for anyone reading the document and to myself the word ‘patent’ has always applied to all things within the patent process inside of JEDEC, and that’s the explanation that has always been given by myself inside of JEDEC committees, and the footnote was added to add – make sure that everyone understood the word ‘patent’ involved everything within the patent process.” (Rhoden, Tr. 316-17).

5. Conflicts in the Trial Testimony

748. The EIA/JEDEC patent policy cannot be based upon a common understanding of the policy, as the conflicts in the trial testimony show that there was no common understanding. JEDEC members testified not only to different understandings of the

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policy, but some witnesses' testimony was not credible and even contradicted their own prior testimony. (See F. 749-65).

a. Trial Testimony Conflicts Regarding Whether the Patent Policy Applied to Patent Applications and Intentions to File Patent Applications

749. There was conflicting testimony from JEDEC members regarding whether the patent policy applied to patent applications and intentions to file patent applications. One opinion that was expressed was that the word *patents* includes *patent applications*. (Calvin, Tr. 1006-07; J. Kelly, Tr. 1886-88, 1896-97; Landgraf, Tr. 1695-96; Lee, Tr. 6595-96; Williams, Tr. 771, 909-11).

750. Another opinion was that the policy extended to include an intent to file a patent application. For example, JC 42.3 Chair G. Kelley testified that when JC 42 Chairman Townsend used the term "patents," "I understood him to mean an issued patent that was available from the patent office, patent applications that were being worked on with the patent office, and items that were probably going to become patents." (G. Kelley, Tr. 2406-07).

751. JEDEC Chairman Rhoden testified that in his "understanding of the policy, the term 'patent' applies to the patent process, anything in that patent process." (Rhoden, Tr. 636-38). Rhoden was unable to cite a JEDEC or EIA manual that expressly stated that disclosure had to be made of an intention to file a patent application, explaining that "I have seen in those manuals the wording that would say that it is a requirement for patents, and then it would be my interpretation of that that – operating in the committee and in the guise of standardization that that would be covered and would be included." (Rhoden, Tr. 639-40).

752. Moreover, there was testimony that *presenters* were required to disclose intellectual property before they advocated a particular technology which implies that non-presenting *members*

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were not under the same obligation. (*See* McGrath, Tr. 9273-74). For example, Intel representative Calvin testified:

The reason I alluded to two different periods, and I can't tell you specific dates, is that I was aware initially that there was a policy that any applicable patents that might have effect on standard or development should be disclosed. I was also aware during that early period, and I don't know whether it was '92 or '93, but I was aware that the primary obligation was upon the presenting advocate of the standard, but that the secondary obligation, or almost to the same extent, I shouldn't say almost, it was to the same extent, was to anyone within the body that knew of patents that might have effect upon the standard.

(Calvin, Tr. 1004.)

b. Trial Testimony Conflicts Regarding Whether Members Should Disclose Actual Claims or Whether a Patent Number Was Sufficient

753. There was a conflict in the trial testimony regarding what should be disclosed under the policy. For example, one view was that the patent policy required a participant to disclose sufficient information to put the committee on notice as to the nature of the relationship between the proposed standard and the intellectual property that might relate to the proposed standard. (J. Kelly, Tr. 1870-71; Calvin, Tr. 1010-12; Rhoden, Tr. 627; Williams, Tr. 771-72, 774-75, 793-94).

754. In contrast, other JEDEC members, including Board Chairman Desi Rhoden, testified that it would be sufficient for a member simply to state that it "might have IP relating" to its presentation. (Rhoden, Tr. 1304-05).

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755. JC 42.3 Chair G. Kelley testified at trial to a disclosure obligation in direct contradiction to his own prior testimony. At the hearing, he testified that upon disclosure, a company must “describe the claims of the patent, probably paraphrased, sometimes handed out as a handout the published patent but more often paraphrased so that the committee understood why the issues of that patent material applied to the discussion in JEDEC” and specifically stated that disclosure of a patent number alone was not enough. (G. Kelley, Tr. 2697-98). However, when asked, in reference to his own prior testimony in a Micron transcript, “[d]id you testify that you believed the giving of the patent number would be enough and that that would give you the information that you needed to go back and research the details on the patent?” he responded “[t]he patent number would be enough.” (G. Kelley, Tr. 2700).

c. Trial Testimony Conflicts Regarding Whether More Than Essential Patents Were Included in the Policy

756. There was conflicting testimony regarding what should trigger disclosure. For example, JC 42.3 Chair and IBM representative Gordon Kelley testified that disclosure was triggered by a patent claim that “reads on or applies” to the standard, meaning that “if you exercise the design or production of the component that was being standardized [it] would require use of the patent.” (G. Kelley, Tr. 2706-07).

757. Another IBM JEDEC representative, Mark Kellogg, testified that his understanding was that “you have to disclose intellectual property that reads on the standard.” (Kellogg, Tr. 5311). Kellogg also stated that “[s]ometimes we disclose intellectual property that doesn’t [read on the standard] and one would question why. It adds confusion.” (Kellogg, Tr. 5311).

758. Another opinion was that the EIA/JEDEC patent policy extended to patents and patent applications that “might be

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involved” in the standards under development. (CX 208A at 19 (“obligation of all participants to inform the meeting of any knowledge they may have of any patents, or pending patents, that might be involved in the work they are undertaking”); G. Kelley, Tr. 2705 (“there were many work items that occurred on the committee that did not become standards . . . My definition says that any claim that might apply to the work of the committee it was required to disclose.”); Landgraf, Tr. 1693-94 (disclose patents or applications “that would potentially be impacting the standard or proposed standard.”); Lee, Tr. 6595-96; Rhoden, Tr. 307; Sussman, Tr. 1346 (participants must disclose where there is a “gray” area); CX 2057 at 203-04 (Meyer, Dep.) (disclosed patent when “sufficiently close” to work of JEDEC); Williams, Tr. 910-11 (if “there would be a reasonable possibility that the patent was going to be associated with the work of JEDEC, that you ought to say, hey, I’ve got something I’m patenting here or there’s something that you’re talking about that I’ve got some IP on.”)).

759. Yet another opinion was that the policy applies “if the intellectual property has any relevance to the work that’s going on, it might be involved – we’re not asking the people that are disclosing to actually try to do a determination of whether it applies or doesn’t apply. We’re saying if it’s related, in the same general area, . . .” (Rhoden, Tr. 322-23).

760. This conflict in trial testimony highlights the ambiguity of the JEDEC policy. (F. 718-39).

d. Trial Testimony Conflicts Regarding the Timing of Disclosure

761. Consistent with the EIA patent policy which encourages disclosure of essential patents, early disclosure was encouraged at JEDEC. (J. Kelly, Tr. 1955-56; Williams, Tr. 772; 910-11).

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762. Some members understood this to mean that disclosure was expected “[i]f there is any suggestion that the committee’s work should move in a certain direction.” (Williams, Tr. 1984).

763. Another opinion was that any obligation that may have existed was not triggered until the time that a proposal was balloted for approval. (G. Kelley, Tr. 2707). JC 42.3 Chair G. Kelley testified “[t]he policy at JEDEC was that the disclosure should occur as soon as possible in the discussion of the material and certainly by the time it was balloted.” (G. Kelley, Tr. 2702; *see also* CX 2057 at 211 (Meyer, Dep.) (testimony by Siemens JEDEC representative Willi Meyer that although it was “good practice” to notify the committee before balloting, “the ballot was considered the deadline when it should have been done”)).

764. Cray representative Grossmeier, although he testified that “if a patent holder has a patent that in any way was applicable to a proposed standard, they were to disclose that at the time of balloting within the committee,” pointed out that “[t]here’s probably thousands of patents that are applicable to every device that’s built, basically semiconductor technology patents that undoubtably are being duplicated by other companies. You can’t disclose every – I mean, there would be lists of thousands of patents on every standard.” (Grossmeier, Tr. 10945, 10956).

765. Yet another opinion was that disclosure was not tied to any procedural formality in the JEDEC process. (J. Kelly, Tr. 1983-85; Rhoden, Tr. 488-89).

H. The Scope of the EIA/JEDEC Patent Policy

1. Disclosures Were Encouraged and Voluntary

766. The controlling EIA manuals do not refer to or impose a mandatory obligation to disclose intellectual property. (*See* CX 204 at 4; CX 203A at 11; JX 54 at 9-10; *see supra* F. 633-38).

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767. JEDEC manuals also do not impose any mandatory disclosure duty. JEP 21-H, in effect when Rambus joined JEDEC, states that “JEDEC standards are adopted without regard to whether or not their adoption may involve patents” and does not provide any further guidance regarding intellectual property. (CX 205 at 20; *see supra* F. 606-32). JEP 21-I refers to, but does not impose, an obligation to disclose intellectual property. (CX 208 at 19, 26; *see supra* F. 610-32).

768. The committee forms including the membership application, sign-in/attendance roster, committee ballot, members’ manual, and patent tracking list do not refer to or impose an obligation to disclose intellectual property, although the committee ballot requests those aware of patents involved in the ballot to “please” alert the committee. (CX 601 at 1-2; CX 306 at 1-2; CX 252A at 2; RX 507 at 15; *see supra* 646-69).

769. The contemporaneous correspondence also shows that disclosure was voluntary. (RX 669 at 3 (EIA, on behalf of JEDEC, told the FTC in a January 22, 1996 letter that it “encourage[s] the early, voluntary disclosure of patents that relate to the standards in work.”); RX 742 at 1 (statement in JEDEC Secretary’s 7/10/96 memorandum to JEDEC Council members that the EIA “encourage[s] early voluntary disclosure of any known essential patents”); RX 1585 at 1 (statement in JEDEC Secretary’s 2/11/00 email that “[d]isclosure of patents is a very big issue for Committee members and cannot be required of members at meetings”)).

770. Moreover, there is no evidence that any JEDEC member objected when Gordon Kelley of IBM and Hans Wiggers of Hewlett-Packard announced at JEDEC meetings that they would not be disclosing any intellectual property from their companies. (JX 15 at 6; RX 420 at 2; JX 18 at 8; Wiggers, Tr. 10592-94; *see supra* F. 691-700).

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771. Complaint Counsel did not provide sufficient evidence from which to find that the EIA/JEDEC patent policy in effect while Rambus was a member did anything more than encourage the disclosure of patents essential to the standards at balloting.

2. Patent Applications or Intentions To File Patent Applications Were Not Covered by the Policy

772. The controlling EIA manuals refer to “patents,” “known patents,” and “patented item or process,” but never refer to patent applications. (*See, e.g.*, CX 204 at 4; CX 203A at 11; JX 54 at 9-10; *see supra* F. 633-38). In addition, there was testimony from G. Kelley that EIA’s definition of the word “patent” did not include patent applications. (G. Kelley, Tr. 2686-87; 2695-97).

773. The contemporaneous documents show that the JEDEC patent policy encouraged the disclosure of patents, not patent applications or intentions to file patent applications. The minutes of the February 2000 meeting of the JEDEC Board of Directors state that disclosure of patent applications is “not required under JEDEC bylaws.” (RX 1570 at 13). A few days after the meeting, JEDEC Secretary Ken McGhee explained to the members of JEDEC 42.4 that the disclosure of patent applications went “one step beyond” the policy and that even disclosure of patents could not be required: “Disclosure of patents is a very big issue for Committee members and cannot be required of members at meetings.” (RX 1582 at 1).

774. The most that the record evidence can be understood to support is an argument that *presenters* were expected to disclose patent applications that related to technologies they were asking that JEDEC standardize. (RX 507 at 15; McGrath, Tr. 9273-74).

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3. Members Were Encouraged To Disclose Patents That Were Essential To Practice the Standard

775. Disclosure was only encouraged of patents that were “essential” to a standard, i.e., those patents that were necessary for the manufacture or use of a product that complied with the standard. (CX 203A at 11 (standards that “call for the use of patented items”); JX 54 at 9 (standards “that call for the exclusive use of a patented item or process”); CX 208 at 19 (standards that “require the use of patented items”); RX 742 at 1 (“known essential patents”)).

776. Hewlett-Packard representative Thomas Landgraf testified that he understood the patent policy to involve disclosure if “the standard required someone else’s idea to be used . . . in order for it to operate.” (Landgraf, Tr. 1695).

777. JC 42.3 Chair and IBM representative Gordon Kelley testified that the disclosure duty was triggered by a patent claim that “reads on or applies” to the standard, meaning that “if you exercise the design or production of the component that was being standardized [it] would require use of the patent.” (G. Kelley, Tr. 2706-07).

778. Another IBM JEDEC representative, Mark Kellogg, testified that his understanding was that “you have to disclose intellectual property that reads on the standard.” (Kellogg, Tr. 5311). Kellogg also stated that “[s]ometimes we disclose intellectual property that doesn’t [read on the standard] and one would question why. It adds confusion.” (Kellogg, Tr. 5311).

4. There Was No Duty To Search for Intellectual Property Issues

779. It was undisputed at trial that JEDEC representatives had no obligation to do any investigation, research or inquiry of their own company or its lawyers regarding possible intellectual

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property interests relating to JEDEC work. (Rhoden, Tr. 623-24; G. Kelley, Tr. 2451, 2700-01; J. Kelly, Tr. 1966-68; CX 2057 at 189, 193 (Meyer, Dep.); *see also* RX 1712 at 8 (no duty to search under ANSI Guidelines)).

5. The Policy was Limited To Participants With Actual Knowledge

780. The patent policy applied only to people with “actual knowledge.” (Rhoden, Tr. 623-24). JEDEC Board Chairman Desi Rhoden testified that the disclosure obligations under the JEDEC patent policy were “triggered by the actual knowledge of the people that were involved, and that would not be just the representative at the meeting, but all of the people that would have been involved in . . . The knowledge of the people that are involved in the process.” (Rhoden, Tr. 624; J. Kelly, Tr. 1970).

781. Rambus’s JEDEC representative, Richard Crisp, testified that during the time that Rambus was a JEDEC member, he: (1) had not seen any Rambus patent application with claims over an SDRAM that used any of the four features at issue here; and (2) did not know one way or the other whether Rambus’s pending patent applications covered JEDEC-compliant SDRAMs using any of those features. (Crisp, Tr. 3540-43; 3461-66).

6. The Patent Policy Did Not Apply After a Company Withdrew From JEDEC

782. After a company left JEDEC it had no obligations under the patent policy. (*See* G. Kelley, Tr. 2700-01).

7. If Disclosure Was Made, It Was Encouraged No Later Than the Time of Balloting

783. Consistent with EIA patent policy to encourage early disclosure of relevant patents, early disclosure was encouraged at JEDEC. (J. Kelly, Tr. 1955-56; Williams, Tr. 772, 910-11).

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784. The committee ballot was considered the deadline for disclosure. (G. Kelley, Tr. 2707; Grossmeier, Tr. 10945). JC 42.3 Chair G. Kelley testified “[t]he policy at JEDEC was that the disclosure should occur as soon as possible in the discussion of the material and certainly by the time it was balloted.” (G. Kelley, Tr. 2702; CX 2057 at 211 (Meyer, Dep.) (testimony by Siemens JEDEC representative Willi Meyer that although it was “good practice” to notify the committee before balloting, “the ballot was considered the deadline when it should have been done”)).

785. This is consistent with the patent tracking list which asked the committee chair to “resolve patent status prior to (choose one),” followed by a list of events, from presentation to balloting. (CX 34 at 7; CX 711 at 169; JX 27 at 7-8; JX 28 at 15-18).

VII. JEDEC 42.3 COMMITTEE MEMBERS WERE NOT MISLED BY RAMBUS ON ISSUES RELATING TO RAMBUS INTELLECTUAL PROPERTY

A. JEDEC Committee Leaders and Members Were Fully Aware of Rambus’s Patents With Respect To Features Being Considered for Incorporation into JEDEC Standards

1. Crisp Did Not Mislead JEDEC At the May 1992 Committee Meeting Regarding Rambus’s Intent To Seek Patent Rights Over Certain SDRAM Features

a. IBM and Siemens

786. In the spring of 1992, IBM and Siemens (whose former semiconductor division is now called Infineon Technologies) were cooperating on a joint venture to develop and produce a new DRAM design. (G. Kelley, Tr. 2532; CX 2088 at 277-78, 310 (Meyer, Infineon Trial Tr.)).

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787. Both the Siemens JEDEC representative, Willi Meyer, and the IBM JEDEC representative, Gordon Kelley, were involved in the Siemens/IBM DRAM development efforts in the spring of 1992. (G. Kelley, Tr. 2620-21). The efforts included a consideration of the Rambus technology. (G. Kelley, Tr. 2627).

788. In March 1992, G. Kelley prepared a memorandum regarding Rambus. (RX 240 at 1). G. Kelley's March 19, 1992 memorandum refers to "unique (and probably patented) Rambus protocol" and "special Microprocessor and DRAM interface (other than industry standard)." (RX 240 at 1). G. Kelley's memorandum also states that he had asked an IBM in-house lawyer "to get me a copy of Rambus patents." (RX 240 at 1).

789. On April 23, 1992, G. Kelley attended a presentation at IBM by Rambus founder Mike Farmwald and Rambus executive David Mooring. (G. Kelley, Tr. 2631; RX 273 at 1).

790. According to handwritten notes of the April 23, 1992 Rambus/IBM meeting a Rambus representative stated at the meeting that Rambus intended to obtain "license fee + royalties from IC company." (CX 2355 at 1). The notes also state that Rambus "want[s] to set industry std." (CX 2355 at 1).

791. In April 1992, Gordon Kelley prepared a "Rambus Assessment" along with two other IBM employees, Dr. Beilstein and Michael Clinton. (RX 279 at 1). The "Rambus Assessment" is dated April 24, 1992, the day after Kelley had attended the presentation by Rambus. (RX 279 at 1; G. Kelley, Tr. at 2635).

792. The April 1992 "Rambus Assessment" that G. Kelley co-authored refers to "Unique Rambus Features/Attributes." (RX 279 at 1). The "Rambus Assessment" also states that "Intel is Rambus licensee" and notes a "potential future Intel memory strategy to marry . . . 586/686 processor with Rambus protocol to corner PC/notebook market with state of the art performance." (RX 279 at 4).

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793. The “Rambus Assessment” states that “Rambus can work technically” and notes “the risk is whether it becomes a standard for the low end – bulk of DRAM bit volume – and that it provides a simple low end solution for anyone to get into the PC business.” (RX 279 at 8).

794. The “Rambus Assessment” states that “[i]f Rambus fails to become standard, then it is business as usual for BTV [the acronym for IBM’s Burlington, Vermont operations] and the SDRAM has a significant chance of being standard.” (RX 279 at 7).

795. It is apparent from G. Kelley’s March and April 1992 analyses of Rambus that he was aware of Rambus technology, and its prospects for success in the spring of 1992. (See RX 279; RX 273; RX 240).

796. One week after G. Kelley finalized the April 24, 1992 “Rambus Assessment,” he participated in a conference call with Siemens JEDEC representative Willi Meyer. The call included a discussion of Rambus. (RX 286A at 1).

797. Meyer prepared an April 30, 1992 memorandum reflecting the conference call which states in part: “Rambus: Visited key in-house IBM users. IBM is still keeping its eye on RAMBUS. RAMBUS has announced a claim against Samsung for USD 10 million due to the similarity of the SDRAM with the RAMBUS storage device architecture. For that reason, IBM is seriously considering to preemptively obtain a license as soon as possible (at an introductory price).” (RX 286A at 2; CX 2088 at 317-19 (Meyer, Infineon Trial Tr.)).

798. Meyer testified that during the conference call, Gordon Kelley had provided the Rambus-related information contained in Meyer’s April 30, 1992 memorandum. (RX 286A; CX 2088 at 317-19 (Meyer, Infineon Trial Tr.)).

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799. Siemens executive Martin Peisl similarly testified that the information regarding Rambus that is contained in Meyer's April 30, 1992 memorandum "seems to be information coming from IBM or Gordon Kelley." (Peisl, Tr. 4517).

800. G. Kelley and Meyer were both aware, as of April 30, 1992, of a possibility that Rambus might assert some intellectual property claims "due to the similarity of the SDRAM with the RAMBUS storage device architecture." (RX 286A at 2).

801. An April 16, 1992 IBM memorandum referenced the fact that an in-house lawyer, J. Walter, had been asked to review and comment upon Rambus related intellectual property issues. (RX 272 at 2).

802. Meyer also wrote a separate memorandum dated April 30, 1992 that stated in part that "[t]he original idea behind the SDRAM is based on the basic principle of a simple pulse input (IBM toggle pin) and the complex RAMBUS structure." (RX 285A at 5). This memorandum also demonstrates Meyer's awareness of similarities between the SDRAM device and the "RAMBUS structure." (*See* RX 285A at 5).

803. On May 6, 1992, Meyer prepared a chart showing the "Pros" and "Cons" of "Sync DRAM," "Rambus DRAM," and "Cached DRAM." (RX 289 at 1).

804. In his May 6, 1992 "Pros" and "Cons" chart, Meyer stated that the "2-bank" synchronous DRAM "may fall under Rambus patents." (RX 289 at 1). Meyer testified that he did not think Rambus had patents at the time covering 2-bank synchronous DRAM but that there was the potential it could obtain such patents. (CX 2089 at 44 (Meyer, Infineon Trial Tr.)).

805. Meyer testified that at the time, he thought there was a potential that Rambus would obtain patents covering two-bank

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features that may be included in SDRAMs. (CX 2089 at 44 (Meyer, Infineon Trial Tr.)).

806. Meyer also testified that in 1992, “we were absolutely sure that Rambus was trying to get patents.” (CX 2088 at 75 (Meyer, Infineon Trial Tr.)).

b. The May 1992 JC 42.3 Meeting

807. On May 7, 1992, Meyer and G. Kelley attended a JC 42.3 subcommittee meeting in New Orleans, Louisiana. (CX 34).

808. The May 1992 meeting was Richard Crisp’s first formal JC 42.3 subcommittee meeting as Rambus’s JEDEC representative, (CX 34 at 1; Crisp, Tr. 2929), although he had attended a JC 42.3 task group meeting on April 9 and 10, 1992. (Crisp, Tr. 3009-10).

809. At the meeting, Gordon Kelley asked Crisp if he would like to comment on whether Rambus had patents or potential patents covering two bank design. Crisp declined to comment. (CX 673 at 1; CX 2089 at 136-37 (Meyer, Infineon Trial Tr.)).

810. Howard Sussman of NEC commented to the group that he had seen a copy of a Rambus’s foreign patent application. (CX 2092 at 128 (Crisp, Infineon Trial Tr.)). According to Crisp, the essence of the comment was that Sussman had obtained a copy of the application from the foreign patent office, had read it and concluded that it should not be a concern for the JEDEC standardization effort because, according to Sussman, “many, many claims . . . are anticipated by prior art.” (CX 673 at 1).

811. The witnesses who testified about the May 1992 exchange between G. Kelley and Crisp were Kelley, Crisp, Siemens representative Willi Meyer, IBM representative Mark Kellogg and Intel representative Samuel Calvin. (G. Kelley, Tr.

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2662; Crisp, Tr. 3066; Kellogg, Tr. 5055-56; Calvin, Tr. 1066-69; CX 2089 at 169, 136 (Meyer, Infineon Trial Tr.)).

812. Calvin, the Intel representative, testified that he recalls that at the JEDEC meeting, Crisp was asked if he cared to comment about whether Rambus had patents or intellectual property that covered a particular subject. (Calvin, Tr. 1068-69). Calvin recalls that Crisp declined to comment. (Calvin, Tr. 1068-70).

813. Meyer, who was Siemens's primary JEDEC representative between 1992 and 1996, testified that at the May 1992 meeting, he asked G. Kelley to ask Crisp "whether [he] would like to comment" about whether Rambus had patents relating to the use of two banks in a DRAM. (CX 2089 at 133-34 (Meyer, Infineon Trial Tr.); CX 2057 at 66 (Meyer, Infineon Dep.)).

814. Meyer testified that "[t]he way how Kelley formulated the question was: Do you want to give a comment on this?" (CX 2088 at 136, 164 (Meyer, Infineon Trial Tr.)). Meyer testified that Crisp "just shook his head." (CX 2088 at 136, 164 (Meyer, Infineon Trial Tr.)).

815. Meyer's trip report of the May 1992 meeting states in part: "Siemens and Philips concerned about patent situation with regard to Rambus and Motorola. No comments given." (RX 297 at 5).

816. Crisp sent an email on May 6, 1992 that described his exchange with Kelley in this manner: "Siemens expressed concern over potential Rambus Patents covering designs. Gordon Kelley of IBM asked me if we would comment which I declined." (CX 673 at 1).

817. Gordon Kelley testified that Siemens representative Willi Meyer had raised an "issue of concern with Rambus and Rambus

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patents” at the May 1992 meeting. (G. Kelley, Tr. 2662). Kelley recalls that Meyer had asked Crisp if he knew whether Rambus “had patentable material on the concept of the synchronous DRAM.” (G. Kelley, Tr. 2543). Kelley recalls that Crisp declined to comment in response to that question. (G. Kelley, Tr. 2662).

818. G. Kelley testified that he could not recall whether he had said anything at the May 1992 JEDEC meeting about possible Rambus patent claims. (G. Kelley, Tr. 2544).

819. G. Kelley also testified that a “no comment” from a JEDEC member in response to a question about intellectual property is “unusual” and “surprising” and “is notification to the committee that there should be a concern. . . .” (G. Kelley, Tr. 2579).

820. IBM representative Mark Kellogg prepared contemporaneous handwritten notes at the May 1992 JEDEC meeting that refer to the concerns Meyer had raised. (RX 290 at 3). Kellogg’s notes state: “Siemens: Kernel of chip similar to Rambus. Patent concerns? (No Rambus comments).” (RX 290 at 3).

821. Kellogg testified that when he used the phrase “kernel of the chip” in his notes, he was referring to Meyer’s concern that “the fundamental architecture of the SDRAM device” was “similar to Rambus.” (Kellogg, Tr. 5324).

822. Kellogg testified that he took his notes at the May 1992 meeting in part to act as “a log of events” and “also to initiate action on my part or the part of others.” He said that this discussion “would have been a flag, which is why I wrote it down.” (Kellogg, Tr. 5322).

823. Kellogg testified that he considered the discussion a “flag” because JEDEC members were “describing possible intellectual property concerns which may affect our decision

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process for synchronous DRAM.” He testified that “[t]hat is a concern” and that “[t]he lack of response by Rambus is also a concern.” (Kellogg, Tr. 5323).

824. The chairman of the meeting, Gordon Kelley, testified that prior to the May 1992 meeting Crisp had spoken to him about the possibility of Rambus scheduling a presentation concerning DRAM design. (G. Kelley, Tr. 2553). G. Kelley also testified that he had refused to allow Rambus to present its technology for standardization at JEDEC on this and another occasion, even though he had never barred any other member company from presenting its technology. (G. Kelley, Tr. 2649-58).

825. G. Kelley had a clear conflict of interest; he made and enforced his unilateral decision to bar Rambus from presenting its technology *two weeks* after he wrote in an internal company document that his company’s interests were threatened by the Rambus technology and were best served if Rambus “fails to become standard.” (RX 279 at 7). He did not disclose this conflict to Crisp or to anyone else. (G. Kelley, Tr. 2656-57).

c. PCT Application

826. A “PCT” application is an international patent application filed pursuant to the Patent Cooperation Treaty. (CX 1454 at 1). Rambus had filed a PCT application on April 16, 1991 that was identical in all material respects to the ‘898 application it had filed at the same time in the U.S. (Fliesler, Tr. 8811; *see* CX 1451; CX 1454).

827. Pursuant to the procedures governing applications filed under the Patent Cooperation Treaty, Rambus’s PCT application became publicly available as of October 31, 1991. (CX 1454 at 1; First Set of Stipulations, Stip. 8).

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828. NEC's Sussman testified that he did not find anything in the PCT application that "related to the work ongoing at JEDEC." (Sussman, Tr. 1445).

d. After the May 1992 JC-42.3 Meeting

829. Roughly one week after the May 1992 meeting, Siemens's JEDEC representative Willi Meyer also reported that: "Siemens and Philips: concerned about patent situation with regard to RAMBUS and MOTOROLA. No comments given. Motorola patents have priority over RAMBUS'. RAMBUS patents filed but pending." (RX 297 at 5).

830. In June 1992, G. Kelley gave a presentation about Rambus to a group of about 30 engineers. Half of the engineers were from IBM; half were from Siemens. (G. Kelley, Tr. 2658-59).

831. In connection with his June 1992 presentation, G. Kelley prepared a chart entitled "COMPARE ALTERNATIVES for Future High Performance, High Volume DRAM Designs." The chart listed "Pros" and "Cons" of Sync DRAMs and Rambus DRAMs. One of the two "cons" listed for Sync DRAMs was "Patent Problems? (Motorola/Rambus)." (RX 303 at 1; G. Kelley, Tr. 2545).

832. Kelley testified that he included the reference to possible "patent problems" involving Motorola and Rambus in his June 1992 "Pros" and "Cons" chart because he "was notifying the people involved in the design of the joint work that was going on between IBM and Siemens that there was concern about potential patent problems as I had heard at the JEDEC meeting about Motorola and Rambus intellectual property, and I wanted the group to recognize that there was this concern." (G. Kelley, Tr. 2545).

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833. Meyer testified that in September 1992 he had prepared a presentation entitled “What Is Rambus?” (RX 321 at 1; CX 2089 at 66-67 (Meyer Infineon Trial Tr.)). Meyer delivered this presentation to, among others, Dr. Schumacher, the current CEO of Infineon. (CX 2089 at 66-67 (Meyer, Infineon Trial Tr.)).

834. In his September 1992 presentation, Meyer referred to Rambus as a “deadly menace to the established computer industry.” (RX 321 at 2). He also suggested that to “protect” the computer industry, someone could “buy Rambus and dump it.” (RX 321 at 3). Meyer testified that he thought some of his competitors were so worried about Rambus that they might purchase the entire company and “bury the technology.” (CX 2089 at 89 (Meyer Infineon Trial Tr.)).

835. G. Kelley testified, in a 2001 deposition, that he had had conversations with Meyer after 1992 regarding the potential applicability of Rambus patents to SDRAM devices. At trial, he could not recall the substance of these conversations. (G. Kelley, Tr. 2664-65).

2. PCT Application Discussed At the September 1993 Meeting

836. At the September 1993 meeting Crisp disclosed to the Committee the issuance to Rambus on September 7, 1993, of United States Patent No. 5,243,703. (Crisp, Tr. 3173; First Set of Stipulations, Stip. 11).

837. The ‘703 patent was the first Rambus patent and had issued shortly before the meeting. The ‘703 patent resulted from a divisional application of an original application, Serial No. 07/510,898 (‘898 application), filed in April 1990. (First Set of Stipulations, Stip. 11).

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838. The specification and drawings of the '703 patent are substantially the same as those contained in the '898 application. (Fliesler, Tr. 8812, 8817; *see* RX 425 at 1; CX 1451 at 1).

839. There was an additional discussion of Rambus's PCT application at a JEDEC meeting in September 1993, after Rambus representative Richard Crisp disclosed that Rambus had obtained its first U.S. patent (the '703 patent). According to Siemens's JEDEC representative Willi Meyer:

During the meeting, which was the same meeting in which the Rambus '703 patent was disclosed with its full patent number, and a participant, I'm not quite sure, either the participant or the chairman or the JEDEC official, somebody at the meeting said by the way, there is also something called like a WIPO, World Intellectual Property, and he offered to anybody who was interested in it to get the number from him, the reference number, and to step up to him after the meeting to do so.

(CX 2058 at 298 (Meyer, Infineon Dep.)).

840. Meyer also testified that he obtained the serial number for Rambus's WIPO application at the JEDEC meeting and "sent it back to the [Siemens] patent department." (CX 2089 at 112 (Meyer, Infineon Trial Tr.)).

841. A few months later, in March 1994, Meyer prepared a memorandum about Rambus for a Siemens engineering manager named Penzel. The memorandum stated in part that "[a]ll computers will (have to be) built like this some day, but hopefully without royalties to RAMBUS." (RX 488A at 1; CX 2089 at 124 (Meyer, Infineon Trial Tr.)).

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3. The May 1995 JC 42.3 Meeting

842. At the May 24, 1995 JEDEC meeting, presentations were made by several JEDEC members regarding a “next generation” memory technology called “SyncLink.” (JX 26 at 10-11). At this meeting there were a number of inquiries about possible patent issues pertaining to SyncLink. G. Kelley of IBM asked whether or not HP, Hyundai, Mitsubishi or TI had any patents covering any of the matters being presented; all of these companies stated that they did not. (CX 711 at 72; Crisp, Tr. 3265-66).

843. At this same meeting, Sam Calvin of Intel and G. Kelley also inquired whether there were any Rambus patents covering the SyncLink technology. (CX 711 at 73; Crisp, Tr. 3266). When Crisp did not respond to this inquiry at the meeting he was asked by Kelley to go back to Rambus and then report back to the Committee whether Rambus knew of any patents, especially Rambus patents, that may read on the SyncLink technology. (CX 711 at 73; CX 794 at 4; Crisp, Tr. 3267-68).

844. Crisp wrote an email informing the Rambus executives, engineering managers and business development and marketing groups of this development. In that email he listed a few ideas he had of Rambus intellectual property relating to SyncLink. (CX 711 at 68, 73). He also suggested that Rambus review its current issued patents and see what it had to work against SyncLink. (CX 711 at 68, 73). He recommended that Rambus consider responding to the JEDEC request by “simply provid[ing] a list of patent numbers which have issued” and telling members to decide for themselves what does and does not infringe. He added, however, that if the Rambus patents were “not a really key issue . . . Then it makes no sense to alert them to a potential problem they can easily work around,” and that “we may not want to make it easy for all to figure out what we have especially if nothing looks really strong.” (CX 711 at 68, 73).

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845. Rambus executives heeded Crisp's advice and Crisp testified at trial that at the September meeting, he made "no statement to the 42.3 subcommittee that [he] believed that SyncLink would violate Rambus patents." (Crisp, Tr. 3316).

846. A few days after the May 1995 meeting, Crisp sent an email to Reese Brown, a JEDEC consultant, that included a reference to "Ramlink," the foundation for the proposed SyncLink device. (CX 711 at 80-82; Gustavson, Tr. 9281-83). Crisp's email stated in part that he took exception to the fact that Brown had posted a copy of the ballot for the proposed IEEE Ramlink standard on the JEDEC reflector. (CX 711 at 76-78; Crisp, Tr. 3280-82).

847. When Brown responded to Crisp and suggested that Crisp's exception was partly due to the fact that Crisp saw the standard as competition to Rambus, Crisp responded that the proposed IEEE standard was not real and had patent issues associated with it. (CX 711 at 79-80; Crisp, Tr. 3282-83). Crisp admitted that he had not planned ahead of time to disclose this but did it in the heat of the moment. (Crisp, Tr. 3282-83).

848. Brown forwarded Crisp's email to Hans Wiggers, the JEDEC representative for Hewlett-Packard, who was chairing the Ramlink/Synclink working group. (CX 711 at 88-91; Gustavson, Tr. 9282-83).

849. On June 10, 1995, Wiggers copied his response to Crisp's comments to, among others, Gordon Kelley, the Chairman of the JC 42.3 subcommittee, along with a request that Crisp clarify his comments about patents relating to Ramlink. (CX 711 at 90-91).

850. On June 12, 1995, Kelley prepared an internal IBM memorandum that stated with respect to the SyncLink device that "the Rambus patents should be closely reviewed." (RX 575 at 7).

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851. On June 13, 1995, Crisp sent an email to Wiggers that stated:

[R]egarding patents, I have stated to several persons that my personal opinion is that the Ramlink/Synclink proposals will have a number of problems with Rambus intellectual property. We were the first out there with high bandwidth, low pincount; DRAMs, our founders were busily at work on their original concept before the first Ramlink meeting was held, and their work was documented, dated and filed properly with the US patent office. Much of what was filed has not yet issued, and I cannot comment on specifics as these filings are confidential.

(RX 576 at 2).

852. Crisp's email to Wiggers also stated that:

I was asked at the last JEDEC meeting to report on our patent coverage relative to SyncLink as proposed at JEDEC at the next meeting in Crystal City in September. Our attorneys are currently working on this, so I think I will be in a position to make some sort of official statement at that time and plan to do so. In the meantime, I have nothing else to say to you or the rest of the committee about our patent position. If you want to search for issued patents held by Rambus, then you may learn something about what we clearly have covered and what we do not. But I must caution you that there is a lot of material that is currently pending and we will not make any comment at all about it until it issues.

(RX 576 at 2).

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853. In August 1995, Rambus warned the SyncLink working group that its work might infringe Rambus's intellectual property. The minutes of the August 22, 1995, meeting of the SyncLink working group state in part as follows:

Richard Crisp, of RamBus, informed us that in their opinion both RamLink and SyncLink may violate RamBus patents that date back as far as 1989. Others commented that the RamLink work was public early enough to avoid problems, and thus might invalidate such patents to the same extent that they appear to be violated. However, the resolution of these questions is not a feasible task for this committee, so it must continue with the technical work at hand.

(RX 592 at 2).

854. Although the August 21, 1995 SyncLink meeting was held under the auspices of the standards setting body IEEE, not JEDEC, each of the seven companies represented at the SyncLink meeting was also a JEDEC member company, and at least five of the engineers present at the SyncLink meeting were JEDEC representatives who attended the next JEDEC 42.3 meeting on September 11, 1995. (*See* First Set of Stipulations, Stip. 21).

4. The September 1995 JC 42.3 Meeting

855. At the September 1995 JEDEC meeting, Crisp presented a written response to the questions about intellectual property that had been raised at the May 1995 meeting. The statement included this passage:

At this time, Rambus elects to not make a specific comment on our intellectual property position relative to the SyncLink proposal. Our presence or silence at committee meetings does not constitute an endorsement of any proposal under the

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committee's consideration nor does it make any statement regarding potential infringement of Rambus intellectual property.

(JX 27 at 26). Rambus's statement was published in full in the official JEDEC minutes of the September 1995 meeting. (JX 27 at 26).

856. A September 1995 meeting report prepared by Motorola JEDEC representative Mark Farley noted that "Rambus made a non-statement statement to the committee saying that Rambus has been developing this technology for five+ years and has a substantial number of patents related to high-bandwidth DRAMs." (RX 615 at 1). Farley also reported that "SyncLink told Motorola confidentially that there were very likely patents violated by their proposal." (RX 615 at 1).

857. Intel representative Samuel Calvin testified that at that time, he understood from Rambus's September 11, 1995 statement that any silence by Rambus at JEDEC meetings should not be taken as an indication that it did not have intellectual property relating to JEDEC's work. (Calvin, Tr. 1070).

5. Rambus Met With Manufacturers and Suppliers

858. In the course of the discussion of the Rambus letter at the September 1995 Committee meeting, Crisp reminded the Committee that Rambus in the past had reported a Rambus patent to the Committee, referring to the disclosure to the Committee of the Rambus '703 patent in September 1993. (Crisp, Tr. 3312). Crisp "reminded them of the 14 patents relating to SDRAMs, and that our silence was not an agreement that we have no IP related to SyncLink, . . . [and I] reminded them that the member companies are constantly receiving patents on things they are standardizing and that they seldom report the patents." (CX 711 at 167).

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859. During a meeting in Korea in October 1995, Rambus informed LG Semiconductor that Rambus had or might obtain intellectual property rights that might apply to SDRAMs. (CX 2111 at 315-16 (Tate Dep.)).

860. During a meeting in Korea in October 1995, Rambus informed Samsung that SyncLink and fast SDRAMs were heading in the direction where they might infringe future Rambus patents. (CX 2111 at 317 (Tate Dep.)).

861. During a meeting in Japan in October 1995, Rambus informed NEC that SyncLink and new SDRAMs (SDRAMs using a PLL or dual-edge clock) might end up in a position where they infringed future Rambus patents. (CX 2111 at 320-21 (Tate Dep.)).

862. During a meeting in Japan in October 1995, Rambus informed OKI of the possibility that there would be Rambus intellectual property that might apply to SyncLink and new SDRAMs. (CX 2111 at 320-22 (Tate Dep.)).

863. During a meeting with Intel in October 1995, Rambus informed Intel that it did not see how future memory chips could meet performance goals without using some or all of Rambus's inventions. (CX 2111 at 323-26 (Tate Dep.)).

864. DRAM manufacturer Micron Technology demonstrated its concern about Rambus's patents in 1995 and 1996. On November 7, 1995, Micron executive Jeff Mailloux sent a memo entitled "RAMBUS Inc. patents" to several other Micron employees, including JEDEC representative Terry Walther. (RX 630 at 1). Mailloux's memorandum stated in part as follows: "[a]ttached are abstracts for the patents that have been granted to RAMBUS Inc. so far Please consider both the quality (is there prior art?) and the breadth (apply to more than just RAMBUS?) of the patents." (RX 630 at 1).

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865. Mitsubishi's Japanese patent department was also apparently considering any prior art to Rambus's patents in November 1995. (RX 1041A at 1 ("we have obtained CRAY Corporation's patents to investigate the prior art for the patents owned by Rambus Inc. . . .")).

866. In January 1996, the concerns of Micron and others about Rambus's intellectual property were reflected in the minutes of the SyncLink Consortium: "Rambus has 16 patents already, with more pending. Rambus says their patents may cover our SyncLink approach even though our method came out of early RamLink work. Micron is particularly concerned to avoid the Rambus patents, though all of us share this concern." (RX 663 at 2).

867. Others who took a close look at Rambus's intellectual property in this time period included Dr. David Gustavson, the Secretary of the SyncLink Consortium, who reviewed several European patent applications that Rambus had filed. (Gustavson, Tr. 9286). Dr. Gustavson has testified that he recognized immediately upon reviewing the Rambus patent applications that they had a broad scope that would apply to virtually any memory device, but that he believed the applications would never be allowed in light of their breadth. (Gustavson, Tr. 9287).

868. Two Apple engineers, David James and Glen Stone, reviewed the Rambus patent applications along with Gustavson. (Gustavson, Tr. 9286).

6. JEDEC Members Viewed Rambus's Patents As a Collection of Prior Art

869. Crisp's May 6, 1992 email states that:

In response to the patent issue, Sussman stated that our patent application is available from foreign patent offices, that he has a copy, and noted many, many claims that we make that are anticipated by prior art. He also stated the Motorola patent

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predated ours (not the filing date!) and it too was anticipated by prior art.

(CX 673 at 1).

870. The handwritten notes taken contemporaneously at the May 1992 meeting by IBM representative Mark Kellogg similarly indicate: “NEC: Rambus International Patent 150 pages, Motorola patents/Rambus patent – suspect claims won’t hold.” (RX 290 at 3).

B. The Dell Consent Order and Rambus’s Last JEDEC Meeting – December 1995 To January 1996

871. The final JEDEC meeting attended by Rambus was the meeting in December 1995. (CX 2104 at 853-54 (Crisp, Micron Dep.)). Rambus did not pay in response to a dues invoice sent by JEDEC in January 1996. (CX 887). Rambus responded to the dues invoice by a letter dated June 17, 1996, in which it informed JEDEC that it was not renewing its membership in the organization. (CX 887).

872. Also in December 1995, Rambus’s patent counsel, Lester Vincent, sent Diepenbrock, Rambus’s IP manager, materials relating to a proposed FTC consent order involving Dell Computer. (CX 1990 at 1; Diepenbrock, Tr. 6222). Vincent described the case as involving charges that Dell restricted competition in the personal computer industry and undermined the standard setting process by threatening to exercise undisclosed patent rights against computer companies adopting standard technology. (CX 1990 at 1).

873. “[L]egal guidance not to attend JEDEC escalated” after the “situation with Dell.” (CX 2112 at 222 (Mooring, Dep.)). Rambus’s lawyers felt that, although Rambus’s situation was not the same as the situation in the Dell case, the risk that an equitable estoppel defense might be raised justified withdrawing from

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JEDEC, assuming that the benefits of attendance did not outweigh the risks. (CX 3124 at 196-97 (Vincent Infineon Dep.)).

874. Rambus's separation from JEDEC was formalized on June 17, 1996, when Rambus sent a letter to the JEDEC office that stated:

I am writing to inform you that Rambus Inc. is not renewing its membership in JEDEC.

Recently at JEDEC meetings the subject of Rambus patents has been raised. Rambus plans to continue to license its proprietary technology on terms that are consistent with the business plan of Rambus, and those terms may not be consistent with the terms set by standards bodies, including JEDEC. A number of major companies are already licensees of Rambus technology. We trust that you will understand that Rambus reserves all rights regarding its intellectual property. Rambus does, however, encourage companies to contact Dave Mooring of Rambus to discuss licensing terms and to sign up as licensees.

To the extent that anyone is interested in the patents of Rambus, I have enclosed a list of Rambus U.S. and foreign patents. Rambus has also applied for a number of additional patents in order to protect Rambus technology.

(*See* CX 887).

875. Rambus included with the letter a list of patents but did not include any reference to patent applications. Nor did the list include the '327 patent. (CX 887).

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876. The evidence is inconclusive regarding whether the '327 patent was left off of the list intentionally or inadvertently. (CX 887).

C. Ongoing Discussions of Rambus Patents by JEDEC Members After June 1996

877. In October 1996, [redacted] (RX 781 at 2 (*in camera*)).

878. In December 1996, Micron executive Jeff Mailloux wrote a memorandum to Micron CEO Steve Appleton that stated in part that:

We have been investigating high speed DRAMs and the intellectual property associated with them for some time now. . . . We have also been investigating the prior art related to the area of high-speed DRAMs. From our research, we think many RAMBUS patents read on prior art or other patents.

(RX 829 at 2).

879. The minutes of the March 1997 JC 42.3 meeting reflect that during a presentation regarding an NEC proposal involving DDR SDRAM, a representative stated that “[s]ome on the committee felt that Rambus had a patent on that type of clock design.” (JX 36 at 7).

880. Micron representative Terry Lee was present at the March 1997 JC 42.3 meeting. Lee had raised the concern about a possible Rambus patent at the meeting that is reflected in the minutes. (Lee, Tr. 6957-58; JX 36 at 7).

881. The NEC representative’s trip report for the March 1997 JEDEC meeting supports Lee’s recollection, for it includes the

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following summary of the discussion regarding the NEC DDR proposal:

<i>Company</i>	<i>Comments</i>
Micron	This technique is patented by RAMBUS and they will not agree to the JEDEC patent policy.
Mosaid/VLSI	This may be a future bus concept. Future bus was invented before RAMBUS became a company, so this may not be a valid patent.

(RX 880 at 25).

882. The NEC DDR proposal, however, did not involve a “narrow bus” and was not “packetized.” (Lee, Tr. 6961).

883. Lee agreed that by March 1997, he thought that Rambus might have intellectual property claims relating not just to RDRAMs but to the work of the JC 42.3 committee as well. (Lee, Tr. 6962-64).

884. On April 16, 1997, a Micron employee, Keith Weinstock, sent an email to various Micron employees that stated in part that “Rambus plans legal action to request royalties on all DDR memory efforts.” (RX 920 at 2).

885. At the time he prepared his April 16, 1997 email, Weinstock was a Micron account representative with responsibility for Intel. (Lee, Tr. 6700).

886. Weinstock sent his April 16, 1997 email, and its statement that “Rambus plans legal action to request royalties on all DDR memory efforts,” to Jon Biggs, with a copy to Terry

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Walther, Jeff Mailloux, Terry Lee, Kevin Ryan, Gary Welch and Steve Trick. (RX 920 at 1).

887. At the time, Biggs was Weinstock's predecessor as the Micron account representative for Intel. (Lee, Tr. 6967). Mailloux was Micron's DRAM Marketing Manager at the time. (CX 3133 at 44-45 (Mailloux, Micron Dep.)). Walther was a JEDEC representative for Micron. (Lee, Tr. 6594, 6953). Welch was in Product Marketing at Micron, with responsibility for Rambus products. (Lee, Tr. 6967). Trick was a Micron employee responsible for module development. (Lee, Tr. 6973). Lee was in the Strategic Marketing department at Micron, reporting to Mailloux. He also attended JEDEC meetings frequently in the 1997-2000 time period. (Lee, Tr. 6591-95). Ryan was in a similar position as Lee and also attended JEDEC meetings in this time period. (Lee, Tr. 6601).

888. On April 17, 1997, Micron JEDEC representative Terry Walther responded to Weinstock's email and asked him to confirm the report about Rambus's intellectual property claims, asking "Does Rambus believe they have a patent on changing data on both edges of the clock? .. I think that is old technology. Can you find out what they think they have?" (RX 920 at 1).

889. Weinstock responded to Walther's question: "Yes, Rambus feels DDR for any memory is under their patent coverage. James [Akiyama, an Intel employee] said that Rambus has more IP than Intel has seen. He further stated the determining factor would be whether the courts take a 'broad or a narrow view of the patents.'" (RX 920 at 1).

890. The April 17, 1997 response by Weinstock was copied to Mailloux, Lee and all of the other recipients of Weinstock's original email. (RX 920 at 1).

891. Lee testified that he understood Weinstock's statement about Rambus's intellectual property claims over "DDR for any

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memory” to be a reference to the DDR SDRAM device that was then being discussed at JEDEC. (Lee, Tr. 6968).

892. Lee also understood that Weinstock was referring to possible patent infringement lawsuits by Rambus when Weinstock wrote: “Rambus plans legal action to request royalties on all DDR memory efforts.” (Lee, Tr. 6971-72; *see* RX 920 at 2).

893. Lee testified that he did nothing at all to follow up on the reference to Rambus’s intellectual property claims regarding “DDR for any memory.” (Lee, Tr. 6702, 6972; *see* RX 920 at 1).

894. Lee testified that as far as he knows, none of the other recipients of Weinstock’s April 17, 1997 email did anything to follow up on the reference to Rambus’s intellectual property claims. (Lee, Tr. 6972-73).

895. Lee explained that he had not followed up with respect to the information regarding Rambus’s possible intellectual property claims, and did not consider asking JEDEC to request “RAND” assurances from Rambus, because he “didn’t believe this was true.” (Lee, Tr. 6981).

896. After reviewing the April 16 and 17, 1997 Micron emails during trial, 42.3 chairman Gordon Kelley testified that he believed that the Micron JEDEC representatives who received the emails were obligated under the JEDEC patent policy to tell the JC 42.3 committee the information about Rambus’s claims that is contained in the emails. (G. Kelley, Tr. 2748-49).

897. In May 1997, Rambus engineer Richard Crisp met with the Vice President of Engineering for VIA Technologies, a chipset manufacturer based in Taiwan. (RX 924 at 1).

898. Crisp’s email regarding the May 1997 meeting states in part that the VIA executive had:

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“. . . Told me that he thinks that SyncLink is going to be stepping all over Rambus patents. I told him that no one can know for sure about any of that until chips exist, but that since we were first and have a lot of fundamental patents, it would not be a surprise to find that to be the case, and if it were, that I felt quite sure we would pursue protection of our IP rights.”

(RX 924 at 1).

899. In July 1997, the official SyncLink Consortium minutes reflect a concern that the Consortium should “collect information relevant to prior art and Rambus filings” in anticipation that “Rambus will sue individual companies” for patent infringement. (RX 966 at 3).

900. In July 1998, a Hynix executive sent an email containing “a list of Rambus patents” to a large group of DRAM engineers and JEDEC representatives from such companies as Micron, Texas Instruments, IBM, VLSI, Compaq, Mosaid and Siemens. (RX 1214 at 1).

901. The list of patents provided by the Hynix executive included the ‘327 patent that Rambus had left off the list of patents submitted with its JEDEC withdrawal letter. (RX 1214 at 1).

VIII. RAMBUS WAS NOT IN VIOLATION OF ANY JEDEC RULES

A. Rambus Was Not in Violation of the JEDEC Patent Policy

902. Rambus was not in violation of the JEDEC patent policy because that policy merely encouraged the voluntary disclosure of patents essential to practice JEDEC standards. (*See* F. 766-85,

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supra). Not disclosing patents conformed not only to the policy but also was consistent with the conduct of other JEDEC members. (*See* F. 686-717, *supra*).

B. There Is No Evidence that Crisp, During the Time Rambus Participated in JEDEC, Had Actual Knowledge that Rambus Had Claims that Could Be Asserted Against JEDEC-Compliant SDRAM or DDR SDRAM Products

903. Complaint Counsel have asserted that “when a JEDEC member company understands or believes that its patents bear upon specific aspects of JEDEC’s standardization work, that knowledge on the part of the company triggers a duty to disclose.” (Opening Statement, Tr. 17).

904. There is substantial evidence that it was a JEDEC representative’s “actual knowledge,” not his beliefs, that triggered whether disclosure obligations might exist. (Rhoden, Tr. 624; J. Kelly, Tr. 1970, 2171-72; *see also* RX 669 at 3).

905. Rambus CEO, Geoff Tate, testified that a statement in the June 1992 draft plan that “we believe that Sync DRAMs infringe on some claims in our filed patents” was based on a “feeling” that “synchronous DRAMs sure looked like they stem[med] from [our] inventions.” (CX 543A at 17; CX 2073 at 221-22 (Tate, Micron Dep.)). Tate had “assumed” that broad patent applications had been filed to protect all of Rambus’s inventions. (CX 2073 at 222 (Tate, Micron Dep.); CX 2088 at 57 (Tate, Infineon Trial Tr.)).

906. Crisp is not among the individuals listed as receiving the June 1992 draft plan. (CX 543A at 11).

907. After the 1992 Business Plan was prepared, a Rambus employee was assigned the task of determining what filed claims would be infringed by SDRAMs. (CX 2073, Tate Micron Dep. at

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222-23). The employee subsequently informed Tate that the filed claims were not as broad as previously thought and did not cover the full range of what had been invented and described in the '898 application. (CX 2073 at 222-24 (Tate, Micron Dep.); CX 2088 at 57-58 (Tate, Infineon Trial Tr.)).

908. Complaint Counsel also point to a June 1993 email by Rambus engineer Fred Ware that states that a claim in a Rambus patent application was “directed against SDRAMs.” (CX 1959 at 1). Complaint Counsel did not contend at trial, however, that in June 1993 Rambus had any claim in a pending application that covered any feature of SDRAMs. The only Rambus patent claims that are alleged by Complaint Counsel to cover SDRAMs are claims in the '961 and '490 applications; these claims were not filed until 1995. (*See supra* F. 960-62).

909. In their opening statement, Complaint Counsel asserted that Ware’s June 1993 email referred to a May 1993 “amendment to Rambus’s pending ‘651 application [application serial no. 07/847,651] related to the concept of programmable CAS latency and that this amendment was intended to cover programmable CAS latency when used in DRAMs generally, including SDRAMs that were the subject of JEDEC work.” (Opening Statement, Tr. 84-85). However, all the claims in the May 1993 amendment to the ‘651 application contained the limitation that data, address, and control information be “in the form of packets,” a feature that is not found in SDRAMs. (CX 1458 at 5-8). SDRAMs, unlike RDRAMs, do not receive information in the form of packets. (Rhoden, Tr. 402; Sussman, Tr. 1431-32; G. Kelley, Tr. 2573-74; Kellogg, Tr. 5298; Jacob, Tr. 5466-67). Complaint Counsel did not contend at trial that the claims contained in the May 1993 amendment to the ‘651 application covered programmable latency as used in JEDEC-compliant SDRAMs.

910. Rambus’s JEDEC representative, Richard Crisp, testified that during the time that Rambus was a JEDEC member, he: (1) had not seen any Rambus patent applications with claims over an

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SDRAM that used any of the four features at issue here; and (2) did not know one way or the other whether Rambus's pending patent applications covered JEDEC-compliant SDRAMs using any of those features. (Crisp, Tr. 3461-66, 3540-43).

911. In March 1998, Joel Karp informed Rambus's board of directors of the potential weakness of Rambus's existing patent claims. (Farmwald, Tr. 8231-34; CX 615 at 2). Karp also informed the board that he believed that he could improve the strength of the patent portfolio, but that it would take a year or two to do so. (Farmwald, Tr. 8231-32).

912. By July 1999, "Mr. Karp reviewed the Company's strategic portfolio of current IP and plans for an additional strategic portfolio for extending the life of Rambus IP." (CX 622 at 2). He observed a number of weaknesses that could be addressed including a lot of new patent applications or amendments that could be filed, and was actively working on these projects. (Farmwald, Tr. 8237-38; CX 622 at 2).

913. It was not until mid-1999 that a Rambus patent issued with claims that were infringed by JEDEC-compliant SDRAMs or DDR SDRAMs. (Farmwald, Tr. 8239-40; CX 623 at 4).

C. Rambus Did Not Misappropriate Information From JEDEC

914. Rambus began attending JEDEC meetings, in part, to learn what its competition was working on. (CX 837 at 1-2).

915. JEDEC 42.3 Chairman Gordon Kelley testified that he and Siemens's JEDEC representative Willi Meyer were each reporting on JEDEC activities to a joint DRAM development team that IBM and Siemens had created. (G. Kelley, Tr. 2620-21).

916. Kelley testified that he "did not understand that the use of JEDEC confidential information was an abuse as long as the

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people using the information were members.” (G. Kelley, Tr. 2626).

917. Even today, JEDEC tries to enlist new members by pointing to the competitive advantages of membership, or perhaps the *disadvantages* of *non*-membership. (CX 302 at 17 (Rhoden presentation states that “[i]f you are not there, your competition may be deciding your future.”)).

918. Rambus used the information it obtained at JEDEC to help refine the claims in its pending patent applications to ensure that its claims would cover the JEDEC standards. (CX 2092 at 192 (Crisp, Infineon Trial Tr.)).

D. There Were No Prohibitions Which Precluded Rambus From Seeking Patent Protection For Inventions that Related to JEDEC Standards

919. The EIA Legal Guides, which governed JEDEC standardization activities while Rambus was a JEDEC member, state explicitly that “[s]tandards are proposed or adopted by EIA without regard to whether their proposal or adoption may in any way involve patents on articles, materials, or processes.” (CX 204 at 4).

920. The EIA’s January 22, 1996 comment letter to the FTC in connection with the *Dell* litigation states in part that “[a]llowing patented technology in standards is procompetitive.” (RX 669 at 2). The letter explains that “[b]y allowing standards based on patents, American consumers are assured of standards that reflect the latest innovation and high technology the great technical minds can deliver.” (RX 669 at 2-3).

921. The EIA’s January 22, 1996 comment letter to the FTC also states that “[s]tandards in these high-tech industries must be based on the leading edge technologies. Consumers will not buy second-best products that are based only on publicly available

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information. They demand and deserve the best technology these industries can offer.” (RX 669 at 4).

922. The EIA’s January 22, 1996 comment letter to the FTC also states that “[e]ven if knowledge of a patent comes later in time due to the pending status of the patent while the standard was being created, the important issue is the licensing availability to all parties on reasonable, non-discriminatory terms.” (RX 669 at 4).

923. EIA General Counsel John Kelly testified that even though EIA would prefer not to include patented technologies in EIA standards, there is no objection to having standards that incorporate patented technologies, as long as the patents are available to all potential licensees on reasonable and nondiscriminatory terms. (J. Kelly, Tr. 2072).

924. Throughout the time period that Rambus was a member, JC 42.3 routinely passed ballots to adopt technology as part of its standards despite its awareness of patent-related issues. At the March 1993 JC 42.3 meeting, for example, the committee voted to pass a ballot on Mode Register Timing for the SDRAM draft specification even though Hitachi raised a “patent alert.” (JX 15 at 5).

925. At the March 1993 JC 42.3 meeting, the committee also considered ballots for Self-Refresh Entry/Exit, DQM Latency Reads/Writes, and Auto-Refresh for the SDRAM draft specification. (JX 15 at 8-9). The minutes state that both Hitachi and Mosaid raised a “patent alert” or a “patent concern” with respect to each of these features. (JX 15 at 8, 9). The committee voted unanimously to pass these ballots. (JX 15 at 8, 9).

926. At the March 1993 JC 42.3 meeting, the committee also considered a ballot for a Write Latency = 0 for the SDRAM draft specification. With regard to this ballot, the minutes state that Mosaid raised a patent issue. (JX 15 at 5-6). The minutes also

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state, “The Committee is aware of the Hitachi patent. It was noted that Motorola has already noted they have a patent. IBM noted that their view has been to ignore patent disclosure rule because their attorneys have advised them that if they do then a listing maybe construed as complete.” (JX 15 at 6). The committee voted unanimously to pass this ballot. (JX 15 at 6). At that meeting, the committee also voted unanimously to send all SDRAM ballots to the JEDEC Council for standardization. (JX 15 at 14).

927. At the very next JC 42.3 meeting, which was held *before* the SDRAM ballots had been voted on by the JEDEC Council, the 42.3 Committee reviewed an analysis of patents relating to SDRAMs. The analysis, which was prepared by Chipworks, included a discussion of several Hitachi patents related to SDRAMs that were described as “powerful” (CX 53A at 13), as well as SDRAM-related patents held by Motorola and other JEDEC members. (CX 53A at 14).

928. No witness who was present at the March and May 1993 JC-42.3 meetings testified that any criticism was leveled against JEDEC members who had obtained patents relating to SDRAMs.

E. Rambus Followed the Advice of Its Legal Counsel in Determining Its Legal Obligations to JEDEC

929. Complaint Counsel asserts that Rambus “acted with knowledge that it was violating” JEDEC’s rules relating to intellectual property disclosures. (Complaint Counsel’s Pre-Trial Brief, at 196).

930. Shortly after it joined JEDEC, Rambus sought the legal advice of its outside patent counsel, Lester Vincent, in connection with its participation in JEDEC including the preparation and revision of its patent applications. (CX 3125 at 279-80 (Vincent, Dep.)).

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931. In March 1992, Richard Crisp and his supervisor, Allen Roberts, talked to Vincent about JEDEC-related issues. (CX 3125 at 310-315 (Vincent, Dep.)). After discussing JEDEC with Vincent, “the two key things that [Crisp] walked away from the meeting understanding was that Rambus should not go and promote a standard, and we should not mislead JEDEC into thinking that we wouldn’t enforce our property rights.” (Crisp, Tr. 3470-71).

932. Vincent’s time sheets show that at around the time he gave Crisp this advice, he reviewed one or more “JEDEC publications.” (CX 1937 at 12).

933. Crisp followed Vincent’s advice and did not promote a technology for standardization at any time during Rambus’s membership. (Crisp, Tr. 3470).

934. An email that Crisp wrote in December 1995, almost four years later, shows that he was still mindful of Vincent’s advice at that time. He wrote that he understood that Rambus should not “intentionally propose something as a standard and quietly have a patent in our back pocket. . . .” (CX 711 at 188). As he also stated at the time, he was “unaware of us doing any of this or of any plans to do this.” (CX 711 at 188). Crisp testified that this December 1995 passage referred to “what we would have to do and what we should not do in the event that we were to propose the R-module as a standard.” (Crisp, Tr. 3485).

935. When Crisp was asked at JEDEC meetings on two occasions to comment about Rambus’s intellectual property, he declined to comment each time, and the JEDEC members who testified at trial understood that he had declined to comment. (F. 807-25, 842-57, *supra*). Crisp also testified that no one had informed him that his refusal to comment violated any JEDEC rule or policy. (Crisp, Tr. 3490-91).

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936. Crisp was also advised by Vincent, in the 1992 time frame, about the importance of keeping patent applications confidential. Crisp testified that Vincent “told us to not disclose our patent applications. They were confidential.” Crisp followed this advice. (Crisp, Tr. 3496).

937. In letters transmitting copies of Rambus’s patent applications, Vincent reminded Rambus employees to “keep in mind that this information is confidential.” (CX 1951 at 2; CX 1945 at 2).

938. Crisp was present at a JEDEC meeting when an IBM representative stated that he would not disclose intellectual property at JEDEC meetings. Crisp indicated that he understood from that statement that such disclosures were not required. (Crisp, Tr. 3505-07).

**F. During the Time of Its Participation in JEDEC
Rambus Had No Intellectual Property Interests That It
Would Have Been Required To Disclose Even If
Disclosure Was Mandatory**

**1. Rambus Had No Patents That It Was Required To
Disclose**

939. The parties stipulated that as of January 1996, Rambus held no issued U.S. patents that were essential to the manufacture or use of any device manufactured in compliance with any JEDEC standard. (First Set of Stipulations, Stip. 10).

940. The only patent that Complaint Counsel allege Rambus should have disclosed to JEDEC is U.S. Patent No. 5,513,327 (the ‘327 patent). Complaint Counsel allege that disclosure of the ‘327 patent was required because claims 1 and 7 of the patent could have been reasonably construed by an engineer to cover a JEDEC-compliant SDRAM that also incorporated certain dual-edged clocking proposals and because those claims would read on

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the JEDEC DDR SDRAM standard. (Jacob, Tr. 5541-49, 5551-60).

941. The proposals or presentations that Complaint Counsel raise in this regard are: (1) a presentation by William Hardell of IBM referenced in the May 1992 minutes of the JEDEC 42.3 subcommittee (the “Hardell presentation”) (CX 34 at 32; Jacob, Tr. 5542), (2) a “Future SDRAM Features Survey Ballot” referenced in the December 1995 minutes of the JEDEC 42.3 subcommittee (the “Survey Ballot”) (JX 28 at 34-35; Jacob, Tr. 5543-44), and (3) a presentation by Samsung entitled “Future SDRAM,” referenced in the March 1996 minutes of the JEDEC 42.3 subcommittee (the “Samsung presentation”) (JX 31 at 71; Jacob, Tr. 5544).

942. The ‘327 patent issued on April 30, 1996 and was publicly available as of that date. (CX 1494 at 1). All of the proposals or presentations referenced by Complaint Counsel as supposedly triggering a disclosure obligation with respect to the ‘327 patent were made *before* the ‘327 patent issued.

943. Complaint Counsel’s patent law expert, Mark Nusbaum, did not testify as to whether claims of the ‘327 patent related to JEDEC work.

944. Professor Jacob, who testified on behalf of Complaint Counsel regarding the alleged relationship between the ‘327 patent and JEDEC work, has no patents to his name and has never previously done any claims analysis of the type he presented in this matter with respect to the ‘327 patent. (Jacob, Tr. 5624, 5650).

a. The ‘327 Patent Contains Various Limitations

945. Professor Jacob concedes that Claim 1 of the ‘327 patent “describes a specific implementation” of dual edge clocking, including the “implementation detail” that the DRAM contains

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two input receivers with one receiver latching information in response to the rising edge of a clock signal and the other receiver latching information in response to the falling edge of the clock signal. (CX 1494 at 23; Jacob, Tr. 5546-47).

946. Professor Jacob also concedes that claim 7 of the '327 patent describes a specific implementation of dual edged clocking where the DRAM "toggle[s] between two output drivers through a multiplexer." (CX 1494 at 23; Jacob, Tr. 5548).

b. Rambus Had No Duty To Disclose the '327 Patent Based On the Hardell Presentation

947. The Hardell presentation related to IBM's "toggle mode" DRAM. (G. Kelley, Tr. 2514). IBM's toggle mode was an asynchronous design. (Jacob, Tr. 5608; Soderman, Tr. 9398).

948. The Hardell presentation noted that it has "A-Synchronous RAS/CAS." (CX 34 at 32). This makes it an asynchronous DRAM, according to Professor Jacob's definition of asynchronous DRAMs as "those who are driven off the RAS and CAS signals where the RAS and CAS actually control the operation of the DRAM rather than a clock." (Jacob, Tr. 5394).

949. JEDEC-compliant SDRAMs are synchronous DRAMs with synchronous RAS and CAS signals; the Hardell presentation described an asynchronous DRAM with an asynchronous RAS/CAS interface. (CX 34 at 30-32).

950. The Hardell presentation gave no details about implementation of the dual-edged clocking feature, stating simply: "dual clock edge." (CX 34 at 32).

951. The Hardell presentation was referenced in a memorandum discussing presentations at a meeting of a task group in Dallas in April 1992, and no evidence was presented at

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trial that the Hardell presentation was ever balloted at JEDEC. (CX 34 at 4, 30, 32).

c. Rambus Had No Duty To Disclose the ‘327 Patent Based On the Survey Ballot

952. The Survey Ballot was circulated on or about October 30, 1995 to JEDEC members to determine what features JEDEC members might want to include in future DRAMs. (JX 28 at 34-48; CX 260; Lee, Tr. 6636).

953. With respect to dual-edge clocking, the result of the Survey Ballot was that there was “mixed support” for “using both edges of the clock for sampling inputs.” (JX 28 at 35).

954. Complaint Counsel did not present evidence sufficient to find that the Survey Ballot was ever balloted and therefore it would not have triggered the patent policy.

d. Rambus Had No Duty To Disclose the ‘327 Patent Based On the Samsung Presentation

955. With respect to dual-edge clocking, the March 1996 Samsung presentation stated only that “Data in sampled at both edge [sic] of Clock into memory.” The presentation went on to state: “Use both edge [sic] of the Strobe clock to sample the memory Data into Controller.” (JX 31 at 71).

956. Complaint Counsel did not present evidence sufficient to find that the Samsung presentation was ever balloted and therefore it would not have triggered the patent policy.

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e. Complaint Counsel Did Not Provide Sufficient Evidence to Determine Whether the Presentations Would Trigger the Patent Policy

957. Complaint Counsel has not shown that there were sufficient implementation details presented in the Hardell presentation, Survey ballot, or Samsung presentation from which to determine whether the presentations could be construed as covering claims in the '327 patent. (*See* CX 34; JX 28, JX 31).

958. Rambus has not asserted the '327 patent against any SDRAM or DDR SDRAM devices. (*See* First Set of Stipulations, Stip. 14).

2. Rambus Had No Undisclosed Patent Applications That It Was Required to Disclose, Even if the Policy Required Disclosure

959. The parties have stipulated that prior to the adoption of the JEDEC SDRAM standard in 1993, Rambus had no undisclosed claims in any pending patent application that, if issued, would have necessarily been infringed by the manufacture or use of any device manufactured in accordance with the 1993 JEDEC SDRAM standard. (First Set of Stipulations, Stip. 9).

960. Despite this stipulation, Complaint Counsel argued that the following claims of Rambus patent applications should have been disclosed to JEDEC:

- (1) Claims 151, 159, 160, 164, 165 and 168 of application serial no. 07/847,961 (the '961 application), because they allegedly cover JEDEC-compliant SDRAMs (Nusbaum, Tr. 1544-45; Jacob, Tr. 5507, 5523-28);
- (2) Claims 183, 184, and 185 of application serial no. 08/469,490 (the '490 application), because

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they allegedly cover JEDEC-compliant SDRAMs (Nusbaum, Tr. 1572-73; Jacob, Tr. 5528-32);

- (3) Claims 151, 152, 166 and 167 of application serial no. 07/847,692 (the '692 application), because they allegedly cover a presentation made by NEC that is contained in the September 1994 minutes of the JEDEC 42.3 subcommittee (JX 21 at 91; Nusbaum, Tr. 1584; Jacob, Tr. 5535, 5540); and
- (4) Claim 151 and 152 of application serial no. 08/222,646 (the '646 application), because it allegedly covers the Hardell presentation, the Survey Ballot, and the Samsung presentation (Nusbaum, Tr. 1597-98; Jacob, Tr. 5550).

961. The claims of the '961 application that Complaint Counsel allege covered JEDEC-compliant SDRAMs, claims 151, 159, 160, 164, 165, and 168, were added in an amendment filed on January 6, 1995. (CX 1504 at 216-26; Nusbaum, Tr. 1544-45; Fliesler, Tr. 8847). In an office action dated April 16, 1995, the patent examiner rejected all of the claims pending in the '961 application. (CX 1504 at 227-39). Among other grounds, claims 151-165 were rejected as indefinite. (CX 1504 at 229). All of the claims in the '961 application that allegedly covered JEDEC-compliant SDRAMs were cancelled by Rambus on June 23, 1995. (CX 1504 at 258; Fliesler, Tr. 8847-48).

962. The claims of the '490 application that Complaint Counsel allege covered JEDEC-compliant SDRAMs, claims 183, 184 and 185, were added in a preliminary amendment filed on June 23, 1995. (CX 1504 at 258, 264-66; Nusbaum, Tr. 1572-73; Fliesler, Tr. 8852). After a restriction requirement from the patent office, Rambus elected to pursue other claims. Claims 183, 184

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and 185 were withdrawn from further consideration as of November 27, 1995. (CX 1504 at 274-75; Fliesler, Tr. 8852-54).

963. Claims 151 and 152 of the '692 application were filed in a preliminary amendment mailed on June 28, 1993. (CX 1502 at 205, 208; Fliesler, Tr. 8864-65). In an amendment mailed on October 23, 1995, claims 151 and 152 were amended and claims 166 and 167 were added. (CX 1502 at 233-35; Fliesler, Tr. 8864-65).

964. Complaint Counsel has not shown that, upon a formal infringement analysis, claims 151 and 152 of the '692 application (whether before or after the October 23, 1995 amendment) and claims 166 and 167 might cover devices built according to the September 1994 NEC presentation. (JX 21 at 91; Fliesler, Tr. at 8866-67).

965. Claim 151 of the '646 application was mailed on September 6, 1994. (CX 1493 at 183-85; Fliesler, Tr. 8856). In an office action dated January 24, 1995, the patent examiner rejected claim 151 for, among other reasons, being indefinite. (CX 1493 at 212, 215). Claim 151 was canceled in an amendment filed on September 14, 1995. (CX 1493 at 243; Fliesler, Tr. 8856-57). The '327 patent, which issued from the '646 application, did not contain claim 151. (CX 1494; Nusbaum, Tr. 1617).

966. Claim 151 was filed over two years after the Hardell presentation, and before the Samsung presentation or the issuance of the Survey Ballot. (CX 1493 at 183-85; Fliesler, Tr. 8856; CX 34 at 32; JX 28 at 34-35; JX 31 at 71). Thus, claim 151 was not pending at the time of any of the presentations that allegedly triggered its disclosure.

967. Claim 152 of the '646 application issued as claim 1 of the '327 patent. (CX 1493 at 223-24; CX 1494 at 23).

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**G. Rambus Withdrew From JEDEC Before Formal Work
On the Standardization of the DDR SDRAM Began**

968. Rambus attended its last JEDEC meeting in December of 1995. On June 17, 1996, Rambus notified JEDEC that it would not pay its dues for 1996 and that it would no longer be a JEDEC member. (CX 2104 at 853-54 (Crisp, Micron Dep.); CX 887 at 1).

969. The DDR SDRAM standard received JC 42.3 committee approval in March 1998, but was not published until 2000. (CX 375 at 1-3; JX 57).

970. The DDR SDRAM standard received JEDEC Board of Director approval in 1999. (Rhoden, Tr. 743).

971. The first time that a balloted item was approved as part of the JEDEC DDR SDRAM standard was June 1997. (CX 375 at 2).

972. An email authored by JEDEC Board Chairman Desi Rhoden in March 1998 shows that the first presentation leading to the DDR SDRAM standard occurred in December 1996, after Rambus had withdrawn from JEDEC. (CX 375 at 1-2).

973. On March 9, 1998, Rhoden sent an email to Ken McGhee, the JEDEC Secretary, for forwarding to all JC 42 members. (Rhoden, Tr. 1192-93; CX 375). The email was an effort by Rhoden to recap what had transpired in the DDR SDRAM standardization process. (Rhoden, Tr. 1195).

974. Rhoden's March 9, 1998 email states in part:

[W]e could have finished the DDR standard sooner if only we had started earlier. Let us recap what has transpired with DDR:

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1. A lot of private and independent work outside of JEDEC for most of 1996 (here is where we missed a good opportunity to start early).

2. December 96 – A single overview presentation of a DDR proposal at a JC 42 meeting.

3. March 97 – Many (5 as I remember) presentations of very different proposals at JEDEC (no where near the consensus that was supposedly built outside of the committee). None of these were compatible with each other. At this meeting the decision was made to finally get serious and set up a special meeting for April 97.

4. April 97 – Real, focused, dedicated work begins at a special meeting. Many very good ideas and a lot of truly animated discussion.

5. June 97 – First ballots on DDR pass committee.

6. July 1997 – A second special meeting where the last of the basic concepts were articulated and sent out for ballot.

7. Sept 97 – The diamond in the rough took its basic shape (there were 2 very similar, but still different forms).

(CX 375 at 1-2).

975. Rhoden's March 1998 email thus dates the first presentation to JEDEC of a DDR SDRAM proposal to December 1996. (CX 375 at 1).

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976. Rhoden's email states that the DDR device was being developed "outside of JEDEC" in 1996. (CX 375 at 1).

977. In an April 1997 presentation, Rhoden stated: "DDR & SDRAM were Introduced in JEDEC in Dec 96." (RX 911 at 3).

978. The initial DDR SDRAM presentation that Rhoden referred to in his March 1998 email and his April 1997 presentation was made by Fujitsu in December 1996. (Rhoden, Tr. 1198; RX 911 at 3; CX 375 at 1). This presentation, identified in the minutes of the JC 42.3 subcommittee as "Fujitsu Double Data Rate SDRAM," was designated as a "first showing." (JX 35 at 6, 34-42).

979. Desi Rhoden was in a position to know about the dates described in his March 1998 email. He has played a leadership role at JEDEC for quite some time. (Rhoden, Tr. 1191). He is currently chairman of the JC 42 committee, which contains the JC 42.3 subcommittee. (Rhoden, Tr. 1191). He has also been chairman of the 42.3 subcommittee and is currently chairman of the JEDEC Board of Directors. (Rhoden, Tr. 1190). In 1998, Rhoden was very actively involved in the DDR SDRAM standardization process within the JEDEC 42 committee. (Rhoden, Tr. 1191-92).

980. There is other contemporaneous evidence that work on the DDR SDRAM device did not begin, even outside of JEDEC, until the summer of 1996. An IBM presentation on DDR SDRAM dated March 17, 1997 notes that "Industry has been working on DDR definition for 6-9 months," that is, beginning at some point between approximately mid-June and mid-September 1996. (RX 892 at 1). Initially, this work consisted of "small supplier consortiums and individual supplier/user meetings." (RX 892 at 1). Like Rhoden's testimony, the IBM document dates the first "Official DDR presentations" at JEDEC to December 1996, referring (again) to the first showing by Fujitsu. (RX 892 at 1).

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981. A March 10, 1997 Mitsubishi memorandum regarding “DDR SDRAM Specification Planning History and Recent Trends” confirms that DDR efforts began outside of JEDEC in the summer of 1996, with “eight companies . . . meeting once every 2 weeks to quickly plan DDR specifications.” (RX 885A at 1). The Mitsubishi memorandum’s first mention of JEDEC work relating to DDR SDRAM is the first showing by Fujitsu in December 1996. (RX 885A at 1).

982. As Gordon Kelley, Chairman of the JC 42.3 subcommittee, explained, after a company left JEDEC, it had no duty to disclose anything to JEDEC. (G. Kelley, Tr. 2700).

H. Document Destruction by Rambus

983. In March 1998, there was “growing worry” within Rambus about “email back-ups as being discoverable information” in future litigation. (CX 1005 at 1).

984. Rambus executives decided to destroy emails archived on the company’s backup system after three months. (CX 1744A at 94 (“3 months might be ok”); CX 1744A at 104 (May 1998 management staff meeting: “Backups kept for three months”); CX 2114 at 137 (Karp, Dep.)).

985. Rambus did not preserve emails from the early 1990’s that were stored on Macintosh backup tapes. (CX 2114 at 141 (Karp, Dep.) (“those were the first tapes that were destroyed”)).

986. Employees could still maintain their own email archives for whatever time period they desired. Employees were told to maintain their own archives if they wanted to maintain email files for longer than three months. (CX 2102 at 80-81 (Karp Dep.); CX 1031).

987. Rambus CEO Geoffrey Tate and Karp had a one-on-one meeting at which they discussed reviewing pre-June 1996 backup

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tapes. (CX 1744A at 136 (“Review backup tapes for pre-June 1996, Check for files”); CX 2114 at 145-6 (Karp, Dep.)).

988. On May 14, 1998, Karp sent an email to all Rambus engineers and senior managers regarding “Backup Strategy/Document Retention Policy.” (CX 1031 at 1). He informed them that “[e]very Rambus employee will be involved” in Rambus’s document retention policy. (CX 1031 at 1). Karp announced that he expected to have “a company meeting in early June to kick off the program.” (CX 1031 at 1). He invited questions in face-to-face discussions, but preferred that senders of any emails “keep the distribution narrow.” (CX 1031 at 1).

989. In June 1998, Karp outlined a plan to implement Rambus’s document retention policy. (CX 1744A at 126 (“Exec approval of doc. ret. policy, Presentation of details to exec, Presentation to managers and key individuals with outside counsel, Presentation to staff via division meetings, Implementation mid-August”); CX 2114 at 1442-43 (Karp, Dep.)).

990. In July 1998, Karp disseminated Rambus’s two-page written document retention policy to all Rambus employees. (CX 1040 at 1-2; Diepenbrock, Tr. 6230; CX 2114 at 156-57 (Karp, Dep.)).

991. After distributing the written policy, Karp and an attorney from Cooley Godward held a meeting with all Rambus employees to “kick off” the document retention policy. (Diepenbrock, Tr. 6230; Crisp, Tr. 3419; CX 2102 at 98-99 (Karp, Dep.); CX 2114 at 157 (Karp, Dep.)).

992. While explaining the document retention policy to Rambus employees, Karp told staff to destroy emails because they could be discoverable in litigation. (CX 1264 at 1 (“EMAIL – THROW IT AWAY . Email Is Discoverable In Litigation Or Pursuant To A Subpoena . Elimination of email is an integral part

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of document control . In General, Email Messages Should Be Deleted As Soon As They Are Read”); CX 2114 at 161 (Karp, Dep.) (“We know all e-mail is discoverable; there’s no question about that. So the real question becomes what are you required to save and what should you not save.”)).

993. The document retention instructions were also summarized in slides that Karp used when he delivered presentations to staff. The slides Karp presented to all Rambus employees instructed Rambus employees to, “LOOK FOR THINGS TO KEEP.” (CX 1264 at 1).

994. Rambus’s former in-house counsel Anthony Diepenbrock was told that Rambus did not want to keep documents around because they were “[d]iscoverable in a lawsuit.” (Diepenbrock, Tr. 6234-35 (“Q. And when you say you were told Rambus didn’t want to keep these documents around because they were discoverable, when you say ‘discoverable,’ you are talking about in a subsequent litigation like we are in right here, right? . . . A. Discoverable in a lawsuit, right”)).

995. As a result of directives from Karp, Diepenbrock, Rambus’s in-house counsel, purged his documents and files in the summer on 1998. (Diepenbrock, Tr. 6235-36).

996. In the weeks following the initial meeting, Karp held several training sessions regarding the document retention plan. (CX 2102 at 98 (Karp, Dep.)).

997. Karp explained Rambus’s document retention policy to all Rambus employees. (CX 2102 at 104 (Karp, Dep.)).

998. In September 1998, Rambus celebrated a corporate-wide “Shredder Day.” (CX 1044 at 1; CX 1051 at 1 (“Thursday is Shred Day 1998. . . . Please leave your burlap bags in the hallway . . . We will have a Shred Day Celebration in the new 1st floor open area . . . If you have any questions regarding our Document

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Retention Policy, please see Joel [Karp]”); Crisp, Tr. 3422; CX 2102 at 106 (Karp, Dep.) (“we had one day where we had kind of a spring cleaning . . . one of the many Valley shredding companies [came] in with their kind of industrial shredders”).

999. In one day alone, in the span of five hours, Rambus destroyed as much as 20,000 pounds of business records. (CX 2102 at 108 (Karp, Dep.) (Rambus delivered “a lot of stuff” to the shredding company; the “stuff [was] being basically piled pretty high on carts.”); CX 1052 at 1).

1000. Karp testified that he “did a little bit of spot checking” with Rambus employees and “sat and watched over their shoulder” to insure compliance with the document retention policy. (CX 2102 at 97-98 (Karp, Micron Dep.)).

1001. In September 1998, Karp had a one-on-one meeting with Rambus CEO Geoffrey Tate during which Karp inquired whether Tate and other board members had cleaned out their files. (CX 1744A at 141 (“Doc. Retent, Geoff files?, Board members?”); CX 2114 at 148 (Karp, Dep.)).

1002. Rambus instructed Lester Vincent, an attorney with its outside patent law firm Blakely, Sokoloff, Taylor & Zafman, to destroy Rambus-related files. (CX 3129 at 530 (Vincent, Dep.) (“[Karp] discussed the Rambus document retention policy that he wanted me to implement.”); CX 3126 at 410 (Vincent, Dep.); CX 2114 at 183-84 (Karp, Dep.)).

1003. At Rambus’s request, Vincent destroyed a variety of documents from the left hand side of his files, including various “prosecution documents” such as “patent prosecution files for issued patents . . . claiming priority to the 1990 Farmwald, Horowitz application.” (CX 3126 at 408 (Vincent, Dep.); CX 3129 at 530-33, 536, 539-40 (Vincent, Dep.)).

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1004. Vincent also destroyed various “drafts, handwritten notes, letters or faxes, and maybe drawings,” including correspondence from Rambus to Blakely, Sokoloff and vice versa, Vincent’s own handwritten notes and those of other lawyers from his firm, drafts of patent applications and amendments, draft handwritten drawings or informal drawings, electronic versions of such documents, and audio tapes of meetings with inventors. (CX 3129 at 531-33 (Vincent, Dep.); CX 3126 at 425-26 (Vincent, Dep.)).

1005. Some of the copies Vincent destroyed were the “only documents in existence.” (CX 3129 at 539-40 (Vincent, Dep.)).

1006. Vincent carried out the document destruction at various points in time, beginning several months after the initial instructions he received from Rambus in 1997 and early 1998. (CX 3126 at 418, 422 (Vincent, Dep.)).

1007. Vincent briefly suspended the document destruction after Rambus filed a lawsuit against Hitachi in 2000. (CX 3129 at 534-35 (Vincent, Dep.)).

1008. After the hiatus in document destruction during the pendency of the Hitachi litigation, Vincent’s law firm recommenced destroying documents. (CX 3129 at 535 (Vincent, Dep.)). Document destruction continued at least until Rambus filed the Infineon suit in August 2000. (CX 3126 at 424 (Vincent, Dep.)); CX 1329 at 542 (Vincent, Dep.)).

1009. CX 711 is a 199 page collection of emails authored by Richard Crisp that were preserved on Rambus’s main server when Crisp transferred the messages from one laptop computer to another via the server. (Crisp. Tr. 3587-91). These documents were preserved, were produced in discovery, and were admitted into evidence. (Crisp, Tr. 3572-76, 3588-92).

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IX. RAMBUS HAS MONOPOLY POWER IN THE RELEVANT MARKETS**A. Relevant Markets****1. Product Markets**

1010. Technology markets are markets for ideas or inventions where technology itself is a product. (McAfee, Tr. 7324). The demand for DRAM technology is derived from the demand for DRAMs, and the demand for DRAMs is derived from the final products in which DRAM is used. Ultimately the demand for the technology traces back to the demand for the final good. (McAfee, Tr. 7182, 7198-99).

1011. Often in technology markets frequent trades have historically not taken place. Therefore there is little historical price and quantity data. (McAfee, Tr. 7321). In lieu of data pertaining to actual trades, serious consideration of a technology by JEDEC participants suggests that informed buyers of the technology view those technologies as significant substitutes and hence price-constraining substitutes. (McAfee, Tr. 7333-34).

1012. The relevant purchasers or buyers in this case include DRAM manufacturers. (McAfee, Tr. 7323-24; Rapp, Tr. 9969-72).

1013. There are four relevant technology markets in this case: (1) the latency technology market (McAfee, Tr. 7364); (2) the burst length technology market (McAfee, Tr. 7373); (3) the data acceleration technology market (McAfee, Tr. 7380); and (4) the clock synchronization technology market (McAfee, Tr. 7385-86).

1014. In addition, it can be analytically useful to consider a “cluster” market. (McAfee, Tr. 7390-92). A “cluster” market would consider each of the four relevant product markets as a collection, based on the logic that the products are used in the

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same products, though strictly speaking they are not substitutes for one another. (McAfee, Tr. 7390-92). The “cluster” market utilized in this case is the synchronous DRAM technology market. (McAfee, Tr. 7390-91).

1015. Respondent does not challenge Complaint Counsel’s product market definitions. Respondent’s economic expert, Dr. Rapp, testified that “relevant market is not crucial to understanding competition and market power in this setting.” (Rapp, Tr. 10036).

2. Geographic Market

1016. The relevant geographic market for each relevant product market is the world. (McAfee, Tr. 7393).

1017. The relevant geographic market for each relevant product market is the world because: buyers of technology typically do not care about the geographic source of technology; technologies tend to be licensed worldwide; technologies tend to flow across national borders; downstream products are produced and used worldwide; and transportation costs of both technology and DRAMs are negligible. (McAfee, Tr. 7393-95).

B. Monopoly Power

1018. Rambus possesses monopoly power in the relevant technology markets. (F. 1019-29; McAfee, Tr. 7420-21).

1019. Rambus’s economic expert, Dr. Rapp, does not contest that Rambus possesses market power in the four technology markets. (Rapp, Tr. 10046). Dr. Rapp testified that his “opinion is that the market power that Rambus possesses in these four technologies arises solely out of the distance between the cost-performance qualities of the Rambus technologies and the next best alternative.” (Rapp, Tr. 10260).

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1. Market Share

1020. The percentage of total DRAM production in the world today that is subject to Rambus's patent claims is in the upper nineties. (McAfee, Tr. 7430).

1021. Rambus claims that approximately ninety percent of the entire DRAM market is covered by Rambus patents. (CX 1386 at 4 (“Today - We are on the cusp of achieving our original [goal] - SDRAM+DDR+RDRAM>>90% of the DRAM market - SDRAM/DDR: [approximately] 20% paying us royalties now; all by 01/E”)); CX2067 at 171 (Davidow, Dep.) (“Q. So am I right, then, that it's Rambus's position [] that any SDRAM or RDRAM being used in main memory PCs today [January 31, 2001] are covered by their patents? . . . [A] I would say that it is highly likely that is true.”)).

2. Assertion of Patents

1022. Rambus believed that certain of its patents cover SDRAM and DDR SDRAM products. (CX 1353 at 7 (“Intellectual Property . . . Strategic Patent Portfolio 1: SDRAM/DDR/Controllers all infringe”)); CX 1382 at 33 (“Non-Compatible License Terms, All agreements cover SDRAM, DDR and logic ICs which control these memories”); CX 1364 at 1-2 (*in camera*)).

1023. Rambus has asserted that its innovations include “Programmable latency register on a SDRAM,” “Programmable burst techniques implemented on a SDRAM,” “DLL implemented on a SDRAM,” and “Double data rate.” (CX 1371 at 5; CX 1383 at 4; *see also* CX 1363 at 1).

1024. Rambus has asserted that “programmable latency on a DRAM” and “Programmable burst on a DRAM,” as used in SDRAMs, and “DLL implemented on a DRAM” and “Double

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data rate,” as used in DDR SDRAMs, are Rambus innovations covered by its patents. (CX 1363 at 3).

1025. Rambus has asserted that its issued patents cover programmable CAS latency, as described and depicted in JEDEC SDRAM and DDR SDRAM data sheets and individual company data sheets. (CX 1371 at 46, 53 (asserting that the phrase “value which is representative of a time delay after which the memory device responds to a read request” in claim 44 of Rambus’s ‘365 patent corresponds to the CAS latency portion of the mode register diagram in the JEDEC 64M DDR SDRAM Data Sheet); CX 1383 at 47, 51 (same); CX 1338 at 20, 23 (asserting that same language from claim 23 of Rambus’s ‘195 patent corresponds to the CAS latency portion of the mode register in Micron’s 16M SDRAM Datasheet); CX 1338 at 41, 44 (similar language from Rambus’s ‘918 patent compared to the CAS latency portion of Micron’s 16M SDRAM Datasheet)).

1026. Rambus has asserted that its issued patents cover programmable burst length, as described and depicted in JEDEC SDRAM and DDR SDRAM data sheets and individual company data sheets. (CX 1371 at 64, 68 (asserting that the phrase “a first amount of data to be output onto a bus in response to a read request” in claim 1 of its ‘214 patent corresponds to the burst length portion of the mode register diagram in the JEDEC 64M DDR SDRAM Data Sheet); CX 1383 at 60, 64 (same); CX 1371 at 31, 36 (asserting that similar language from Rambus’s ‘918 patent corresponds to the burst length portion of the mode register in Micron’s 16M SDRAM Datasheet)).

1027. Rambus has asserted that its issued patents cover on-chip DLL as depicted in JEDEC SDRAM and DDR SDRAM data sheets. (CX 1371 at 84-85 (asserting that the term “delay locked loop” in claim 11 of its ‘214 patent corresponded to the indication “DLL” in the functional block diagram of the JEDEC 64M DDR SDRAM Data Sheet)).

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1028. Rambus has asserted that its patents cover use of programmable CAS latency, programmable burst length, on-chip DLL and dual edge clock in JEDEC-compliant SDRAMs and DDR SDRAMs. (Lee, Tr. 6776-77; Rhoden, Tr. 529-31).

1029. Rambus has also asserted that certain of its issued foreign patents cover use of programmable CAS latency, programmable burst length, on-chip DLL and dual edge clock in certain SDRAMs and DDR SDRAMs. (Bechtelsheim, Tr. 5884-85; CX 1268 at 1-8, 13-14).

3. JEDEC Standardization

a. Rambus's Market Power Is Not Attributable to the Inclusion of Its Technology In JEDEC Standards

1030. Regarding standardization and market power, Rambus offered the testimony of Dr. Rapp, who has expertise in the area of standard setting. As an example, he recently presented a paper on the economics of standard setting at a session of the Antitrust Section of the American Bar Association, which Dr. Rapp proposed and helped to organize. (Rapp, Tr. 9770-71).

1031. Last year, Dr. Rapp presented a paper and testified about the issue of standard setting and market power at the joint hearings of the Federal Trade Commission and the Department of Justice on intellectual property and the knowledge based economy. (Rapp, Tr. 9771).

1032. In contrast, Complaint Counsel's expert, Professor McAfee, has no expertise in the area of standard setting. (McAfee, Tr. 11345).

1033. According to the economic literature, a standard is a specification of a product design intended to achieve engineering compatibility, either between parts of a product or system or

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between components of a network. (Rapp, Tr. 9783). Economists recognize that standards are necessary when compatibility requirements are high and when either products, systems, or networks will fail unless engineering compatibility is maintained. (Rapp, Tr. 9783). From an economist's point of view, standard setting does not entail specifying every detail of a product; rather, standard setting is economically efficient when it achieves compatibility but does not over-determine product characteristics. (Rapp, Tr. 9785).

1034. Economists refer to standards that are set through formal means, i.e., through a standard setting body or the government, as *de jure* standards. (Rapp, Tr. 9788-89). Standards that emerge through market forces are referred to as *de facto* standards. (Rapp, Tr. 9789).

1035. In a market where compatibility requirements are exceedingly high, the market might permit only a single standard. (Rapp, Tr. 9791). This may occur in a network industry, which require a special kind of complementarity where systems must be able to communicate. (Rapp, Tr. 9792). The typical example of this type of network effect is the facsimile machine. A facsimile machine is worthless if it cannot communicate with other facsimile machines; the more facsimile machines that it is able to communicate with, the more valuable it is. (Rapp, Tr. 9792-93).

1036. Where compatibility requirements are less than extreme, which is more common, multiple standards may coexist. (Rapp, Tr. 9791). For example, there are several standards for cellular telephones, but each type of cellular telephone can communicate with the other types. (Rapp, Tr. 9791).

1037. Compatibility requirements in the DRAM industry are not high. (Rapp, Tr. 9793). Although DRAM must be compatible with other components in a particular computer, a computer with one type of DRAM can communicate with a computer with another type of DRAM. (Rapp, Tr. 9793-94). This means that

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network effects in the DRAM industry are weak. (Rapp, Tr. 9794).

1038. Because of the weakness of network effects, different DRAM standards can coexist in the market. (Rapp, Tr. 9794).

1039. Standardization by JEDEC is not necessary for marketplace success. For instance, the latest generation of Video RAM was not standardized by JEDEC yet gained market success. Samsung actually brought the technology to JEDEC for standardization, but JEDEC declined to adopt it. (Prince, Tr. 9021). Samsung produced the product anyway, and it became a high volume DRAM product. (Prince, Tr. 9021-22).

1040. Similarly, reduced latency DRAM (“RLDRAM”) was developed and produced by Infineon and Micron with little or no involvement by JEDEC. (Bechtelsheim, Tr. 5965-66).

1041. Standardization by JEDEC is also sometimes insufficient for marketplace success. For example, JEDEC standardized Burst EDO, a technology brought to JEDEC by Micron (JX 23 at 68), yet it failed in the marketplace. (Williams, Tr. 873). Failure occurred despite the fact that Micron rigorously promoted the technology. (Williams, Tr. 822-24).

1042. JEDEC standardization is not always necessary nor sufficient to assure demand for a product. Standardization of SDRAM by JEDEC in 1993 did not assure that there would be demand for SDRAM devices (MacWilliams, Tr. 4809-10), and SDRAM might never have enjoyed demand from the market absent Intel’s developemnt of the PC100.

1043. The publication of JEDEC’s SDRAM standard was insufficient to ensure market success or even interoperability. The JEDEC SDRAM standard was not sufficiently comprehensive; because of this, SDRAM products made by one DRAM

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manufacturer were not compatible with those produced by another. (MacWilliams, Tr. 4908).

1044. Prompted by these incompatibilities, Intel – not JEDEC – developed the “PC SDRAM” standard in 1996. (MacWilliams, Tr. 407-09). As stated in that standard, “The objective of this document is to define a new Synchronous DRAM specification (‘PC SDRAM’) which will remove extra functionality from the current JEDEC standard SDRAM specification, so that it will be a ‘fully compatible’ device among all vendor designed parts.” (RX 2103-14 at 9).

1045. The Intel PC SDRAM specification set forth what would become the industry specification for PC100 SDRAM. (MacWilliams, Tr. 4908). For instance, Compaq used Intel PC100 SDRAM compliant parts for its products. (Gross, Tr. 2350-51). Similarly, AMD referred to the Intel PC SDRAM specification when designing its chipsets. (Polzin, Tr. 4010-11).

1046. The Intel PC SDRAM specification later set forth the industry standard for PC66 SDRAM. (MacWilliams, Tr. 4908; RX 2104-13 at 60-61). Compaq, for example, used Intel PC66 SDRAM compliant parts for its products. (Gross, Tr. 2348-49).

1047. The PC133 SDRAM standard was developed by yet another route. In that case, DRAM manufacturers and PC OEMs developed the specification. (MacWilliams, Tr. 4912-13; CX 2560 at 1). The PC133 SDRAM standard was later incorporated into the Intel PC SDRAM standard. (RX 2104-14 at 7 (document revision history shows addition of standards for 133MHz SDRAM); MacWilliams, Tr. 4908). Again, Compaq used the Intel PC133 SDRAM compliant DRAM for its products. (Gross, Tr. 2353).

1048. Intel’s adding of the PC SDRAM standard specifications demonstrates that there are powerful forces in the DRAM industry that affect DRAM standards in a *de facto* rather

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than *de jure* sense. From an economic perspective, Intel can, outside of a standard setting body, create specifications or specification addendums that become the industry standard. (Rapp, Tr. 9797). Formal standard setting is therefore not the only way in which an iteration of DRAM can become prominent. (Rapp, Tr. 9798).

1049. It is sometimes the case, but not always, that formal standard setting may create market power. (Rapp, Tr. 9798-99). Formal standard setting may create market power when (1) there are high compatibility requirements, (2) the standard setting body is faced with several technologies that are more or less equivalent in cost-performance terms, and (3) standard setting elevates one of those technologies above the others. (Rapp, Tr. 9799-00). Where compatibility requirements are not high and there may exist more than one standard, then little or no market power is gained through standard setting. (Rapp, Tr. 9800).

1050. Where one technology is superior to the alternatives then that technology would have been selected and become the *de facto* standard had the market been allowed to operate. Under these circumstances, formal standard setting does not add any market power. (Rapp, Tr. 9800-01). The market power of the technology is due to its superiority. (Rapp, Tr. 9801).

1051. Standardization of the Rambus technologies by JEDEC did not reduce the substitution possibilities of alternatives, and Rambus's market power was unchanged by formal standard setting by JEDEC. (Rapp, Tr. 9902).

b. Rational Manufacturers and a Rational Standard Setting Organization Would Have Still Adopted the Rambus Technologies Had Disclosure Occurred

1052. The evidence shows that the four Rambus technologies were the technologies of choice throughout the relevant time

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period and that a rational manufacturer or a rational JEDEC would have selected the Rambus technologies. (Rapp, Tr. 9903). The additional disclosures that Complaint Counsel allege Rambus should have made would not have affected the outcome because there were no cost-performance equivalent technologies to the two Rambus technologies incorporated in SDRAM or to the four Rambus technologies incorporated in DDR. (Rapp, Tr. 9907-08). Had the allegedly required additional disclosures occurred, rational manufacturers and a rational standard setting organization would have adopted the Rambus technologies for both SDRAM and DDR. (Rapp, Tr. 9908-09).

1053. It therefore follows that competition has not been adversely affected by Rambus's alleged failure to disclose. (Rapp, Tr. 9908-09). It is worth noting on this issue that Complaint Counsel's economic expert testified that the alleged conduct of Rambus has had no impact on DRAM prices, no effect on consumers, and no effect on the final PC market as of the time of trial (over three and one-half years after Rambus began asserting its patents). (McAfee, Tr. 7565-66)).

1054. The conclusion that competition has not been adversely affected by Rambus's alleged failure to disclose is bolstered by the likelihood that JEDEC would have selected Rambus's four technologies had Rambus never joined JEDEC. This demonstrates that JEDEC members, acting as rational manufacturers, would have selected Rambus's technologies, so that standardization by JEDEC did not increase Rambus's market power. (Rapp, Tr. 9863).

1055. Because the but-for world outcome is the same as the actual world outcome, Rambus's alleged conduct caused it to gain no additional market power. (Teece, Tr. 10312-13).

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c. Intel's Choice of RDRAM Conferred Market Power, Not JEDEC Standardization

1056. In the 1995-1996 time period, Intel spent about a year exploring various alternatives for the next generation DRAM. (MacWilliams, Tr. 4800-01). Intel looked at EDO, SDRAM, DDR, SyncLink, and Rambus. (MacWilliams, Tr. 4800-01). Other than these alternatives, “the memory vendors didn’t have any other good ideas.” (MacWilliams, Tr. 4800-01).

1057. An internal Intel document written by Peter MacWilliams explained that the DRAM manufacturers were not focused on improving DRAM technology: “[u]p to this point in time, [(Q395)] memory vendors were strictly focus[ing] on lowering costs and increasing density – Intel felt the memory vendors needed to get more focused on increasing access speed.” (RX 1532 at 1).

1058. Intel saw a growing performance gap in the mid-1990’s between CPU performance and DRAM performance. (RX 868 at 3). After examining the alternatives for a year, Intel chose RDRAM to be its next generation DRAM technology. (MacWilliams, Tr. 4800-01).

1059. Intel chose RDRAM because of the need for higher bandwidth for use with faster CPUs and the need to satisfy memory needs driven by more I/O demands and new applications. (RX 904 at 5-6; *see also* RX 805 at 2 (December 1996 Intel document reciting need for increased bandwidth driven by memory intensive applications such as visual computing and noting that Intel was looking for technology beyond 100 MHz SDRAM)).

1060. Intel’s choice of RDRAM was significant. As Richard Heye of AMD – Intel’s competitor in the microprocessor market – explained, in the late 1990’s AMD believed that RDRAM would become the next volume memory product (even though the

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technology was “revolutionary”) because it had been chosen by Intel:

And given that, you know, Intel, who owns 80 percent of the market, really put his wood behind the arrow, so to speak, on Rambus, you know, they had talked about the customers, well our customers were saying, hey, you ought to use Rambus, and we talked to the memory vendors. And the memory vendors were saying, you know what, Rambus, it's a revolutionary change, not evolutionary, but, you know, that's the way the industry is going, that's the way we're going to go, and Rambus is it.

(Heye, Tr. 3685).

1061. Steve Polzin of AMD testified that it was important to AMD that Intel chose RDRAM because Intel's selection would make RDRAM a *de facto* standard: “[Intel] drove the volume, and if the volume DRAM was Rambus, that would become the commodity part, and we had to remain competitive in terms of both performance and cost, and if the indications were most of the DRAMs to be built in the world were going to be Rambus DRAMs, we better be compatible with them.” (Polzin, Tr. 3941-42).

1062. Intel's selection of RDRAM was also significant to the PC OEMs. For example, Compaq, one of the largest producers of personal computers in the world stated in a November 1998 Compaq Memory Update that Compaq was planning to incorporate RDRAM into all Compaq products. (RX 1302 at 8). Jacquelyn Gross, the Director of Memory Procurement at Compaq (Gross, Tr. 2265), testified that Compaq was planning to transition all of its products – desktops, workstations, etc. – to RDRAM at rate higher than it had ever changed memory technologies before. (Gross, Tr. 2324-27). As described in

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Compaq's documents, this was the "[m]ost aggressive, cross divisional memory technology shift ever planned at Compaq." (RX 1302 at 8). This was planned, even though Compaq considered RDRAM to be "revolutionary." (Gross, Tr. 2327).

1063. Similarly, an October 1998 internal presentation reflects Compaq's sentiment at the time that "Rambus is the clear next generation memory" technology. (RX 1287 at 4). As Gross explained, the reason for this belief was that Intel had told Compaq that it was going to produce chip sets for RDRAM. (Gross, Tr. 2317-18). This was important to Compaq because ninety percent of Compaq's PC applications used Intel chipsets. (Gross, Tr. 2317-18).

X. THE CHALLENGED CONDUCT WAS NOT EXCLUSIONARY**A. Rambus Had a Legitimate Business Justification For Not Disclosing its Proprietary Patent Information**

1064. Crisp was advised by Vincent, Rambus's outside patent counsel, in the 1992 time frame, about the importance of keeping patent applications confidential. Crisp testified that Vincent "told us to not disclose our patent applications. They were confidential." Crisp understood that the consequences that might result from disclosure of applications included "that companies could potentially file interference actions on our patent applications in the patent office; that in certain countries where the rules are first to file, somebody could potentially file a claim before we actually did; and that we basically would be disclosing trade secrets that could work against us in terms of our competitive position in the marketplace." Crisp followed this advice. (Crisp, Tr. 3496).

1065. Crisp commented about Rambus's reasons not to disclose patent applications in a September 23, 1995 email:

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[W]e decided that we really could not be expected to talk about potential infringement for patents that had not issued both from the perspective of not knowing what would wind up being acceptable to the examiner, and from the perspective of not disclosing our trade secrets any earlier than we are forced to.

(CX 837 at 2).

1066. Respondent's economic expert, Dr. Rapp, received a bachelor's degree in economics from Brooklyn College in 1965, a master's degree in economic history from the University of Pennsylvania in 1966, and a Ph.D. in economic history from the University of Pennsylvania in 1970. (Rapp, Tr. 9766). He is the president of NERA, which is an economics consulting firm with five hundred employees that specializes in the economics of competition, including industrial economics, antitrust and intellectual property. (Rapp, Tr. 9764). He has been an economic consultant with NERA since 1977 and the president of NERA since 1988. (Rapp, Tr. 9764). Prior to his joining NERA, Dr. Rapp was a tenured professor at the State University of New York at Stony Brook. (Rapp, Tr. 9766).

1067. In addition, Dr. Rapp has published articles on predatory pricing, intellectual property economics, and innovation in high-technology markets. (Rapp, Tr. 9768-69). In the past fifteen years, a great deal of his consulting work has been in the area of high-technology antitrust and intellectual property, typically in the computer and semiconductor industries. (Rapp, Tr. 9769-70).

1068. Dr. Rapp has been qualified as an expert on numerous occasions. Since the early 1980's, Dr. Rapp has testified in hearings or trials as an antitrust economics expert, on average, about once per year. (Rapp, Tr. 9771). He has testified at least

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five times as an expert on the economic aspects of intellectual property issues. (Rapp, Tr. 9771-72).

1069. Dr. Rapp testified that Rambus's alleged conduct was not exclusionary. (Rapp, Tr. 9921).

1070. Complaint Counsel's economic expert, Professor McAfee, did not criticize or rebut Dr. Rapp's opinion that Rambus's conduct was not exclusionary because of the presence of a legitimate business justification. To the contrary, McAfee admitted that concealing information, even if it discourages competitors from entering a market, is not exclusionary. (McAfee, Tr. 7525-27). McAfee also admitted that it is not exclusionary to conceal an invention from competitors in order to take advantage of the invention while others cannot. (McAfee, Tr. 7527-28).

1071. Professor McAfee admitted that the only "candidate purpose" he considered for Rambus's withholding information about its patent applications was monopolization, i.e., he did not consider other purposes that might have led Rambus to take the risk that he identified. (McAfee, Tr. 7539).

1072. The protection of trade secrets, including intentions about amending pending claims, is a valid business justification for not disclosing information regarding pending patent applications and intentions to file applications in the future. (Rapp, Tr. 9915-16).

1073. Disclosure of trade secrets, including pending patent applications or intentions to file or amend future applications, even after a parent patent application becomes public, may: (1) jeopardize the issuance of pending claims by enabling competitors to file patent interferences or to race to be first-to-file in certain foreign jurisdictions; and (2) result in a loss of competitive advantage by informing competitors of the firm's R&D focus or by inducing competitors to begin work around efforts earlier. (Rapp, Tr. 9916-18, 9926).

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1074. Even after the '898 application had been disclosed (in the form of the PCT application), Rambus still had trade secrets (additional pending applications and intentions to file additional applications) that it could legitimately protect from disclosure. (Rapp, Tr. 9926).

1075. Prior to 1999, patent applications were kept strictly confidential by the PTO until patent issuance. (Fliesler, Tr. 8830).

1076. Patent applications are generally kept confidential by applicants for as long as possible. (Fliesler, Tr. 8829-30). Applicants have no enforceable rights until a patent issues and generally do not want to have their technology disclosed to competitors until such time as they do have enforceable patent rights. (Fliesler, Tr. 8829-30). In the 1990 to 1996 time frame, if a patent ultimately did not issue from an application, the application would remain secret and the applicant could retain trade secret protection over the material in the application. (Fliesler, Tr. 8836-37).

1077. As of October 31, 1991, Rambus had no trade secret protection over the written description, drawings, and original one hundred fifty claims of the '898 application. (Fliesler, Tr. 8894).

1078. Companies often are wary of disclosing patent applications because to do so would be to disclose to competitors the areas of technology that the company is developing and the areas of technology for which the company is seeking patent protection. (Fliesler, Tr. 8840).

1079. Even when a patent has issued from an original application – which results in disclosure of the drawings and written description – the applicant would still have reasons to keep confidential other applications claiming priority back to that original application. (Fliesler, Tr. 8837-38). It would be very valuable to a competitor to know what claims the applicant is

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actually pursuing in those other applications from the entirety of inventions that could be claimed based on the written description. (Fliesler, Tr. 8838, 8900-02).

1080. Similarly, even if a corresponding international patent application is published, there remain business reasons for not disclosing a United States patent application, because information about the particular claims being pursued constitutes strategic business and technical information that a company would want to keep from its competitors. (Fliesler, Tr. 8840-41, 8894-96).

1081. In addition, if information about pending applications were disclosed by a company to a competitor, the competitor could potentially slow down or interfere with the prosecution of the application. (Fliesler, Tr. 8841). The competitor could disclose prior art to the company, for example. Even if it is not relevant prior art, it could cause a dilemma for the company about whether the information triggered a duty to disclose prior art to the PTO, potentially confusing or delaying the patent prosecution. (Fliesler, Tr. 8841-42).

1082. The competitor could also try to provoke an “interference” at the patent office – that is, a proceeding to determine which of two applicants claiming the same invention was actually the first to invent and entitled to a patent – by claiming the same invention in one of the competitor’s applications. (Fliesler, Tr. 8834-35, 8842).

1083. In the United States, patents are generally awarded to the applicant who was the first to invent a given invention. (Fliesler, Tr. 8834-35). Most foreign jurisdictions, however, have a first to file rule: The first applicant to file an application that is otherwise entitled to a patent will be awarded the patent. (Fliesler, Tr. 8838-39). Through treaties to which the United States is a party, a patent applicant has up to one year following the filing date of his U.S. patent application to file a corresponding application in foreign countries. If he does so, the foreign country

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accords the application a priority date, meaning a legally effective filing date in that foreign country, of the U.S. application. (Fliesler, Tr. 8839-40). Which applicant is the first to file an application in a foreign country will be judged according to the priority date. (Fliesler, Tr. 8839-40).

1084. Martin Fliesler, a patent attorney with over thirty years of experience prosecuting patent applications, advises his clients that they should not disclose patent applications, but instead should keep them confidential. (Fliesler, Tr. 8765-72, 8842-43).

1085. The need to keep patent applications confidential was well recognized in the semiconductor industry. JEDEC members were informed in 1992 of potential negative consequences flowing from premature disclosure of inventions. In October 1992, JC 42 Chairman Jim Townsend circulated an article entitled “Don’t lose your patent rights” to members of the JC 42 committee. (CX 342 at 8). The article advises inventors to “keep it under your hat” because disclosure of an invention may waive any rights to obtain a patent. The article states that in the United States, a disclosure made one year before filing an application can bar a patent, while in some foreign jurisdictions, any disclosure before filing an application will bar a patent. (CX 342 at 8).

1086. Rambus’s keeping information about its pending or future patent applications confidential did not impose on Rambus costs or risks that were compensable only by excluding rivals and thereby gaining market power. (Rapp, Tr. 9924).

1087. These conclusions apply in the standard setting context as in any other. A company that is the member of a standard setting body may benefit from not disclosing information regarding its pending patent applications or its intentions to file future patent applications regardless what standards are developed. (Rapp, Tr. 9919-20). The benefits to a company keeping control of its business and intellectual property strategies do not depend on which standard is chosen by the standard setting

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body. (Rapp, Tr. 9919-20). These benefits have to do with maximizing the ability to operate competitively, not standardization. (Rapp, Tr. 9920).

B. Rambus's Conduct Did Not Impact Equal or Superior Alternatives

1088. The evidence shows that Rambus's conduct was not exclusionary even as that term was defined by Complaint Counsel's expert, Professor McAfee. The exclusion of inferior products from the market is not exclusionary in an economic sense. (McAfee, Tr. 7536).

1089. According to Professor McAfee, in order for conduct to be exclusionary, it must impact equal or superior alternatives. (McAfee, Tr. 7537). Professor McAfee defined the phrase equal or superior alternatives to include the commercially viable alternatives that could have been chosen had Rambus disclosed. (McAfee, Tr. 7762-63).

1090. Dr. Rapp testified that the cost differences that he quantified and the performance advantages of the Rambus technologies made the Rambus technologies superior to the alternatives in cost-performance terms. (Rapp, Tr. 9861-62).

1091. Professor McAfee admitted that he did not quantify any cost differences between Rambus's technologies and the alternative technologies. (McAfee, Tr. 11340).

1092. Although Professor McAfee admitted that JEDEC members would consider the performance of alternatives in deciding whether to pursue the alternatives (McAfee, Tr. 11340), he did not quantify the performance differences between Rambus's technologies and any of the alternatives he claimed were commercially viable. (McAfee, Tr. 7581-82, 11340).

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1093. Professor McAfee also admitted that JEDEC members would consider the “headroom” or future flexibility of alternatives in deciding whether to pursue the alternatives. (McAfee, Tr. 11340). He did not, however, compare the headroom or future flexibility of Rambus’s technologies with any of the alternatives he proposed as commercially viable. (McAfee, Tr. 11340-41).

1094. For example, Professor McAfee admitted that JEDEC behavior and JEDEC discussions show that JEDEC members valued multiple latencies and multiple burst lengths, yet he did not quantify that value. (McAfee, Tr. 11351).

1095. Professor McAfee also testified that, although he had made no effort to determine if any intellectual property covered any of the alternatives that he considered commercially viable other than Kentron’s technology, the presence of intellectual property could render a technology not commercially viable in his opinion, because JEDEC attached a “penalty” to the presence of intellectual property. (McAfee, Tr. 7582-85).

C. The “Commercial Viability” Analysis of Complaint Counsel’s Economic Expert

1096. Professor McAfee testified that he believed that equal or superior alternatives were excluded by Rambus’s alleged conduct. His definition of “equal or superior,” however, was flawed. To determine whether equal or superior alternatives were excluded, Professor McAfee developed a “commercial viability” test. (McAfee, Tr. 7330-31).

1097. Although he claimed that his methodology was “parallel” to standard economic tests, Professor McAfee admitted that he was aware of no economic literature that describes the use of a “commercial viability” test to determine market substitutability of alternatives. (McAfee, Tr. 7567).

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1098. According to Professor McAfee, an alternative was “commercially viable” if it constrained the price of Rambus’s technologies. (McAfee, Tr. 7330-31). But defined that way, the concept of “commercially viable” does not mean that the technology is “equal or superior.” Even weak substitutes can constrain the price of a technology. (Rapp, Tr. 9860). An alternative can therefore be “commercially viable” in this sense without being equal or superior or even a viable alternative in any practical sense. (Teece, Tr. 10368, 10370-71).

1099. When determining whether an alternative was price constraining, Professor McAfee provided no analysis of price elasticity. In other words, he did not consider the price level required before the alternatives would actually constrain the price. Instead, he simply looked for evidence that the alternative was considered as a possible alternative by members of JEDEC and that knowledgeable engineers now claimed that the alternative was viable. (McAfee, Tr. 7333-34).

1100. Further, Professor McAfee tied his notion of commercial viability to subjective judgments of JEDEC members (McAfee, Tr. 7335) and considered the opinions of Professor Jacob, (*see, e.g.*, McAfee, Tr. 7360) and the cost information provided by Respondent’s expert Michael Geilhufe. (McAfee, Tr. 11199, 11249-78).

1101. Professor McAfee judged patented technologies to be “hobbling” because the JEDEC rules put a “penalty” on technologies that were covered by intellectual property. (McAfee, Tr. 7337, 7582-83). He thus regarded patented technologies, such as Rambus’s, as inferior based on the presence of intellectual property and without regard to the level of royalties sought for that technology.

1102. In a competitive market, if the best solution in cost-performance terms is patented and involves the payment of royalties, competition will dictate that the royalties be paid and

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that the patented solution is adopted. (Rapp, Tr. 9939). While individual executives in an industry may dislike paying royalties, just as they may dislike paying health care costs for workers or a competitive wage, they will have no choice because competition will mandate that these costs be incurred. (Rapp, Tr. 9938-39).

1103. Professor McAfee also considered “a perception of the magnitude of those problems” associated with that technology as “relevant to the determination of which technologies should be selected.” (McAfee, Tr. 7586). In other words, he based his determination of whether a technology was “equal or superior” on the subjective perceptions of JEDEC members at the time, regardless of whether these perceptions were ultimately correct. While this factor may go to whether JEDEC would have selected the technology, it does not go to whether the alternative is equal or superior in objective terms.

1104. Professor McAfee considered each company’s strategic interests in which technology would be selected because of differences in technical ability. (McAfee, Tr. 7338-39). In determining whether a technology was commercially viable, he factored in whether some JEDEC members might prefer the technology because they were better equipped to produce it. Again, while this factor may go to whether JEDEC would have selected the technology, it does not go to whether the alternative is equal or superior in objective terms.

1105. Professor McAfee relied on his notion of “satisficing” to conclude, in effect, that a product that has lesser performance is nonetheless “equal” to one with better performance. (McAfee, Tr. 7335-36). Because he believed that JEDEC was “satisficing,” Professor McAfee essentially defined “equal” to include technologies that were inferior to Rambus’s technologies. Professor McAfee defined satisficing as referring to the process by which an organization like JEDEC will choose an adequate solution to a problem it faces rather than expending the effort to find the perfect solution. (McAfee, Tr. 7255-56).

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1106. Rather than examining the actual cost differences between the Rambus technologies and the alternatives, Professor McAfee opined that he had considered an amalgam of factors and determined that certain alternatives were “commercially viable” based on the information he analyzed. (*See, e.g.*, McAfee, Tr. 7363). Professor McAfee did evaluate the alternatives using the cost information provided by Geilhufe and found that, using those cost estimates, there were a number of commercially viable alternatives to the technologies claimed by Rambus. (McAfee, Tr. 11249-78).

1107. While Professor McAfee testified that it was likely that at least one of the technologies he deemed commercially viable alternatives to Rambus’s technology was equally efficient or superior to Rambus’s technology, he admitted that he could not identify any particular technology as equal or superior to Rambus’s technologies. (McAfee, Tr. 7578-79).

D. The Assumption by Complaint Counsel’s Economic Expert that Rambus Knowingly Assumed the Risk Of Losing Its Ability To Enforce Its Patents

1108. In determining that Rambus’s conduct was exclusionary, Professor McAfee assumed that Rambus knowingly took a risk that it might lose the ability to enforce its patents by not disclosing patent interests that it did not disclose. (McAfee, Tr. 7538-40).

1109. But Professor McAfee admitted that Rambus would have understood that if it withheld information about its patent applications that it should have disclosed, any effort to enforce its patents once they issued, would have triggered an inquiry into whether Rambus should have disclosed its patent interests. In addition, Professor McAfee admitted that if a JEDEC member failed to disclose patent interests that should have been disclosed and revealed knowledge of that patent interest, e.g., in a written

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document, the risk of a challenge that would render the patents invalid would increase substantially. (McAfee, Tr. 7550).

E. The Assumption by Complaint Counsel's Economic Expert That Rambus Violated a JEDEC Rule or Made Misrepresentations to JEDEC

1110. Professor McAfee explained that Rambus's concealing of information about its patent applications would, in his opinion, be exclusionary only if it violated a rule or process. (McAfee, Tr. 7530-31, 7546). Professor McAfee assumed that Rambus's conduct included a violation of a JEDEC rule or process. (McAfee, Tr. 7530). An alternate assumption was that Rambus made misrepresentations to JEDEC. (McAfee, Tr. 7478).

1111. Professor McAfee assumed that Rambus "should have disclosed patents or patent applications with reference to all four of the technologies challenged in the case." (McAfee, Tr. 7546). But he admitted that, "[i]f they shouldn't have disclosed on one of the technologies, then my finding of exclusionary conduct on that technology is no longer – on that particular technology would no longer be reliable because I've assumed that they should have disclosed on that technology." (McAfee, Tr. 7546).

1112. Professor McAfee admitted that he did his analysis with no assumptions about the specific claims of any patent application that Rambus should have allegedly disclosed. (McAfee, Tr. 7669-70).

1113. Professor McAfee also admitted that he did his analysis with no assumptions about the specific date that Rambus allegedly should have made the disclosures that Complaint Counsel allege should have been made. (McAfee, Tr. 7671).

1114. Professor McAfee also admitted that he did his analysis with no assumed specific triggering event that would have caused

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Rambus to be obligated to make disclosures to JEDEC. (McAfee, Tr. 7671).

1115. Professor McAfee admitted that if work on DDR had not begun by the time Rambus had left JEDEC and if there was no duty to disclose absent such work, the conclusions that he drew from assuming that Rambus failed to disclose with regard to DDR would fall away. (McAfee, Tr. 7575).

1116. Professor McAfee admitted that if Rambus had made the additional disclosures that Complaint Counsel allege should have been made, JEDEC ignored the disclosure, and JEDEC incorporated the Rambus technology nonetheless, Rambus would not have engaged in exclusionary conduct. (McAfee, Tr. 7682).

1117. Professor McAfee also admitted that there are situations in which JEDEC could become aware of Rambus's potential patents other than through Rambus's disclosure of that information to JEDEC, such that Rambus's failure to disclose would not, as a matter of economics, constitute exclusionary conduct. (McAfee, Tr. 7686).

1118. Professor McAfee further admitted that it is plausible with his assumptions that if Rambus never joined JEDEC, JEDEC would have selected the four Rambus technologies for inclusion in its standards. (McAfee, Tr. 7688).

F. The Economic Evidence Regarding “Hold Up” and Disclosure Costs

1119. Professor McAfee based his analysis that Rambus's conduct was exclusionary on several assumptions, one of which was the assumption that Rambus's conduct violated a JEDEC rule or process. (McAfee, Tr. 7530-31).

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1120. Professor McAfee admitted that he had done no analysis to determine whether JEDEC's rules and processes advanced the interests of antitrust law. (McAfee, Tr. 7532-33).

1121. Nor did Professor McAfee perform any analysis of JEDEC's costs and benefits in order to determine the economically efficient disclosure rules for it to impose. (McAfee, Tr. 7727). In fact, he admitted that he has not investigated the economic efficiency of JEDEC's rules. (McAfee, Tr. 7727-28).

1122. As an economic matter it is disputed whether the optimal time for disclosure of information regarding patent interests is as early in the standardization process as possible. (Teece, Tr. 10385). As Professor Teece testified, disclosure involves costs, so the optimal time for disclosure must consider those costs. (Teece, Tr. 10385). Depending on the costs and benefits, later disclosure may be optimal. (Teece, Tr. 10402).

1123. The costs of disclosure include the cost to the patent applicant of losing trade secrets and confidentiality. (Teece, Tr. 10453). The costs to the standard setting organization are that it must try to evaluate and assess the highly preliminary information regarding the patent application. (Teece, Tr. 10453-54).

1124. Since patents are not going to change and are public, the costs associated with disclosing patents are less than those associated with disclosing patent applications. (Teece, Tr. 10454-55).

1125. The narrower the scope of disclosure regarding patent applications, the lower the costs and burdens of disclosure. (Teece, Tr. 10454, 10547-58). If intellectual property issues are put aside once a RAND assurance is given, there is less need for disclosure. (Teece, Tr. 10548).

1126. Professor McAfee admitted that JEDEC's disclosure rules do little to mitigate risk of hold up because the disclosure

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obligation applies only to the knowledge of the representative at the meeting, rather than that of the member company (McAfee, Tr. 7724) and because, in large companies, the representative might not have a lot of knowledge about the company's patents. (McAfee, Tr. 7724-25).

1127. Professor McAfee also admitted that a JEDEC disclosure requirement would not mitigate the risk that the standard might involve technology covered by patents held by nonmembers. (McAfee, Tr. 7725).

**XI. THE EVIDENCE DOES NOT SUPPORT COMPLAINT
COUNSEL'S ARGUMENT THAT THERE WERE
VIABLE ALTERNATIVES TO RAMBUS'S
TECHNOLOGIES**

**A. The Testimony of Professor Jacob Regarding Allegedly
Viable Alternatives Is Not Persuasive**

1128. Complaint Counsel's expert witness regarding viable alternatives, Professor Jacob, has never done DRAM circuit design. (Jacob, Tr. 5588). Indeed, Professor Jacob had never designed any circuits for computer chips (even apart from DRAMs) that were to be fabricated prior to 2002. (Jacob, Tr. 5588). Aside from reviewing some DRAM data sheets, Professor Jacob, who was a student at the time, had no particular DRAM-related experience in the mid-1990's. (Jacob, Tr. 11148). Professor Jacob did not obtain his graduate degree and begin to teach electrical engineering until 1997. (Jacob, Tr. 5357).

1129. By contrast, Respondent's technical experts have a wealth of relevant experience in the DRAM and semiconductor industries. Dr. Soderman was employed in the semiconductor industry for over thirty years during which time he designed DRAMs as well as various other types of integrated circuits. (Soderman, Tr. 9329-36).

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1130. Likewise, Michael Geilhufe worked in the semiconductor industry for over thirty years. (Geilhufe, Tr. 9543-52). Geilhufe holds four patents for DRAM design and managed Intel's international manufacturing operations which involved working closely with DRAM manufacturers such as Samsung. (Geilhufe, Tr. 9549-50, 9553).

1131. In Professor Jacob's publications comparing certain DRAM architectures, he tried to model their performance as precisely as possible using software simulation. In contrast, Professor Jacob did no such software simulation with respect to the alternatives that he proposed to Rambus's technology. (Jacob, Tr. 5589).

1132. With the exception of three of his alternatives (using a burst terminate command, increasing the number of pins on the DRAM, and increasing the number of pins on the module), Professor Jacob did no simulation or modeling of any kind to try to assess the alternatives' performance. (Jacob, Tr. 5590-91).

1133. Professor Jacob's proposed alternatives were not sufficiently detailed to enable an actual circuit design. (Geilhufe, Tr. 9673).

1134. Professor Jacob did not do any investigation to determine whether any of his proposed alternatives were covered by patents owned by Rambus or others. (Jacob, Tr. 5601).

B. Complaint Counsel Did Not Prove That There Were Viable Alternatives to the Rambus Technologies Adopted in the SDRAM

1. Programmable CAS Latency

1135. Complaint Counsel have suggested, through their technical expert, Professor Jacob, the following possible alternatives to programmable CAS latency in SDRAMs:

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- (1) Use fixed CAS latency parts;
- (2) Program CAS latency by blowing fuses on the DRAM;
- (3) Scale CAS latency with clock frequency;
- (4) Use dedicated pins to transmit latency information from the controller to the DRAM;
- (5) Explicitly identify CAS latency in the read command;
- (6) Stay with an asynchronous-style DRAM.

(Jacob, Tr. 5370-96).

a. Complaint Counsel Did Not Prove That the Use of Fixed CAS Latency Parts Was a Viable Alternative

1136. One of the alternatives proposed by Professor Jacob for programmable CAS latency was to fix the CAS latency at the design stage, the manufacturing stage, or the packaging stage. (Jacob, Tr. 5371). Fixing CAS latency at the design stage would result in a single part with only one CAS latency. (Jacob, Tr. 5373). Fixing CAS latency at the processing stage would involve a “metal mask option” that would fix the CAS latency to one value or another. (Jacob, Tr. 5373-75). Fixing CAS latency during packaging would require a multiplexer that would be hardwired to either power or ground during the packaging process to select one of two latency values. (Jacob, Tr. 5375-76).

1137. Multiple CAS latency values are required for SDRAMs because users of DRAMs would prefer to buy parts that they can insert in a variety of systems with different bus speeds. (RX 1626

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at 3-4; Soderman, Tr. 9346-47). The appropriate CAS latency for a part will depend on the bus speed and the access time of the DRAM. (Soderman, Tr. 9347-48). Therefore, using fixed latency parts would require multiple fixed latency parts, as opposed to a single, programmable latency part. (Soderman, Tr. 9347-48).

1138. Mark Kellogg of IBM testified that, in the 1992 time frame, “we weren’t convinced that we knew the right latency and we did expect that the DRAM frequency would go up over time – that we knew the correct latency if we were to select one and we expected that the DRAM frequency would increase over time, which meant we might wish to change the CAS latency.” (Kellogg, Tr. 5139).

1139. The mode register in SDRAMs and DDR SDRAMs reserves three bits for CAS latency, allowing for up to eight different CAS latency values. (CX 234 at 150).

1140. Release 4 of JEDEC Standard 21-C (November 1993), which contains the first published SDRAM standard, specified three required CAS latency values (1, 2, and 3) and one optional CAS latency value (4). (JX 56 at 114; Lee, Tr. 11003-04). Release 9 of JEDEC Standard 21-C (August 1999), which contains the first published DDR SDRAM standard, specified two required CAS latency values for SDRAMs (2 and 3) and one optional value (4); it also specified two required CAS latency values for DDR SDRAMs (2 and 2.5) and three optional values (1.5, 3, and 3.5). (CX 234 at 150; Lee, Tr. 11068-72).

1141. Although not all of the eight possible values of CAS latency are used in SDRAMs and DDR SDRAMs, the other possibilities were reserved to preserve flexibility for future additions. (Lee, Tr. 11072-73).

1142. Desi Rhoden gave a presentation on “Future SDRAM” at the March 1996 meeting of the JEDEC 42.3 subcommittee. (JX 31 at 64; Rhoden, Tr. 489-90). The presentation indicates that

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CAS latencies of 2, 3, 4, 5 and 6 would be required for different generations of SDRAMs. (JX 31 at 64; Rhoden, Tr. 490-91).

1143. JEDEC's DDR2 SDRAM standard intends to expand the use of programmable latency. (Soderman, Tr. 9351-53). Preliminary DDR2 SDRAM data sheets from both Hynix and Samsung indicate that DDR2 SDRAMs will continue to have three bits in the mode register reserved for CAS latency, allowing for up to eight different CAS latency values. (RX 2099-14 at 21; RX 2099-39 at 20; Soderman, Tr. 9351). Hynix's part provides three different CAS latency values (3, 4, 5). (RX 2099-14 at 21; RX 2099-39 at 20; Soderman, Tr. 9351).

1144. DDR2 SDRAMs also reserve three bits in an "extended mode register" for "additive latency," allowing for up to eight different additive latency values. (RX 2099-14 at 24; RX 2099-39 at 22; Soderman, Tr. 9351-53; Lee, Tr. 11068). Hynix's part provides six different additive latency values (0, 1, 2, 3, 4, and 5), while Samsung's part provides five different additive latency values (0, 1, 2, 3 and 4). (RX 2099-14 at 24; RX 2099-39 at 22; Soderman, Tr. 9351-53; Lee, Tr. 11068). The "read latency" in DDR2 SDRAMs (that is, the number of clock cycles from receipt of a CAS command until data is output onto the bus) is the sum of the CAS latency and the additive latency. (RX 2099-14 at 32; RX 2099-39 at 37).

1145. In 1993, Micron's first SDRAM design allowed for four different CAS latencies (1, 2, 3, and 4). (Lee, Tr. 11063-64).

1146. Micron currently sells an SDRAM for the graphics market allowing for three different CAS latencies (1, 2, and 3). (Lee, Tr. 11064-67).

1147. The total unit cost for a mature product built by a first tier DRAM manufacturer in the mid-1990's was approximately two dollars. (Geilhufe, Tr. 9564). Multiple fixed latency parts

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would have been an expensive alternative, for several reasons. (Soderman, Tr. 9348-49).

1148. First, manufacturing multiple fixed latency parts would decrease a DRAM manufacturer's yield due to speed distribution. (Soderman, Tr. 9348; Geilhufe, Tr. 9577). DRAMs cannot be accurately tested for speed until after packaging; fixing the CAS latency prior to that time would result in some parts that are not capable of performing at the CAS latency that has been fixed and, therefore, would not be usable. (Soderman, Tr. 9347-49; Geilhufe, Tr. 9577-78). If CAS latency were programmable, those slower parts would be usable at a higher CAS latency value. (Soderman, Tr. 9347-49; Geilhufe, Tr. 9577-78).

1149. Second, fixing CAS latency would result in DRAM manufacturers losing some of the price premium associated with their fastest (i.e., lowest CAS latency) parts which can sell for fifty percent or more over their standard parts. (Soderman, Tr. 9348-50; Lee, Tr. 11074-75). This, again, is because the latency would be fixed prior to accurate speed testing and, consequently, some parts that would be capable of faster performance (i.e., operating at a low CAS latency) will be set to a CAS latency higher than necessary. (Soderman, Tr. 9348-50; Lee, Tr. 11074-75).

1150. Steve Polzin of AMD testified that "Fixed CAS latency would have been pretty onerous for the DRAM manufacturers" and "would have a significant cost impact for the DRAM manufacturers." (Polzin, Tr. 3992).

1151. Joe Macri of ATI testified that [redacted] (Macri, Tr. 4762 (*in camera*)). [redacted] (Macri, Tr. 4762-63 (*in camera*)).

1152. Third, there would have been an increase in design, photo tooling, and qualification costs because multiple products would have had to be designed and manufactured, rather than just one product. (Geilhufe, Tr. 9679, 9682-83, 9690).

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1153. Some design effort would have been required for each different CAS latency; one mask would have had to be changed for each different CAS latency; and each different CAS latency part would have had to be qualified before it could be sold. (Geilhufe, Tr. 9575-76, 9578-79).

1154. Fourth, multiple fixed latency parts in place of a single programmable latency part would result in substantial inventory costs. (Soderman, Tr. 9349-50).

1155. Gordon Kelley of IBM testified about the benefits of programmability as follows: “One of the advantages of that is that that drives low cost. The producer does not have to maintain multiple part numbers. One part number fits many applications. That’s one of the drivers to low cost.” (G. Kelley, Tr. 2550-51).

1156. When first developing the Rambus technology, Drs. Farmwald and Horowitz considered having a fixed latency. (Horowitz, Tr. 8532). Dr. Horowitz learned from an early visit to a DRAM manufacturer the importance of having a single, as opposed to multiple parts. At that time, there were two different packages for DRAMs, and the DRAM manufacturer was making a single die that could fit into either package even though this entailed ten percent additional die area. (Horowitz, Tr. 8532-33). Dr. Horowitz’s understanding at the time was that the reason for making a single part despite the die size penalty was that inventory costs from having two different designs during the manufacturing process would be too expensive. (Horowitz, Tr. 8533-34).

1157. Multiple fixed latency parts would also be inferior from the user’s standpoint. Because the part could no longer be programmed to operate in various systems, a user would have to pay attention to the part’s detailed specifications to determine whether it would work in its system. (Soderman, Tr. 9350-51).

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1158. In an April 11, 2000 email responding to a proposal to fix CAS latency in DDR2, Bill Hovis of IBM rejected the idea, both because of cost concerns and because of the benefits to DRAM users from programmable CAS latency. (RX 1626 at 3).

1159. Using fixed latency would not allow for the elimination of the mode register in SDRAMs and DDR SDRAMs because the mode register is used for purposes other than programming CAS latency. In the JEDEC SDRAM standard, the mode register is used for storing CAS latency, burst length and burst type. (CX 234 at 150). Certain SDRAMs being manufactured use the mode register for additional purposes as well, such as for programming operating mode and write burst mode. (RX 2100-13 at 3). The DDR SDRAM standard adds an extended mode register used to enable or disable a DLL. (CX 234 at 176). The DDR2 SDRAM standard expands the use of the mode register even further, with the mode register being used to program burst length, burst type, CAS latency, test mode, DLL reset, and tWR, and the extended mode register being used to program DLL enable, output driver impedance control, RTT, additive latency, OCD, /DQS enable and RDQS enable. (RX 2099-14 at 21, 24; RX 2099-39 at 20, 22).

1160. Although there would have been a decrease in testing costs because each part would have had to be tested for a single CAS latency, rather than for multiple CAS latencies (Geilhufe, Tr. 9576), this cost saving would have been far outweighed by the cost increases due to other factors.

1161. The fixed CAS latency alternative would have resulted in the following approximate net costs compared to the cost of SDRAM in the mid-1990's, assuming a first-tier DRAM manufacturer and a product that is already well down the learning curve with a volume of twenty million unit volume, that is, a product that has already realized its cost improvement: \$100,000 increase in product design costs per latency; \$50,000 increase in photo tooling costs per latency; one cent decrease per unit in testing costs at wafer sort; three cents per unit cost increase due to

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reduced good die yield; two cents per unit increase in inventory costs; and \$250,000 increase in qualification costs per latency. (Geilhufe, Tr. 9562-64, 9575-79).

1162. The net increase in variable costs for the fixed CAS latency alternative is, therefore, approximately four cents per unit. The total cost increase is approximately six cents per unit, calculated by converting the fixed costs to per unit costs through division by twenty million (the unit production run) and adding the resulting per unit fixed costs to the per unit variable costs. (Geilhufe, Tr. 9579).

1163. The additional inventory cost estimate is based on three different fixed latency parts being manufactured, the number of required CAS latencies in the original SDRAM standard, instead of a single programmable latency part. (Geilhufe, Tr. 9578; JX 56 at 114).

1164. The estimate for increased inventory costs is conservative, because inventory costs due to multiple products can be much larger. For example, in 1989, Apple Computer reported \$27 million quarterly loss attributed entirely to purchasing a DRAM part that they could no longer use in their systems. (Geilhufe, Tr. 9587). This amounted to a loss of about five to six dollars per unit. (Geilhufe, Tr. 9588).

**b. Complaint Counsel Did Not Prove That
Programming CAS Latency with Fuses Was a
Viable Alternative**

1165. Professor Jacob's proposed alternative of programming CAS latency with fuses is similar to his fixed CAS latency alternative because, once the fuse is blown, the part has a fixed CAS latency. (Jacob, Tr. 5378-79).

1166. Fuses can be blown by lasers or electrically. (Jacob, Tr. 5380).

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1167. Laser-blown fuses are more reliable than electrically-blown fuses. (Soderman, Tr. 9356-57; Geilhufe, Tr. 9581-82 (Certain products using electrically blown fuses were discontinued at Intel for reliability reasons.)).

1168. In the 1995 time frame, the dominant fuse technology used by major DRAM manufacturers was laser fuse technology. (Geilhufe, Tr. 9581-82). There are DRAM manufacturers who do not have the technology to blow fuses electrically and did not have such technology in the 1995-2000 time frame. (Jacob, Tr. 5596; Geilhufe, Tr. 9740-41).

1169. Fixing the CAS latency with laser-blown fuses prior to packaging would lead to the same logistical difficulties as Professor Jacob's fixed CAS latency alternative. (Soderman, Tr. 9354).

1170. Another disadvantage of using fuses is that the manufacturer would have to blow the fuses after receiving orders for parts, leading to a "time lag from request to delivery of parts." (Kellogg, Tr. 5131).

1171. Laser blown fuses could not be blown by OEMs (original equipment manufacturers) because they cannot be blown after packaging. (Jacob, Tr. 5378-80; Soderman, Tr. 9354-56). Electrically-blown fuses can be blown after packaging, but they still could not be blown by OEMs because the part must be tested after the fuse is blown to make sure it is operating correctly. (Soderman, Tr. 9517). OEMs do not have the capability to perform such testing. (Soderman, Tr. 9354-56).

1172. There would have been an increase in design costs due to the design effort to provide the fuses required. (Geilhufe, Tr. 9575, 9584-85).

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1173. There would have been an increase in testing costs due to the time required to blow a fuse and perform certain additional steps. (Geilhufe, Tr. 9585).

1174. There would have been reduced good die yield, inventory, and qualification costs of the same magnitude as the corresponding increases for the fixed CAS latency alternative because, once the fuse is blown, the part is a fixed latency part. (Geilhufe, Tr. 9585-89).

1175. Programming CAS latency by blowing fuses would have resulted in the following approximate net costs compared to SDRAM in the mid-1990's, assuming a first-tier DRAM manufacturer using existing laser fuse technology and a product that is already well down the learning curve with a volume of twenty million unit volume, that is, a product that has already realized its cost improvement: \$100,000 increase in product design costs per latency; one cent increase per unit in testing costs at wafer sort; three cents per unit cost increase due to reduced good die yield; two cents per unit increase in inventory costs; and \$250,000 increase in qualification costs per latency. (Geilhufe, Tr. 9562-64, 9584-86, 9589).

1176. The net increase in variable costs for the alternative of programming CAS latency by blowing fuses is, therefore, approximately six cents per unit. The total cost increase is approximately seven cents per unit, calculated by converting the fixed costs to per unit costs through division by twenty million (the unit production run) and adding the resulting per unit fixed costs to the per unit variable costs. (Geilhufe, Tr. 9589).

1177. If the DRAM manufacturer did not have antifuse or electrically blown fuse technology available and wished to use that technology, adding it to the manufacturing process would entail several million dollars in additional development costs. (Geilhufe, Tr. 9583-84).

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c. Complaint Counsel Did Not Prove That Scaling CAS Latency With Clock Frequency Was a Viable Alternative

1178. Professor Jacob's proposed alternative of scaling CAS latency with clock frequency involves having the DRAM either being informed of the frequency by the memory controller or using some sort of internal circuitry to sense the frequency. The DRAM would then calculate the appropriate CAS latency to use based upon its own inherent latency. (Jacob, Tr. 5383).

1179. Professor McAfee did not testify that this alternative was commercially viable. (McAfee, Tr. 7363).

1180. Having the controller send the bus speed information to the DRAM would require extra pins and circuitry on the controller and, potentially, extra pins on the DRAM, adding manufacturing expense. (Soderman, Tr. 9359-60).

1181. Having the DRAM sense the bus speed would require complex and costly circuitry on the DRAM. (Soderman, Tr. 9358).

1182. Scaling CAS latency with clock frequency is not an alternative to using a register to store a latency value because the latency value would still have to be stored in a register, potentially violating Rambus's patents. (RX 1626 at 2; Soderman, Tr. 9359).

1183. For example, upon a formal infringement analysis, this alternative might be determined to be covered by claim 1 of U.S. Patent No. 5,953,263, assigned to Rambus. (CX 1517 at 29).

1184. Scaling CAS latency with clock frequency was actually proposed by Micron as an alternative to programmable CAS latency for DDR2. At the March 2000 meeting of the JEDEC JC 42.3 subcommittee, Micron made a first showing entitled "Simplifying Read Latency for DDRII." (CX 154A at 9, 25-32).

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In its presentation, Micron noted that one approach would be to “offer devices with a fixed read latency.” (CX 154A at 26). Under this approach, “[v]endors can offer different speed devices, each with a different fixed latency,” but there would be the “[d]isadvantage” that “[u]sers may need to order different parts to cover different applications.” (CX 154A at 26).

1185. Micron went on to present a second approach, proposing to scale CAS latency with clock frequency: “offer devices with programmable operating frequency; each operating frequency range has a fixed read latency associated with it.” (CX 154A at 27).

1186. In an email dated April 13, 2000 from Mark Kellogg of IBM to Art Kilmer of IBM, Kellogg discussed the proposals made by Micron at the March 2000 JEDEC meeting in the context of the Rambus patents. (RX 1626 at 2). Kellogg noted that “[i]n the last JEDEC meeting, the option of a single latency device was pooh-poohed.” (RX 1626 at 2). Kellogg went on to discuss Micron’s alternative proposal of scaling CAS latency with clock frequency. Kellogg stated:

[T]he alternate proposal from Micron (programming the frequency range instead of CAS Latency) was better-received. The problem with the latter proposal (in my mind), was that nothing changed except the name assigned to the command register bits (originally defined as CAS Latency, now to be defined as frequency range or something similar). As such, I felt they were walking a fine line and that this change would not hold up in court as being anything other than an attempt to circumvent possible patent infringement via a term redefinition.

(RX 1626 at 2).

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d. Complaint Counsel Did Not Prove That Using Dedicated Pins to Identify the Latency Was a Viable Alternative

1187. Professor Jacob's proposed alternative of using an existing or dedicated pin to identify the latency involves a pin on the DRAM that would select one CAS latency if it received a high voltage and a different CAS latency if it received a low voltage. (Jacob, Tr. 5386-87).

1188. This alternative would require additional wiring in the DIMM and from the DIMM to the memory controller. These additional wires can have a "noise glitch" – that is, the signals could be perturbed by adjacent signals – that would upset the CAS latency value and lead to improper operation of the DRAM. (Soderman, Tr. 9361-62).

1189. Certain configurations of SDRAMs had no "no-connect" pins. (CX 234 at 84; Geilhufe, Tr. 9741-42). Certain others had only a single "no-connect" pin. (RX 2100-13 at 1; Polzin, Tr. 4026-28).

1190. Moreover, pins designated as "no connect" are not necessarily available for other uses because they may be used in testing. (Soderman, Tr. 9463-65).

1191. Pins designated as "no connect" also may be unavailable because they are reserved for uses in other configurations. For example, if a manufacturer used the same mask for x4, x8 and x16 configurations, and if a pin designated "no connect" in the x4 and x8 configurations was used as a data pin in the x16 configuration, that pin could not be used for other purposes in the x4 and x8 configurations; in other words, the pin would need to remain a "no connect" pin in the x4 and x8 configurations. (Lee, Tr. 11084-87).

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1192. Pins designated as “no connect” may also be valuable for use in future, higher density generations of the product. As Gordon Kelley of IBM testified, using up a pin is not something that was done “easily, because once you use that pin up for a function, you don’t have it available to you in the future for generation advance. As the memory densities increase, we need pins for more addressing of more address locations and those pins are very valuable for that feature, so this would have limited the number of generations of DRAM design that we could have used if we were to use up this pin.” (J. Kelly, Tr. 2552-53).

1193. To achieve the same level of flexibility as SDRAMs and DDR SDRAMs which have three bits in the mode register for storing a CAS latency value, a manufacturer would have to add three pins to a DRAM with no pins available. (Soderman, Tr. 9362; Geilhufe, Tr. 9589-90). Moreover, since the packages in use in the 1990’s were all rectangular and required pins to be added in multiples of two, four pins would have to be added. (Soderman, Tr. 9362-63; Geilhufe, Tr. 9590).

1194. In its license negotiations with Rambus in 1994, Samsung was motivated to seek a non-assertion provision for non-Rambus-compatible uses of Rambus’s inventions because of the on-chip DLL shown in Rambus’s PCT application. (CX 2078 at 107-08 (Karp, Micron Dep.)).

1195. The number of pins required could not be reduced by having more than two voltage levels per pin. Although Professor Jacob has suggested that this could be done, he has never designed a circuit that would detect more than two voltage levels at high frequency. (Jacob, Tr. 11126). No SDRAM or DDR SDRAM parts support more than two voltage levels per pin in normal operation. (Jacob, Tr. 11125-26). Having more than two voltage levels on a pin would require sophisticated circuitry that would be easily perturbed by noise. (Soderman, Tr. 9363-64).

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1196. The first Rambus DRAM, the 4.5 megabit part built by Toshiba in the early 1990's, had a pin with three voltage levels. (Horowitz, Tr. 8549). Rambus did not want to use an extra pin for entering test mode and, instead, created an extra voltage level on one of the existing pins for that purpose. (Horowitz, Tr. 8549). Although Rambus believed that the part had been built and designed with enough separation between the voltage levels to prevent confusion, in fact the part sometimes failed because it entered test mode accidentally. (Horowitz, Tr. 8550-51). Rambus never used a pin with more than two voltage levels on subsequent Rambus DRAMs. (Horowitz, Tr. 8551).

1197. Assuming a first-tier DRAM manufacturer and a product that is already well down the learning curve with a volume of twenty million unit volume, that is, a product that has already realized its cost improvement, programming CAS latency by using dedicated pins would have resulted in approximately four cents in increased packaging costs per unit, compared to the cost of SDRAMs in the mid-1990's, because of the need for additional four pins. (Geilhufe, Tr. 9562-64, 9589-91).

1198. The four cent increase cost estimate for this alternative is very conservative. First, standard packages generally add more than four pins – for example, the JEDEC SDRAM standards move from a 44-pin package to a 54-pin package, adding ten pins, and then to a 66-pin package, adding twelve pins. (Geilhufe, Tr. 9590; CX 234 at 99-106). Thus, if there were not enough pins available on a certain standard package, one might have to move up to the next standard package, adding many more than the bare minimum of four pins.

1199. Second, in addition to the four pins on the DRAM, more pins would also be required on the memory controller; however, every pin on controllers is fully utilized, so pins would have to be added there. (Soderman, Tr. 9363; Geilhufe, Tr. 9591).

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1200. Third, both a new, more expensive connector may be required to connect the DIMM to the motherboard, and more lines on the bus. (Geilhufe, Tr. 9590-91).

e. Complaint Counsel Did Not Prove That Identifying CAS Latency in the Read Command Was a Viable Alternative

1201. Professor Jacob's proposed alternative of identifying CAS latency in the read command would involve a different command sent from the controller to the DRAM for each desired CAS latency. (Jacob, Tr. 5389).

1202. However, this alternative, upon a formal infringement analysis, might be determined to be covered by claim 1 of U.S. Patent No. 5,953,263, assigned to Rambus. (CX 1517 at 29).

1203. Professor Jacob testified that this alternative would not require a register because a "latch" could be used to store the latency information instead. (Jacob, Tr. 5393). This distinction is of no consequence because a register is a generic class of storage (Soderman, Tr. 9450-51), and one type of register is a latch. (Soderman, Tr. 9450-51; Horowitz, Tr. 8508-09).

1204. Professor Jacob concedes that "a register might be built out of latches." (Jacob, Tr. 5393). He testified that: "A latch is a specific implementation. A register implies how a piece of storage is being used." (Jacob, Tr. 5393).

1205. Identifying CAS latency in the command would have the negative side effect of limiting the simultaneous issuing of independent commands that is possible with the current command set. (Jacob, Tr. 5599).

1206. This alternative might also be covered by U.S. Patent No. 5,835,956, which is assigned to Samsung and was not considered by Professor Jacob. (RX 1308; Jacob, Tr. 5599-601). Claim 1 of that patent claims a synchronous memory device that

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is capable of receiving latency mode information and selecting one of a plurality of latency modes in response to the information. (RX 1308 at 90).

f. Complaint Counsel Did Not Prove That Staying with Asynchronous Technology Was a Viable Alternative

1207. SDRAM, SLDRAM and RDRAM are all synchronous designs. (Jacob, Tr. 5601-02).

1208. Despite the success of SDRAM, a substantial amount of work on asynchronous technology has continued during the last decade at both the academic and commercial levels. (Jacob, Tr. 5602; Horowitz, Tr. 8560-61).

1209. When Dr. Horowitz began working on what was to become RDRAM, he had substantial experience in asynchronous designs. Some of Dr. Horowitz's Ph.D. students had done their dissertations in asynchronous design, and Dr. Horowitz had himself done studies comparing asynchronous to synchronous designs. (Horowitz, Tr. 8559).

1210. Dr. Horowitz decided that a synchronous design would be necessary for RDRAM because he did not believe that one could build a very high-performance asynchronous interface. (Horowitz, Tr. 8498). As a circuit designer, Dr. Horowitz realized that when a signal passes through a block of circuitry, the amount by which it is delayed is subject to some uncertainty because of fluctuations in certain parameters such as temperature and voltage. (Horowitz, Tr. 8499-00). In the absence of a timing reference, like the clock in a synchronous system, as the signal continues to travel through more and more blocks, the amount of uncertainty will grow so that it will not be possible to predict with any accuracy when data will arrive. (Horowitz, Tr. 9499-00). For high performance, the amount of uncertainty must be kept to a

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small, predictable amount; this requires a synchronous system. (Horowitz, Tr. 8501-02).

1211. Asynchronous memories are very dependent on loading on the bus – that is, how many other chips are on the bus. In a general purpose environment, the loading of the bus can vary; consequently, asynchronous memories do not perform well in a bus environment at high frequencies. (Soderman, Tr. 9366).

1212. It was generally understood in the 1990's that asynchronous memories were not capable of reaching the speeds that would be required for future DRAMs. For example, an article by a Fujitsu engineer published in 1996 states that “[a]synchronous DRAMs, be that EDO or Burst EDO, can not keep up with bus speeds of over 66 MHz.” (RX 2099-4 at 4). Jacquelyn Gross of Hewlett-Packard, formerly of Compaq, testified that it was Compaq's view in the 1996-1997 time frame that asynchronous technology was limited in the bandwidth it could achieve and that synchronous technology “provided higher benefits.” (Gross, Tr. 2347). Steve Polzin of AMD testified that in the 1996-1997 time frame it was his opinion that, due to inherent limitations, asynchronous technology had less “headroom,” that is less of an ability to offer improved performance over time, than synchronous technology. (Polzin, Tr. 4033-35).

1213. Burst EDO was an asynchronous type of DRAM that Micron was strongly pushing in the mid-1990's. (Williams, Tr. 822-23, 879). A 1995 Micron publication entitled “The Burst EDO DRAM Advantage” raises a question about the viability of Burst EDO (“BEDO”) at bus speeds greater than 75 MHz and states that “BEDO will probably reach its limit somewhere around 100 MHz.” (CX 2632 at 5).

1214. Burst EDO was standardized by JEDEC in March 1995. (Williams, Tr. 873, 879-80; RX 585 at 1). However, Burst EDO failed in the marketplace in competition with SDRAM. (Williams, Tr. 829).

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2. Programmable Burst Length

1215. Complaint Counsel, through Professor Jacob, have suggested the following possible alternatives to programmable burst length in SDRAMs:

- (1) Use fixed burst length parts;
- (2) Program burst length by blowing fuses on the DRAM;
- (3) Use dedicated pins to transmit burst length information from the controller to the DRAM;
- (4) Explicitly identify burst length in the read command;
- (5) Use a burst terminate command;
- (6) Use a CAS pulse to control data output.

(Jacob, Tr. 5397-12).

a. Complaint Counsel Did Not Prove That the Use of Fixed Burst Length Parts Was a Viable Alternative

1216. Professor Jacob's proposed alternative of using fixed burst length parts, similar to his fixed CAS latency alternative, involves fixing the burst length of the DRAM during the design phase, manufacturing phase, or packaging phase. (*See* Jacob, Tr. 5373, 5397-98)

1217. Different burst lengths are required for different applications, so multiple fixed burst length parts would be required for this alternative. (Soderman, Tr. 9368-69). As Gordon

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Kelley of IBM testified with respect to programmable burst length:

The programmable feature allowing you to make that selection when the PC or the computer powered up was a nice feature because it allowed you to use devices that were common from multiple suppliers, put them into many different types of machines. Some of them would be a burst length of one, some would be a burst length of four, with the same part that was programmed at power-up. One of the advantages of that is that that drives low cost. The producer does not have to maintain multiple part numbers. One part number fits many applications. That's one of the drives to low cost.

(G. Kelley, Tr. 2550-51).

1218. The mode register in SDRAMs and DDR SDRAMs reserves three bits for burst length, allowing for up to eight different burst length values. (CX 234 at 150).

1219. Release 4 of JEDEC Standard 21-C (November 1993), which contains the first published SDRAM standard, provided specified two required burst length values (4 and 8) and three optional burst length values (1, 2, and full page). (JX 56 at 114). Release 9 of JEDEC Standard 21-C (August 1999), which contains the first published DDR SDRAM standard, specified three required burst length values for SDRAMs (2, 4, and 8) and two optional values (1 and full page); it also specified three required burst length values for DDR SDRAMs (2, 4, and 8). (CX 234 at 150).

1220. Burst lengths of one are used in graphics applications. (Lee, Tr. 11076).

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1221. Micron sells SDRAMs that allow for five different burst lengths (1, 2, 4, 8 and full page). (RX 2100-13 at 1; Lee, Tr. 11078-80).

1222. Mark Kellogg of IBM noted that a disadvantage of fixing burst length in the manufacturing process would be that if a manufacturer did not have enough parts of the right burst length in stock, there could be a time lag of two weeks to one month before parts could be delivered. (Kellogg, Tr. 5119). Kellogg recommended to his company in 1992 that they support the programmable burst length feature because “[i]t offered us the greatest flexibility. We had a lot of applications.” (Kellogg, Tr. 5132).

1223. A fixed burst length would have been “very, very bad for AMD.” (Polzin, Tr. 3994). AMD designed processors to use a burst length of eight “for performance reasons,” but because Intel processors use a burst length of four, fixing burst length would have meant that manufacturers would most likely produce burst length of four parts. (Polzin, Tr. 3994).

1224. JEDEC originally intended to fix the burst length at four in the DDR2 SDRAM standard. (Soderman, Tr. 9369; Macri, Tr. 4673-74). After further review by the DRAM manufacturers and the user community, it was determined that programmable burst length needed to be retained. (Soderman, Tr. 9369). DDR2 SDRAMs continue to have three bits in the mode register reserved for burst length, allowing for up to eight different burst length values. (RX 2099-14 at 21; Soderman, Tr. 9370). DDR2 SDRAMs currently require burst lengths of four and eight. (RX 2099-14 at 21; Soderman, Tr. 9369). This may change in the future; thus, the flexibility provided by the mode register is very important. (Soderman, Tr. 9370).

1225. There would have been an increase in design, photo tooling, and qualification costs because multiple products would

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have had to be designed and manufactured rather than just one product. (Geilhufe, Tr. 9679, 9682-83, 9690).

1226. There would have been a decrease in testing costs due to the fact that each part would have had to be tested for a single burst length rather than multiple burst lengths. (Geilhufe, Tr. 9594).

1227. There would have been additional inventory cost due to four different burst lengths parts being manufactured, one less than the number of required and optional burst lengths in the original SDRAM standard, instead of a single programmable burst length part. (Geilhufe, Tr. 9595; JX 56 at 114). There would be an “economic disadvantage” from having multiple part numbers corresponding to different burst lengths. (Kellogg, Tr. 5119).

1228. The fixed burst length alternative would have resulted in the following approximate net costs compared to SDRAM in the mid-1990’s, assuming a first-tier DRAM manufacturer and a product that is already well down the learning curve with a volume of twenty million unit volume, that is, a product that has already realized its cost improvement: \$100,000 increase in product design costs per latency; \$50,000 increase in photo tooling costs per latency; one cent decrease per unit in testing costs at wafer sort; three cents per unit increase in inventory costs; and \$250,000 increase in qualification costs per latency. (Geilhufe, Tr. 9562-64, 9594-95).

1229. The net increase in variable costs for the fixed burst length alternative is, therefore, approximately two cents per unit. The total cost increase is approximately four cents per unit, calculated by converting the fixed costs to per unit costs through division by twenty million (the unit production run) and adding the resulting per unit fixed costs to the per unit variable costs. (Geilhufe, Tr. 9595-96).

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1230. If both CAS latency and burst length were fixed, one would need to multiply the number of latencies by the number of burst lengths to calculate the total number of parts required. For example, if there were three latencies and four burst lengths, twelve parts would be required. (Geilhufe, Tr. 9601). Fixing both CAS latency and burst length would thus increase inventory costs by far more than the increase that would result from fixing CAS latency or burst length, but not both. (Geilhufe, Tr. 9601).

b. Complaint Counsel Did Not Prove That Programming Burst Length With Fuses Was a Viable Alternative

1231. Professor Jacob's proposed alternative of setting burst length with fuses is similar to his corresponding proposed alternative for programming CAS latency with fuses. (Jacob, Tr. 5403).

1232. Professor McAfee did not testify that this alternative was commercially viable. (McAfee, Tr. 7372).

1233. Once the fuse is blown, the DRAM becomes a fixed burst length part under this alternative. (Jacob, Tr. 5404; Soderman, Tr. 9370). As with fixing the CAS latency, having multiple fixed burst length parts would lead to logistical difficulties exacerbated by the fact that the fuse could not be blown by OEMs. (Soderman, Tr. 9370-71; Kellogg, Tr. 5142).

1234. There would have been an increase in design costs due to the design effort to provide the fuses required. (Geilhufe, Tr. 9575, 9584-85).

1235. There would have been increased inventory and qualification costs of the same magnitude as the corresponding costs for the fixed burst length alternative because, once the fuse is blown, the part would be a fixed burst length part. (Geilhufe, Tr. 9585-89).

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1236. Setting burst length by blowing fuses would have resulted in the following approximate net costs compared to SDRAM in the mid-1990's, assuming a first-tier DRAM manufacturer using existing laser fuse technology and a product that is already well down the learning curve with a volume of twenty million unit volume, that is, a product that has already realized its cost improvement: \$100,000 increase in product design costs per latency; three cents per unit increase in inventory costs; and \$250,000 increase in qualification costs per latency. (Geilhufe, Tr. 9562-64, 9596-98).

1237. The net increase in variable costs for the alternative of setting burst length by blowing fuses is, therefore, approximately three cents per unit. The total cost increase is approximately five cents per unit calculated by converting the fixed costs to per unit costs through division by twenty million (the unit production run) and adding the resulting per unit fixed costs to the per unit variable costs. (Geilhufe, Tr. 9598).

1238. If the DRAM manufacturer did not have antifuse or electrically blown fuse technology available and wished to use that technology, adding it to the manufacturing process would entail several million dollars in development costs in addition to the costs above. (Geilhufe, Tr. 9583-84).

c. Complaint Counsel Did Not Prove That Using Dedicated Pins To Identify Burst Length Was a Viable Alternative

1239. Professor Jacob's proposed alternative of using an existing or a new dedicated pin to identify burst length is similar to his corresponding proposed alternative for using pins to identify CAS latency. (Jacob, Tr. 5405).

1240. As with the use of pins to set CAS latency, this alternative would lead to additional costs associated with adding

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pins to the DRAM, wiring to the module and the motherboard, and adding pins to the controller. (Soderman, Tr. 9371).

1241. When asked about the advantages of using pins to set burst length, Gordon Kelley of IBM responded:

I can't think of a lot of advantages compared to the programmable feature, which did not require a pin. I can think of the disadvantage that having a pin or using up a pin to do burst length selection was not a thing that we did easily, because once you use that pin up for a function, you don't have it available to you in the future for generation advance. As the memory densities increase, we need pins for more addressing of more address locations and those pins are very valuable for that feature, so this would have limited the number of generations of DRAM design that we could have used if we were to use up this pin.

(G. Kelley, Tr. 2552-53).

1242. Moreover, this alternative, upon a formal infringement analysis, might be determined to be covered by claim 1 of U.S. Patent No. 6,324,120, assigned to Rambus. (RX 2099-52 at 31-32; Soderman, Tr. 9371-72).

1243. Programming burst length by using dedicated pins would have resulted in the following approximate net costs compared to SDRAM in the mid-1990s, assuming a first-tier DRAM manufacturer and a product that is already well down the learning curve with a volume of twenty million unit volume, that is, a product that has already realized its cost improvement: 2 cents in increased packaging costs per unit due to an additional two pins. (Geilhufe, Tr. 9562-64, 9599).

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1244. Although SDRAMs use three bits to program burst length, the cost calculation above involves the addition of only two pins based on the assumption that if pins were being used to set burst length, they would also be used to set CAS latency. (Geilhufe, Tr. 9599). Because pins have to be added in even increments, four pins were added to program CAS latency although only three were required. That extra pin, plus two additional pins, are sufficient to set burst length. (Geilhufe, Tr. 9599). If burst length were being set using pins, but not CAS latency, then an additional four pins would be required to achieve the same degree of flexibility as provided in the SDRAM standard. (Geilhufe, Tr. 9599-9600).

1245. As in the case of using dedicated pins for CAS latency, the estimated two cent increase cost for this alternative is very conservative. (Geilhufe, Tr. 9599).

d. Complaint Counsel Did Not Prove That Explicitly Identifying Burst Length in the Read Command Was a Viable Alternative

1246. Professor Jacob's proposed alternative of identifying burst length in the read command is similar to his corresponding proposed alternative for identify CAS latency in the read command. (Jacob, Tr. 5407).

1247. However, claim 1 of the '120 patent, reproduced above, upon a formal infringement analysis, might be determined to cover "receiving block size information" including when the block size (equivalently, burst length) information is embedded in a read command. (RX 2099-52 at 31-32; Soderman, Tr. 9373-74).

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e. Complaint Counsel Did Not Prove That Using a Burst Terminate Command Was a Viable Alternative

1248. Professor Jacob's proposed alternative of using a burst terminate command rather than programming burst length through the mode register would involve defining all parts to have a fixed, long burst length and then sending a command to terminate the burst if a shorter burst length were desired. (Jacob, Tr. 5409).

1249. A burst terminate command is an optional feature in SDRAMs. (CX 234 at 161). The burst terminate command is required in DDR SDRAMs, but can be used only to terminate "read" bursts, not "write" bursts. (CX 234 at 174). Although DDR SDRAMs have this burst terminate command available, DDR SDRAMs program burst length in the mode register. (CX 234 at 150).

1250. A burst length of one would not have been possible with a burst terminate command because when a read command is issued it takes one cycle to execute before a burst terminate command could be encountered and, at that point, there are already two bits of data coming out. (Geilhufe, Tr. 9598-99).

1251. Professor Jacob's proposed alternative of using a burst terminate command would lead to inefficiencies on the bus. (Jacob, Tr. 5411). For example, terminating a read burst when the next command is a write leads to inefficient bus utilization because data already in the pipeline to be read out must be cleared before data can be written to the DRAM. (Soderman, Tr. 9374-76). Moreover, when the burst terminate command was on the bus, the controller would not be able to send a command to another bank. (Jacob, Tr. 11126).

1252. In fact, according to a study performed by Professor Jacob and a graduate student, this alternative could lead to a ten to

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fifteen percent decrease in the efficiency of the system. (Jacob, Tr. 5604-06).

1253. JEDEC participants considered burst terminate an “internal device timing nightmare.” (CX 415 at 10).

1254. Steve Polzin of AMD testified that use of a burst terminate command would interfere with pipelining and make the system less efficient overall. (Polzin, Tr. 4038-40).

1255. The JEDEC Future DRAM Task Group considered eliminating the burst terminate command, also known as burst interrupt, from DDR2 because at “high data rates burst interrupt commands are of less value, and are more difficult to engineer.” (CX 392 at 5). The Task Group also noted that elimination of burst terminate would reduce test costs and increase yield due to elimination of speed critical path. (RX 2234 at 10).

1256. Although JEDEC retained some form of burst terminate in DDR2 SDRAM, the timing difficulties led JEDEC to limit its use. (Soderman, Tr. 9376-77). As Joe Macri, chairman of the JEDEC Future DRAM Task Group focusing on DDR2, testified:

Well, SDRAM and DDR had a very general purpose interrupt. Essentially you could interrupt the DRAM anywhere. And that’s difficult, you know, it’s like in the middle of a sentence, getting interrupted, and it’s just difficult to figure out where to stop. If you can only be interrupted at a particular place, in a very precise place and under precise conditions, then it makes it much easier to do the – the burst interrupt.

(Macri, Tr. at 4774 (*in camera*)). Thus, in the DDR2 standard, burst terminate can be used only to truncate a burst of eight to four, and it can be used only when reads are followed by reads or writes are followed by writes, not when a read is followed by a

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write or a write is followed by a read. (RX 2099-39 at 63; Soderman, Tr. 9376-77). Despite including this limited form of a burst terminate command in the DDR2 standard, JEDEC also included the programmable burst length feature. (RX 2099-39 at 20).

f. Complaint Counsel Did Not Prove That Using CAS Pulse To Control Data Output Was a Viable Alternative

1257. Professor Jacob's proposed alternative of using a CAS pulse to control data output involves toggling the CAS line to the DRAM once for each bit of data desired – thus, if a burst of four were required, the CAS line would be toggled four times. (Jacob, Tr. 5411-12).

1258. This alternative would not work as Professor Jacob described it because it is not clear how the DRAM would be able to determine whether a signal on the CAS line were intended to be a “toggle” that was part of a burst of data or a new command. (Soderman, Tr. 9378-79). Sophisticated additional circuitry would have to be added to allow the DRAM to recognize the toggling of the CAS line, and that would add cost and create testing problems. (Soderman, Tr. 9379).

1259. In addition, this alternative would not allow efficient interleaving between banks without adding more CAS lines. (Soderman, Tr. 9379-80). Currently, while one bank of an SDRAM is reading out data, the CAS line can be used to send a command to a second bank, a process known as interleaving. Under the proposed CAS pulse alternative, the CAS line would be toggling in connection with the burst and additional CAS lines would have to be added to the other banks to enable this sort of operation. (Soderman, Tr. 9379-80). Because there are four banks on each DRAM, three CAS lines would have to be added requiring additional pins on the DRAM and the controller, as well

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as additional circuitry on the DIMMs and the motherboard. (Soderman, Tr. 9380).

3. Given the Cost-Performance Differences, an Economically Rational DRAM Manufacturer Would Have Adopted and Licensed the Rambus Technologies Incorporated In SDRAM If It Had Known Of Rambus's Royalty Rates In Advance

1260. JEDEC-compliant SDRAM parts use two of the four Rambus technologies at issue: programmable CAS latency and programmable burst length. In order to determine whether the use of alternatives to the Rambus technologies used in SDRAM is more costly than paying the Rambus royalties, one can determine the additional variable costs associated with the alternatives and compare them to the Rambus royalties that would be paid under a license from Rambus. (Rapp, Tr. 9830-33). Costs for alternatives to different features are additive; that is, to calculate the costs associated with implementing alternatives to more than one feature simultaneously, one would simply add the costs associated with the individual alternatives. (Geilhufe, Tr. 9614).

1261. To make this comparison, the total additional cost of each alternative is divided by the weighted average of the selling price ("ASP") of SDRAM for the period 1996 to 2006. (Rapp, Tr. 9816-17, 9830-33). For SDRAM, the ASP is \$4.87. (Rapp, Tr. 9816-17). This calculation shows the additional cost of the alternative as a percentage of selling price.

1262. The Rambus royalty rate for the use of its technologies in SDRAM is 0.75%. (Rapp, Tr. 9832).

1263. The alternatives for programmable CAS latency identified as "commercially viable" by Complaint Counsel's economic expert were: fixed CAS latency, explicitly identify latency in the read command, programming latency with fuses,

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and using multiple pins to set a latency value. (Rapp, Tr. 9810-11; McAfee, Tr. 7354-63).

1264. The total additional incremental costs associated with the use of the fixed latency alternative is four cents per part. (Rapp, Tr. 9814). This total consists of the following additional incremental costs per part: a one cent wafer sort cost savings, a three cent good die yield cost increase, and a two cents inventory cost increase. (Rapp, Tr. 9814). As a percentage of ASP, this total additional incremental cost is 0.82%. (Rapp, Tr. 9817).

1265. The total additional incremental costs associated with the use of the alternative of explicitly identifying latency in the read command is one cent per part, which is the additional incremental costs associated with packaging. (Rapp, Tr. 9814-15). As a percentage of ASP, this total additional incremental cost is 0.21%. (Rapp, Tr. 9817).

1266. The total additional incremental cost associated with the use of the alternative of programming latency with fuses is six cents per part. (Rapp, Tr. 9815). This total consists of the following additional incremental costs per part: a one cent wafer sort cost increase, a three cents good die yield cost increase, and a two cents inventory cost increase. (Rapp, Tr. 9815). As a percentage of ASP, this total additional incremental cost is 1.23%. (Rapp, Tr. 9817-18).

1267. The total additional incremental costs associated with the use of the alternative of using multiple pins to set latency is four cents per part, which is the additional incremental costs associated with packaging. (Rapp, Tr. 9815). As a percentage of ASP, this total additional incremental cost is .82%. (Rapp, Tr. 9818).

1268. In addition to the additional incremental costs, each of the alternatives for programmable CAS latency either has performance disadvantages when compared to Rambus's

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technology or is potentially covered by Rambus's patents. (Rapp, Tr. 9819-23).

1269. The alternatives for programmable burst length identified as "commercially viable" by Complaint Counsel's economic expert were: fixed burst length, explicitly identify burst length in the read command, using a burst terminate command, and using multiple pins to set the burst length. (Rapp, Tr. 9810-11; McAfee, Tr. 7366-72).

1270. The total additional incremental costs associated with the use of the fixed burst length alternative is two cents per part. (Rapp, Tr. 9824-25). This total consists of the following additional incremental costs per part: a one cent wafer sort cost savings and a three cents inventory cost increase. (Rapp, Tr. 9825). As a percentage of ASP, this total additional incremental cost is 0.41%. (Rapp, Tr. 9825).

1271. The total additional incremental costs associated with the use of the alternative of explicitly identifying burst length in the read command is one cent per part, which is the additional incremental costs associated with packaging. (Rapp, Tr. 9825-26). As a percentage of ASP, this total additional incremental cost is 0.21%. (Rapp, Tr. 9826).

1272. There is no additional incremental cost associated with the use of the alternative of using a burst terminate command to set burst length. (Rapp, Tr. 9826). As discussed above, this alternative suffers from performance drawbacks.

1273. The total additional incremental costs associated with the use of the alternative of using multiple pins to set latency is two cents per part, which is the additional incremental costs associated with packaging. (Rapp, Tr. 9826). As a percentage of ASP, this total additional incremental cost is .41%. (Rapp, Tr. 9826).

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1274. In addition to the additional incremental costs, each of the alternatives for programmable burst length either has performance disadvantages when compared to Rambus's technology or is potentially covered by Rambus's patents. (Rapp, Tr. 9828-30).

1275. The most costly alternatives to the two identified Rambus technologies that are used in JEDEC-compliant SDRAM that are not covered by Rambus's patents are the use of fuses to set latency and the use of fixed burst length. (Rapp, Tr. 9832). The total additional incremental cost of using these two alternatives is eight cents per part. (Rapp, Tr. 9832). As a percentage of ASP, this additional incremental cost is 1.64%, which exceeds the 0.75% Rambus royalty rate. (Rapp, Tr. 9832).

1276. The least costly alternatives to the two Rambus technologies that are used in JEDEC-compliant SDRAM that are not covered by Rambus's patents are the use of fixed CAS latency and the use of a burst terminate command to set burst length. (Rapp, Tr. 9831). The total additional cost of using these two alternatives is four cents per part. (Rapp, Tr. 9831-32). As a percentage of ASP, this additional incremental cost is 0.82%, which exceeds the 0.75% Rambus royalty rate. (Rapp, Tr. 9832).

1277. In order to determine what royalty a rational decision-maker would have expected Rambus to charge (in the absence of direct knowledge), the standard assumption and methodology in economics is to assume that the royalty rate actually charged is the best estimate of the royalty rate a decision-maker would have expected at an earlier time. (Rapp, Tr. 10207-09). Similarly, the standard assumption and methodology in economics is to assume that the actual weighted average selling price over the product life cycle is the best estimate of an ASP that a decision-maker would have predicted in advance. (Rapp, Tr. 10212-13). Using the standard assumptions and methodology in economics, a rational DRAM manufacturer or group of manufacturers would have

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expected the additional costs of any alternatives to outweigh the costs of Rambus's royalties.

1278. Even without any reference to performance penalties, a rational manufacturer or group of manufacturers in JEDEC would have chosen to take a license from Rambus at 0.75% for SDRAM rather than use any combination of the alternatives identified by Complaint Counsel's economic expert as "commercially viable" that are not covered by Rambus's patents because all of those alternatives are more costly than licensing the Rambus technologies for SDRAM. (Rapp, Tr. 9833). Taking performance issues into account would have reinforced the decision to license rather than to substitute any of these alternatives because most of the alternatives have performance problems as well. (Rapp, Tr. 9833).

1279. Accordingly, a rational standard setting organization that knew that Rambus had patent interests on those two technologies but did not know precisely what Rambus's royalty rates would be to license the technologies would have selected the Rambus technologies. (Rapp, Tr. 9838-39). That is true even if the standard setting body were acting in a satisficing manner. (Rapp, Tr. 9839-40). If satisficing means that small cost differences are overlooked, then a satisficing standard setting body would be indifferent to the prospect of paying royalties; therefore, the theory of satisficing does not contribute to the analysis. (Rapp, Tr. 9839-40).

C. Complaint Counsel Did Not Prove That There Were Viable Alternatives To the Specified Rambus Technologies Adopted In DDR SDRAM

1. Dual-Edge Clocking

1280. Complaint Counsel, through Professor Jacob, have suggested the following possible alternatives to dual-edge clocking in DDR SDRAMs:

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- (1) Interleave on-chip banks;
- (2) Interleave on-module ranks;
- (3) Increase the number of pins on the DRAM;
- (4) Increase the number of pins on the module;
- (5) Double the clock frequency;
- (6) Use simultaneous bidirectional input/output;
- (7) Use toggle mode.

(Jacob, Tr. 5415-38).

a. Complaint Counsel Did Not Prove That Interleaving On-Chip Banks Was a Viable Alternative

1281. Professor Jacob's alternative of interleaving on-chip banks involves sending a clock signal to one bank on the DRAM and a second clock signal, a delayed version of the first, to another bank. (Jacob, Tr. 5419-20, 5614). Data would then be output or input on only a single edge of each clock signal, alternating between the two banks. (Jacob, Tr. 5419-20, 5614).

1282. Professor McAfee did not testify that interleaving on-chip banks was a commercially viable alternative. (McAfee, Tr. 7376-81).

1283. Efficient implementation of interleaving on-chip banks would still require dual-edge clocking and, therefore, is not an alternative. (Soderman, Tr. 9366). That is because the successive data signals from each bank should be given equal amounts of time on the bus. If one bank were given a shorter time window for

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detection of data signals than the other, the data given the shorter time window might not be detected accurately; if, the data could be detected accurately in such a short time window, then it would be more efficient to restrict both banks to such a time window and run the bus at a faster speed. (Soderman, Tr. 9384-85). Also, a multiplexer would be used to select which bank is outputting data onto the bus at a given time. (Soderman, Tr. 9384). But the multiplexer must have a timing reference to tell it when to switch from one bank to the other. If one of the two clocks required by Professor Jacob's alternative is used for this reference, then data will be output onto the bus on both the rising and falling edge of this clock (since the falling edge of one of these clocks corresponds to the rising edge of the other); if, on the other hand, a third clock (not specified by Professor Jacob) is used to time the multiplexer, data would have to be output on the rising and falling edges of that clock. (Soderman, Tr. 9384-86).

1284. Even if interleaving on-chip banks did not require dual-edge clocking, it might still not be an alternative to Rambus's technology, because, upon a formal infringement analysis, it might be determined to be covered by U.S. Patent No. 5,915,105 (the '105 patent), assigned to Rambus. (RX 1472).

1285. Professor Jacob did not consider the '105 patent when he proposed interleaving on-chip banks as an alternative. (Jacob, Tr. 5615-16).

1286. Performance disadvantages of interleaving on-chip banks include significant increased power dissipation because of the power consumed by the additional clocks and the fact that two banks are being accessed alternately. Keeping both banks active doubles the number of precharge cycles, and the precharge operation may be the most power consuming part of the whole DRAM operation. (Soderman, Tr. 9387).

1287. There would have had to be a significant design effort for this alternative. (Geilhufe, Tr. 9602-03).

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1288. There would have been a reduction in good die yield due to additional critical die area. (Geilhufe, Tr. 9603-04). So-called “redundancy technology” can be used to replace a defective part of the memory array on a DRAM, but the peripheral circuitry is “critical” in the sense that a defect in that circuitry will cause the unit to fail. (Geilhufe, Tr. 9603). The additional peripheral circuitry that would have been required to implement this alternative – such as multiplexing circuitry and timing circuitry – is critical in nature and defects in this circuitry would have reduced the good die yield. (Geilhufe, Tr. 9603-04).

1289. This alternative would have also complicated final testing and led to a slightly higher fall-out at that stage due to the necessity to activate two banks and to test the additional clocking circuitry. (Geilhufe, Tr. 9604).

1290. The alternative of interleaving on-chip banks would have resulted in the following approximate net costs compared to DDR SDRAM in the late 1990's, assuming a first-tier DRAM manufacturer and a product that is already well down the learning curve with a volume of twenty million unit volume, that is, a product that has already realized its cost improvement: \$250,000 increase in product design costs; three cents per unit cost increase due to reduced good die yield; two cents per unit increase in final testing and good unit yield costs. (Geilhufe, Tr. 9562-64, 9602-04).

1291. The net increase in variable costs for the alternative of interleaving on-chip banks is, therefore, approximately five cents per unit. The total costs increase is approximately six cents per unit, calculated by converting the fixed costs to per unit costs through division by twenty million (the unit production run) and adding the resulting per unit fixed costs to the per unit variable costs. (Geilhufe, Tr. 9604-05).

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b. Complaint Counsel Did Not Prove That Interleaving On-Module Ranks Was a Viable Alternative

1292. Professor Jacob's proposed alternative of interleaving banks on the DIMM or memory module is similar to his proposed alternative of interleaving on-chip banks except that data from different chips in a module, rather than data from different banks on the same chip, would be interleaved. (Jacob, Tr. 5426).

1293. Implementing this technology would require high speed bidirectional switches or multiplexers. (Soderman, Tr. 9389). Such bidirectional switches would require sophisticated engineering and would add appreciable cost. (Soderman, Tr. 9389). Moreover, additional hardware would be required to drive the switches. (Soderman, Tr. 9389).

1294. Professor Jacob testified that this alternative would have significant advantages and that the only disadvantage would be a slight complication of the memory module because of an extra clock line. (Jacob, Tr. 5427-28). Professor Jacob did not testify about any need for expensive high speed switches. (Jacob, Tr. 5427-28).

1295. Unlike most of Professor Jacob's proposed alternatives, his opinion about this alternative can be tested because a company, Kentron Technologies, Inc. ("Kentron"), has actually tried to implement the alternative of interleaving on module ranks. (Soderman, Tr. 9388).

1296. Kentron's "QBM" technology involves interleaving between chips on the module. (Goodman, Tr. 5997, 6002-03). Robert Goodman, Kentron's Chief Executive Officer, testified that the QBM technology requires the use of advanced switches. (Goodman, Tr. 6082).

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1297. Each module would require eight switches at a dollar a piece in high-volume production, for a total of eight dollars per module. (Goodman, Tr. 6046-47, 6083). Additional circuitry, such as a PLL on the module is also required. (Goodman, Tr. 6048).

1298. Although Kentron now uses DDR SDRAM chips in its QBM technology, it initially called the technology “DBR” for “double bus rate” and used SDRAM chips. (CX 409 at 2). Kentron asserted that it could achieve the “same performance as ‘DDR’ using standard SDRAM single data rate.” (CX 409 at 2).

1299. [redacted] (RX 1976 at 49 (*in camera*)).

1300. AMD’s preliminary evaluation of the Kentron QBM technology concluded that it would have signal integrity problems. (Polzin, Tr. 4035-36).

1301. Kentron had no customers for its QBM technology. (Goodman, Tr. 6008).

1302. Interleaving on-module ranks suffers from additional disadvantages. First, it would lead to a less flexible memory increment: “[b]ecause high bandwidth is achieved by interleaving between DRAMs, twice as many DRAMs would be required on the DIMM to achieve the same bandwidth as is available using dual-edge clocking.” (Soderman, Tr. 9389-90).

1303. Moreover, this alternative would not be available in all applications since many applications do not use modules at all but, rather, have the DRAM soldered directly onto the motherboard. (Soderman, Tr. 9390-91; Wagner, Tr. 3871-72).

1304. The alternative of interleaving on-module ranks would have resulted in the following approximate net costs compared to DDR SDRAM in the late 1990’s, assuming a first-tier DRAM manufacturer and a product that is already well down the learning curve with a volume of twenty million unit volume, that is, a

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product that has already realized its cost improvement: four dollars per module for multiplex and driver circuitry. (Geilhufe, Tr. 9562-64, 9605-06).

1305. This four dollar per module cost translates into a twenty-five cent per DRAM cost for DIMMs, which are memory modules containing 16 DRAMs each. (Geilhufe, Tr. 9606). This twenty-five cent increase is a variable cost.

c. Complaint Counsel Did Not Prove That Increasing the Number of Pins on the DRAM Was a Viable Alternative [*415]

1306. Professor Jacob's proposed alternative of increasing the number of pins per DRAM involves achieving high bandwidth by using only a single edge of a clock but doubling the number of data pins. (Jacob, Tr. 5429).

1307. Professor McAfee did not testify that increasing the number of pins on the DRAM is commercially viable. (McAfee, Tr. 7376-81).

1308. In addition to doubling the number of data pins, this alternative would require increasing the number of power and ground pins in order to support the added data pins. (Jacob, Tr. 5429-30). The number of pads and receivers on the DRAM would also have to be increased, leading to an increase in the size of the DRAM die and the size of the package. (Jacob, Tr. 5430-31).

1309. The additional data signals would toggle very fast and cause noise that could perturb the DRAM or other circuitry on the board. (Jacob, Tr. 5430-31).

1310. Tom Landgraf of Hewlett-Packard testified that his company was in favor of including dual-edged clocking in the DDR standard because of cost concerns. (Landgraf, Tr. 1709). Landgraf explained:

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In DDR, double data rate memory, you need – you’re essentially transitioning data twice as fast as at a single data rate, and since memory systems tend to be very cost-competitive, one of our goals was to minimize the number of new pins we had to add to the next generation of memory. So, by using the double edged clock to transfer data, we were using the package and the pins more efficiently.

(Landgraf, Tr. 1709-10).

1311. The alternative of increasing the number of pins on the DRAM would be very expensive because of the number of additional pins required. (Soderman, Tr. 9391-92). For example, DRAMs with 16 data pins would have to have 16 additional data pins, plus additional power and ground pins. (Soderman, Tr. 9391-92). Moreover, the pins would need to be interconnected through the DIMM to the motherboard, increasing the cost of the whole system. (Soderman, Tr. 9392).

1312. There would have been additional product design costs because of the significant design effort associated with adding 16 input/output drivers and related multiplexing circuitry. (Geilhufe, Tr. 9607).

1313. There would have been a reduction in good die yield because of the considerable amount of critical die area added by the additional input/output circuitry. (Geilhufe, Tr. 9607).

1314. There would have been additional packaging costs associated with a more sophisticated and packaging technology known as a “ball grid array,” which would have been required by the addition of 16 input/outputs. (Geilhufe, Tr. 9607-08).

1315. The alternative of increasing the number of pins on the DRAM, assuming that the data width would be doubled from 16 to 32, would have resulted in the following approximate net costs

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compared to DDR SDRAM in the late 1990's, assuming a first-tier DRAM manufacturer and a product that is already well down the learning curve with a volume of twenty million unit volume, that is, a product that has already realized its cost improvement: \$250,000 increase in product design costs; five cent per unit cost increase due to reduced good die yield; twenty-five cent per unit increase in packaging costs. (Geilhufe, Tr. 9562-64, 9607-08).

1316. The net increase in variable costs for the alternative of increasing the number of pins on the DRAM is, therefore, approximately thirty cents per unit. The total cost increase is approximately thirty-one cents per unit, calculated by converting the fixed costs to per unit costs through division by twenty million (the unit production run) and adding the resulting per unit fixed costs to the per unit variable costs. (Geilhufe, Tr. 9579).

**d. Complaint Counsel Did Not Prove That
Increasing the Number of Pins on the Module
Was a Viable Alternative**

1317. Professor Jacob's proposed alternative of increasing the number of pins per module would not change the single data rate DRAM at all but would achieve the desired bandwidth by adding data pins to the module. (Jacob, Tr. 5431).

1318. Professor McAfee testified that increasing the number of pins on the module is *not* commercially viable. (McAfee, Tr. 7378).

1319. This alternative would require 128 wires on the motherboard and 128 pins on the memory controller. (Jacob, Tr. 5432-33).

1320. This alternative would be expensive because of the extra pins and wires required. (Soderman, Tr. 9392-93).

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1321. This alternative would not be available in all applications because many applications do not use modules at all but, rather, have the DRAM soldered directly onto the motherboard. (Soderman, Tr. 9390-91; Wagner, Tr 3871-72).

e. Complaint Counsel Did Not Prove That Doubling the Clock Frequency Was a Viable Alternative

1322. In Professor Jacob's proposed alternative of doubling the clock frequency, rather than using both the rising and falling edges of a clock, only a single edge of a clock running at twice the frequency would be used to achieve the same bandwidth. (Jacob, Tr. 5433-34).

1323. This alternative would require a clock signal that transitions at twice the rate of present systems and would, therefore, burn twice as much power as present systems. (Jacob, Tr. 5434-35).

1324. This alternative would cause clock distribution problems, because routing the clock signal through the DIMM to the various DRAMs is a critical task that becomes much more difficult at higher frequencies. (Soderman, Tr. 9393-94).

1325. This alternative would also lead to increased electromagnetic radiation from the higher frequency clock. (Soderman, Tr. 9395). Both DRAM manufacturers and systems companies are very careful about the amount of electromagnetic radiation generated because it can interfere with other circuitry and because there are strict FCC guidelines as to how much such radiation is permissible. (Soderman, Tr. 9395).

1326. At the time that JEDEC was considering using dual-edged clocking in DDR SDRAMs, the "predominant disadvantage" of using a higher frequency clock was "electromagnetic interference, radiation, the fact that fast pulses

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tend to radiate. And we've constantly been concerned, and at that time was no different, about our ability to distribute very high-speed signals throughout a system." (Kellogg, Tr. 5182).

1327. In July 1997, Texas Instruments made a proposal involving a high speed single-edge clock. (CX 371 at 2-3; Lee, Tr. 6710-12). Terry Lee of Micron wrote the following in an email about the Texas Instruments proposal: "[a] single frequency clock is not practical. There is no real support yet for the higher frequency clock idea yet." (Lee, Tr. 11039, 11087-89).

1328. In September 2000, Micron proposed using a double frequency, single-edge clock in DDR2. (CX 2769 at 13; Lee, Tr. 6795-98).

1329. As late as November 2000, JEDEC was considering using a single data rate clock in DDR2. In an email dated November 29, 2000, Terry Lee of Micron circulated a summary of a conference call regarding "clocking issues" in DDR2. (CX 426). The conference call included representatives of ATI, Micron, Hewlett-Packard, IBM, Intel, Mitsubishi, AMD, Texas Instruments, and others. (CX 426 at 2-4). The summary of the conference call includes the following statement:

Discussion on single data rate clock vs. doble [sic] data rate clock Fundamentally question is that is single data rate clock possible? Micron believes that SDR has some advantages as it gets ride [sic] of duty cycle issue, it has old prior art, and the inherent bandwidth is better with write than read In general, everyone agreed that SDR clock is ok provided that it works.

(CX 426 at 4).

1330. DDR2 SDRAMs use dual edge clocking. (RX 2099-14 at 3; RX 2099-39 at 5-6).

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1331. There would have been additional design costs associated with additional circuitry required for the faster clock. (Geilhufe, Tr. 9608-9).

1332. There would have been additional final testing costs associated with testing involving a clock that is running at the speed of current technology. This would have been a significant step up in testing that would have required changes in the test equipment and would have lowered yield. (Geilhufe, Tr. 9609).

1333. To distribute a double frequency clock on the DIMM would have required an on-DIMM clock. (Geilhufe, Tr. 9609). At the required frequency, that clock would have cost approximately \$3.80. Because the cost of a clock is a function of frequency, such a clock could cost as much as seven to eight dollars for the highest frequency parts and much less for lower frequencies. (Geilhufe, Tr. 9609-10).

1334. The alternative of doubling the clock frequency would have resulted in the following approximate net costs compared to DDR SDRAM in the late 1990's, assuming a first-tier DRAM manufacturer and a product that is already well down the learning curve with a volume of twenty million unit volume, that is, a product that has already realized its cost improvement: \$100,000 increase in product design costs; four cent per unit cost increase due to higher speed final testing; \$3.80 per module for an on-module clock. (Geilhufe, Tr. 9562-64, 9608-10).

1335. The net increase in variable costs for the alternative of doubling the clock frequency is approximately twenty-eight cents per unit, obtained by dividing the "per module" costs by sixteen corresponding to the number of DRAMs on a DIMM and adding this to the other variable costs. (Geilhufe, Tr. 9610). Since the increase in fixed costs is relatively small, the total cost increase, calculated by converting the fixed costs to per unit costs through division by twenty million (the unit production run) and adding

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the resulting per unit fixed costs to the per unit variable costs, is also approximately twenty-eight cents per unit.

f. Complaint Counsel Did Not Prove That Using Simultaneous Bi-directional I/O Drivers Was a Viable Alternative

1336. Professor Jacob's proposed alternative of using simultaneous bi-directional input/output drivers involves a signaling scheme that allows read data and write data to exist on the bus simultaneously, potentially increasing bandwidth. (Jacob, Tr. 5435-36).

1337. Professor McAfee did not testify that simultaneous bi-directional I/O drivers was a commercially viable alternative. (McAfee, Tr. 7376-81).

1338. Simultaneous bi-directional input/output drivers involve a more complex driver design. (Jacob, Tr. 5437).

1339. This complex technology has been used in point-to-point systems in which there is only a single transmitter and receiver sending data back and forth and the time it takes to get from one to the other is known and built into the design parameters of the system. (Soderman, Tr. 9396-97). It would not work in a high-speed, bus-based system, such as used in general purpose computers, where there might be differing numbers of DRAMs connected to the bus and the components do not know precisely when signals being sent will arrive at other components. (Soderman, Tr. 9396-97).

1340. Even if this alternative could be made to work, the amount of additional bandwidth that would result from the ability to read from and write to the DRAM simultaneously would depend on the application and on whether the read and write operations are balanced. (Jacob, Tr. 5437). For most systems, which require a burst of data to be read from the DRAM prior to

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writing to the DRAM and for which the read and write operations are thus not balanced, this alternative would not achieve the same high bandwidth as DDR SDRAMs. (Soderman, Tr. 9397-98). In the extreme case of an application that only read data from the DRAM but never wrote data to the DRAM, no benefit whatsoever would be obtained. (Soderman, Tr. 9397-98).

1341. Rambus has considered using simultaneous bi-directional input/output for high speed signaling. (Horowitz, Tr. 8563). Rambus did not use it, however, because Rambus could not implement it in a way that was not likely to cause errors. (Horowitz, Tr. 8563-64).

g. Complaint Counsel Did Not Prove That Using Toggle Mode Was a Viable Alternative

1342. By his proposed “toggle mode” alternative, Professor Jacob meant a DRAM like IBM’s toggle mode DRAM. (Jacob, Tr. 5417).

1343. IBM’s toggle mode DRAM was an asynchronous design. (Jacob, Tr. 5608; Soderman, Tr. 9398; Sussman, Tr. 1472). Asynchronous technology could not achieve the same performance in a general purpose, bus type architecture as could synchronous technology. (Soderman, Tr. 9398-99).

1344. An IBM researcher described IBM’s toggle mode DRAM as “very big, very hot, and very nonstandard.” (RX 2099-97 at 16; Soderman, Tr. 9399-00). The researcher went on to conclude that “in the commodity market, these attributes are disastrous.” (RX 2099-97 at 16; Soderman, Tr. 9399-400).

1345. The toggle mode alternative would have required significant additional design costs. (Geilhufe, Tr. 9611).

1346. The good die yield would have been reduced due to additional critical die area. (Geilhufe, Tr. 9611).

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1347. The toggle mode alternative would also have required an additional pin for the data toggle signal. Because pins must be added in pairs, two additional pins would have to be added. (Geilhufe, Tr. 9611).

1348. The toggle mode alternative would have resulted in the following approximate net costs compared to DDR SDRAM in the late 1990's, assuming a first-tier DRAM manufacturer and a product that is already well down the learning curve with a volume of twenty million units, that is, a product that has already realized its cost improvement: \$250,000 increase in product design costs; ten cents cost increase per unit due to reduced good die yield; one cent cost increase per unit for an additional pin. (Geilhufe, Tr. 9562-64, 9610-11).

1349. The net increase in variable costs for the toggle mode alternative is, therefore, approximately twelve cents per unit. The total cost increase is approximately thirteen cents per unit, calculated by converting the fixed costs to per unit costs through division by twenty million (the unit production run) and adding the resulting per unit fixed costs to the per unit variable costs. (Geilhufe, Tr. 9611-12).

2. On-Chip DLL

1350. Complaint Counsel has suggested, through Professor Jacob, the following possible alternatives to on-chip DLL in DDR SDRAMs:

- (1) Put a DLL on the memory controller;
- (2) Put a DLL on the module;
- (3) Use a vernier method;
- (4) Increase the number of pins on the DRAM;

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- (5) Rely on the DQS data strobe for timing;
- (6) Read clocks to avoid replicating DLL circuits on DRAM chips.

(Jacob, Tr. 5443-58).

1351. The purpose of the on-chip DLL in DDR SDRAMs is to compensate for internal delays on the DRAM and thereby to remove uncertainty in the timing of the system. (Jacob, Tr. 5442-43; Soderman, Tr. 9404).

1352. This timing uncertainty varies from DRAM to DRAM because of differences in process, temperature and voltage. (Soderman, Tr. 9402-03).

1353. The timing uncertainty compensated for by the DLL is more of a problem at high speeds because, as speeds increase, the window of time in which data is valid becomes smaller and the timing uncertainty reduces the size of the window even more. (Soderman, Tr. 9404-05).

1354. At high enough bus speeds, a DLL or PLL on the DRAM to compensate for individual timing uncertainties is required for correct operation. (Soderman, Tr. 9401-05).

1355. In the mid-1990s, DRAM engineers believed that a DLL or PLL on the DRAM would be necessary at future bus speeds. (RX 2099-29 at 1-4; RX 2099-13 at 1-7; Soderman, Tr. 9408-10).

1356. In a presentation on “Future SDRAM” at the March 1996 meeting of the JEDEC 42.3 subcommittee, Desi Rhoden presented a chart with columns representing clock speeds and rows representing certain features. (JX 31 at 64; Rhoden, Tr. 542-43). The chart indicates that “on-chip PLL/DLL” would be a “no”

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at 100 MHz, “maybe” at 150 MHz, and “yes” at 200 MHz and above. (JX 31 at 64; Rhoden, Tr. 542-43). Indeed, Rhoden testified that: “We discussed [on-chip PLL/DLL] at length inside of JEDEC, and I don’t think we ever had any question whether we would use the technology. It was just a question of when.” (Rhoden, Tr. 546).

1357. In an email dated November 18, 1997, Bill Gervais of Transmeta wrote that “a DLL must be onchip and enabled for the Intel spec.” (RX 1060 at 1). In other words, an on-chip DLL was required to meet Intel’s timing requirements.

a. Complaint Counsel Did Not Prove That Putting a DLL On the Memory Controller Was a Viable Alternative

1358. Professor Jacob’s proposed alternative of putting the DLL on the memory controller involves putting a DLL circuit on the memory controller rather than on each individual DRAM. (Jacob, Tr. 5445).

1359. This alternative is not sufficient for high speed performance because a DLL on the controller will broadcast the same delayed clock to all of the DRAMs and, therefore, cannot compensate for timing differences between DRAMs. (Soderman, Tr. 9405-06).

1360. Dr. Horowitz and other Rambus engineers have considered moving the DLLs off of the DRAMs and onto the memory controller on a number of occasions. (Horowitz, Tr. 8561-62). However, they determined that they were unable to meet the necessary timing requirements without a DLL on the DRAM. (Horowitz, Tr. 8561-62).

b. Complaint Counsel Did Not Prove That Putting a DLL On the Module Was a Viable Alternative

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1361. Professor Jacob's proposed alternative of putting the DLL on the module involves putting an additional chip on the module containing either one or more DLL circuits rather than having a DLL on each individual DRAM. (Jacob, Tr. 5448-49).

1362. At high speeds, a single DLL would be insufficient and a separate DLL would be required for each DRAM on the module. (Jacob, Tr. 5449; Soderman, Tr. 9406-07).

1363. Professor Jacob's suggestion that multiple DLLs be put on a single chip would not solve the problem. A DLL on the DRAM could sense the DRAM's performance in order 430] circuitry on the DRAM to communicate with the DLL chip about the DRAMs performance. (Soderman, Tr. 9407). Such circuitry would be difficult and expensive to implement and would require extra traces on the module which would further increase the cost of the system. (Soderman, Tr. 9407-08).

1364. Tom Landgraf of Cisco, formerly at Hewlett-Packard, testified that Hewlett-Packard was in favor of including an on-chip PLL or DLL in the DDR SDRAM standard because putting a PLL on the motherboard or module instead would have led to lower performance at higher cost. Landgraf explained:

One way to implement PLL is to put it on a – on the system, on the motherboard or on the memory module, and what we were suggesting, what we were in favor of doing was any time you can take a function which is on the motherboard that is common to a memory system, if you can incorporate that in the memory system itself, it reduces the overall cost of the system and also improves the performance of the system.

(Landgraf, Tr. 1709).

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1365. The test time at wafer sort would have been decreased because the DLL on the DRAM would no longer have had to be tested. (Geilhufe, Tr. 9612-13).

1366. There would have been an increase in good die yield due to the decrease in critical die area resulting from removal of the DLL from the DRAM. (Geilhufe, Tr. 9613).

1367. The cost of an on-DIMM DLL is a function of the frequencies supported. For the DLL required for DDR SDRAMs, it would have cost approximately \$3.80. (Geilhufe, Tr. 9613).

1368. The alternative of putting the DLL on the module would have resulted in the following approximate net costs compared to DDR SDRAM in the late 1990's, assuming a first-tier DRAM manufacturer and a product that is already well down the learning curve with a volume of twenty million units, that is, a product that has already realized its cost improvement: two cent cost decrease due to decreased test time at wafer sort; one cent cost decrease due to increased good die yield; \$3.80 per module for an on-DIMM DLL. (Geilhufe, Tr. 9562-64, 9612-14).

1369. These costs would lead to an approximate twenty-one cent increase in the cost per unit, calculated by converting the fixed costs to per unit costs through division by twenty million (the unit production run), dividing the "per module" costs by sixteen corresponding to the number of DRAMs on a DIMM, and adding the resulting per unit fixed costs and per unit variable costs to the other variable costs. (Geilhufe, Tr. 9614). This twenty-one cent cost increase is a variable cost.

c. Complaint Counsel Did Not Prove That Using a Vernier Method To Account For Skew Was a Viable Alternative

1370. Professor Jacob proposed using a "vernier method" to "account for skew," that is timing uncertainties. (Jacob, Tr. 5444).

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A “vernier” is a circuit that provides a static delay, that is, it is a variable delay circuit that does not contain a feedback loop like a DLL for changing the size of the delay. (Jacob, Tr. 5450; Soderman, Tr. 9411).

1371. Unlike a DLL, Professor Jacob’s proposed alternative of using a vernier method to account for skew would not account for dynamic changes in skew caused by, for example, fluctuations in temperature or voltage without recalibration, that is adjustment of the amount of the delay, by the memory controller. (Jacob, Tr. 5452-53).

1372. These temperature and voltage changes can occur on the order of milliseconds and microseconds, respectively, and without the DLL’s feedback loop the vernier will not be able to take these fluctuations into account and minimize the timing uncertainty. (Soderman, Tr. 9411-12).

1373. Moreover, the recalibration necessary to make the vernier more precise would consume bus bandwidth, because the recalibration information would have to be transmitted over the bus from the controller to the DRAM, and would make the system less efficient. (Soderman, Tr. 9412).

1374. The SyncLink consortium tried to design a chip, called an “SLDRAM,” using verniers alone without PLLs or DLLs on the DRAM. (RX 2099-43 at 158; Soderman, Tr. 9412-14).

1375. Ultimately, however, SyncLink’s SLDRAM chip did use a DLL in each DRAM, in addition to the vernier, in order “to make that timing a little bit more accurate.” (Jacob, Tr. 5620-21; RX 2099-11; Soderman, Tr. 9414-15).

1376. In addition, the use of verniers, upon a formal infringement analysis, might be determined to be covered by U.S. Patent No. 6,115,318, “Clock Vernier Adjustment” assigned to Micron Technology (RX 1701), and as used in SLDRAM by U.S.

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Patent No. 5,917,760, “Deskewing Data Signals in a Memory System,” assigned to SLD RAM, Inc. (RX 1479).

1377. Professor Jacob did not consider these patents when he proposed the use of verniers as an alternative. (Jacob, Tr. 5622-23).

d. Complaint Counsel Did Not Prove That Increasing the Number of Pins on the DRAM Was a Viable Alternative

1378. Professor Jacob’s proposed alternative of achieving high bandwidth using more DRAM pins and not clock frequency is the same as the alternative he proposed of using more pins per DRAM rather than using dual-edge clocking. (Jacob, Tr. 5453-54).

1379. This alternative suffers from the same infirmities and the same additional costs as the same alternative when it was proposed as an alternative for dual-edge clocking. (Geilhufe, Tr. 9612).

1380. Professor McAfee did not testify that increasing the number of pins on DRAM was a commercially viable alternative. (McAfee, Tr. 7385).

e. Complaint Counsel Did Not Prove That Relying on the DQS Data Strobe Was a Viable Alternative

1381. Professor Jacob’s proposed alternative of relying on the DQS data strobe involves using the DQS signal that already exists in DDR SDRAMs to time the data which would no longer necessarily be aligned with the system clock. (Jacob, Tr. 5456-57).

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1382. Using the DQS signal without the DLL is not sufficient for high speed performance. (Soderman, Tr. 9415-16).

1383. DDR SDRAMs already have the DQS signal available, but DDR SDRAMs also contain a DLL for accurate operation, even though DRAM manufacturers incur a cost to put the DLL on the DRAM. (Soderman, Tr. 9416-17).

1384. DDR2 SDRAMs have DQS data strobe signals as well as on-chip DLLs, even though DRAM manufacturers incur a cost to put the DLL on the DRAM. (*See* RX 2099-14 at 3; RX 2099-39 at 5, 7).

f. Complaint Counsel Did Not Prove That Read Clocks Were a Viable Alternative

1385. In the 1995-1998 time frame, JEDEC considered read clocks as an alternative to using DLL circuits in every DRAM. (Kellogg, Tr. 5159-60; Lee, Tr. 6663-65; JX 29 at 18-19).

1386. A read clock is less accurate than a strobe. (Kellogg, Tr. 5161). Since JEDEC could not rely on a strobe absent a DLL, it could not have relied on a read clock.

1387. Even Professor Jacob did not testify that a read clock was a viable alternative to on-chip DLL. (Jacob, Tr. 5444-45).

3. Given the Cost-Performance Differences, Economically Rational DRAM Manufacturers Would Have Adopted and Licensed the Rambus Technologies Incorporated in DDR and SDRAM

1388. JEDEC-compliant DDR parts use all four of the Rambus technologies at issue: programmable CAS latency, programmable burst length, dual-edge clocking, and on-chip PLL/DLL. In order to determine whether the use of alternatives to these Rambus technologies used in DDR is more costly than

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paying the Rambus royalties, one can determine the additional incremental costs associated with the alternatives and compare those to the Rambus royalties that would be paid to Rambus under a license from Rambus. (Rapp, Tr. 9850-54). Costs for alternatives to different features are additive; that is, to calculate the costs associated with implementing alternatives to more than one feature simultaneously, one would simply add the costs associated with the individual alternatives. (Geilhufe, Tr. 9614).

1389. To make this comparison, the total additional incremental costs of alternatives are summed and divided by the weighted average of the actual and forecast average selling price (“ASP”) of DDR for the period 2000 to 2006. (Rapp, Tr. 9844-45, 9850-54). For DDR, the ASP is \$5.13. (Rapp, Tr. 9844-45).

1390. The Rambus royalty rate for the use of its technologies in DDR is 3.5%. (Rapp, Tr. 9853).

1391. The same additional incremental costs and performance disadvantages that apply to the alternatives to programmable CAS latency and programmable burst length as used in SDRAM also apply to the use of those alternatives in DDR. (Rapp, Tr. 9842-43).

1392. The alternatives for dual-edge clocking identified as “commercially viable” by Complaint Counsel’s economic expert were: interleaving banks on the module, doubling the clock frequency, and the use of toggle mode. (Rapp, Tr. 9841; McAfee, Tr. 7380-81).

1393. The total additional incremental cost associated with the use of the alternative of interleaving banks on a module is twenty-five cents per part, which is the additional incremental cost associated with board complexity. (Rapp, Tr. 9844). As a percentage of ASP, this total additional incremental cost is 4.88%; which exceeds the 3.5% Rambus royalty rate. (Rapp, Tr. 9844-45).

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1394. The total additional incremental cost associated with the use of the alternative of doubling the clock frequency is twenty-eight cents per part. (Rapp, Tr. 9845-46). This total consists of the following additional incremental costs per part: a four cents final test and good yield cost increase and a twenty-four cent circuit board area cost increase. (Rapp, Tr. 9845-46). As a percentage of ASP, this total additional incremental cost is 5.46%. (Rapp, Tr. 9846).

1395. These two technologies also have performance disadvantages when compared to Rambus's dual-edge clocking technology. (Rapp, Tr. 9846-48).

1396. The final alternative, toggle mode, is an asynchronous technology that is not technically viable. (Rapp, Tr. 9841, 9856-57).

1397. The alternatives for on-chip PLL/DLL identified as "commercially viable" by Complaint Counsel's economic expert are: the use of a vernier mechanism, placing the DLL on the module, and relying on the DQS data strobe. (Rapp, Tr. 9841-42). Each of these alternative has performance disadvantages when compared to Rambus's on-chip PLL/DLL technology. (Rapp, Tr. 9848-50).

1398. The most costly alternatives to the four specified Rambus technologies that are used in JEDEC-compliant DDR that are not covered by Rambus's patents are the use of fuses to set latency, the use of fixed burst length, any on-chip PLL/DLL alternative, and doubling the clock frequency. (Rapp, Tr. 9850-52). The total additional cost of using these four alternatives is thirty-six cents per part. (Rapp, Tr. 9852). As a percentage of ASP, this additional cost is 7.02%, which exceeds the 3.5% Rambus royalty rate by a substantial margin. (Rapp, Tr. 9853).

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1399. The least costly alternatives to the four specified Rambus technologies that are used in JEDEC-compliant DDR that are not covered by Rambus's patents are the use of fixed latency, the use of a burst terminate command, any on-chip PLL/DLL alternative, and interleaving banks on a module. (Rapp, Tr. 9850-52). The total additional cost of using these four alternatives is twenty-nine cents per part. (Rapp, Tr. 9852). As a percentage of ASP, this additional cost is 5.65%, which exceeds the 3.5% Rambus royalty rate by a substantial margin. (Rapp, Tr. 9853).

1400. In order to determine what royalty a rational decision-maker would have expected Rambus to charge (in the absence of direct knowledge), the standard assumption and methodology in economics is to assume that the royalty rate actually charged is the best estimate of the royalty rate a decision-maker would have expected at an earlier time. (Rapp, Tr. 10207-09). Similarly, the standard assumption and methodology in economics is to assume that the actual weighted average selling price over the product life cycle is the best estimate of an ASP that a decision-maker would have predicted in advance. (Rapp, Tr. 10212-13). Using the standard assumptions and methodology in economics, a rational DRAM manufacturer or group of manufacturers would have expected the additional costs of any alternatives to outweigh the costs of Rambus's royalties.

1401. Based on these cost calculations and in consideration of the performance advantages of the four Rambus technologies incorporated in DDR, it is clear that Rambus's technologies were superior in cost-performance terms. (Rapp, Tr. 9857-58). A rational manufacturer or group of manufacturers in JEDEC would have chosen to take a license from Rambus at 3.5% for DDR rather than use any combination of the alternatives identified by Complaint Counsel's economic expert as "commercially viable." (Rapp, Tr. 9857-59).

1402. Although DRAM manufacturing costs decline over time, this does not affect the additional incremental costs used for

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purposes of the calculations with regard to alternative technologies for either SDRAM or DDR because these costs were estimated for a mature product. (Rapp, Tr. 9854). Moreover, some of the estimated costs, such as inventory costs, are not subject to a decline over time because the decline in costs in the DRAM industry come from improvements in manufacturing technology and increased yields. (Rapp, Tr. 9854-55).

XII.EVEN ASSUMING THAT ALTERNATIVES DID EXIST, JEDEC WOULD NOT HAVE REJECTED THE RAMBUS TECHNOLOGIES

A. Whether JEDEC Would Have Adopted Alternatives To Rambus's SDRAM and DDR Technologies Had Rambus Made Additional Disclosures

1403. Rambus offered the testimony of Professor David Teece. Professor Teece has a Master's degree in economics from the University of Canterbury, a Master's degree in economics from the University of Pennsylvania, and a Ph.D. in economics from the University of Pennsylvania. (Teece, Tr. 10297). The subject of his Ph.D. Thesis was the resource costs of transferring technology between nations and amongst firms. (Teece, Tr. 10297). The thesis was published as a book, and two peer-reviewed articles came from it. (Teece, Tr. 10297). Professor Teece has written over one hundred fifty publications and over a dozen books. (Teece, Tr. 10298).

1404. Professor Teece is a chaired professor in the School of Business at the University of California at Berkeley. (Teece, Tr. 10295). He is also the Director of the Institute for Management, Innovation, and Organization at the University of California at Berkeley. (Teece, Tr. 10295). The Institute conducts research into questions of innovation, technology policy, and technology strategy. (Teece, Tr. 10295). The Institute has conducted a lengthy multi-country study of the global semiconductor industry. (Teece, Tr. 10295-96).

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1405. Professor Teece has taught a number of courses over the years, including a Master's level course on management innovation and a Ph.D. seminar on technology strategy and related public policy issues. (Teece, Tr. 10296-97). In addition to teaching at Berkeley, Professor Teece has taught at the University of Pennsylvania, Stanford University, and Oxford University. (Teece, Tr. 10296).

1406. Professor Teece has received the first international prize in technology strategy and he has been named one of the fifty most important business thinkers of our time. (Teece, Tr. 10298-99).

1407. Professor Teece co-founded a journal entitled *Industrial and Corporate Change*, published by Oxford University Press, which focuses on technology management, technology policy, and the economics of innovation. (Teece, Tr. 10299). He has also referred several peer-reviewed journals. (Teece, Tr. 10299-300).

1408. Professor Teece's specialization within the field of industrial organization is in technology policy and particularly antitrust policy as it relates to high technology industries. (Teece, Tr. 10300). In the last fifteen to twenty years, he has written numerous articles on technology strategy and on the interface of technology policy and antitrust policy. (Teece, Tr. 10300).

1409. Professor Teece also has substantial expertise in the area of the economics of standard setting. He began to study the economics of standard setting organizations about a decade ago. (Teece, Tr. 10300-01). He was invited to speak twice at the joint FTC/DOJ hearings on the subject of standard setting and antitrust. (Teece, Tr. 10301).

1410. In contrast, Complaint Counsel's economic expert, Professor McAfee has not published a single paper on the issue of standard setting. (McAfee, Tr. 11345). He was not invited to

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speak at the joint FTC/DOJ hearings. (McAfee, Tr. 11345). He has never been invited to speak on the issue of standard setting. (McAfee, Tr. 11345).

1411. The “but-for” world may be analyzed by the use of a decision tree, which is a device commonly used in economics to understand the different possible scenarios and outcomes in a “but-for” world. (Teece, Tr. 10315-16).

1412. In this case, the decision tree starts with the but-for world assumption that Rambus made the additional disclosures that Complaint Counsel allege Rambus should have made. (Teece, Tr. 10316).

1413. The decision tree may be described as follows. Had Rambus made these additional disclosures, JEDEC would have a choice; it could either proceed without seeking a RAND letter from Rambus, or it could ask Rambus to provide a RAND letter. (Teece, Tr. 10316). Had JEDEC proceeded without asking for a RAND letter, the same outcome would have occurred in the but-for world as in the actual world – JEDEC would have adopted standards incorporating Rambus’s technologies. (Teece, Tr. 10329-30). If JEDEC had asked for a RAND letter, Rambus would have to decide whether to give a RAND letter. (Teece, Tr. 10317). If Rambus agreed to give a RAND letter, JEDEC members would (as a theoretical matter) have sought to negotiate licenses from Rambus before the standard was adopted and before any relevant patents issued (*ex ante*) or it could have proceeded without such negotiations. (Teece, Tr. 10317-18). If there were no *ex ante* negotiations, JEDEC could have adopted the standards incorporating Rambus’s technologies or it could have adopted different standards. (Teece, Tr. 10319). Had JEDEC adopted the same standards as it actually adopted, the same outcome would have occurred in the but-for world as in the actual world. (Teece, Tr. 10319).

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B. JEDEC Might Not Have Sought a RAND Assurance From Rambus Even if Rambus Had Made Disclosures

1414. As a matter of economic analysis, there are a number of considerations that suggest JEDEC might not have asked Rambus for a RAND letter, even if Rambus had made all of the disclosures described by Complaint Counsel.

1415. First, JEDEC might have perceived that Rambus was trying to derail the standard setting process by gaming the system. (Teece, Tr. 10320-22). That is, JEDEC might have believed that Rambus was asserting that it had patent rights in order to provoke JEDEC into seeking a RAND letter so that Rambus could refuse to give the letter and thereby stopping or slowing the standardization process. (Teece, Tr. 10320-22).

1416. Second, JEDEC might not have asked for a RAND letter because members might have believed that Rambus would not obtain patents that would cover products complying with the JEDEC standard. (Teece, Tr. 10323). For example, JEDEC members might have believed that Rambus's patent applications would not result in issued patents or that, if they did, the patents might not be valid because of prior art. (Teece, Tr. 10323).

1417. Third, JEDEC might not have asked for a RAND letter from Rambus because, in the real world, JEDEC did not seek, and to this day has not sought, a RAND assurance from Rambus regarding SDRAM, DDR or DDR2, despite JEDEC's knowledge of and concerns about Rambus's patent coverage. (Teece, Tr. 10323-27).

1418. JEDEC's failure to seek a RAND letter from Rambus is not explained by speculation that JEDEC *may* have chosen not to ask for a RAND letter – after Rambus began asserting its issued patents against DRAM manufacturers – because of litigation between Rambus and the DRAM manufacturers. (Teece, Tr. 10328-29). In the real world however, JEDEC sought a RAND

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letter from Texas Instruments regarding the Quad-CAS technology even though TI was in litigation with Micron at the time. (Teece, Tr. 10329; CX 348 at 2, 4).

1419. Had Rambus made the additional disclosures that Complaint Counsel contend it should have made and had JEDEC not sought a RAND letter, economic analysis shows that JEDEC would have adopted the same standards that it did in the real world – the standards incorporating Rambus’s technology. (Teece, Tr. 10329-30). Professor McAfee conceded this to be true; he testified that had JEDEC not sought a RAND letter, “it would lead to the same outcome as the actual world.” (McAfee, Tr. 11308). In that event, the alleged failure to disclose had no anticompetitive effect. (Teece, Tr. 10320).

1420. Professor McAfee also admitted that if JEDEC was aware of patents that applied to SDRAM and not to previous generations of DRAM, and if JEDEC went forward with SDRAM without requesting a RAND letter, that would impact his assumption that JEDEC requires a RAND letter and therefore impact his opinions that rely on that assumption. (McAfee, Tr. 7708).

1421. There was, in addition, an example in the 1995-1996 time frame where a RAND letter was *not* requested by an EIA standards body, despite an assertion by an EIA member that it possessed a patent relating to the standard. In that case, an EIA member called Echelon gave notice to an EIA standards body, the Consumer Electronics Association (“CEA”) that it had an issued patent that might cover a technology included in a CEA standards proposal. The EIA body chose not to ask for RAND assurances. (J. Kelly, Tr. 2122-23).

1422. Echelon was a participant in the standards setting process that had voted against the proposed standard. Echelon was promoting its own technology in competition with certain technology included in the standard. (J. Kelly, Tr. 2122).

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1423. EIA General Counsel John Kelly was personally involved in the Echelon situation. He testified that RAND assurances were not sought from Echelon because “it appeared to us at the time . . . That Echelon was deliberately trying to impede the process, to stall it out for its own purposes” (J. Kelly, Tr. 2135).

1424. J. Kelly testified that after Echelon asserted that it had a patent related to the standard, it tried to insist that the EIA request a RAND assurance from it under the EIA Patent Policy. (J. Kelly, Tr. 2166-67).

1425. J. Kelly believed that Echelon was asserting its intellectual property claims, and insisting upon receiving a request for RAND assurances, in a bad faith effort to block the process of standardization. (J. Kelly, Tr. 2167). J. Kelly also believed that it was “reasonably clear” that “we weren’t going to get those licensing assurances” from Echelon. (J. Kelly, Tr. 2166-67). J. Kelly believed that if a request for RAND assurances was made to Echelon, Echelon would refuse to give those assurances, and the standardization process would necessarily come to a stop. (J. Kelly, Tr. 2165-67).

1426. Dr. Gustavson expressed concern that standards could be blocked by a company asserting patent rights. (Gustavson, Tr. 9296; RX 675 at 1).

1427. Keith Weinstock, an Intel account representative from Micron, sent an email to Ryan, Lee and Walther stating that “Rambus plans legal action to request royalties on all DDR memory efforts.” (RX 920 at 2).

1428. It appears that neither Ryan, Lee nor Walther, each of whom attended JEDEC meetings on behalf of Micron, ever notified JEDEC about the information they had learned regarding Rambus’s plans. (Lee, Tr. 6972-73).

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1429. Walther responded to the information in part by saying that he thought that “changing data on both edges of the clock” was “old technology.” (RX 920 at 1).

1430. Lee testified that he ignored the information about Rambus’s plans to request royalties on all DDR memory efforts because he did not “believe this was true.” (Lee, Tr. 6981). Instead, he believed that Rambus was trying to spread “misinformation.” (Lee, Tr. 6983). As Lee explained, his “thought process was that they were trying to get Intel locked into designing Rambus in on everything, direct RDRAM, and to try to tell [Intel] they had no other alternative, that they’ve eliminated all of their competition. . . .” (Lee, Tr. 6982-83).

1431. Lee testified that “it was consistent with [Rambus’s] prior behavior that they might tell Intel, Oh, we have patents on that, so you can’t use DDR there either,” referring to a specific graphics memory application. (Lee, Tr. 6982-83).

1432. Professor McAfee testified that if JEDEC determines that the technology is not patented, JEDEC may proceed without requesting a RAND letter or RAND assurance even if someone asserts that the technology is covered by a valid patent as they did with Echelon. (McAfee, Tr. 7676-77).

1433. Professor McAfee further conceded that if, in the but for world in which Rambus made the additional disclosures that Complaint Counsel allege should have been made, JEDEC had determined that the Rambus technology it sought to include into a standard would not be patented, JEDEC might not have requested a RAND letter. (McAfee, Tr. 7678).

1434. Professor McAfee also admitted that he did not consider the possibility that had Rambus made the additional disclosures that Complaint Counsel allege should have been made, JEDEC might have proceeded to incorporate the technology without

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requiring a RAND letter. (McAfee, Tr. 7680-81). Although Professor McAfee said in his rebuttal testimony that he did not think that there was a significant possibility that JEDEC would not have asked for a RAND letter (McAfee, Tr. 11308), he also testified that if JEDEC thought that it was being “gamed” by Rambus, and if JEDEC thought that Rambus was unlikely to obtain patent coverage, it was a “logical possibility” that JEDEC would not ask for a RAND letter and would proceed to incorporate in its standards the technologies at issue. (McAfee, Tr. 11331).

C. If JEDEC Had Sought a RAND Assurance, It Would Still Have Adopted Rambus’s Technologies

1. Rambus Would Have Given a RAND Assurance

1435. A RAND letter must state that the patent holder will license its patent either royalty free or on reasonable terms and conditions that are demonstrably free of any unfair competition; in the latter case, the royalty rate is not specified in the letter. (Teece, Tr. 10331-32; JX 54 at 9-10). In this case, given Rambus’s business model, an economist would not expect Rambus to agree to license its technology royalty free. (Teece, Tr. 10314, 10331-32; McAfee, Tr. 7492-93).

1436. A RAND assurance has three key provisions, each of which has economic implications for the patent holder. (Teece, Tr. 10333).

1437. The first provision is that the patent holder must make licenses available to all interested parties. (Teece, Tr. 10333). This provision means that the patent holder gives up the right to pick and choose to whom it will license. (Teece, Tr. 10334). There is a substantial economic motivation for a patent holder to agree to this provision. Agreeing to the provision makes it likely that firms will be willing to incorporate the patented technology because they are assured of not being frozen out. (Teece, Tr. 10334). The

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patent holder is therefore likely to receive royalties that it otherwise would not receive. (Teece, Tr. 10334-35). Economic literature indicates that patent holders may be willing to agree to this type of restriction because doing so gives confidence to the licensees that they can use the patent holder's technology and be competitive in the marketplace. (Teece, Tr. 10335).

1438. The second provision of a RAND assurance is that the licensor agrees to license on reasonable terms and conditions. (Teece, Tr. 10336). This provision prevents the patent holder from charging unreasonable terms. (Teece, Tr. 10336). This commitment assures the licensees that royalties will not be unreasonable, again making them more likely to adopt the patentee's technology. (Teece, Tr. 10336). A patentee therefore has an economic incentive to agree to this provision. (Teece, Tr. 10337-38).

1439. In economic terms, reasonable terms and conditions means that the royalty rates are not so high as to negate the offer to license. (Teece, Tr. 10336-37). For example, if the rate is so high that it would put the licensee out of business, the rate is not reasonable. (Teece, Tr. 10337).

1440. The third provision of a RAND assurance is that the license be demonstrably free of any unfair discrimination. (Teece, Tr. 10338). This provision prevents arbitrary pricing differences among different licensees; it is designed to create a level playing field. (Teece, Tr. 10338). Again, this commitment is often attractive for a patent holder because it makes it more likely that licensees will adopt the patented technology, leading to royalties for the patentee. (Teece, Tr. 10338).

1441. From an economic perspective, licensees would be most concerned about the third provision - that licenses be demonstrably free of any unfair discrimination. (Teece, Tr. 10339). A level playing field is more important to firms than the

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level of royalties because nondiscriminatory licenses mean that the firm is not competitively disadvantaged. (Teece, Tr. 10320).

1442. Economic analysis leads to the conclusion that if JEDEC had asked Rambus to provide a RAND letter, Rambus would have provided such a commitment. (Teece, Tr. 10340-41). First, in the but-for world in which Rambus makes the additional disclosures Complaint Counsel contends should have been made, Rambus would have already lost any benefits of keeping that information confidential. (Teece, Tr. 10344). Agreeing to give a RAND assurance at that point therefore involves less of a sacrifice. (Teece, Tr. 10344).

1443. Second, in Complaint Counsel's "but-for" world, where commercially feasible alternatives to Rambus's technologies exist, Rambus would have been confronted with the choice of giving a RAND letter and obtaining royalties or potentially seeing its technologies excluded from the standard and not receiving royalties. (Teece, Tr. 10344-45). Rambus never had to make that choice in the real world. Rambus is a pure-play licensing company. That is, Rambus does not manufacture DRAM, but rather uses research and development to invent new DRAM technologies and makes its money by licensing its technology to others. (Teece, Tr. 10350-51). If Rambus does not license, it goes out of business. (Teece, Tr. 10341). Rambus therefore has an economic incentive to agree to terms that make it possible for it to license its technology. (Teece, Tr. 10341). If it does not give a RAND assurance, it forces JEDEC to look at alternative technologies. (Teece, Tr. 10345). But given Rambus's business model, it does not want JEDEC to look at alternatives; it wants JEDEC to adopt its technologies so that it can obtain royalties. (Teece, Tr. 10345).

1444. This incentive is especially great if there are in fact alternatives to Rambus's technologies. (Teece, Tr. 10341-42). If there were good alternatives to Rambus's technologies, Rambus would clearly have given a RAND assurance because refusing to

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do so would have cost it the opportunity to get significant revenue from licensing. (Teece, Tr. 10343). In that situation, it would have been economically irrational for Rambus to refuse to give a RAND letter. (Teece, Tr. 10345).

1445. This conclusion is consistent with the views of Professor McAfee. First, McAfee admitted that his starting point would be that whatever information was known to JEDEC about alternative would be known to Rambus. (McAfee, Tr. 7729). Second, he admitted that one of the risks that Rambus would face if it chose not to give a RAND letter in the but-for world would have been that JEDEC would adopt a non-infringing alternative. (McAfee, Tr. 7729).

1446. The conclusion that Rambus would have given a RAND letter is not affected by speculation that Rambus might have gained some marketplace benefit for RDRAM by refusing to give a RAND assurance. (Teece, Tr. 10345-46). Especially if there were alternatives to Rambus's technologies, any benefit to Rambus's goal of increasing the acceptance and sales of RDRAM that might flow from a refusal to give a RAND assurance for SDRAM and/or DDR would be minimal or nonexistent. (Teece, Tr. 10346). Moreover, giving a RAND assurance would lead to royalties in hand for Rambus rather than a mere potential benefit to RDRAM. (Teece, Tr. 10739-40).

1447. Finally, the conclusion that Rambus would have issued a RAND letter if asked is bolstered by the fact that the DRAM industry exhibits fairly rapid technological change. (Teece, Tr. 10346-47). Rambus is a "repeat player"; that is, its business model is such that it will often be engaging in licensing in the DRAM industry as it develops new technologies. (Teece, Tr. 10346-47). Rambus therefore has an incentive to behave in a reasonable and cooperative manner because it is building an ongoing technology company (Teece, Tr. 10347), and it therefore has incentive to give a RAND letter because it wants to build

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relationships with the licensees for the future. (Teece, Tr. 10740-41).

1448. Evidence that Rambus was concerned about agreeing to a RAND policy does not change this conclusion. First, in the but-for world, unlike the real world, Rambus has already disclosed its trade secrets. (Teece, Tr. 10716).

1449. Second, evidence that Rambus might have been reluctant in the actual world to give a RAND letter is affected by the fact that Rambus had apparently misunderstood what a JEDEC RAND assurance required. Had Rambus been confronted with a request from JEDEC to provide a RAND letter, it would have had an incentive to seek to determine what that commitment entailed. (Teece, Tr. 10716-17).

1450. This fact is supported by Rambus's conduct in December 1995 – just before Rambus left JEDEC – when Rambus was considering proposing the R-Module technology for standardization at JEDEC. Because Rambus realized that proposing a technology at JEDEC might require it to agree to license on RAND terms, Richard Crisp made inquiries about what RAND entailed. (Crisp, Tr. 3479-82). When he did so, Crisp learned from Sussman that “reasonable” terms and conditions meant “almost anything we wanted it to mean.” (Crisp, Tr. 3480-81; CX 711 at 188). After learning this, Crisp wrote an email to others at Rambus explaining, “So the conclusion I reach here is that we can abide by the patent policy on a case-by-case basis, are free to set the terms of our license arrangements to what we like (as long as we agree to license all-comers to build our modules), and we give up nothing else in the process.” (CX 711 at 188; Crisp, Tr. 3483). He then concluded that with regard to RAND, the JEDEC policy was not “nearly as onerous as some of us had earlier believed.” (CX 711 at 188; Crisp, Tr. 3483).

1451. In contrast to this analysis, Complaint Counsel's economic expert admitted that he was unable to determine

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whether or not Rambus would have given a RAND letter in the but-for world (McAfee, Tr. 7730, 11333), and he admitted that he could not say “one way or the other” if it would have been in Rambus’s economic interest to issue a RAND letter in the but-for world. (McAfee, Tr. 7733).

2. It is Unlikely There Would Have Been Any Ex Ante Negotiations

1452. Professor McAfee testified that once Rambus issued a RAND letter, JEDEC members would have an “incentive” to engage in ex ante negotiations, i.e., to negotiate with Rambus prior to the adoption of Rambus’s technologies into the SDRAM and DDR standards. (McAfee, Tr. 7493-94). Professor McAfee testified that if one firm engaged in *ex ante* negotiations with Rambus, that firm would “report” the royalty rates back to other JEDEC members. (McAfee, Tr. 7494). This analysis, however, is flawed. Firms have incentives to do lots of things that they do not actually do; a proper analysis must take into account all the pertinent factors, including those that would have prevented JEDEC members from asking for any incentive to negotiate *ex ante*. (Teece, Tr. 10353-54). Moreover, any such licensing negotiations would be done under confidentiality agreements (Teece, Tr. 10352-53), and companies would, or should, avoid such an exchange of pricing information because of antitrust concerns.

1453. There is also no evidence of *ex ante* negotiations for naked licenses for patent applications outside of the DRAM industry. (Teece, Tr. 10354). Professor Teece, who has studied licensing for over twenty years, did not know of a single example of a negotiation of a naked license for a patent application. (Teece, Tr. 10356, 10360).

1454. There are several economic reasons for the absence of negotiations before patents issue. First, because patent applications are a bundle of rights that has not matured, the parties

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do not know for what they are bargaining. (Teece, Tr. 10357). Patent applications often change during the course of prosecution – claims get amended, claims get withdrawn, claims are abandoned – and it is not clear what claims will ultimately issue. (Teece, Tr. 10357-59). There is therefore great uncertainty about the rights that would be negotiated before a patent issues. (Teece, Tr. 10357).

1455. Because of the uncertainty about what, if any, claims in an application will issue, negotiations before patents issue are extraordinarily complex and costly, and in the real world, firms do not engage in this type of negotiations with any frequency. (Teece, Tr. 10357).

1456. Moreover, *ex ante* negotiations for a license regarding patent applications involve confidentiality concerns – the negotiations may be an avenue for the parties to discover each other’s intellectual property strategies or information about future inventions. (Teece, Tr. 10359). This might provide a disincentive to *ex ante* negotiations of this sort. (Teece, Tr. 10358-59).

1457. Finally, *ex ante* negotiations for a naked license involving patent applications may require claim contingent licensing – agreements on different royalty rates depending on which claims in the application issue – which adds to the complexity and costs. (Teece, Tr. 10359).

1458. The fact that Rambus entered into licenses for RDRAM does not undermine this conclusion. The licenses for RDRAM were not naked patent licenses (licenses that do not include rights other than a right to use the intellectual property). (*See, e.g.*, CX 1592 at 19-21; Teece, Tr. 10355-56).

1459. Because of these costs and disincentives, *ex ante* negotiations for a naked license involving patent applications usually do not take place either inside or outside the DRAM industry. (Teece, Tr. 10354-60).

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1460. Professor McAfee agreed that *ex ante* negotiations are less likely with respect to a patent application than an issued patent. (McAfee, Tr. 11335). He also agreed that the less certainty there is about the exact scope of a claim and whether or not it would issue, the lower the probability of *ex ante* negotiations. (McAfee, Tr. 11336).

1461. Professor McAfee also admitted that if the potential licensee believed that the pending claims would be invalid or would not issue, it would be less likely to engage in *ex ante* negotiations. (McAfee, Tr. 11336).

1462. Moreover, according to Professor McAfee, the likelihood of *ex ante* negotiations would be less if Rambus did not have pending claims that actually covered the relevant technologies at the time it gave the RAND letter because, “[i]f nothing else, it makes it harder to describe precisely what is being negotiated about.” (McAfee, Tr. 11334-35).

1463. In the but-for world, JEDEC members and Rambus would most likely have recognized the costs of negotiating a license regarding patent applications as opposed to issued patents. (Teece, Tr. 10396). Complaint Counsel’s economic expert agreed in part, that JEDEC members might rationally conclude that the costs of *ex ante* negotiations exceed the costs of waiting to negotiate *ex post*. (McAfee, Tr. 11337).

3. JEDEC Would Have Adopted Rambus’s Technologies with Rambus’s RAND Assurance

1464. Assuming that Rambus would have given a RAND assurance if asked, there are a number of reasons why JEDEC would have adopted the Rambus technologies. First, the alternatives were inferior, even when taking into account Rambus’s royalties. (Teece, Tr. 10363, 10365; *see* F. 1128-1402, *supra*).

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1465. Second, the theory of revealed preference shows that JEDEC preferred Rambus's technologies. (Teece, Tr. 10365-66; *infra* F. 1486-1518). These two points are sufficient to show that JEDEC would have adopted Rambus's technologies for both SDRAM and DDR. (Teece, Tr. 10366).

1466. Third, JEDEC has demonstrated a willingness to adopt patented technologies, and it would likely do the same thing with Rambus's technologies. (Teece, Tr. 10371-72).

1467. JEDEC has previously adopted patented technologies where it received a RAND letter. Gordon Kelley, a long time chair of JC 42.3 testified that he could not recall any instance in which JEDEC pursued alternatives after receiving a RAND commitment on what the committee thought was the best alternative. (G. Kelley, Tr. 2707-09). By contrast, he did recall some instances in which all consideration of alternatives was dropped as soon as a RAND assurance was received. (G. Kelley, Tr. 2707-09).

1468. During the period when Rambus attended JEDEC, Desi Rhoden could not recall any example of a JEDEC committee trying to find an alternative technology after a JEDEC member disclosed a patent application that in someway related to the technology being standardized and stated that it would license on RAND terms. (Rhoden, Tr. 628-29).

1469. At the May 1990 meeting, JC 42.3 sent a ballot to Council to standardize the 256K x4 MPDRAM technology (JC-42.3-89-48) after receiving a RAND assurance from Digital Equipment Corporation. The minutes state, "This ballot passed but was on hold concerning the patent issue. A patent release letter . . . was circulated during the meeting resolving that issue. The ballot will now go to Council." (JX 1 at 6). The "patent release letter" indicated that Digital Equipment Corporation was

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willing to license the relevant patent for a one percent royalty on sales. (JX 1 at 24).

1470. At the December 1991 JC 42.3 meeting, Siemens disclosed at the time of balloting that it had an issued patent that may cover Extended Data Out for MPDRAM (JC-42.3-91-157). (JX 10 at 9). The committee responded that it was aware of prior art on this patent and unanimously moved to send the ballot to Council assuming the patent issue could be resolved. (JX 10 at 9).

1471. At the July 1992 JC 42.3 meeting, the committee considered a ballot for 2M x8/x9 Sync DRAM in TSOP II (JC 42.3-92-83). (JX 13 at 9). At the meeting, Motorola disclosed an issued patent and provided a letter assuring that Motorola would license the patent on a nondiscriminatory basis for a reasonable fee. (JX 13 at 9, 136). The committee agreed that the letter met the EIA requirements, and the committee voted to pass the ballot. (JX 13 at 9-10). The item was given Council ballot number 93-13. (JX 16 at 38). At the May 1993 JEDEC Council meeting, the Council passed the ballot and standardized the technology. (CX 54 at 8).

1472. At the March 1993 JC 42.3 meeting, the committee voted to pass a ballot on Mode Register Timing (JC-42.3-92-129-1A) for the SDRAM draft specification even though Hitachi commented "patent alert." (JX 15 at 5). At that meeting, the committee voted unanimously to send all SDRAM ballots to JEDEC Council for standardization. (JX 15 at 14). The item was given Council ballot number 93-19. (JX 16 at 39). At the May 1993 JEDEC Council meeting, the Council passed the ballot to standardize this technology. (CX 54 at 9).

1473. At the March 1993 JC 42.3 meeting, the committee considered a ballot for Write Latency (JC-42.3-92-130A) for the SDRAM draft specification. With regard to this ballot, the minutes state that Mosaid raised a patent issue. (JX 15 at 5-6). The committee voted unanimously to pass this ballot. (JX 15 at 6).

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At that meeting, the committee voted unanimously to send all SDRAM ballots to JEDEC Council for standardization. (JX 15 at 14). The item was given Council ballot number 93-20. (JX 16 at 38). At the May 1993 JEDEC Council meeting, the Council passed the ballot to standardize this technology. (CX 54 at 9).

1474. At the March 1993 JC 42.3 meeting, the committee considered a ballot for Self-Refresh Entry/Exit (JC-42.3-92-133A) for the SDRAM draft specification. (JX 15 at 8). The minutes state that both Hitachi and Mosaid raised a "patent alert." (JX 15 at 8). The committee voted unanimously to pass this ballot. (JX 15 at 8). At that meeting, the committee voted unanimously to send all SDRAM ballots to JEDEC Council for standardization. (JX 15 at 14). At the May 1993 JEDEC Council meeting, the Council passed the ballot to standardize this technology. (CX 54 at 10).

1475. At the March 1993 JC 42.3 meeting, the committee considered a ballot for Auto-Refresh (JC-42.3-92-134A) for the SDRAM draft specification. (JX 15 at 8). The minutes state that both Hitachi and Mosaid raised a patent issue. (JX 15 at 8). The committee voted unanimously to pass this ballot. (JX 15 at 9). At that meeting, the committee voted unanimously to send all SDRAM ballots to JEDEC Council for standardization. (JX 15 at 14). The item was given Council ballot number 93-24. (JX 16 at 38). At the May 1993 JEDEC Council meeting, the Council passed the ballot to standardize this technology. (CX 54 at 10).

1476. At the March 1993 JC 42.3 meeting, the committee considered a ballot for DQM Latency Reads/Writes (JC-42.3-92-136A) for the SDRAM draft specification. (JX 15 at 9). The minutes state that both Hitachi and Mosaid raised a "patent concern." (JX 15 at 9). The committee voted unanimously to pass this ballot. (JX 15 at 9). At that meeting, the committee voted unanimously to send all SDRAM ballots to JEDEC Council for standardization. (JX 15 at 14). This item was given Council ballot number 93-26. (JX 16 at 38). At the May 1993 JEDEC Council

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meeting, the Council passed the ballot to standardize this technology. (CX 54 at 10).

1477. At the March 1994 JC 42.3 meeting, the committee considered a ballot for SGRAM and SVRAM Special Mode (JC-42.3-94-15). (JX 19 at 12). Micron voted against the ballot, citing three issued patents held by Texas Instruments that could cover the technology. (JX 19 at 12). Texas Instruments said they saw “no need to comment.” (JX 19 at 12). The committee passed the ballot unanimously on the motion by Hitachi to “send it [to] Council providing TI gives some assurance on the patent. (JX 19 at 12).

1478. At the March 1995 JC 42.3 meeting, the committee considered ballot JC-42.3-95-14 Item 637. (JX 25 at 2). TI raised patent concerns. (JX 25 at 2). The committee nonetheless passed a motion to send the ballot to JEDEC Council. (JX 25 at 2).

1479. At the September 1995 JC 42.3 meeting, the committee considered a ballot for 4M/8M x8 DRAM in 32-pin SOP Item 660 (JC-42.3-65-109). (JX 27 at 7). The minutes state, “The Stacktek patent was discussed. Motion by HP to pass to Council the ballot conditionally on resolution of Stacktek’s patent position. . . . Unanimous.” (JX 27 at 8). The Council later passed this ballot. (JX 34 at 18).

1480. JEDEC’s behavior, as exhibited in the JEDEC 42.3 meeting minutes, shows that JEDEC repeatedly adopted technologies despite patent issues, especially after receiving a RAND letter. In accordance with this behavior, had Rambus provided a RAND assurance, JEDEC most likely would have adopted the Rambus technologies. (Teece, Tr. 10379-80, 10382-84).

1481. EIA General Counsel, John Kelly, agreed that there is no objection to having features and standards that are protected by

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valid patents as long as they are available to all comers on reasonable and nondiscriminatory terms. (J. Kelly, Tr. 2072).

1482. The chair of JC 42.3 admitted that if Rambus had agreed to give a RAND assurance, “I would have had to consider accepting their intellectual property.” (G. Kelley, Tr. 2564-66).

1483. Even if alternatives were “price constraining” with respect to Rambus’s technologies, they could not have been chosen by JEDEC. (Teece, Tr. 10366-67). A technology that is price constraining is not the same as an economic substitute. (Teece, Tr. 10370-71). An economic substitute must be equivalent in terms of cost-performance features. (Teece, Tr. 10371).

1484. Technologies that are not equivalent may still be price constraining, but that does not make them a viable alternative for JEDEC. (Teece, Tr. 10371). What is important to compare is the overall attractiveness of the alternatives on a quality/cost-adjusted basis. (Teece, Tr. 10976-97).

1485. The conclusion that JEDEC would have adopted Rambus’s technologies in SDRAM and DDR once it received a RAND assurance from Rambus is not undermined by the possibility that JEDEC might have been “satisficing.” (Teece, Tr. 10414-15). If JEDEC had avoided patented technologies in favor of alternative technologies without a lot of analysis, it would not have been satisficing; such conduct is merely biased behavior. (Teece, Tr. 10414). If JEDEC were satisficing, it would be willing to go forward with patented technology upon the receipt of a RAND letter. (Teece, Tr. 10414-15).

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XIII. ANALYSIS OF THE BUT/FOR WORLD HYPOTHESIS**A. The Revealed Preference Theory – JEDEC Continued To Select Rambus Technologies Even While Rambus Was Asserting Its Patent Rights**

1486. The economic theory of revealed preference posits that one should not look to what people say but, at what they actually do. (Teece, Tr. 10366).

1487. In simple terms, the theory of revealed preference is that one draws inferences about people's preferences by observing their choices. (Rapp, Tr. 9804).

1488. According to the theory of revealed preference, the choices of JEDEC and DRAM manufacturers to use the Rambus technologies when there were opportunities to use other technologies, shows that the Rambus technologies were superior to any alternatives in cost-performance terms. (Rapp, Tr. 9803-05).

1489. For SDRAM, JEDEC selected two Rambus technologies – programmable CAS latency and programmable burst length – over all available alternatives. As Gordon Kelley testified, JEDEC considered the available technologies and selected what was considered to be the best. (G. Kelley, Tr. 2707-09).

1490. Instead of Rambus's programmable CAS latency technology, JEDEC considered for the SDRAM standard, the alternatives of fixed latency and the use of fuses to set the latency. (Kellogg, Tr. 5136). With regard to Rambus's programmable burst length technology, JEDEC considered the alternatives of fixed burst length, the use of pins to set the burst length, and the use of fuses to set the burst length. (Kellogg, Tr. 5111-12).

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1491. In the place of Rambus's dual-edge clocking technology, for the DDR standard, JEDEC considered increasing the speed of the clock and interleaving banks on a module. (Kellogg, Tr. 5178). Instead of Rambus's on-chip PLL/DLL technology, JEDEC considered using verniers and relying only on data strobes. (Kellogg, Tr. 5156).

1492. The development of the DDR2 standard began in April 1998. (Macri, Tr. 4598). From that date through June 2000, JEDEC specified many of the architectural attributes for DDR2. (Macri, Tr. 4598-99).

1493. The April 1998 meeting minutes of the Future DRAM Task Group (the JEDEC subcommittee that developed DDR2) reveal that JEDEC considered entirely different architectures for the next generation DRAM, including architectures based on SDRAM, Rambus and DDR, as well as packetized and non-packetized architectures. (CX 379A at 9). About one-third of the Task Group voted to base the next generation DRAM on the SDRAM architecture and one-third voted to use a packetized architecture. (CX 379A at 9).

1494. Similarly, a few months later, in September and October of 1998, Joe Macri, the Task Group Chair, presented four possible choices on how to proceed with DDR2 definition, from simply tightening the DDR specifications to a complete change of the logic interface, I/O, and core architecture. (RX 1306 at 9; Macri, Tr. 4621-22).

1495. In late 1999, well prior to the close of the DDR2 specification period, Rambus began asserting its patents against JEDEC-compliant SDRAM and DDR products that incorporated the technologies at issue in this case. (F. 1022-29). This assertion of patent rights was widely publicized and well-known in the industry. (CX 1864 at 1; Macri, Tr. 4667-68). JEDEC's development of the DDR2 standard continued in the face of this knowledge.

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1496. From June 2000 to June 2001, even as more companies announced licenses for Rambus's technologies in SDRAM and DDR, JEDEC continued to flesh out the DDR2 specification. According to Macri, "Well, once you have kind of a – you know, a list of attributes, major attributes, to create a, you know, a real standard which is in the end a specification, you must add an infinite amount of detail to those attributes. So, this was – during June of 2000 to June of 2001, we were adding the meat, you know, the real description that an engineer would need to truly understand these – these concepts." (Macri, Tr. 4598-99).

1497. All of this JEDEC work from June 2000 to June 2001 was done in full view of Rambus's patents and in full view of Rambus's assertion – accepted by the over one-half of the industry that had licensed the technologies – that SDRAM and DDR SDRAM devices infringed certain claims of those patents. [redacted] (Macri, Tr. 4753-56 (*in camera*)).

1498. From June 2001 through September 2001, JEDEC made further architectural changes to the DDR2 standard. (Macri, Tr. 4599). These changes were made with knowledge of Rambus's patents and demands for royalties.

1499. As of May 2003, the DDR2 specification had not been finalized. (Rhoden, Tr. 411-12).

1. Proposed Alternatives Not Adopted By JEDEC

1500. Steve Polzin of AMD testified that he had discussions with DRAM manufacturers in 2000 about alternatives for programmable CAS latency, programmable burst length, and dual-edge clocking. (Polzin, Tr. 3988, 3996, 4044). At the time, the DDR2 standard was still winding its way through JEDEC. (Polzin, Tr. 4044-45). Polzin understood at the time of these discussions that Rambus patents cover these technologies. (Polzin, Tr. 4047-48). The DDR2 standard, however, still specifies

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programmable CAS latency, programmable burst length, and dual-edge clocking. (Polzin, Tr. 4046-48).

1501. Complaint Counsel's economic expert conceded that it is unlikely that JEDEC would discuss alternatives in the year 2000 unless at least some significant number of JEDEC members thought that the adoption of the alternatives was feasible at that point in time. (McAfee, Tr. 7571).

a. Alternative To On-Chip PLL in DDR2

1502. JEDEC explored alternatives to the use of Rambus technologies in DDR2. In late 1998, the Future DRAM Task Group wanted to explore eliminating both on-chip DLL and programmable burst length. (RX 1306 at 10; Macri, Tr. 4705).

1503. The December 1998 Future DRAM Task Group Minutes record that HP proposed to eliminate the on-chip PLL in DDR2. (CX 137 at 3, 27). Those minutes also show that IBM proposed to use a vernier mechanism in place of on-chip PLL. (CX 137 at 4).

1504. Despite this investigation, and despite Rambus's assertion of its patents in 1999, no alternative to on-chip PLL/DLL was adopted. (RX 1854 at 12-14 (preliminary DDR2 specification showing mode register and extended mode register using DLL Reset, and DLL Enable/Disable, "passed committee ballots and went to council at June 2001 meeting"))).

b. JEDEC Selection of Programmable CAS Latency

1505. In March and April 2000, JEDEC considered alternatives for programmable CAS latency in SDRAM, DDR, and DDR2, including fixed latency, scaling latency with clock frequency, and using pins or additional commands in DDR2. (RX 1626 at 5-6). At the March 2000 meeting of JC 42.3, Micron

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made a proposal entitled, “Simplifying Read Latency for DDRII.” (CX 154A at 25; Lee, Tr. 6779-80). The proposal included a section on “Avoiding Programmable Latency in SDR/DDR SDRAMs.” (CX 154A at 27-29). The presentation also included a proposed alternative for programmable CAS latency in DDR2. (CX 154A at 30-31; Lee, Tr. 6779-80).

1506. In response to these proposals, Bob Fusco at Hitachi wrote, “For DDR-2, we have no legacy to live with, so I like the Micron proposal. For DDR-1 it’s not too late for minor, carefully considered changes, so I’m open to either proposal.” (RX 1626 at 4). This response demonstrates that JEDEC could have adopted alternatives if doing so were preferable.

1507. Bill Hovis of IBM rejected the proposals regarding alternatives to programmable CAS latency because of cost concerns. (RX 1626 at 3). For DDR, Hovis still supported programmable CAS latency because “ultimately the flexibility of supporting multiple CAS latencies in one device can result in benefits to the customers that end up buying the memory.” (RX 1626 at 3). Hovis similarly insisted that DDR2 retain programmable CAS latency, even though he was “not currently locked in.” (RX 1626 at 3-4).

1508. In July 2000, Micron made a presentation entitled, “Pin Selectable Posted CAS for DDR II.” (CX 2766 at 1). The proposal included using multiple pins “to select specific latency values,” which had the trade off of “higher overhead for pins/traces, lower overhead associated with mode register.” (CX 2766 at 3). The proposal also stated, “Latency select pin(s) on DRAMs can be: hardwired, . . . brought out to pins on the module, [or] . . . driven by a modified SPD device.” (CX 2766 at 4).

1509. JEDEC ultimately opted to use Rambus’s programmable CAS latency technology in DDR2. (Polzin, Tr. 4046; RX 1854 at 12-14).

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c. JEDEC Selection of Programmable Burst Length

1510. The preliminary DDR2 specification, published in July 2001, specified a fixed burst length of 4. (RX 1854 at 20; Macri, Tr. 4733-34; Krashinsky, Tr. 2834).

1511. After that specification was published, both AMD and Intel proposed to change the DDR2 specification to add programmable burst length. (Macri, Tr. 4675). At the September 2001 JC42.3 meeting, Intel proposed that DDR2 have burst length of 8 in addition to 4. (CX 174 at 7-8). At that same meeting, AMD also proposed the addition of a burst length of 8. (CX 174 at 8). According to Intel, adding a burst length of 8 would result in a potential improvement of four to ten percent on high-bandwidth applications. (CX 174 at 37). The vote to ballot this proposal was unanimous. (CX 174 at 7-8).

1512. Joe Macri, the Future DRAM Task Group chairman, admitted that he was aware when adding programmable burst length to DDR2 that Rambus would believe it infringes its patents. (Macri, Tr. 4679-83).

1513. JEDEC adopted Rambus's programmable burst length technology in DDR2 despite complete awareness of Rambus's issued patents and demands for royalties. (Polzin, Tr. 4046-47).

d. JEDEC Selection of Dual-Edge Clocking

1514. JEDEC was looking at alternative clocking schemes to avoid Rambus patents. (Krashinsky, Tr. 2828). JEDEC failed to find an acceptable alternative and adopted Rambus's dual-edge clocking technology. (Polzin, Tr. 4047).

1515. At the September 2000 JEDEC meeting, Micron made a proposal that DDR2 incorporate single data rate technology instead of dual-edge clocking. (CX 2769 at 13). Micron made this

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proposal to convince the committee that they had a better clocking scheme. (Macri, Tr. 4719-20).

1516. In a November 2000 conference call, committee members discussed going to a single data rate (“SDR”) technology. (Macri, Tr. 4639-42). The minutes of that meeting reflect a consensus to try to adopt SDR if it would work. Those minutes state, “HP . . . prefers SDR” and indicate that for IBM, “Single data rate clocks are acceptable provided that it works.” (CX 426 at 2). The minutes also indicate that IBM agreed “with the need to avoid I.P. issues.” (CX 426 at 3). The minutes state: “Majority of companies prefers [sic] single data rate clocks but not all of them.” (CX 426 at 3). “Discussion on single data rate clock vs. doble [sic] data rate clock Fundamentally question is that is single data rate clock possible? In general, everyone agreed that SDR clock is ok provided that it works.” (CX 426 at 4).

1517. Macri, the chair of the Task Group, believed that everyone knew about Rambus IP at this time; therefore, there was no need to discuss the issue and the JEDEC rules were satisfied even though he did not disclose his knowledge of Rambus patents. (Macri, Tr. 4639-42).

1518. Despite the consensus to use SDR in place of dual-edge clocking “provided we can make it work,” JEDEC incorporated dual-edge clocking into DDR2. (Polzin, Tr. 4047).

2. JEDEC Continued to View Rambus Patents As A Collection Of Prior Art

1519. Many JEDEC members were aware of Rambus’s patent claims but considered Rambus’s patents a collection of prior art when considering the four technologies at issue. (F. 869-70).

1520. Furthermore, JEDEC members continued to believe that Rambus’s patents were a collection of prior art when JEDEC

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subsequently considered alternatives to Rambus's technologies. (F. 1521-35).

1521. Mark Kellogg of IBM testified that he examined Rambus's patents in 2001. (Kellogg, Tr. 5301). With respect to the technologies in SDRAM and DDR, Kellogg testified that he believed that there was prior art to Rambus's patents, and he said that he had conveyed his opinion to other DRAM manufacturers. (Kellogg, Tr. 5301-02).

1522. According to Kellogg, the DRAM manufacturers "were considering the fact that some of the Rambus patents might be overturned" when making decisions about whether to try to design around Rambus patents. (Kellogg, Tr. 5303-04).

1523. At the May 1992 JEDEC meeting, NEC representative Howard Sussman stated that he had reviewed the claims in Rambus's PCT application and that, in his opinion, many of the 150 claims were barred by prior art. (RX 290 at 3).

1524. Notes taken at the May 1992 JC 42.3 meeting by IBM representative Mark Kellogg state: "NEC: Rambus International Patent 150 pages, Motorola patents/Rambus patent – suspect claims won't hold." (RX 290 at 3; Kellogg, Tr. 5319).

1525. In an email recounting the meeting, Richard Crisp wrote, "Siemens expressed concern over potential Rambus Patents covering 2 bank designs. . . . In response to the patent issue, Sussman stated that our patent application is available from foreign patent offices, that he has a copy, and has noted many, many claims that we make that are anticipated by prior art. He also stated the Motorola patent predated ours (not the filing date!) and it too was anticipated by prior art." (RX 673 at 1). Crisp understood the gist of Sussman's statement to be that "everything that he thought Rambus had invented, somebody else had invented first." (Crisp, Tr. 3492-93).

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1526. Siemens's JEDEC representative Willi Meyer prepared a trip report from the May 1992 JC 42.3 meeting that states, "Siemens and Philips concerned about patent situation with regard to Rambus and Motorola. No comments given. Motorola patents have priority over Rambus'. Rambus patents filed but pending." (RX 297 at 5).

1527. Meyer also testified that sixteen months later, at the September 1993 JC 42 meeting, there was an additional discussion of Rambus's patent applications in which someone said that the applications were "stuck in the patent office" and "not proceeding right now." (CX 2057 at 300 (Meyer, Dep.)). The speaker then referred to Rambus's patent applications as "a collection of prior art." (CX 2057 at 300 (Meyer, Dep.)).

1528. In 1994, during a presentation to Samsung, Dr. Betty Prince stated that "many of the large systems houses believe that Rambus patents are challengeable by previous internal work and/or patents." (RX 153 at 10). This was public information that Dr. Prince had gathered for Samsung. (Prince, Tr. 9003). The presentation went on to state that the early concern about the impact of the Rambus patents on the major systems houses and vendors seems to have diminished considerably. (RX 2153 at 10).

1529. As Dr. Prince explained at trial: "When Rambus first started talking about their product, they were very secretive and nobody really knew what they had. After it was clear what they had, then many of the big companies reviewed the patents that they had already – prior work that they had already had and there was discussion various places in the industry that much of this seemed to have prior art." (Prince, Tr. 9004). Dr. Prince testified that this information was from public sources. (Prince, Tr. 9004).

1530. A November 6, 1995 Mitsubishi memorandum regarding "Request for Cray Patent Investigation as a Countermeasure for the Rambus Patent" states: "In response to the directive from the U Memory Department, we did a prior art

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search regarding the patents owned by Rambus, emphasizing the patents by Cray Corporation, and have found at least three issues that are potentially prior art for the Rambus patent.” (RX 660A at 3).

1531. Mitsubishi followed up with Cray Corporation and received some additional reassurance. In a November 28, 1995 email, Alan Grossmeier of Cray wrote to Kazutami Ariomoto in Mitsubishi’s Memory Devices Department that, based on Cray work, “[w]e have not been concerned about infringing on Rambus patent since if dispute would occur we believe we have sufficient *prior art* to show.” (RX 660 at 1).

1532. A 1996 Micron email states: “We have also been [i]nvestigating the prior art related to the area of high-speed DRAMs. From our research, we think many RAMBUS patents read on prior art or other patents.” (RX 829 at 2).

1533. As Howard Sussman, who represented NEC and then Sanyo at JEDEC meetings, explained, although the engineers who attended JEDEC meetings were “not really the experts” on construing patent claims, “[f]or prior art, we most likely have knowledge.” (Sussman, Tr. 1344).

1534. Although there was no assurance that Ramlink did not infringe Rambus’s patents, the Ramlink standard was issued by the IEEE. (Gustavson, Tr. 9300-01). As Wiggers explained at trial, “the SyncLink work went forward, yes, based on the fact that we still felt we were in the public domain, that everything we had done was, you know, based on things that had been done in the public domain. . .” (Wiggers, Tr. 10604). Wiggers testified that he did not take Rambus’s patent position very seriously. (Wiggers, Tr. 10604).

1535. In 1997, Craig Hampel of Rambus was informed that Desi Rhoden, currently JEDEC’s Chairman of the Board, “was commenting that it looked like there was going to be prior art on

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Rambus, that would make [Rambus's] patents difficult to defend.” (RX 908 at 1).

XIV. RAMBUS'S ROYALTY RATES ARE IN FACT REASONABLE AND NONDISCRIMINATORY

1536. Professor Teece has studied the semiconductor industry for many years; he has consulted in the industry; and he has focused on understanding patents, licensing and cross-licensing in the semiconductor industry. (Teece, Tr. 10301-02).

1537. Professor Teece is frequently called to advise companies on their licensing policies and the design of licensing arrangements and agreements. (Teece, Tr. 10303). He is also frequently asked to testify on antitrust and patent damages issues. (Teece, Tr. 10303). Much of his consulting work involves the semiconductor industry. (Teece, Tr. 10303). Over the last twenty years, he has advised at least a dozen companies on licensing and licensing strategy. (Teece, Tr. 10417). In addition, as the member of the board of directors of several companies, he has approved licensing agreements and on some occasions actually negotiated them. (Teece, Tr. 10419).

1538. Professor Teece published a paper on licensing and cross-licensing in the semiconductor industry that was published in the California Management Review. (Teece, Tr. 10302). He has written a number of times on the issue of licensing, including one of the first studies on technology transfer and technology licensing (for which he interviewed over one hundred licensing executives). (Teece, Tr. 10418). In the mid-1990's, Professor Teece did a study on cross-licensing, though not specific to the semi-conductor industry, during which he interviewed more licensing executives. (Teece, Tr. 10418).

1539. Professor Teece has been a member of the Licensing Executives Society for about twenty years. (Teece, Tr. 10417). He has addressed licensing executives at the annual meeting of the

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Licensing Executives Society and he has published two papers in the journal of that society. (Teece, Tr. 10418).

1540. Professor Teece has been qualified as an expert in a number of courts to testify on the issue of reasonable royalties. (Teece, Tr. 10419).

1541. Complaint Counsel's economic expert, on the other hand, admitted that he had little expertise determining a reasonable royalty rate. (McAfee, Tr. 7737). Nor does he have any expertise in the areas of licensing or technology transfer. (*See* McAfee, Tr. 7144, 11246).

A. Rambus's Royalty Rates Are Reasonable**1. The JEDEC Rules Defined "Reasonable" as the Rate Determined By the Market**

1542. J. Kelly, the EIA General Counsel, testified that EIA does not get involved in the determination of whether terms are reasonable and nondiscriminatory; rather, EIA leaves this determination to the "marketplace," i.e., a willing licensee and licensor engaged in arms-length negotiation. (J. Kelly, Tr. 1882-83). As he explained, "We don't get into the definition, the further definition of reasonable and nondiscriminatory at all. We leave that to the parties to work out or the courts." (J. Kelly, Tr. 2073-74).

1543. J. Kelly also admitted that it is not one of the goals of EIA or JEDEC to get the lowest possible royalty rate if there is intellectual property in the standards. (J. Kelly, Tr. 2073).

1544. Robert Goodman of Kentron testified that he understood a reasonable rate to be what the market will agree to pay. (Goodman, Tr. 6088).

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1545. Similarly, according to Desi Rhoden, whether licensing terms for patents covering JEDEC compliant products were “fair and reasonable” is to be determined by the courts. (Rhoden, Tr. 658, 663; RX 1461 at 1).

2. Rambus’s Royalties Are Comparable To Other Licensing Rates in the Industry and Are “Reasonable” Under the JEDEC Rules

1546. Rambus’s royalty rate for its SDRAM licenses for most companies is .75%. (Rapp, Tr. 9832; CX 1680 at 4 (*in camera*); CX 1683 at 13 (*in camera*); CX 1685 at 19 (*in camera*); CX 1686 at 17 (*in camera*); CX 1687 at 16 (*in camera*); CX 1689 at 20, (*in camera*)). Its royalty rate for its DDR licenses (with the exception of its license to Hitachi) is 3.5%. (Rapp, Tr. 9853).

1547. These rates are low compared to other licensing rates in the semiconductor industry. (Teece, Tr. 10429-51).

1548. The IBM Worldwide Licensing Policy sets forth royalty rates from 1-5% of selling price: “The royalty for use of IBM’s patents may be based on the licensee’s selling price of each product covered by one or more licensed patents or on the royalty portion selling price of such product, the choice being left to the licensee. . . . The royalty rates are 1% of the selling price if the product is covered by one Category I patent and 2% of the selling price if the product is covered by two or more Category I patents If the product is covered by one, two or three or more Category II patents, the royalty will be, respectively, 1%, 2% or 3% of the selling price added to any royalty incurred for Category I patents.” (JX 9 at 24).

1549. Mark Kellogg presented this IBM Worldwide Licensing policy to JEDEC at a meeting of JC 42.5 on December 2, 1991. (JX 9 at 24; Kellogg, Tr. 5236). No one, to his memory, suggested that IBM’s license rates were unreasonable. (Kellogg, Tr. 5238-39). Kellogg was not authorized by IBM to discuss royalty rates;

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he therefore could not tell anyone at JEDEC that IBM would license on other than IBM's standard rates. (Kellogg, Tr. 5236-37).

1550. Gordon Kelley agreed that the IBM Worldwide Licensing Policy shown at the December 1991 JEDEC meeting shows royalty rates of one to five percent, and he too did not recall anyone saying that these rates were unreasonable. (G. Kelley, Tr. 2620).

1551. The IBM Standards Practice Manual that was in effect in 1996 states, "The normal royalty rate for a license to IBM patents ranges from one percent to five percent of the selling price for the apparatus that practices the patents. This is a very reasonable rate in our industry and generally meets the requirement of standards organizations that licenses be made available on reasonable and nondiscriminatory terms and conditions." (RX 653 at IBM/2 128124).

1552. Similarly, the IBM Standards Program, which superseded the IBM Standards Practice Manual, states, "The normal royalty rate for a license to IBM patents ranges from one percent to five percent of the selling price for the apparatus that practices the patents. This is a very reasonable rate in our industry and generally meets the requirement of standards organizations that licenses be made available on reasonable and nondiscriminatory terms and conditions." (RX 653 at IBM/2 153802).

1553. The IBM website contains IBM's Standards Practices and states that IBM's royalty rates for patent licenses granted to members of standard setting organizations is one to five percent. (RX 2105-07 at 1).

1554. AMD [redacted] (Heye, Tr. 3919-20 (*in camera*); CX 1420 at 8 (*in camera*)).

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1555. In February 1990, Digital Equipment Corporation wrote to JEDEC to inform its members that Digital would agree to license its U.S. Patent No. 4,851,834 and corresponding foreign patents for a royalty rate of one percent of sales. (JX 1 at 24).

1556. After DRAM manufacturers complained of administrative burdens associated with royalty agreements, Kentron changed from charging five percent royalties for Kentron's FEMMA technology to pricing its patented flex tabs, which are a necessary input for the FEMMA technology, so as to receive the equivalent of the five percent royalty. (Goodman, Tr. 6020-22, 6078-80). Kentron has also set the price of its patented switches, used in its QBM technology, such that for a QBM product priced around \$200, the purchaser would pay an additional eighteen dollars included within that price for the Kentron patented QBM technology (approximately nine percent). (Goodman, Tr. 6087). As a matter of economics, a higher price built into a product that is a necessary input is the equivalent of the same amount charged as a royalty. (Teece, Tr. 10432).

1557. In Rambus's 1992 business plan, Rambus recognized that its royalty rates were in line with semiconductor "traditional royalty levels of 1-5%." (CX 543A at 14).

1558. Based on these cited industry rates, as Professor Teece concluded, Rambus's royalty rates are reasonable. (Teece, Tr. 10429-51). The industry royalty rates cluster around four to five percent. The Rambus SDRAM royalty rate of 0.75% is at the low end of what comparable technologies command. (Teece, Tr. 10451). Rambus's DDR royalty rate of 3.5% is near the low end of the middle of comparable rates. (Teece, Tr. 10451).

1559. The industry rates used in this comparison underestimated actual rates because the semiconductor industry rates tend to reflect balancing payments on cross-licenses rather than rates for a straight license like Rambus's. (Teece, Tr. 10423-24). A royalty rate that is paid as a balancing payment (e.g., where

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two companies cross-license, the company with the smaller or weaker patents must pay the other party a balancing payment) reflects a much higher implied royalty rate for the underlying intellectual property rights. (Teece, Tr. 10424).

1560. Complaint Counsel's economic expert recognized this when he admitted that companies can get economic value from internally developed patented technology because this gives the company a benefit in cross-licensing negotiations. (McAfee, Tr. 7698). Appleton testified that Micron decreased the amount of revenue it pays in royalty rates by devoting more resources to its own research and development projects. (Appleton, Tr. 6299-300).

1561. Rambus's royalty rates for SDRAM and DDR SDRAM were agreed to in armslength negotiations with major industry players. (Teece, Tr. 10425).

1562. The conclusion that the Rambus's royalty rates for SDRAM and DDR are reasonable is not undermined by the fact that Rambus's RDRAM royalty rates are lower than its rates for DDR because those licenses are not comparable. (Teece, Tr. 10534 (*in camera*)).

1563. [redacted] (Teece, Tr. 10534-35 (*in camera*); MacWilliams, Tr. 4824-25).

1564. Also with RDRAM, Rambus had an economic incentive to accept lower royalty rates because it was trying to build a new technology and would get the benefit of co-development from its licensees. (Teece, Tr. 10535-36 (*in camera*)). Rambus was able to "participate in future design improvements," obtain information about the partner's customers, and be "part of the process going forward." (Farmwald, Tr. 8179-80).

1565. Rambus's RDRAM licenses form a partnership; Rambus works with the licensee, and receives valuable feedback

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and information. (Farmwald, Tr. 8241). For non-DDR by contrast, there is no partnership, and Rambus receives no additional benefits. (Farmwald, Tr. 8241). [redacted] (Teece, Tr. 10535 (*in camera*)).

1566. Complaint Counsel's economic expert admitted that although Rambus's RDRAM licenses have benefits to Rambus that its DDR licenses do not, he did not quantify those benefits when comparing the DDR and RDRAM license rates. (McAfee, Tr. 7835).

1567. Complaint Counsel did not present evidence sufficient to rebut Respondent's showing that its royalty rates were reasonable.

B. Rambus's Royalty Rates Are Nondiscriminatory

1. JEDEC Has Left the Definition of "Nondiscriminatory" to the Market and the Courts

1568. As Rhoden testified, JEDEC takes no position on the definition of questions regarding "non-discriminatory." (Rhoden, Tr. 665). Rather, JEDEC leaves the determination of what terms are nondiscriminatory to the market and, if that fails, to the courts. (J. Kelly, Tr. 1882-83).

1569. For instance, when Dick Foss of Mosaid wrote to JEDEC to ask whether the RAND requirement means that Mosaid had to license its DLL patent on the same terms to licensees currently under a broad patent license from Mosaid as to those who licensed just the DLL technology, Townsend responded that the details of the license terms were left to Mosaid's negotiations with individual companies. (RX 1461 at 1-2). Desi Rhoden also replied that the interpretation of RAND is left to the courts. (RX 1461 at 1).

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1570. Similarly, JEDEC did not object when Mosaid indicated that there would be differences in its licenses for its DLL patent depending on whether the licensee licensed only the DLL patent or multiple patents from Mosaid. (*See* CX 400 at 2). In May 1999, Dick Foss wrote to JEDEC stating, “[t]here is inevitably a difference between someone who gets a DLL license thrown in as part of a multi-million settlement on multiple patents and someone who just wants a license for DLL usage.” (CX 400 at 2). He also wrote, “[t]here will be differences in terms if company ‘a’ is a general licensee (and is automatically licensed anyway) and company ‘b’ is not and so will be expected to take a ‘reasonable’ license if wanting to use our IP on the item.” (CX 400 at 1). Jim Townsend responded that he would presume that this arrangement was acceptable, though he thought Mosaid should ask counsel. (CX 400 at 1). Joe Macri did not recall any objection to Mosaid’s two tiered licenses and never raised the issue with Dick Foss. (Macri, Tr. 4714-16; RX 1457).

1571. Robert Goodman of Kentron testified that he understood that a nondiscriminatory rate should be measured at a particular point in time; at different points in time, charging different rates is not discriminatory if there is some reason to charge a different rate. (Goodman, Tr. 6088).

1572. In a September 6, 2001 letter from Christopher Pickett, General Counsel of Tessera, Inc., to John Kelly, EIA’s President and General Counsel, Pickett recounted his discussion with Kelly to the effect that either the parties or the courts must resolve whether JEDEC’s RAND policy allowed Tessera to charge a higher rate to litigating parties:

As we discussed on the phone and as is set forth in your letters, this JEDEC policy is intentionally broad in order to allow the parties to negotiate terms and come to their own decision on what the words mean in the particular circumstances. The JEDEC patent policy does not negate the context

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of what is commercially reasonable in determining license terms with a particular licensee. Whether a patent owner may consider a company's adverse action in negotiating licensing terms is a matter that must be resolved, in the first instance, by the negotiating parties themselves. If the parties cannot reach agreement, they may submit the question to the courts for resolution.

(RX 1885 at 1).

2. The Economic Evidence That Rambus's Royalty Rates Are Nondiscriminatory

1573. Discrimination in licensing is a circumstance where different parties are offered different deals. (Teece, Tr. 10538 (*in camera*)). A nondiscriminatory license is one where everyone is offered the same deal at about the same time. (Teece, Tr. 10538 (*in camera*)).

1574. Rambus offered its SDRAM and DDR licenses to everybody on more or less the same terms. (Farmwald, Tr. 8242).

1575. Higher royalties for litigating parties are not discriminatory in an economic sense because litigation involves costs, including legal costs and the diversion of management and litigation involves a risk that the patent will be found invalid or not infringed. (Teece, Tr. 10541 (*in camera*)).

1576. In addition, as patents mature, as they get tested in the courts and are affirmed, they become more valuable because the uncertainty about infringement and invalidity goes down. (Teece, Tr. 10540 (*in camera*)). In other words, the fact that Rambus charged a higher rate after litigation could be justified by changed perceptions regarding the strength of the patents.

1577. If a firm knows that it will receive the same royalty rate as other licensees even if it litigates and loses, then it will have a

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disincentive to license because it is a no-lose proposition to take the issue to court. (Teece, Tr. 10542 (*in camera*)). This creates a “heads I win, tails I break even” problem and encourages future litigation by other potential licensees. (Teece, Tr. 10542-43 (*in camera*)).

1578. Charging higher royalties to litigating parties is therefore cost justified in the sense that it avoids future litigation costs. (Teece, Tr. 10542, 10551 (*in camera*)).

1579. Complaint Counsel’s economic expert used an analysis based on production costs to conclude that Rambus’s DDR royalty rate to Hitachi was discriminatory. (McAfee, Tr. 7827). But for purposes of determining whether patent licenses are discriminatory, it does not make sense to look at the issue in terms of whether the differences are cost justified in a traditional sense because intellectual property is not priced on a cost basis. (Teece, Tr. 10544-45 (*in camera*)). In this context, therefore, it does not make sense to look at traditional marginal costs. (Teece, Tr. 10545 (*in camera*)).

1580. Moreover, Complaint Counsel’s economic expert effectively admitted that litigation imposes costs on Rambus and that it is economically rational to develop a strategy to avoid those costs. (McAfee, Tr. 7829). He went on to admit that it would be consistent with economic theory to charge a higher royalty rate to licensees that require the patent holder to incur costs before taking a license. (McAfee, Tr. 7829). Further, he recognized that Hitachi’s litigation with Rambus imposed risks on Rambus (McAfee, Tr. 7830), and that a licensing strategy of charging more to companies that choose to litigate would maximize Rambus’s profits by reducing its future costs. (McAfee, Tr. 7831).

1581. Complaint Counsel’s economic expert did not make any assumption as to whether charging a higher rate to companies that choose to litigate violates the JEDEC nondiscrimination policy. (McAfee, Tr. 7832).

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XV. THE EVIDENCE DOES NOT ESTABLISH THAT THE DRAM INDUSTRY IS LOCKED IN TO USING THE RAMBUS TECHNOLOGIES

1582. Complaint Counsel contends that the DRAM industry was “locked in” to using the Rambus technologies once they were adopted into the JEDEC standards. To the contrary, the evidence shows that JEDEC has considered changing its standards and switching to alternatives to Rambus’s technologies. (CX 154A at 25-29; RX 1626 at 4).

1583. In 2000, Steve Polzin of AMD discussed alternatives to Rambus’s technologies with DRAM manufacturers. (Polzin, Tr. 3988, 3996, 4044).

1584. Also in this time period, JEDEC’s Future DRAM Task Group considered alternatives for each of Rambus’s technologies, but ended up adopting the Rambus technologies with full knowledge of Rambus’s issued patents and demands for royalties. (*See* F. 1022-29).

1585. As Complaint Counsel’s own expert conceded, JEDEC members would not be discussing alternatives to Rambus’s technologies in 2000 unless they thought that the alternatives were commercially viable and could be adopted. (McAfee, Tr. 7571).

A. An Historical Look at How the DRAM Industry Transitions To New Technologies**1. Statistical Evidence of Co-Existing DRAM Standards**

1586. In 1994, fast page mode (“FPM”) DRAM accounted for 96.7% of the revenue for DRAM. (Rapp, Tr. 10100, 10248). The remaining 3% of DRAM revenue was accounted for by other DRAM technologies. (Rapp, Tr. 10248).

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1587. In 1995, FPM accounted for 87.2%, EDO DRAM for 9.9%, and other DRAM for 2.9% of DRAM revenue. (Rapp, Tr. 10100-01, 10248).

1588. In 1996, FPM accounted for 39.4%, EDO for 52.7%, SDRAM for 4.3%, RDRAM for 0.5%, and other DRAM for 3.1% of DRAM revenue. (Rapp, Tr. 10101, 10248).

1589. In 1997, FPM accounted for 8.1%, EDO for 55.2%, SDRAM for 33.5%, DRAM for 1.3%, and other DRAM for 1.8% of DRAM revenue. (Rapp, Tr. 10101, 10248).

1590. In 1998, FPM accounted for 8.8%, EDO for 27.6%, SDRAM for 60.8%, RDRAM for 1.6%, and other DRAM for 1.3% of DRAM revenue. (Rapp, Tr. 10101, 10249).

1591. In 1999, FPM accounted for 10.5%, EDO for 17.5%, SDRAM for 69.3%, RDRAM for 1.1%, and other DRAM for 1.5% of DRAM revenue. (Rapp, Tr. 10102, 10249).

1592. In 2000, FPM accounted for 5.2%, EDO for 11.1%, SDRAM for 78.4%, RDRAM for 3%, DDR for 0.4%, and other DRAM for 1.9% of DRAM revenue. (Rapp, Tr. 10101, 10249).

1593. In 2001, FPM accounted for 4%, EDO for 7.7%, SDRAM for 69.7%, RDRAM for 12.5%, DDR for 5.3%, and other DRAM for 0.8% of DRAM revenue. (Rapp, Tr. 10101, 10249).

1594. Within each of these categories, there were different speeds (*e.g.*, for SDRAM, PC66, PC100, PC133; for DDR, DDR200, DDR266, DDR333, DDR400). (Rapp, Tr. 10249-50; Gross, Tr. 2348-56; Polzin, Tr. 3998-4005).

1595. These figures show that, in any given year, the DRAM market is divided among multiple incompatible standards and

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demonstrate that there is no technological or economic force mandating a single standard in the DRAM industry. (Rapp, Tr. 10103-04).

2. Industry Redesign of DRAM

1596. Brian Shirley, Design Operations Manager for the Computing and Consumer group at Micron Technology (Shirley, Tr. 4133), testified that Micron “taped out,” or went through the entire design process, for numerous different DRAM each year. F.1596-1603

1597. [redacted] (Shirley, Tr. 4218 (*in camera*)).

1598. In 1998, [redacted] (Shirley, Tr. 4218-19, 4226 (*in camera*)).

1599. In 1999, [redacted] (Shirley, Tr. 4220-23, 4225-26 (*in camera*)).

1600. In 2000, [redacted] (Shirley, Tr. 4223-25 (*in camera*)).

1601. In 2001, [redacted] (Shirley, Tr. 4227 (*in camera*)).

1602. In 2002, [redacted] (Shirley, Tr. 4228-29 (*in camera*)).

1603. According to Shirley, Micron is constantly, on an everyday basis, designing DRAMs and over time introducing new masks for DRAMs and over time retiring masks for parts that Micron is no longer offering. (Shirley, Tr. 4282 (*in camera*)).

3. The Manufacture of Multiple DRAMs to Accommodate New Technology

1604. Micron CEO Steven Appleton testified that Micron currently manufactures a wide variety of DRAMs, including

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EDO, SDRAM, DDR, DDR2, and various specialty DRAMs, such as pseudostatic RAMs. (Appleton, Tr. 6264).

1605. In a “response script” prepared by Micron in December 1996 for use in discussions with customers, Micron described its ability to manufacture various different kinds of DRAMs. (RX 836 at 2-4).

1606. The December 1996 “response script” was prepared by Micron in connection with Intel’s announcement that it intended to design its next generation of chipsets to work with Rambus memory devices, then denominated “nDRAM.” (RX 836 at 2; Lee, Tr. 6853-54). At the time, Micron did not have a license to manufacture the Rambus device. (RX 836 at 2; Lee, Tr. 6856).

1607. The December 1996 “response script” includes possible questions and proposed answers. One such question is “What would having to make ‘nDRAM’ or SyncLink mean to Micron?” Micron’s answer to this question is instructive:

Keep in mind that ALL of these DRAM technologies use the same DRAM process, the same DRAM cell, and virtually the same DRAM array.

...

Switching from one product to another, while still using the same core technology, involves only changing priorities in design and product engineering and may mean some differences in our assembly and test equipment purchases. SDRAM, SLDRAM, nDRAM all use the same fab equipment and core DRAM technology. *In short, while the flavors might change, it’s still a DRAM.*

(RX 836 at 3) (emphasis added).

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1608. Since the first silicon came out of Infineon's Richmond plant in January 1998, Infineon's has plant manufactured four different types of die shrinks for 64MB SDRAM (through 2001); three different types of die shrinks for the 256 SDRAM (2000-present); the 128MB SDRAM (2001-2002); and two different types of die shrinks for the 256MB DDR (2000-present). (Becker, Tr. 1167-69, 1179-83).

1609. For Infineon, every "shrink" (i.e., reduction in the feature size of the DRAM) and redesign requires a new "mask set" for the product. (Becker, Tr. 1170-73). In the two and a half to three years in which the Infineon Richmond plant manufactured 64MB SDRAMs, it had to make at least 20 different mask sets. (Becker, Tr. 1170-73).

1610. When the Infineon Richmond plant transitioned some of its lines from SDRAM to DDR, Infineon had to purchase additional equipment because DDR requires additional manufacturing processes. (Becker, Tr. 1182-83). Nonetheless, DDR and SDRAM were made in the same processing facility, and except for the additional equipment, its manufacturer used the same processing equipment. (Becker, Tr. 1182-83).

1611. In fact, of the DRAM currently produced by the Infineon Richmond plant, approximately two-thirds are DDR and one-third are SDRAM. (Becker, Tr. 1139).

1612. Infineon's 2002 product information guide lists three Infineon manufacturing plants, which produce the following product categories: DDR SDRAM, SDR SDRAM, Graphics RAM, Mobile-RAM, and RDRAM. (CX 2466 at 2-3).

1613. The Infineon 2002 product information guide lists the following densities for DDR products as either being currently in production by Infineon or planned for production in 2002: 128 Mb DDR, 256 Mb DDR, 256 Mb FBGA DDR, and 512 Mb DDR. (CX 2466 at 5). Each of these different density products is

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produced in three different organizations (e.g., for the 128Mb DDR - 32Mx4, 16Mx8, and 8Mx16). (CX 2466 at 5). Each of these different organizations is produced in several speeds (e.g., for the 512Mb DDR in the 128Mx4 organization – DDR200, DDR266A, and DDR333). (CX 2466 at 5). In all, according to the product guide, Infineon had in production 34 different DDR products in 2002.

1614. The Infineon 2002 product information guide lists the following densities for SDRAM products as either being currently in production by Infineon or would be in production in 2002: 256Mb SDRAM, 256Mb FBGA SDRAM, and 512Mb SDRAM. (CX 2466 at 6-7). Each of these different density products is produced in three different organizations (e.g., for the 256Mb SDRAM - 64Mx4, 32Mx8, and 16Mx16). (CX 2466 at 6). Each of these different organizations is produced in several speeds (e.g., for the 512Mb SDRAM in the 128Mx4 organization – PC100 and PC133). (CX 2466 at 7). In all, according to the product guide, in 2002 Infineon had in production twenty-seven different SDRAM products in 2002.

1615. In addition, the Infineon product guide shows that Infineon produced seven different types of Graphics RAM, twenty different types of Mobile DRAM, and six different types of RDRAM (according to the part numbers) in 2002. (CX 2466 at 8-9).

1616. Infineon's Richmond plant currently manufactures all twelve of the different types, organizations and speeds of 256-megabit SDRAMs listed in the Infineon 2002 product information guide (CX 2466), as well as DDR products. (Becker, Tr. 1143).

1617. Infineon is able to shift its production of DRAM to a different density within fourteen months. (Becker, Tr. 1146-48). Die shrinks require new equipment, new processes, putting in the capability to run the wafers, electrical performance testing of wafers and process tweaking, design tweaking and "some

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redesigns,” reliability testing, customer qualification and feedback. All this takes fourteen months. (Becker, Tr. 1158).

1618. Infineon is able to shift its production of DRAM to increased speeds in as little as three to four months. (Becker, Tr. 1148-49).

1619. When Infineon shifted some of its manufacturing lines from producing SDRAM to producing DDR, the shift took sixteen to seventeen months. (Becker, Tr. 1149-50).

1620. If technically feasible, the alternatives proposed by Professor Jacob could, on his statement of “the industry experience of how often a DRAM normally gets revised during its manufacturing cycle,” each have been implemented in a six to twelve month time frame. (Geilhufe, Tr. 9674-75).

1621. These facts show that scale economies are not so powerful that they drive the industry necessarily to a single standard technology at any one time. (Rapp, Tr. 9894-95).

1622. Economies of scale occur at the plant level. (Rapp, Tr. 9893). Plants in the industry often produce at the same time a variety of DRAM (using different technologies, DRAM of different speeds, etc.). (Rapp, Tr. 9893). For example, RDRAM, SDRAM, and DDR have coexisted in the marketplace. (Rapp, Tr. 9893-94). Similarly, different subgenerations of DRAM – e.g., PC66, PC100, PC133 – have coexisted in the marketplace. (Rapp, Tr. 9893-94). This shows that the economics of the industry does not require a single standard. (Rapp, Tr. 9893).

1623. The coexistence of multiple standards also shows that network effects in the DRAM industry are not so high as to make it impractical to switch to an alternative technology. (Rapp, Tr. 9895).

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4. Coordination of New Industry Standards

1624. That the industry is able to coordinate changes in technology can be seen by the experience of AMD. Prior to its K7 microprocessor, AMD produced microprocessors that were “pin compatible” with Intel processors. (Heye, Tr. 3653). That is, AMD processors could be plugged into sockets designed for Intel processors and could use the entire Intel-based infrastructure. (Heye, Tr. 3653). An infrastructure in a computer consists of a north bridge (also called a chipset), which connects the microprocessor via a bus to the memory, graphics, and the south bridge. (Heye, Tr. 3655-58). The south bridge communicates with peripheral devices, such as the keyboard and mouse, and the BIOS, which communicates with the microprocessor. (Heye, Tr. 3655-58).

1625. During this time, AMD took no more than fifteen to eighteen months to design and produce a K7 north bridge, starting from scratch. (Heye, Tr. 3767-69). In June 1999, AMD launched the first AMD K7 processor, which used the AMD750 chipset with a 200MHz front side bus (FSB) and was compatible with PC100 SDRAM. (Polzin, Tr. 3998-01).

1626. Soon thereafter, third party vendors such as VIA designed and launched chipsets for the K7 processor that were compatible with PC133 SDRAM. (Polzin, Tr. 3994, 4001; Heye, Tr. 3769-70). This change required the development of a different north bridge and a new motherboard. (Heye, Tr. 3769-70).

1627. In September 2000, AMD launched a new version of the K7 processor using a 266 MHz FSB and the newly designed AMD 760 chipset, which was compatible with DDR200 and DDR266. (Polzin, Tr. 4001). The design of the new chipset took only fifteen to eighteen months, and the resulting chipset was not backward compatible with SDRAM. (Heye, Tr. 3767-69).

1628. To transition from using SDRAM to DDR, the newly established AMD infrastructure needed newly designed

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motherboards, newly designed DIMMs, and a new BIOS. (Heye, Tr. 3767-69).

1629. As part of this transition to DDR, AMD gave motherboard samples to manufacturers in March 2000, and those manufacturers were able to produce the DDR compatible motherboards in volume by September 2000. (Polzin, Tr. 4017-18).

1630. In fact, according to an internal memorandum, AMD decided to transition to DDR in early 1999, was able to power up a complete system by December 1999, and was shipping units by October 2000. (CX 2158 at 2; Heye, Tr. 3807-10).

1631. In October 2002, AMD launched a new version of the K7 processor with a 333MHz FSB. Third party chipsets made for this version were compatible with DDR333. (Polzin, Tr. 4004).

1632. During these changes, portions of the infrastructure other than the chipset changed as well. For example, DDR333 had different DIMM specification from those of previous generations of DDR. (Polzin, Tr. 4006-07).

1633. In May 2003, AMD launched the K7 processor with a 400MHz FSB. (Polzin, Tr. 4004). Matched with newly designed third party chipsets, this system uses DDR400. (Polzin, Tr. 4004).

1634. In sum, the AMD K7 systems went from using PC100 to PC133 to DDR200 and 266 to DDR333 to DDR400 – 5 transitions – all in the time period from June 1999 to May 2003. (F. 43-53).

1635. Compaq, an OEM that produced personal computers, servers, and workstations, and is now part of HP (Gross, Tr. 2265), has gone through similar transitions. (F. 1636-42).

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1636. Compaq started using EDO DRAM in its products in 1995. (Gross, Tr. 2348).

1637. In 1997, Compaq shifted to using PC66 SDRAM in its computers, which required different chipsets and different motherboards. (Gross, Tr. 2348-50). PC66 SDRAM was an Intel standard. (Gross, Tr. 2348-49).

1638. In 1998, Compaq shifted to using PC100 SDRAM in its computers. (Gross, Tr. 2348-49). The PC100 SDRAM was an Intel standard. (Gross, Tr. 2348-49). It was not backward compatible with PC66 SDRAM. (Gross, Tr. 2348-49).

1639. In 1999, Compaq shifted to using PC133 SDRAM in its products. (Gross, Tr. 2353). The PC133 SDRAM was an Intel standard. (Gross, Tr. 2353).

1640. In 2001, Compaq/HP shifted to using DDR 266 in its products. (Gross, Tr. 2354). DDR requires a different chipset than does DRAM. (Bechtelsheim, Tr. 5958). DDR is not backward compatible with SDRAM; a DDR device cannot be used in an SDRAM socket (Bechtelsheim, Tr. 5958).

1641. In late 2002, Compaq/HP shifted to using DDR 333 in its products. (Gross, Tr. 2356).

1642. From 1995 to 2002, therefore, Compaq shifted from using EDO DRAM to PC66 SDRAM to PC100 SDRAM to PC133 SDRAM to DDR266 to DDR333 in its products. (F. 56-61).

1643. There are of course other examples of the rapid product changes in the computer industry. For instance, Barry Wagner, the manager of technical marketing at NVIDIA, a company that produces graphics processors, testified that NVIDIA launched fourteen new products in the space of six years. (Wagner, Tr. 3820, 3875-76).

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1644. If there were a change in the existing standards to incorporate alternatives to Rambus's technologies, only a small portion of the overall infrastructure would need to be changed. (Heye, Tr. 3742-43).

1645. Based on evidence of a transition by AMD, a shift to alternative technologies would incur few additional costs or coordination difficulties beyond those that would be incurred when the industry was in transition to a new standard. (See Polzin, Tr. 4040-42).

B. Switching Costs Do Not Support Theory of Industry Lock In

1. Such Costs Are Not Prohibitive

1646. "Lock in" is a term used in economics to identify a situation where switching costs prohibit consumers from changing to another product or technology. (Rapp, Tr. 9873). Switching costs are the costs incurred to transition to an alternative product or technology. (Rapp, Tr. 9873-74).

1647. Specific investments and switching costs are not identical. (Rapp, Tr. 9875-77). For instance, a company may make a specific investment of \$100 million in building a coal-burning plant located near a particular coal mine. If, in response to an increase in the price of coal from the coal mine, the only way to avoid paying the price increase is to shut down the plant and build a new plant in another location for \$100 million, the switching costs and the specific investment of \$100 million are the same. (Rapp, Tr. 9875-77). If, however, the coal plant can be converted to a gas burning plant for a cost of \$5 million, the switching costs are \$5 million, not the \$100 million to build a new plant. (Rapp, Tr. 9875-77).

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1648. With respect to DRAM, the cost of constructing and equipping a fabrication facility is not relevant to switching costs. (Rapp, Tr. 9877-78). This is because a DRAM facility may produce several types of DRAM; there is no need to build a new DRAM facility to produce a new type of DRAM. (Rapp, Tr. 9877-78).

1649. The fact that an industry has high fixed costs and low marginal costs does not have any bearing on switching costs unless the fixed costs have to be replicated in their entirety in order to switch to a new technology. (Rapp, Tr. 9880).

1650. Complaint Counsel's economic expert admitted on cross-examination that he did not quantify or "add up" any switching costs. (McAfee, Tr. 7716-17, 11356). By contrast, Respondent's expert, Geilhufe, testified regarding his estimates of these costs. (Rapp, Tr. 9884-85, 10122-24).

1651. It is not possible for an economist to make a sound judgment about whether switching costs are high enough to create lock in without quantifying those costs. (Rapp, Tr. 9881).

1652. The switching costs for a DRAM manufacturer to shift from using the Rambus technologies to alternative technologies may be calculated by summing the additional one-time-only fixed costs associated with switching to the alternative technologies. (Rapp, Tr. 9883-85).

1653. Dr. Rapp's calculations show that switching costs associated with shifting to alternatives to Rambus's technologies were relatively low in comparison with the expenses associated with manufacturing DRAMs in general and that DRAM manufacturers could therefore have switched at any point. (Rapp, Tr. 9878).

1654. For example, to maintain the functionality provided by programmable CAS latency and programmable burst length when

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switching to fixed CAS latency and fixed burst length requires twelve different parts (three different CAS latencies and four different burst lengths). (Rapp, Tr. 9883-85). The additional fixed costs associated with switching to fixed CAS latency and fixed burst length are: \$300,000 in additional design costs for the three CAS latencies; \$400,000 in additional design costs for the four different burst types; \$250,000 per part in additional qualification costs times twelve different parts; and \$50,000 in additional photo-tooling costs times twelve different parts – this totals \$4.3 million. (Rapp, Tr. 9885).

1655. The total of the cost estimates provided by Geilhufe, although not inclusive of all switching costs, is low, relative to DRAM production costs in general, (Rapp, Tr. 9886), and less than the royalties paid to Rambus to license the use of programmable burst length in SDRAM. (Rapp, Tr. 9886-87). If fixed CAS latency and fixed burst length for example, were truly viable non-infringing alternatives, a manufacturer might profitably switch to those alternatives. (Rapp, Tr. 9886-87).

1656. The evidence shows assuming that the alternatives were preferable in cost performance terms, certain of the proposed alternatives to programmable CAS latency might have been implemented when manufacturers were going through technology upgrades or at the time of the transition from SDRAM to DDR SDRAM. (Soderman, Tr. 9418). Such regular redesigns happened on the order of every six to twelve or eighteen months. (Soderman, Tr. 9418; Geilhufe, Tr. 9615). For example, Bill Hovis of IBM could have accepted proposals regarding alternatives to programmable CAS latency for DDR2, but rejected them even though he was “currently not locked in.” (RX 1626 at 3-4).

1657. The switching costs for any combination of alternatives for Rambus’s four technologies may be calculated by summing the design, qualification, and photo-tooling costs associated with those alternatives as provided by Geilhufe. (Rapp, Tr. 10123-24).

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The switching costs for the fixed CAS latency and fixed burst length alternatives are assumed to be typical, if not higher than, the switching costs for the other alternatives. (Rapp, Tr. 10124).

1658. Complaint Counsel's economic expert was not persuasive because he admitted that he did not quantify or "add up" any switching costs. (*See* McAfee, Tr. 7716-17; 11356). He also admitted that switching from Rambus's technologies to alternative technologies would be less costly than the switch from SDRAM to RDRAM. (McAfee, Tr. 7717-18).

2. Coordination Issues Would Not Preclude Switching to New Technology

1659. Complaint Counsel's economic expert admitted that switching away from Rambus's technologies to alternative technologies would involve the same categories of costs that were incurred when the industry went from SDRAM to DDR, and from PC100 SDRAM to another grade of PC SDRAM. (McAfee, Tr. 7714-15, 11357).

1660. Coordination issues with producers of complementary goods would not prevent switching away from the Rambus technologies. (Rapp, Tr. 9889). It is assumed that coordination of this sort is not uncommon in the industry; there is no evidence that suggests that any coordination issues with switching away from Rambus's technologies could not be resolved in the ordinary course of business. (Rapp, Tr. 9889-90).

1661. Coordination for a switch away from Rambus's technologies would not be difficult even if the DRAM industry has made investments in using the Rambus technologies. (Rapp, Tr. 9890). If there were truly viable non-infringing alternatives, it is assumed that the coordination issues faced by the industry would not be any more difficult than those that the industry faces routinely in other situations. (Rapp, Tr. 9890-91).

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1662. Complaint Counsel contend that coordination would be difficult because some DRAM manufacturers are licensed under Rambus's patents, but others are not. But the fact that some DRAM manufacturers are licensed to use Rambus's technologies and others are not would assumably not affect the ability of the industry to coordinate switching, because all manufacturers have an interest in using alternatives that are best in cost-performance terms. (Rapp, Tr. 9891-92).

1663. Complaint Counsel's economic expert admitted that he did not reach a conclusion as to whether the interests of the fifty percent who have licensed from Rambus have interests regarding a standard that eliminates the patented technologies that are different from the fifty percent who have not taken a license. (McAfee, Tr. 7723).

1664. DRAM manufacturers were not locked in to using the Rambus's technologies at any point in time from 1990 to today. (Rapp, Tr. 9896). Their continued used of the Rambus technologies is due to the fact that the four Rambus technologies are superior in cost-performance terms to any alternatives. (Rapp, Tr. 9896-99). This is true for the two Rambus technologies used in SDRAM, the four used in DDR, and the four used in DDR2. (Rapp, Tr. 9896-99).

1665. The fact that the DRAM industry continues to use the four Rambus technologies in DDR2 when that standard was developed after Rambus's issued patents and their claimed scope were well known in the industry, demonstrates that Rambus's technologies were superior in cost-performance terms even taking into account Rambus's royalty rates. (Rapp, Tr. 9898-99).

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PART THREE: ANALYSIS AND CONCLUSIONS OF LAW**I. PROCEDURAL ISSUES****A. Standard of Proof**

The parties' burdens of proof are governed by Commission Rule 3.43(a), Section 556(d) of the Administrative Procedure Act ("APA"), and case law. FTC Rules of Practice, Interim rules with request for comments, 66 Fed. Reg. 17,622, 17626 (April 3, 2001). Pursuant to Commission Rule 3.43(a), "counsel representing the Commission . . . shall have the burden of proof, but the proponent of any factual proposition shall be required to sustain the burden of proof with respect thereto." 16 C.F.R. § 3.43(a).

The preponderance of the evidence standard typically governs in FTC enforcement actions. *In re Adventist Health System/West*, 117 F.T.C. 224, 297 (1994) ("Each element of the case must be established by a preponderance of the evidence"); *FTC v. Abbott Laboratories*, 853 F. Supp. 526, 535 (D.D.C. 1994) (government must show "by a preponderance of the evidence that [defendant's] action was the result of collusion with its competitors"). *See also Herman & MacLean v. Huddleston*, 459 U.S. 375, 387-91 (1983) (preponderance of the evidence standard applies to enforcement of antitrust laws); *Steadman v. SEC*, 450 U.S. 91, 95, 102 (1981) (APA establishes preponderance of the evidence standard of proof for formal administrative adjudicatory proceedings).

The Complaint, although it alleges that Respondent engaged in deception, does not assert a cause of action for fraud, nor must fraud be proven to establish antitrust liability in this case. Enforcement actions brought under Section 5 of the FTC Act often involve allegations of deception, sometimes even labeled "fraud," and yet in such cases courts nevertheless apply a preponderance of the evidence standard. *See, e.g., FTC v. Renaissance Fine Arts, Ltd.*, 1994 WL 543048, *8 (N.D. Ohio

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1994) (finding, by preponderance of evidence, that defendants had violated Section 5 through “a lucrative scheme to defraud”); *In re Amrep Corp.*, 102 F.T.C. 1362, 1640-41 (1983) (applying preponderance standard to practices described as “land sale fraud”). *See also Herman & MacLean*, 459 U.S. at 387-91 (1983) (In securities fraud case, the Supreme Court declined “to depart from the preponderance of the evidence standard generally applicable in civil actions” and reversed the Fifth Circuit’s application of the traditional fraud clear and convincing standard.).

Respondent argues that a heightened standard of proof is required in this case based on *Walker Process Equipment, Inc. v. Food Machinery & Chemical Corp.*, 382 U.S. 172 (1965) and its progeny. RPHRB at 5 (“The crux of the anticompetitive conduct alleged here – the failure to disclose material information and the bad faith enforcement of patents against manufacturers practicing JEDEC standards – is identical to the conduct that was held to the clear and convincing standard of proof in the *Walker Process* line of cases.”). The heightened burden of proof applied in *Walker Process* cases flows from the statutory presumption of patent validity (35 U.S.C. § 282 (2003)) and the duty of candor owed to the Patent and Trademark Office (*Charles Pfizer & Co., Inc. v. FTC*, 401 F.2d 574, 579 (6th Cir. 1968) (patent applicant “stood before the Patent Office in a confidential relationship and owed the obligation of frank and truthful disclosure”). “The road to the Patent Office is so tortuous and patent litigation is usually so complex, that ‘knowing and willful fraud’ as the term is used in *Walker*, can mean no less than clear, convincing proof of intentional fraud involving affirmative dishonesty” *Cataphote Corp. v. DeSoto Chemical Coatings, Inc.*, 450 F.2d 769, 772 (9th Cir. 1971).

Respondent’s argument, however, is unpersuasive. There is a fundamental difference between the failure to disclose material information to the Patent Office, to whom a duty of candor is owed, and the failure to disclose information to competitors, as

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alleged here. Thus, in this case, which Complaint Counsel characterize as based on antitrust theories, where the Complaint does not allege conduct involving “knowing and willful fraud,” and where the Complaint does not allege fraud on the patent office, the standard of clear and convincing evidence is not appropriate.

Respondent also argues that the remedy proposed in the Complaint mandates a heightened level of scrutiny. The Notice of Contemplated Relief proposes “requiring Respondent to cease and desist all efforts it has undertaken by any means . . . through or in which Respondent has asserted that any person or entity, by manufacturing, selling, or otherwise using JEDEC-compliant SDRAM and DDR SDRAM technology (including future variations of JEDEC-compliant SDRAM and DDR SDRAM technology), infringes any of Respondent’s current or future United States patents that claim priority back to U.S. Patent Application Number 07/510,898 filed on April 18, 1990 or any other U.S. Patent Application filed before June 17, 1996.” ¶ 1. The Notice of Contemplated Relief also proposes that a cease and desist order prohibit Respondent from undertaking any new efforts to enforce current or future domestic or foreign patents that claim priority back to U.S. Patent Application Number 07/510,898 or any other patent application filed before June 17, 1996. ¶¶ 2-4. As set forth below, Complaint Counsel have not met their burden of proving liability on any of the violations alleged. Because of this finding on liability, no determination on remedy is made. Consequently, whether the remedy sought would mandate a heightened burden of proof need not be determined.

For these reasons, the government’s case in this proceeding shall be adjudicated under the preponderance of evidence standard.

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B. The Adverse Presumptions Are Not Material to the Disposition of the Case

In the Order On Complaint Counsel's Motions For Default Judgment And For Oral Argument, issued February 26, 2003, seven rebuttable adverse presumptions were imposed against Respondent. ("February 26, 2003 Order"). The February 26, 2003 Order was issued to resolve Complaint Counsel's motion for default judgment relating to Respondent's destruction of evidence. In that Order, the Court determined that "[w]hen Rambus instituted its document retention policy in 1998, it did so, in part, for the purpose of getting rid of documents that might be harmful" in future anticipated litigation involving "its JEDEC related patents." February 26, 2003 Order at 5 (internal quotations omitted). Moreover, this Court has expressed "significant and ongoing concerns about the Respondent directing its employees to conduct a wholesale destruction of documents and failing to create an inventory of what was destroyed." Order Denying Complaint Counsel's Motion for Additional Adverse Inferences and Other Appropriate Relief, issued April 15, 2003, at 4. The Court further indicated that the spoliation issue is not "closed to future reconsideration *after trial*." *Id.* at 4 n.2 (emphasis in original).

While the Commission will not tolerate spoliation efforts affecting its Part 3 administrative proceedings, the document destruction issue in this case, based on the conclusions reached herein, does not warrant the Court's continued attention. Rambus's conduct in this regard is, at best, troublesome. In a different cause of action, the Court might well have sanctioned Rambus for having deprived Complaint Counsel of their ability to present the merits of the case and thereby prejudicing Complaint Counsel and the adjudicative process. *See, e.g., Anderson v. Cryovac, Inc.*, 862 F.2d 910, 925 (1st Cir. 1988).

However, the process here has not been prejudiced as there is no indication that any documents, relevant and material to the

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disposition of the issues in this case, were destroyed. In fact, Complaint Counsel noted that the record shows “an unusual degree of visibility into the precise nature of Rambus’s conduct.” (Opening Statement, Tr. 15). Moreover, as discussed below, none of the adverse presumptions are material to the disposition of the case.

1. The First and Second Adverse Presumptions Are Moot

The first presumption entered was that “Rambus knew or should have known from its pre-1996 participation in JEDEC that developing JEDEC standards would require the use of patents held or applied for by Rambus.” February 26, 2003 Order at 9. The evidence shows that even if Rambus knew that developing JEDEC standards would require the use of Rambus patents, Rambus was not required to disclose those patents or applications, as the disclosure of intellectual property was voluntary. F. 766-71. Therefore, the presumption is moot.

The second presumption was that “Rambus never disclosed to other JEDEC participants the existence of these patents.” February 26, 2003 Order at 9. The evidence, as described throughout this decision, shows that Rambus, through its conduct, raised sufficient red flags to put members of JEDEC and others on notice that there were patent applications pending, and that members of JEDEC, in fact, were well aware that Rambus sought to make intellectual property claims on the relevant technology. *E.g.*, F. 786-806. The evidentiary record in this case is replete with instances where participants in JEDEC were thoroughly familiar with Rambus’s intellectual property rights and acted despite this knowledge. F. 1486-1518. Moreover, as the JEDEC disclosure responsibility is voluntary, this presumption, like the first, is rendered moot.

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2. The Five Remaining Adverse Presumptions Are Not Relevant to Any Material Issues

The five remaining adverse presumptions – Rambus knew that its failure to disclose the existence of these patents to the JEDEC participants could serve to equitably estop Rambus from enforcing its patents as to other JEDEC participants; Rambus knew or should have known from its participation in JEDEC that litigation over the enforcement of its patents was reasonably foreseeable; Rambus provided inadequate guidance to its employees as to which documents should be retained and which documents could be discarded as part of its corporate document retention program; Rambus’s corporate document retention program specifically failed to direct its employees to retain documents that could be relevant to any foreseeable litigation; and Rambus’s corporate document retention program specifically failed to require employees to create and maintain a log of the documents purged pursuant to the program – are not relevant to any of the issues that remain to be decided. *See infra* Section II.

3. A “Missing Witness” Inference Is Not Appropriate

Complaint Counsel also contend that they are entitled to a “missing witness” inference because Respondent chose not to call Rambus executives William Davidow, Geoff Tate, or David Mooring to testify live during its case-in-chief, but instead relied on prior recorded testimony. Complaint Counsel and Respondent each listed Davidow, Tate, and Mooring as trial witnesses. During their case-in-chief, Complaint Counsel presented prior recorded testimony from each of these individuals.

None of the cases cited by Complaint Counsel in support of their request for a missing witness inference involved a situation where the parties actually introduced deposition testimony from the missing witnesses. This distinction is critical, for when witnesses testify at trial by way of deposition – as Davidow, Tate, and Mooring did – they are not “missing.” *Bogosian v.*

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Woloohojian Realty Corp., 323 F.3d 55, 67 n.10 (1st Cir. 2003) (individuals “were not ‘missing witnesses’ at all, since their depositions were admitted at trial”); *Boehringer Ingelheim Vetmedica, Inc. v. Schering-Plough Corp.*, 106 F. Supp.2d 667, 694 n.14 (D.N.J. 2000) (“By offering their deposition testimony instead of pursuing their live testimony . . . Schering . . . should not now be permitted to benefit from a negative inference be[ing] drawn against Boehringer.”). *See also Oxman v. WLS-TV*, 12 F.3d 652, 661 (7th Cir. 1993) (holding that a defendant’s decision not to call two witnesses did not justify a missing witness inference because the plaintiff, by using the deposition process, could “have ensured that their testimony was presented” at trial).

The missing witness inference is not appropriate under these facts, where Complaint Counsel deposed the witnesses and chose to present testimony from the witnesses via deposition. *See Jones v. Otis Elevator Co.*, 861 F.2d 655, 659 (11th Cir. 1988) (questioning the soundness of the missing witness inference); *Cameo Convalescent Center, Inc. v. Senn*, 738 F.2d 836, 844 (7th Cir. 1984) (“the justification for the missing witness instruction diminishes with the availability of the tools of discovery”). Indeed, in their Proposed Findings of Fact, Complaint Counsel cite to Davidow’s deposition to support twenty-three of their proposed findings; Tate’s, to support nine; and Mooring’s, to support fifteen. CCPFF 88, 89, 703, 735, 736, 749, 925, 927, 937, 938, 941, 975, 1064, 1073, 1089, 1241, 1676, 1682, 1706, 1714, 1751, 1756, 1822, 1827, 1851, 1869-72, 1875, 1916, 1920, 1952, 1977, 1978, 1980, 1984, 1992, 1994, 2001, 2025, 2029, 2039, 2103, 2104, and 3213. Having failed to establish entitlement to the inference, Complaint Counsel’s request to allow it is denied.

C. The Infineon Litigation

Rambus filed a patent infringement suit against Infineon Technologies, AG (“Infineon”) in the United States District Court for the Eastern District of Virginia. *Rambus Inc. v. Infineon Technologies AG*, 164 F. Supp.2d 743 (E.D. Va. 2001), *aff’d in*

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part, vacated in part, rev'd in part, 318 F.3d 1081 (Fed. Cir. 2003), *cert. denied*, 124 S. Ct. 227 (2003). Infineon filed counterclaims, including an allegation that Rambus committed fraud by failing to disclose to JEDEC patents and patent applications held by Rambus that allegedly related to Synchronous Dynamic Random Access Memory (“SDRAM”) and the Double Data Rate SDRAM (“DDR SDRAM”) standards adopted by JEDEC. 164 F. Supp.2d at 746.

At the conclusion of a two and one-half week trial, the jury found Rambus liable for committing actual and constructive fraud in its conduct at JEDEC with respect to both the SDRAM and DDR SDRAM standards adopted by JEDEC. *Id.* at 747. Rambus moved for judgment as a matter of law (“JMOL”). *Id.* at 746. The district court granted Rambus’s JMOL and set aside the fraud verdict for DDR SDRAM on grounds that because the standard setting process for DDR SDRAM did not actually begin until after Rambus had left JEDEC, Rambus had had no duty to disclose. *Id.* at 765-66. The district court denied Rambus’s JMOL and let stand the jury finding that Rambus committed fraud in its conduct at JEDEC with respect to the SDRAM standards adopted by JEDEC. *Id.* at 747.

On appeal to the Court of Appeals for the Federal Circuit, the Federal Circuit upheld the district court’s grant of JMOL that set aside the fraud verdict on the DDR SDRAM standards and reversed the district court’s denial of JMOL that let the fraud verdict stand on the SDRAM standards. *Rambus Inc. v. Infineon Technologies AG*, 318 F.3d 1081, 1084 (Fed. Cir. 2003), *cert. denied*, 124 S. Ct. 227 (2003). With respect to the DDR SDRAM standards, the Federal Circuit held that Infineon did not show that Rambus had a duty to disclose before the DDR-SDRAM standard setting process began, thus the district court properly granted JMOL of no fraud in Rambus’s favor. *Id.* at 1105. With respect to the SDRAM standards, the Federal Circuit held “substantial evidence does not support the jury’s verdict that Rambus breached its duties under the EIA/JEDEC policy.” *Id.* at 1105.

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D. Jurisdiction

The Complaint charges Respondent with violations of Section 5 of the FTC Act, 15 U.S.C. § 45. Section 5 of the FTC Act gives the Commission jurisdiction to prevent unfair methods of competition by “persons, partnerships, or corporations.” 15 U.S.C. § 45. Respondent is a corporation engaged in the licensing of intellectual property. F. 60. Respondent designs, develops, licenses, and markets high-speed chip connection technology to enhance the performance of computers, consumer electronics, and communications systems. F. 60. The Commission has jurisdiction over acts or practices “in or affecting commerce,” providing that their effect on commerce is substantial. *McLain v. Real Estate Bd. of New Orleans, Inc.*, 444 U.S. 232, 241-42 (1980); *Hospital Bldg. Co. v. Trs. of Rex Hosp.*, 425 U.S. 738, 745-46 (1976). Respondent’s challenged activities relating to the licensing of intellectual property have an obvious nexus to interstate commerce. F. 58-66. Accordingly, the Commission has jurisdiction over Respondent and the subject matter of this proceeding.

II. OVERVIEW OF VIOLATIONS ALLEGED

Before turning to an analysis of the evidence bearing on liability, this section provides an overview of the violations alleged. Complaint Counsel have asserted three separate violations. Counts I and II set forth Sherman Act based claims of monopolization and attempted monopolization similar to those arising under 15 U.S.C. § 2. Count III sets forth a claim of unfair methods of competition which arises under Section 5 of the FTC Act, 15 U.S.C. § 45.

Count I, monopolization, requires the possession of monopoly power in the relevant markets and the willful acquisition or maintenance of that power. *United States v. Grinnell Corp.*, 384 U.S. 563, 570-71 (1966). “A firm violates § 2 only when it

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acquires or maintains, or attempts to acquire or maintain, a monopoly by engaging in exclusionary conduct.” *United States v. Microsoft Corp.*, 253 F.3d 34, 58 (D.C. Cir. 2001). Further, the offense of monopolization requires a showing that respondent’s acquisition of power caused unreasonable exclusionary or anticompetitive effects. *Trans Sport, Inc. v. Starter Sportswear, Inc.*, 964 F.2d 186, 188 (2d Cir. 1992).

Count II, attempted monopolization, requires proof of three elements: (1) exclusionary or anticompetitive conduct; (2) specific intent to monopolize; and (3) a dangerous probability of achieving monopoly power. *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 456 (1993).

Count III, unfair methods of competition, is alleged in the Complaint in this case to entail the willful engagement in a pattern of anticompetitive and exclusionary acts whereby Respondent unreasonably restrained trade in the relevant markets. Complaint ¶ 124. Complaint Counsel describe the elements of Count III as follows:

[t]his claim differs from the monopolization claim (Count I) principally in that there is no need to demonstrate actual monopoly power – proof of market power and material adverse effects on competition will suffice. The unfair methods of competition claim differs from the attempted monopolization claim (Count II) in two respects: (1) it requires proof of actual (as opposed to probable) adverse effects on competition, albeit not necessarily rising to the level of monopolization; and (2) in order to establish liability for unfair methods of competition, specific intent need not be shown.

CCPHB at 19. Thus, the unfair methods of competition claim that Complaint Counsel set out to prove requires: (1) willful

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engagement of anticompetitive and exclusionary acts; (2) market power; and (3) material adverse effects on competition. Complaint ¶ 124; CCPHB at 18-19.

The section that follows analyzes each of the elements necessary to support the violations alleged and whether Complaint Counsel have presented sufficient evidence to prove liability. The elements of liability are: monopoly power, exclusionary conduct, intent, causation, and anticompetitive effects. The following section also analyzes the theory of liability that Complaint Counsel assert serves as a basis for all three of the alleged violations: Respondent's "pattern of anticompetitive acts and practices." In addition, the following section includes an analysis of the economic evidence and Complaint Counsel's theory of lock in.

III. ELEMENTS OF LIABILITY

A. Possession of Monopoly Power in the Relevant Markets

1. Relevant Markets

Establishing the relevant market is the first step in assessing whether a respondent possesses monopoly power. *Spectrum Sports*, 506 U.S. at 455-56 (to establish monopolization or attempted monopolization, it is "necessary to appraise the exclusionary power of the illegal patent claim in terms of the relevant market for the product involved") (citations omitted). "The purpose of defining a relevant market is to identify a market in which market power might be exercised and competition thereby diminished." *In re Coca-Cola Bottling Co.*, 118 F.T.C. 452, 540 (1994). Complaint Counsel carry the burden of describing a well-defined relevant market, both geographically and by product. *H.J., Inc. v. Int'l Tel. & Tel.*, 867 F.2d 1531, 1537 (8th Cir. 1989).

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a. Geographic Market

The relevant geographic market is the region “in which the seller operates, and to which the purchaser can practicably turn for supplies.” *Tampa Elec. Co. v. Nashville Coal Co.*, 365 U.S. 320, 327 (1961); *Re/Max Int’l, Inc. v. Realty One, Inc.*, 173 F.3d 995, 1016 (6th Cir. 1999) (a geographic market is defined as an area of effective competition or the locale in which consumers can turn for alternative sources of supply).

Technologies, such as those described in the Complaint as the relevant product markets, tend to be licensed worldwide, tend to flow across national borders, have negligible transportation costs, and tend to be worldwide markets. F. 1017. Buyers of the relevant products typically do not care about the geographic source of the technology. F. 1017. The products downstream from the relevant products are produced and used worldwide. F. 1017. Therefore, the geographic market in this case is the world. F. 1016.

b. Product Markets

The relevant product market is “composed of products that have reasonable interchangeability for the purposes for which they are produced – price, use and qualities considered.” *United States v. E.I. du Pont de Nemours & Co.*, 351 U.S. 377, 404 (1966). “In defining the relevant product market, the courts and the Commission generally examine what products are reasonable substitutes for one another.” *In re Int’l Assoc. of Conference Interpreters*, 123 F.T.C. 465, 640 (1997).

The relevant product markets at issue here involve technologies that are incorporated in DRAM for use in current and recent-generation personal computers and other electronic memory devices. See F. 1010-15. Each market consists of a type of technology that addresses a specific aspect of memory design and operation. The four markets, described more fully in the Findings of Fact, are the latency technology market, the burst

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length technology market, the data acceleration technology market, and the clock synchronization technology market. F. 1013. In addition, the Complaint describes a cluster market of synchronous DRAM technologies. F. 1014. A cluster market can be established if (1) there is only one real source of market power in each of the individual markets, or (2) the defendant has the same market share, competitors, and barriers to entry in each market. HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY 102 (2d ed. 1999); *see United States v. Philadelphia National Bank*, 374 U.S. 321, 356 (1963) (cluster of banking services constituted relevant market); *United States v. Central State Bank*, 817 F.2d 22, 23-24 (6th Cir. 1987) (same). Rambus's economic experts have not contested Complaint Counsel's market definitions. F. 1015. Accordingly, Complaint Counsel have established the relevant product markets.

2. Monopoly Power

Monopoly power is defined as "the power to control prices or exclude competition." *E.I. du Pont*, 351 U.S. at 391; *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 596, n.20 (1985). There are two ways to establish monopoly power. "The first is by presenting direct evidence of actual control over prices or the actual exclusion of competitors." *Re/Max Int'l, Inc. v. Realty One, Inc.*, 173 F.3d 995, 1016 (6th Cir. 1999) (citations omitted). The second way to establish that a respondent has monopoly power is by showing a high market share within a defined market. *Id.* (citations omitted). "The existence of such power ordinarily may be inferred from the predominant share of the market." *Grinnell*, 384 U.S. at 571; *United States v. Microsoft Corp.*, 253 F.3d 34, 51 (D.C. Cir. 2001) ("monopoly power may be inferred from a firm's possession of a dominant share of a relevant market that is protected by entry barriers"). Barriers to entry include patents. *Image Technical Services, Inc. v. Eastman Kodak Co.*, 125 F.3d 1195, 1208 (9th Cir. 1997); *Axis S.p.A. v. Micafil, Inc.*, 870 F.2d 1105, 1107 (6th Cir. 1989).

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This element requires only that monopoly power exists, not that it be exercised. In *American Tobacco Co. v. United States*, 328 U.S. 781 (1946), the Supreme Court held “that the material consideration in determining whether a monopoly exists is not that prices are raised and that competition actually is excluded but that power exists to raise prices or to exclude competition when it is desired to do so.” *Id.* at 811.

Complaint Counsel have demonstrated that Respondent has monopoly power in the relevant markets. Rambus’s market share of over ninety percent in the relevant markets (F. 1020-21), where there are barriers to entry (*see* F. 94-95), demonstrates monopoly power. “[T]he existence of [monopoly] power ordinarily may be inferred from the predominant share of the market.” *Grinnell*, 384 U.S. at 571 (eighty-seven percent of the relevant market left no doubt that defendants had monopoly power). In addition, Rambus has asserted that certain of its patents cover features specified in JEDEC’s SDRAM and DDR SDRAM standards, including the four “Rambus” technologies. F. 1022-29. When the government has granted the seller “a patent or similar monopoly over a product, it is fair to presume that the inability to buy the product elsewhere gives the seller market power.” *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 16 (1984).

Complaint Counsel have demonstrated that Respondent has acquired monopoly power in the relevant markets. However, as discussed in the following sections, Complaint Counsel have not demonstrated that Respondent’s acquisition or maintenance of monopoly power was unlawful.

B. No Pattern of Anticompetitive Acts and Practices

Complaint Counsel assert that the theory of liability that serves as the basis for all three of their claims is the alleged “pattern of anticompetitive acts and practices” including Respondent’s concealment of patent-related information “in violation of JEDEC’s own operating rules and procedures,” as well as “other bad-faith, deceptive conduct.” CCPHB at 19

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(quoting Complaint ¶¶ 1-2). The pattern of bad-faith, deceptive acts alleged in the Complaint are Respondent's failure to disclose material, patent-related information to JEDEC and Respondent's affirmative misleading statements and actions through which Respondent (before and after withdrawing from JEDEC) purposefully sought to convey to JEDEC's members the impression that Respondent did not possess intellectual property rights that would, or might, be infringed by JEDEC's SDRAM and DDR SDRAM standards. CCPHB at 19. The Complaint alleges that Respondent's omissions and misrepresentations violated or subverted: (1) JEDEC's patent disclosure rules; (2) JEDEC's "basic rule" that standardization programs conducted by the organization "shall not be proposed for or indirectly result in . . . restricting competition, giving a competitive advantage to any manufacturer, [or] excluding competitors from the market"; and (3) a variety of other policies, rules, and procedures through which JEDEC sought "to avoid, where possible, the incorporation of patented technologies into its published standards, or at a minimum to ensure that such technologies, if incorporated, will be available to be licensed on royalty-free or otherwise reasonable and non-discriminatory terms." CCPHB at 20.

In this case, to evaluate whether Respondent is liable under Section 5 of the FTC Act for the alleged pattern of anticompetitive acts and practices requires the following determinations: (1) whether the conduct alleged by Complaint Counsel states a legally cognizable cause of action under Section 5 of the FTC Act; (2) whether JEDEC's rules and policies created clear and unambiguous standards upon which liability could be based; (3) whether the evidence presented demonstrates that Respondent's conduct amounted to a pattern of anticompetitive acts and practices; (4) whether the evidence presented demonstrates that Respondent made affirmative, misleading statements to JEDEC; and (5) whether Respondent's amendments to claims to broaden its patent applications were improper.

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1. The Legal Theory Upon Which Complaint Counsel Challenge Respondent's Conduct Lacks a Reasonable Basis in Law

Section 5 of the FTC Act authorizes the Federal Trade Commission to define and proscribe “unfair methods of competition.” 15 U.S.C. § 45(a)(1). Accordingly, the Commission may proscribe “conduct which, although not a violation of the letter of the antitrust laws, is close to a violation or is contrary to their spirit.” *E.I. Du Pont de Nemours & Co. v. FTC*, 729 F.2d 128, 136-37 (2d Cir. 1984); *see also FTC v. Sperry & Hutchinson Co.*, 405 U.S. 233, 239 (1972); *Grand Union Co. v. FTC*, 300 F.2d 92, 98-99 (2d Cir. 1962). The FTC Act empowers the Commission with broad authority to “declare trade practices unfair.” *FTC v. Brown Shoe Co.*, 384 U.S. 316, 321 (1966).

While “Congress intentionally left development of the term ‘unfair’ to the Commission rather than attempting to define ‘the many and variable unfair practices which prevail in commerce,’” the determination that conduct constitutes an unfair method of competition must have “a reasonable basis in law.” *Atlantic Refining Co. v. FTC*, 381 U.S. 357, 369 (1965). *Accord Luria Bros. & Co. v. FTC*, 389 F.2d 847, 860 (3rd Cir. 1968). “[S]tandards for determining whether [conduct] is ‘unfair’ within the meaning of § 5 must be formulated to discriminate between normally acceptable business behavior and conduct that is unreasonable or unacceptable.” *Du Pont*, 729 F.2d at 138. Complaint Counsel do not challenge Respondent’s conduct as collusive, coercive, or predatory. Furthermore, as explained *infra* Section III.C, Complaint Counsel have not demonstrated that Respondent’s conduct was exclusionary. Therefore, to prevail, Complaint Counsel must support their theory by some other “reasonable basis in law.”

Complaint Counsel assert that, regardless of whether Respondent’s actions violated JEDEC’s rules or reflected a conscious effort to subvert the spirit and purpose of JEDEC’s

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open standards process, when such conduct results in the acquisition of monopoly power, a dangerous probability of monopolization, or material adverse effects of competition in a well-defined market, liability attaches under Section 5 of the FTC Act. CCPHB at 21-22. Complaint Counsel argue that “this is an antitrust case, arising under Section 5 of the FTC Act.” CCPHB at 79. Complaint Counsel further assert that “the basis for imposing antitrust liability in these circumstances is well-established.” CCPHB at 21. Despite this assertion, Complaint Counsel cite to only a single case, *Indian Head, Inc. v. Allied Tube & Conduit Corp.*, 817 F.2d 938 (2d Cir. 1987) [“*Indian Head*”], *aff’d*, *Allied Tube & Conduit Corp. v. Indian Head, Inc.* 486 U.S. 492 (1988) [“*Allied Tube*”], and to the consent decree entered in *In re Dell Computer Corp.*, 121 F.T.C. 616, 626, 1996 FTC LEXIS 291 (1996) for support. Complaint Counsel argue, under the authority of *Indian Head*, that JEDEC’s “duty of good faith” provides a basis for liability in this case. (CCRB at 8-9).

The language upon which Complaint Counsel rely in *Indian Head* is the following statement by the Court of Appeals for the Second Circuit: “We refuse to permit a defendant to use its literal compliance with a standard-setting organization’s rules as a shield to protect such conduct from antitrust liability.” CCPHB at 21 (quoting *Indian Head*, 817 F.2d at 941). In *Indian Head*, the Second Circuit found that defendant conspired with other steel companies to take control of the standard setting organization. 817 F.2d at 497. Allegations of collusion or conspiracy or tampering with the voting process of JEDEC, however, are not presented by the instant Complaint. Moreover, unlike in *Indian Head*, the Complaint here does not challenge Respondent’s activities in compliance with JEDEC’s rules, but rather alleges that Respondent’s lack of compliance with the rules should result in liability.

On appeal, the Supreme Court in *Allied Tube* upheld the jury verdict against members of the steel industry who conspired to pack the annual meeting with new members who had the sole

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purpose of voting against inclusion of polyvinyl chloride conduit as an approved conduit in the National Electrical Code published by the National Fire Protection Association. 486 U.S. at 495. The association's board of directors, reviewing this vote, had found that, although the association's rules had been circumvented, the rules had not been violated. *Id.* at 497.

The Supreme Court rejected the argument that *Noerr-Pennington* immunity protected the steel industry activity without addressing the specific requirements of standard setting organizations under the Sherman Act stating:

[a]lthough we do not here set forth the rules of antitrust liability governing the private standard-setting process, we hold that at least where, as here, an economically interested party exercises decisionmaking authority in formulating a product standard for a private association that comprises market participants, that party enjoys no *Noerr* immunity from any antitrust liability flowing from the effect the standard has of its own force in the marketplace.

Id. at 509-10. The Supreme Court noted that its "holding is expressly limited to cases where an 'economically interested party exercises decisionmaking authority in formulating a product standard for a private association that comprises market participants.'" *Id.* at 510 n.13.

The conduct challenged in this case differs greatly from that in *Allied Tube* in a number of essential ways. Here, Respondent did not exercise "decisionmaking authority" during its participation in JEDEC. To the contrary, Rambus did not propose or promote any technology and was not even permitted to present its proprietary Rambus DRAM ["RDRAM"] technology for consideration by the standardization committee. F. 824-25. Respondent only voted on four preliminary ballots relating to technologies proposed for the

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SDRAM standard. F. 330. Rambus did not vote on the final set of SDRAM ballots. F. 330. Rambus was not even participating in JEDEC when JEDEC adopted the DDR standard. F. 968-82.

The antitrust implications of *Allied Tube* were expressly limited to the facts before it and cannot be read to imply a “duty of good faith” requiring disclosure of proprietary intellectual property solely by virtue of membership in a standard setting organization. Further, *Allied Tube* cannot be read to hold that violation of a standard setting organization’s rules or policies forms a basis for antitrust liability.

Complaint Counsel rely also on the consent decree entered in *Dell*, 121 F.T.C. 616 (1996). Such reliance is misplaced. Consent decrees provide no precedential value. “[T]he circumstances surrounding . . . negotiated [consent decrees] are so different that they cannot be persuasively cited in a litigation context.” *United States v. E.I. du Pont de Nemours & Co.*, 366 U.S. 316, 331 n.12 (1961). Indeed, the *Dell* consent decree acknowledges that the agreement is for settlement purposes only and does not constitute an admission of a law violation. *Dell*, 121 F.T.C. at 619.

Nevertheless, two cases have been found that cite to the *Dell* consent decree. The first, *Townshend v. Rockwell Int’l Corp.*, 2000 U.S. Dist. LEXIS 5070 (N.D. Cal. 2000), distinguished *Dell* on the facts presented. The second, *Intel Corp. v. VIA Technologies, Inc.*, 2001 WL 777085 (N.D. Cal. 2001), reserved judgment at the motion to dismiss stage on “whether *Dell*-type conduct . . . would be actionable under the Sherman Act” and on “whether a *Dell*-type theory is reconcilable with the statement of the Federal Circuit that ““in the absence of any indication of illegal tying, fraud in the Patent and Trade Office, or sham litigation, the patent holder may enforce the statutory rights to exclude others [under the patent] free from liability under the antitrust laws.”“ *Intel*, 2001 WL 777085 at *6 (quoting *In re Independent Service Organizations Antitrust Litigation*, 203 F.3d

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1322, 1327 (Fed. Cir. 2000)). The doubts expressed by the court in *Intel* apply with equal force to this case.

Moreover, even if the consent decree in *Dell* was persuasive authority, the facts are distinguishable. Dell participated in a Video Electronic Standards Association (“VESA”) standard setting organization where, as part of the approval process, members certified in writing that they did not possess intellectual property rights that would infringe or conflict with the proposed standard. *Dell*, 121 F.T.C. at 617. On two occasions, Dell’s representative to the body made such a certification, stating in writing that, to the best of his knowledge, “this proposal does not infringe on any trademarks, copyrights, or patents” that Dell possessed. *Id.* Thereafter, Dell sought to enforce a patent against companies that had implemented the standard after the standard became widely adopted into newly manufactured computers. *Id.* at 617-18.

In the Commission Statement accompanying the Dell consent agreement, the Commission points out that VESA’s affirmative disclosure requirement differed from disclosure requirements of other standard setting organizations. *Id.* at 625. For example, the Commission specifically noted that “the VESA policy for dealing with proprietary standards is not very like ANSI’s patent policy. ANSI does not require that companies provide a certification as to conflicting intellectual property rights. Therefore, its policy, unlike VESA’s, does not create an expectation that there is no conflicting intellectual property.” *Id.* at 625 n.6 (internal quotation omitted).

The language of the American National Standards Institute (“ANSI”) patent policy was “essentially identical” to the Electronic Industries Association (“EIA”)/JEDEC policy and the ANSI policy was circulated to JC 42.3 members in 1992 and 1994 because it provided insight into the EIA/JEDEC patent policy. F. 639-40. The ANSI patent policy guidelines “seek to encourage the early disclosure and identification of patents that may relate to

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standards under development.” F. 643. The ANSI policy, like the EIA/JEDEC policy, does not mandate disclosure of intellectual property and therefore, as the Commission stated in *Dell*, is substantially different from the policy which mandated disclosure in *Dell*.

Neither *Allied Tube* nor the consent decree entered in *Dell* provide a “reasonable basis” for finding liability under Section 5 of the FTC Act. No case has been cited to or was found holding that Section 5 of the FTC Act imposes a duty upon corporations that participate in standard setting organizations to comply with the rules of the standard setting organizations, to disclose their patent applications, or to act in good faith towards other members. Although Respondent’s conduct may provide a basis for private causes of action, such as breach of contract, fraud, or equitable estoppel, no such duty is created by the provisions of the FTC Act. Concomitantly, the Federal Circuit in *Infineon* found that under the EIA/JEDEC policy statements, “[t]here is no indication that members ever legally agreed to disclose information.” *Infineon*, 318 F.2d at 1098. With no such duty arising in law, the Court will not infer such a duty.

2. The Duties Upon Which Complaint Counsel Base Their Challenge Must Be Clear

Even if a cause of action exists under the FTC Act based upon a company’s alleged anticompetitive conduct before a standard setting organization, to find liability based upon a participant’s failure to comply with the organization’s rules or policies or based upon a failure to disclose patents and patent applications requires a finding that Respondent was obligated to comply with those rules or policies or otherwise had a duty to disclose such information. As set forth below, any such obligation or duty must be clear and unambiguous to form the basis for antitrust liability or liability under Section 5 of the FTC Act.

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Courts have repeatedly recognized the need for clarity of rules on which antitrust liability can be based. *E.g.*, *Concord v. Boston Edison Co.*, 915 F.2d 17, 22 (1st Cir. 1990); *International Distribution Centers, Inc. v. Walsh Trucking Co., Inc.*, 812 F.2d 786, 796 n.8 (2nd Cir. 1987) (“A major concern underlying antitrust jurisprudence lies in the fear of mistakenly attaching antitrust liability to conduct that in reality is the competitive activity the Sherman Act seeks to protect.”). Where rules are ambiguous or indefinite, businesses are unfairly left to speculate whether their conduct will expose them to potential antitrust liability. In such situations, the ambiguity may result in a chilling effect on otherwise procompetitive conduct. *See Westman Comm’n Co. v. Hobart Int’l, Inc.*, 796 F.2d 1216, 1220 (10th Cir. 1986) (“if the antitrust laws applicable to vertical dealings are uncertain or inefficient, they are likely to have a chilling effect on beneficial, procompetitive market interaction”).

Similarly, liability under Section 5 of the FTC Act must be based on clear standards. *Du Pont*, 729 F.2d at 139 (“The Commission owes a duty to define the conditions under which conduct claimed to facilitate price uniformity would be unfair so that businesses will have an inkling as to what they can lawfully do rather than be left in a state of complete unpredictability.”); *Grand Union v. FTC*, 300 F.2d 92, 100 (2nd Cir. 1962) (“In this highly uncertain area of the law, [respondent] cannot be held to have known to a certainty that its part in the transactions was a violation of § 5.”).

In the *Infineon* case, the Federal Circuit explained that a duty of disclosure must be clear and unambiguous if it is to support a fraud claim:

[w]hen direct competitors participate in an open standards committee, their work necessitates a written patent policy with clear guidance on the committee’s intellectual property position. A policy that does not define clearly what, when,

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how, and to whom the members must disclose does not provide a firm basis for the disclosure duty necessary for a fraud verdict.

Infineon, 318 F.3d at 1102. *See also Bank of Montreal v. Signet Bank*, 193 F.3d 818, 827 (4th Cir. 1999) (“Silence does not constitute concealment in the absence of a duty to disclose.”). In addition, the patent-related equitable estoppel case law upon which Complaint Counsel rely holds that “silence alone will not create an estoppel unless there was a clear duty to speak, or somehow the patentee’s continued silence reinforces the defendant’s inference from the plaintiff’s known acquiescence that the defendant will be unmolested.” *A.C. Aukerman Co. v. R.L. Chaides Cons. Co.*, 960 F.2d 1020, 1043-44 (Fed. Cir. 1992) (internal citations omitted). This well-established reasoning similarly applies in assessing Complaint Counsel’s allegations against Rambus in this case.

As set forth in the analysis below, JEDEC merely encouraged the disclosure of intellectual property and any duties Respondent may have had towards other JEDEC members were so unclear and ambiguous that they cannot form the basis for finding liability in this case.

3. The Evidence Presented at Trial Does Not Provide a Factual Basis for Finding a Pattern of Anticompetitive Acts and Practices

Complaint Counsel concede that the Complaint does not allege that Rambus’s JEDEC-related patent disclosure obligation arises from antitrust law or from overriding principles of public policy. Complaint Counsel’s Memorandum in Opposition to Respondent Rambus Inc.’s Motion for Summary Decision, March 25, 2003 at 6. Rather, Complaint Counsel argue that a duty to disclose intellectual property can be inferred from the duty of good faith found in the EIA Legal Guides, that it can be inferred from JEDEC’s goal of developing open standards, and that it is

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found in rules and policies as interpreted and explained by trial testimony. *Id.* at 11-25; CCPHB at 38-41, 54-55. To be enforceable, the duty must be clear and unambiguous.

As summarized below and as set forth in detail in the Findings of Fact, Complaint Counsel have not met their burden of demonstrating that Respondent was under a clear duty to disclose to JEDEC or its members its proprietary intellectual property, regardless of whether the alleged duty arises from good faith, open standards, or rules and policies. At most, the EIA/JEDEC patent policy encouraged the voluntary disclosure of essential patents when submitting committee ballots.

a. No Duty to Disclose Intellectual Property Based on Good Faith

The EIA Legal Guides do not support Complaint Counsel's contention that there was a good faith based duty imposed upon JEDEC members to disclose intellectual property. F. 587-91. It is apparent from the context of the language that the referenced "good faith duty" is not directed to individual members, but rather is a general directive to the administrators who "conduct" the EIA's standardization activities, directing them to adopt "policies and procedures which will assure fairness and unrestricted participation." F. 591. The duty of good faith found in the Legal Guides seeks to ensure that all participants are treated fairly and in accordance with the policies and practices of JEDEC. F. 588. It would be unreasonable to infer from this language an additional mandatory requirement that members disclose proprietary intellectual property, particularly when that duty is not found elsewhere in JEDEC or EIA manuals.

b. No Duty to Disclose Intellectual Property Based on Open Standards

The parties agree that one goal of JEDEC was to develop "open standards." RPHRB at 19. Complaint Counsel argue that

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the concept of open standards includes “prohibiting the incorporation of patented technology into a standard unless the patent owner is willing to grant a license on reasonable terms.”⁴⁴ CCPHB at 39 (quoting *Amicus Curiae* Brief of JEDEC Solid State Technology Association in Support of [Infineon’s] Petition for Rehearing and Rehearing *En Banc*). Respondent replies that the concept of “open standards” did not exclude the use of patented technology and that if JEDEC was committed to avoiding patented technology, then its purpose would be inconsistent with established antitrust principles. RPHRB at 19.

According to the EIA Legal Guides, standards “are proposed or adopted by EIA without regard to whether their proposal or adoption may in any way involve patents on articles, materials, or processes.” F. 633. Indeed, the evidence demonstrates that “open standards” means that all relevant participants may participate in the development phase and that once standards are developed, the standards are available to everyone on a reasonable and nondiscriminatory basis. F. 600. Moreover, where JEDEC members were aware of a patent, they generally sought assurances for reasonable and nondiscriminatory (“RAND”) terms from the patent owner. F. 601. As a matter of practice, patented technologies were regularly and knowingly included in JEDEC standards once RAND assurances were received. F. 604.

Refusing to include patented technology in industry standards may subject standard setting organizations to antitrust claims and denies consumers superior products. In 1985, the Commission filed a Complaint against a standard setting organization alleging violation of Section 5 of the FTC Act based on the organization’s refusal to consider for standardization technology which was patented or manufactured by only one manufacturer. *In re American Society of Sanitary Engineering*, 106 F.T.C. 324; 1985 FTC LEXIS 20 (1985). In 1996, in its correspondence to the Commission regarding the *Dell* case, EIA recognized that by “allowing standards based on patents, American consumers are assured of standards that reflect the latest innovation and high

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technology the great technical minds of this country can deliver. . . . [T]here is a positive and pro-competitive benefit to incorporating intellectual property in standards.” F. 605.

There is therefore no basis in the facts of this case to infer a duty to disclose proprietary intellectual property based on JEDEC’s goal of creating open standards – to do so would be contrary to the meaning given “open standards” by JEDEC members and could potentially run afoul of antitrust considerations.

c. No Duty to Disclose Intellectual Property Based on the EIA/JEDEC Patent Policy

To support their contention that the EIA/JEDEC policy required disclosure of intellectual property, Complaint Counsel rely on the language in JEP 21-I § 9.3.1 that the “Chairperson of any JEDEC committee, subcommittee, or working group must . . . call attention to the obligation of all participants to inform the meeting of any knowledge they may have of any patents, or pending patents, that might be involved in the work they are undertaking” and the language in JEP 21-I and other EIA/JEDEC manuals requiring the chairperson to ensure that no known patented technology was included in a JEDEC standard unless the committee received advance, written assurance from the intellectual property owner that it agreed to license either royalty free or on RAND terms. CCPHB at 40-41.

As an initial matter, it is important to note that JEP 21-H was in effect when Respondent joined JEDEC. F. 606. The only mention of intellectual property in JEP 21-H is that “JEDEC standards are adopted without regard to whether or not their adoption may involve patents on articles, materials or processes.” F. 607. JEP 21-I was not published until October of 1993. F. 610. Respondent did not receive a copy of JEP 21-I until 1995. F. 629. It is not clear that JEP 21-I was ever formally adopted by JEDEC because there was no evidence that the manual received the EIA

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Engineering Department Executive Council approval necessary to become effective. F. 627-28. In any event, the SDRAM standard was balloted *prior* to publication of JEP 21-I, thereby casting doubt on what effect, if any, JEP 21-I could have pertaining to disclosure obligations under the SDRAM standard. *See* F. 351, 610.

Moreover, JEP 21-I section 9.3.1 does not impose a disclosure duty. Instead it advises committee chairs to call attention to the alleged duty. It goes on to say that “Appendix E (Legal Guides Summary) provides copies of viewgraphs that should be used at the beginning of the meeting to satisfy this requirement.” F. 616. The viewgraphs in appendix E, which are substantially the same as EIA EP-7-A section 3.4, do not impose or even mention an obligation to disclose intellectual property, but rather explain the process for obtaining RAND assurances. F. 618-20. At most, JEP 21-I created ambiguity; its indirect reference to an otherwise undefined duty cannot form the basis of an antitrust claim. *See* F. 744-47.

Throughout the relevant time period, JEDEC was an unincorporated subpart or activity within EIA. F. 222, 740. The EIA Legal Guides governed all EIA engineering standardization and related programs and were required to be followed by JEDEC members. F. 740, 743. Indeed, the patent policy is often referred to as the “EIA/JEDEC” policy without distinguishing between the organizations. *E.g.*, F. 622. The EIA Legal Guides and style manuals do not contain any reference to any obligation to disclose intellectual property. *See* F. 633-38. Rather, these manuals merely spell out the procedures for including known patented technologies in standards. F. 633-38.

Respondent’s actions must be viewed in light of JEDEC’s policies as they existed during the relevant time period. As the Federal Circuit notes in *Infineon*, “after-the-fact morphing of a vague, loosely defined policy to capture actions not within the actual scope of that policy . . . would chill participation in open

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standard-setting bodies.” 318 F.3d at 1102 n.10. Indeed, standard setting organizations, in their *amicus* briefs to the Supreme Court in the *Infineon* case, refer to the need for courts to interpret the patent policies as developed and *written* by standard setting organizations. *Amicus Curiae* Brief of JEDEC Solid State Technology Association in Support of [Infineon’s] Petition for Rehearing and Rehearing *En Banc* at 14; Brief of The Commonwealth of Virginia, *et al.* as *Amici Curiae* in Support of [Infineon] at 2, 8, 13-14. The EIA/JEDEC policy, both in its express written terms and practice, merely encouraged the voluntary disclosure of patents prior to submission of committee ballots. F. 587-785.

The contemporaneous evidence in this proceeding conflicted with trial testimony which, at times, conflicted with other trial testimony (sometimes by the same witness). In weighing this conflicting evidence, greater weight was given to contemporaneous documents than to the after-the-fact testimony by interested witnesses. *See United States v. United States Gypsum Co.*, 333 U.S. 364, 395 (1947) (where trial testimony is in conflict with contemporaneous documents, the trial testimony is entitled to little weight); *see also United States v. International Business Machines Corp.*, 1974 WL 899, *2 (S.D.N.Y. 1974) (The *Gypsum* rule “instructs that when oral testimony is contradicted by contemporaneous documents the trier of fact should give little weight to the oral testimony.”).

The *Gypsum* rule is especially appropriate here, where witnesses would directly benefit from the outcome of this litigation because they work for companies that either manufacture or use DRAMs that may infringe Rambus’s patents, work for entities that are entirely controlled by DRAM manufacturers, or are committed to developing technologies that will compete with Rambus’s technologies.

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i. Disclosure of Intellectual Property Under the EIA/JEDEC Patent Policy Was Voluntary

There is overwhelming evidence from contemporaneous documents, the conduct of participants, and trial testimony that the disclosure of intellectual property interests was encouraged and voluntary, not required or mandatory. The Federal Circuit in *Infineon* found “no language – in the membership application or manual excerpts – expressly requiring members to disclose information.” *Infineon*, 318 F.3d at 1098. When questioned in closing arguments, Complaint Counsel pointed only to the language of JEP 21-I and after-the-fact trial testimony to support their argument that there was a duty to disclose intellectual property based on the policies and procedures of JEDEC. Closing Argument, Tr. 11760-62. As summarized below (and detailed extensively in the Findings), the manuals which discuss the patent policy, a March 1994 memorandum by JEDEC’s secretary, the EIA’s comments to the FTC in connection with the *Dell* consent decree, JEDEC’s internal memoranda, the ANSI patent policy guidelines, the actions of other JEDEC members in not disclosing patents and JEDEC’s reaction thereto, the ballot for voting on technology, and the patent tracking list, are all evidence that disclosure of intellectual property under the EIA/JEDEC patent policy was not mandatory.

The manuals which discuss the EIA/JEDEC patent policy include: JEP 21-H, JEP 21-I, EIA Legal Guides, EP-3-F and EP-7-A. None of these manuals require disclosure of intellectual property; rather, they provide merely a general statement that patented items are not favored and spell out detailed requirements for including known patents in JEDEC standards including the procedure for obtaining RAND assurances. F. 609, 631-32, 634, 638.

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In March 1994, JEDEC Secretary Ken McGhee sent a memorandum to JC 42 Chairman Jim Townsend stating that JEDEC's legal counsel said:

he didn't think it was a good idea to *require* people at JEDEC standards meetings to sign a document assuring anything about their company's patent rights for the following reasons:

- 1) It would have a chilling effect at future meetings
- 2) The general assurances wouldn't be worth that much anyway
- 3) It needs to come from a VP or higher within the company—engineers can't sign such documents
- 4) It would need to be done at each meeting slowing down the business at hand.

F. 671 (emphasis added). This memorandum would not make sense if members were *already* required to disclose intellectual property as a result of JEP 21-I or any other rules or policies of JEDEC. In addition, it explains why such a mandatory policy was *not* adopted by JEDEC.

In connection with the *Dell* consent decree, the EIA submitted comments to the Commission which, in part, described the EIA patent policy. In the correspondence, EIA states clearly and unequivocally that they “encourage the early, voluntary disclosure of patents.” F. 674. Commission Secretary Donald Clark responded, confirming his understanding that EIA “encourage[s] the early, voluntary disclosure of patents, but do[es] not require a certification by participating companies regarding potentially conflicting patent interests.” F. 676.

In 2000, JEDEC Secretary McGhee wrote in an email to JEDEC members that disclosure of patent applications, or pending

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patents, is “not required” by JEDEC, even though it is “encouraged.” F. 684-85. The “spirit of the law” is to disclose patent applications even though disclosure “cannot be required of members,” wrote McGhee. F. 684-85.

ANSI is an umbrella organization that accredits various standard setting organizations, including the EIA. The ANSI Patent Policy Guidelines were circulated to JC 42.3 members in 1992 and 1994 because they “provided insight into the proper interpretation of the EIA and JEDEC patent policy.” F. 639-40. The ANSI guidelines “encourage the early disclosure and identification of patents that may relate to standards under development.” F. 643.

Gordon Kelley, IBM representative and JC 42.3 committee chair, announced on a number of occasions, as recorded by the meeting minutes, that IBM would not disclose intellectual property and, indeed, from December 1993 to December 1995, no IBM patents or patent applications were added to the patent tracking list. F. 691-94. According to IBM, “[i]t is up to the user of the standard to discover which patents apply.” F. 693; *see* F. 692. IBM’s statements coincide with the publication of JEP 21-I and may have been an attempt to assure that IBM would not be liable for any undisclosed patents which ultimately became part of JEDEC standards. There is no record evidence that IBM was sanctioned for its refusal to disclose the company’s intellectual property as would have been expected had disclosure been a mandatory requirement for JEDEC members. F. 698.

Hewlett-Packard similarly indicated that it would not be disclosing intellectual property. F. 699. Again, there is no evidence that Hewlett-Packard was sanctioned for its refusal to disclose the company’s intellectual property, as would have been expected had this been a mandatory requirement for JEDEC members. F. 700.

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In contrast, two other companies *were* sanctioned for failing to disclose intellectual property. In both cases, the companies involved were not merely participants, as Rambus was, but had actually presented and promoted their technology for inclusion in a standard. In the first case, JEDEC chose to standardize a different technology after SEEQ refused to provide RAND assurances. F. 686-88. In the second case, there was private litigation between Texas Instruments [“TI”] and the alleged infringer in which it was ultimately found that the patent was not violated. F. 701-07.

The ballot for voting on which technology to include in standards uses the word “please” to request the disclosure of patents. In contrast, the same ballot employs the term “MANDATORY” to describe the requirement of a member to state the “detailed reason(s) for . . . disapproval” of the content of a ballot topic. F. 654-55. When this language was first added to the ballots in 1989, there was a discussion in a JEDEC meeting of the purpose of the new ballot language. The minutes from that discussion state: “TI was concerned that Committee members could be held liable if they didn’t inform Committee members correctly on patent matters. Committee responded that the question was added on ballot voting sheets for information only and was not going to be checked to see who said what.” F. 656. It is clear from the plain language of the committee ballot that a “no” vote mandates an explanation, while patent disclosure is requested only on a voluntary basis. F. 658

The patent tracking list maintained by Chairman Townsend was an incomplete list of the patents or patent applications disclosed to JEDEC. F. 666-68. Indeed there was no complete list of patents disclosed. If mandatory disclosure had been central to obtaining appropriate standards, there would have been a formal and accurate method of tracking disclosures, similar to the explicit and detailed requirements for submitting RAND assurances. *See* F. 612 (JEP 21-I requiring submission in writing of a letter to the General Counsel prior to or at the time of balloting). Thus, the

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informal and unofficial patent tracking list cannot form the basis for a mandatory duty.

Even witnesses who testified that there was an obligation to disclose patent applications failed to act in a manner consistent with their testimony. For example, JEDEC Chairman Desi Rhoden was a named inventor of a patent covering the SLDRAM standard. F. 713. He failed to disclose the patent application to JEDEC. F. 717. At trial, however, Rhoden testified that even non-members, including visiting guest scientists or engineers from foreign countries, were obligated to disclose their company's patents and patent applications that were related in some general way to a subject being discussed at JEDEC. F. 717. Under the *Gypsum* rule, Rhoden's testimony, which was inconsistent with his actions, can be accorded little, if any weight. *See Gypsum*, 333 U.S. at 395.

ii. The EIA/JEDEC Patent Policy Was Limited to Issued Patents, Not to Patent Applications or Intentions to File

The EIA/JEDEC patent policy encouraged the disclosure of patents, not patent applications or intentions to file patent applications. The minutes of the February 2000 meeting of the JEDEC Board of Directors state unequivocally that disclosure of patent applications is "not required under JEDEC bylaws." F. 773. A few days after the meeting, JEDEC Secretary McGhee explained to the members of JEDEC 42.4 that the disclosure of patent applications went "one step beyond" the patent policy. F. 773. These clear and unambiguous official statements of policy cannot be reconciled with Complaint Counsel's contention that JEDEC had a mandatory policy requiring the disclosure of patent applications or intentions to file patent applications. Indeed, the Federal Circuit in *Infineon* specifically concluded that the EIA/JEDEC disclosure policy did not extend "to a member's plans or intentions." *Infineon*, 318 F.3d at 1102.

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There is more than just contemporaneous written evidence that conflicts with Complaint Counsel's after-the-fact construction of the patent policy; actual conduct of JEDEC participants also contradicts that construction. In addition to the actions of Desi Rhoden, discussed in F. 713-17, there were other instances in which named inventors were present during a JEDEC meeting while proposals relating to their patent applications were being discussed, but did not disclose those applications. F. 701-17.

The most that the record evidence can be understood to support is an argument that *presenters* were required to disclose patent applications that related to technologies that they were asking that JEDEC standardize. F. 752, 774. This is consistent with the focus in *Allied Tube* on actions of economically interested companies which exercise control over the decisionmaking process. *Allied Tube*, 486 U.S. at 509-10. Rambus, which was prohibited from presenting its technology (F. 824-25), would not be obligated to disclose under such a policy.

In sum, the record shows that JEDEC did not require disclosure of patent applications or intentions to file patent applications by anyone other than possibly presenters, although the voluntary, early disclosure of intellectual property was encouraged. The only contrary evidence, a vague reference in a draft manual and the after-the-fact testimony of interested witnesses, is not persuasive and is contradicted by the bulk of the contemporaneous evidence.

iii. The EIA/JEDEC Patent Policy Applied to Essential Patents

Complaint Counsel further contend that patents or applications that *might be involved* in the standards under development were required to be disclosed. (CCPHB at 45). In support of this proposition, they cite to nothing more than after-the-fact testimony by interested witnesses. That testimony is contradicted by the contemporaneous record.

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JEDEC members were encouraged to disclose patents that were “essential” to a standard, i.e., those patents that were necessary for the manufacture or use of a product that complied with the standard. For example, the EIA’s January 1996 letter to the Commission states that EIA “follows the ANSI intellectual property rights (IPR) policy as it relates to *essential* patents.” F. 674 (emphasis added). JEDEC Secretary McGhee’s July 10, 1996 memorandum to JEDEC Council members states that EIA encourages the voluntary disclosure of “known *essential* patents.” F. 678 (emphasis added). EIA Manual EP-3-F refers only to standards that “*call for the use* of patented items.” F. 635 (emphasis added). EIA Manual EP-7-A refers only to standards “that *call for the exclusive use* of a patented item or process.” F. 636 (emphasis added).

The weight of the testimony supports the same conclusion. Hewlett-Packard representative Thomas Landgraf testified that he understood the patent policy to involve disclosure if “the standard required someone else’s idea to be used . . . in order for it to operate.” F. 776. JEDEC 42.3 chairman and IBM representative Gordon Kelley similarly testified that the disclosure duty was triggered by a patent claim that “reads on or applies” to the standard, meaning that “if you exercise the design or production of the component that was being standardized [it] would require use of the patent.” F. 777. Another IBM JEDEC representative, Mark Kellogg, testified that his understanding was that “you have to disclose intellectual property that reads on the standard.” F. 778.

Complaint Counsel failed to prove that the EIA/JEDEC patent policy applied to anything other than “essential” patents. Because disclosure is not required it may be splitting hairs to determine the precise nature of the patents that were encouraged to be disclosed. However, a broad duty, applicable to any potentially related patent would be too vague and difficult to apply with any consistency. As the Federal Circuit explained, any rule that

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required disclosure of patent claims that were not necessary or essential in order to practice the standard would be overbroad:

[t]o hold otherwise would . . . render the JEDEC disclosure duty unbounded. Under such an amorphous duty, any patent or application having a vague relationship to the standard would have to be disclosed. JEDEC members would be required to disclose improvement patents, implementation patents, and patents directed to the testing of standard-compliant devices – even though the standard itself could be practiced without licenses under such patents.

Infineon, 318 F.3d at 1101. Rather, the Federal Circuit held that the duty to disclose “extended only to claims . . . that reasonably might be necessary to practice the standard.” *Infineon*, 318 F.3d at 1100.

iv. The EIA/JEDEC Patent Policy Was Triggered At the Time of Submitting Committee Ballots

Complaint Counsel contend that JEDEC members were required to disclose their intellectual property “as early as possible in the process.” (CCPHB at 46). Again, they rely on after-the-fact testimony for support, but even that evidence, when considered in its entirety, supports the proposition that disclosure was not expected until formal balloting. F. 783-85. *See also* F. 761-65 (revealing conflict in testimony regarding the timing of disclosure). The committee ballot was considered the deadline for when disclosure should be made. F. 784. The informal patent tracking list reinforced this view, because it asked the committee chair to “resolve patent status prior to (choose one),” and then presented a list to choose from, from presentation to balloting. F. 785.

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d. The Unsuccessful Attempt to Expand the EIA/JEDEC Patent Policy Created Ambiguity and Confusion

According to the January 1993 JEDEC Council meeting minutes, “Consensus was expressed that more strength is needed in our policy, however under existing laws, it seemed difficult to do.” F. 733-35. The record shows that some JEDEC Council members wanted to expand EIA/JEDEC’s patent policy to be mandatory, instead of voluntary, and to include patent applications and intentions to file a patent application. F. 724-39. Under governing EIA rules, however, JEDEC was prevented from making any changes to the patent policy. F. 735. At that time, JEDEC was a subpart or activity within EIA, not a separate entity, and was obligated to follow EIA’s patent policy. F. 222, 740. Moreover, it is not clear that, even among those who wanted a more expansive policy, there was agreement on what the policy should be, as evidenced by the inconsistent trial testimony. *See* F. 748-65. There were a number of suggestions made regarding ways to change the policy, none of which were adopted. F. 726.

Instead of explicitly and formally changing the JEDEC policy from the EIA policy, the Council unsuccessfully attempted to redefine the word “patent.” F. 744-47. Committee Chair G. Kelley stated that the Council “discussed the conflict between the EIA wording” and the proposed change to JEP 21-I and “we believed as a group that the concept of patents includes patent applications.” F. 737. G. Kelley also testified that in 1991, the committee agreed to “work to that new definition of patents.” F. 731. This attempted redefinition of the policy marked a departure both from established JEDEC policy and from EIA patent policy and caused confusion by creating ambiguity in the policy. F. 738.

During this time, ambiguous language was added to the sign-in/attendance roster and members’ manual, as well as to JEP 21-I. This language was added as part of the unsuccessful attempt to expand the EIA/JEDEC patent policy. *See* F. 724-39. For example, the reference to “patentable or patented items,” on the

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front page of the meeting attendance roster confused rather than expanded the policy because the front page specifically refers to the EIA guides which appear on the reverse side and apply only to *issued* patents. F. 650-51. Similarly, the members' manual misstates the EIA policies to which it expressly refers and exemplifies the confusion surrounding members' interpretation of the policy. F. 662, 664.

The evidence indicates that members had different understandings of EIA/JEDEC's patent policy. JEDEC members described the policy as "not real clear . . . it was pretty vague," and "unclear." F. 721, 722, 723. One member described "a written policy," "an in-process modified policy," and "an expected policy." F. 720, 723. Texas Instruments presented a letter to JEDEC on March 9, 1994, regarding ambiguities in the EIA/JEDEC patent policy. The letter noted "Texas Instruments believes that the JC 42.3 Committee . . . should review and clarify its interpretation of the JEDEC Patent Policy." ". . . TI is concerned that the committee, or at least some of its members, have interpreted the scope of the JEDEC Patent Policy in a manner that is not only incorrect, but unworkable as well. *The resulting confusion has made it impossible for TI and other members to determine the appropriate course of conduct.*" F. 701 (emphasis added). The issue erupted after TI became embroiled in a disclosure dispute with JEDEC. Cray's representative testified that "some members agreed that [TI] didn't need to [disclose] and other[s] felt that they were in violation of the JEDEC policy by not [disclosing]." F. 706. It is thus evident, that by 1994, there was no clear understanding among members as to the requirements of the EIA/JEDEC patent policy. F. 707.

The Federal Circuit criticized this lack of clarity stating:

In this case there is a staggering lack of defining details in the EIA/JEDEC patent policy. . . . JEDEC could have drafted a patent policy with a broader disclosure duty. It could have drafted a policy broad enough to capture a member's failed

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attempts to mine a disclosed specification for broader undisclosed claims. It could have. It simply did not.

Infineon, 318 F.3d at 1102.

e. Rambus Had No Patents or Pending Patents That Would Have Been Required to be Disclosed by the EIA/JEDEC Patent Policy

As found in Findings of Fact F. 766-71, disclosure of patents and pending patents was not required under the EIA/JEDEC patent policy. In addition, for the policy to apply, the JEDEC representative must have had actual knowledge of the pending patent or patent application. F. 780. Complaint Counsel failed to prove that Richard Crisp, Rambus's representative to JEDEC, had such actual knowledge. F. 781. Moreover, the patent policy was only triggered when submitting a committee ballot. F. 784-85. As discussed below, many of the presentations relied upon by Complaint Counsel never were balloted at JEDEC and thus the patent policy was never triggered.

i. SDRAM

The SDRAM standard was adopted in March 1993. F. 351. The only EIA or JEDEC policy Complaint Counsel cite in support of their interpretation of the patent policy is JEP 21-I which, as noted earlier, was not published until October of 1993 (F. 610), seven months *after* approval of the SDRAM standard.

The parties stipulated that, as of January 1996, Rambus had no U.S. patents that were essential to the manufacture or use of any JEDEC-compliant device and that prior to the adoption of the JEDEC SDRAM standard in 1993, Rambus had no claims in any pending patent applications that, if issued, would necessarily have been infringed by the manufacture or use of any SDRAM device manufactured in accordance with the 1993 JEDEC SDRAM

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standard. F. 939, 959. Complaint Counsel, in seeming contradiction to these stipulations, nonetheless argue that Rambus should have disclosed U.S. Patent No. 5,513,327 (the '327 patent) as well as a number of patent applications. CCPHB at 64-67.

Complaint Counsel allege that Rambus's duty to disclose the '327 patent was triggered by three presentations at JEDEC: (1) a presentation by William Hardell of IBM contained in the May 1992 minutes of the JEDEC 42.3 subcommittee (the "Hardell presentation"), (2) a "Future SDRAM Features Survey Ballot" contained in the December 1995 minutes of the JEDEC 42.3 subcommittee (the "Survey Ballot"), and (3) a presentation by Samsung entitled "Future SDRAM," contained in the March 1996 minutes of the JEDEC 42.3 subcommittee (the "Samsung presentation"). CCPHB at 70; F. 940-41. All three presentations were made before the '327 patent issued, so that Rambus could not have disclosed the '327 patent at the time of these presentations. F. 942.

None of these three presentations ever rose to the level of a balloted proposal. F. 951, 954, 956. As such, they did not specify how the features would actually be implemented. The Hardell presentation states simply "dual clock edge," the Survey Ballot only that there was "mixed support" for "using both edges of the clock for sampling inputs," and the Samsung presentation only that "[d]ata in sampled at both edge [sic] of Clock into memory." F. 950, 953, 955. As Complaint Counsel's technical expert, Professor Jacob, concedes, the '327 patent does not cover the broad concept of dual edge clocking, but only certain "specific implementations" of dual edge clocking. F. 945. Because these presentations did not provide sufficient implementation details, it would not be possible to determine whether or not the '327 patent covered the presentations. F. 957. Rambus has not asserted the '327 patent against any manufacturer of SDRAM or DDR SDRAM devices. F. 958.

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Rambus did not have any undisclosed *patent applications* during the time it was a JEDEC member that it should have disclosed. Complaint Counsel allege that Rambus had four patent applications pending during the time that it was a JEDEC member that should have been disclosed to JEDEC, including application nos. 07/847,961 (the '961 application) and 08/469,490 (the '490 application). F. 960.

In both of these cases, the claims raised by Complaint Counsel were pending only briefly in 1995, over a year after the SDRAM standard was published, before being cancelled. F. 961-62. In an April 16, 1995 office action, the U.S. Patent and Trademark Office ("PTO") rejected all of the claims raised by Complaint Counsel regarding the '961 application and, in particular, found that claims 151-165 were indefinite. F. 961. The claims at issue in the '490 application were either not pursued or withdrawn from consideration by Rambus. F. 962. EIA/JEDEC rules certainly cannot be understood to require disclosure of claims withdrawn or rejected by the PTO.

Moreover, the Federal Circuit noted that the claims of the '961 application would not read on a device built to the JEDEC SDRAM standard. The Federal Circuit stated: "[t]his court has examined the claims of the cited applications as well as the relevant portions of the SDRAM standard. Based on this review, this court has determined that substantial evidence does not support the finding that these applications had claims that read on the SDRAM standard." *Infineon*, 318 F.3d at 1103. The Federal Circuit further held that "claims in the '961 application were limited to the device identifier feature" which is not "necessary to practice the SDRAM standard." *Id.* See *Key Pharms. v. Hercon Labs. Corp.*, 161 F.3d 709, 716 (Fed. Cir. 1998) (Federal Circuit decisions on claim construction have "national *stare decisis* effect") (citing *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 391 (1996)).

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There are only two other applications that Complaint Counsel allege should have been disclosed by Rambus: application nos. 07/847,692 (the '692 application) and 08/222,646 (the '646 application). F. 960. These applications are not alleged to cover any JEDEC standard, but instead are alleged to cover certain JEDEC presentations concerning on-chip phase locked loop ("PLL") and dual-edge clocking. As with the '327 patent, the events that Complaint Counsel contend "triggered" a duty to disclose certain claims in patent applications were merely discussions or presentations, not ballot proposals, and thus the patent disclosure policy was not triggered. F. 964-67.

Complaint Counsel likewise have not presented evidence sufficient to find that presentations of voltage swing signaling, dual bank design, auto-precharge, or synchronous clocking were ever included in a standard, formally balloted for inclusion in a standard, or that Crisp had actual knowledge of any patents or patent applications with any claims that might cover the technologies presented. F. 334-50, 781.

Finally, Complaint Counsel cannot salvage their case by relying on proof that Rambus might have believed (albeit wrongly) that claims in its applications, if issued, would have covered technologies being standardized by JEDEC. As the Federal Circuit observed:

The JEDEC policy, though vague, does not create a duty premised on subjective beliefs. JEDEC's disclosure duty erects an objective standard. It does not depend on a member's subjective belief that its patents do or do not read on the proposed standard. Otherwise the standard would exempt a member from disclosure, if it truly, but unreasonably, believes its claims do not cover the standard. . . . [T]he JEDEC test in fact depends on whether claims reasonably might read on the standard. A member's subjective beliefs, hopes, and desires are

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irrelevant. Hence, Rambus's mistaken belief that it had pending claims covering the standard does not substitute for the proof required by the objective patent policy.

Infineon, 318 F.3d at 1104.

Because JEP 21-I was published after the SDRAM standard was approved; because disclosure of intellectual property was voluntary; because there is no evidence that Rambus's representative to JEDEC had actual knowledge of any patents or pending patents that would trigger the EIA/JEDEC patent policy; and because the presentations were not subject to a triggering event, Rambus was under no disclosure duty relating to the SDRAM standard.

ii. DDR-SDRAM

Formal consideration of the DDR-SDRAM standard did not begin until after Respondent withdrew from JEDEC. F. 968-82. Respondent attended its last JEDEC meeting on December 6, 1995 and formally withdrew from JEDEC by a letter dated June 17, 1996. F. 968. Although Respondent continued receiving information about JEDEC activities after it stopped attending meetings (F. 279-82), once its membership ended, Respondent was not obligated to disclose patent information. F. 782, 982.

Formal work on the DDR-SDRAM standard did not begin within JEDEC, at the earliest, until December 1996, when Fujitsu made the first showing of a DDR-SDRAM related proposal in JEDEC. F. 973-76. This is confirmed by an IBM presentation which lists as the first official DDR presentation at JEDEC a December 1996 presentation and by a Mitsubishi memorandum regarding the history of DDR-SDRAM that similarly relates that a proposal to JEDEC was made in December of 1996. F. 980, 981. It is not until March 1998 that the DDR-SDRAM standard was approved. F. 973-74. JEDEC Chairman Rhoden, in a "recap [of]

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what had transpired with DDR,” cites a “lot of private and independent work outside of JEDEC for most of 1996 (here is where we missed a good opportunity to start early)” and then lists December 1996 as the first JEDEC presentation. F. 973-74. The standard received approval from JEDEC’s Board in August of 1999 and was published in June of 2000. F. 427-28.

Both the Federal Circuit and the District Court in the *Infineon* litigation found that Respondent had no duty to disclose regarding DDR-SDRAM because Rambus had withdrawn from JEDEC prior to formal consideration of the standard. 164 F. Supp.2d at 777; 318 F.3d at 1105. The District Court stated: “Infineon failed to prove that Rambus had a duty to disclose pending patents relating to DDR SDRAM because Rambus was not a member of JEDEC at the relevant time in which the DDR SDRAM standard was under consideration.” 164 F. Supp.2d at 777.

The Federal Circuit agreed, finding that:

the disclosure duty, as defined by the EIA/JEDEC policy, did not arise before legitimate proposals were directed to and formal consideration began on the DDR-SDRAM standard. None of the evidence relied on by Infineon (e.g., survey ballot, technology proposals on the SDRAM standard) provides substantial evidence for the implicit jury finding that Rambus had patents or applications ‘related to’ the DDR-SDRAM standard that should have been disclosed before the standard came under formal consideration.

Infineon, 318 F.3d at 1105.

In addition, the parties stipulated that as of January 1996, Rambus held no issued U.S. patents that were essential to the manufacture or use of any device manufactured in compliance

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with any JEDEC standard. F. 939. Once Rambus withdrew from JEDEC, it was no longer subject to the EIA/JEDEC patent policy.

Complaint Counsel have offered insufficient evidence in support of their argument that Respondent violated the EIA/JEDEC disclosure duty with respect to the DDR SDRAM standard. The evidence presented at this trial clearly establishes that Respondent withdrew from JEDEC before any formal work on the DDR standard commenced. Thus, the conclusions shared by both the District Court and the Federal Circuit in *Infineon* on this question remain sound. As such, there is no basis to find a disclosure duty or violation of a duty by Respondent as it would pertain to the DDR SDRAM standard.

4. The Evidence Presented at Trial Does Not Provide a Factual Basis for Finding That Rambus Made Affirmative, Misleading Statements to JEDEC

Complaint Counsel argue that Rambus made “affirmative misleading statements calculated to quell any concerns or suspicions of JEDEC members as to the possibility that Rambus had patents or patent applications relevant to JEDEC’s work.” CCPHB at 72. In support of this argument, Complaint Counsel challenge Respondent’s conduct in refusing to answer questions about its intellectual property on two occasions and Respondent’s allegedly deceptive letter formalizing its withdrawal from JEDEC.

At Richard Crisp’s first formal JC 42.3 subcommittee meeting as Rambus’s JEDEC representative in May of 1992, Gordon Kelly, JC 42.3 committee chair, asked Crisp whether Rambus had patents or potential patents covering two bank design. F. 808, 811. Crisp shook his head indicating that he declined to comment. F. 808, 811. The evidence shows that JEDEC members understood that Crisp was declining to comment and not that he was making any indication about whether Rambus had obtained or intended to pursue patent protection of the two bank design. F. 812-17, 819, 857. For example, Kellogg testified that he considered Crisp’s

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conduct a “flag” because JEDEC members were “describing possible intellectual property concerns which may affect our decision process for synchronous DRAM,” that “[t]hat is a concern,” and that “[t]he lack of response by Rambus is also a concern.” F. 825. Complaint Counsel did not present any evidence that Crisp was informed that his act of not commenting violated the JEDEC rules, as would have been expected at his first meeting if patent disclosure was required.

Despite Crisp’s refusal to comment on Rambus’s intellectual property, the evidence is compelling that JEDEC committee leaders and members were fully aware of Rambus’s patents and applications with respect to features being considered for incorporation into JEDEC standards. As early as March 1992, Gordon Kelley had prepared a memorandum regarding Rambus’s patents. F. 788. In April 1992, he prepared a “Rambus Assessment” along with two other IBM employees, the day after he attended a presentation by Rambus. F. 789, 791. The assessment noted “the risk is whether it [RDRAM] becomes a standard for the low-end bulk of DRAM bit volume.” F. 793. The assessment further noted that “if Rambus fails to become a standard then it is business as usual for [IBM] and the SDRAM has a significant chance of being standard.” F. 794. It is thus clear that Kelley was aware of Rambus technology and the prospects of its success in the spring of 1992. F. 786-806.

Similarly, Willi Meyer of Siemens (now Infineon) testified that in 1992 “we were absolutely sure that Rambus was trying to get patents.” F. 806. Meyer also prepared a chart showing the “Pros” and “Cons” of “Rambus RDRAM,” stating that 2-bank synchronous DRAM “may fall under Rambus patents.” F. 803-06. Howard Sussman, the NEC representative, had reviewed Rambus’s international patent application pursuant to the Patent Cooperation Treaty (“PCT application”) and felt that many of the claims were barred by prior art. F. 810. Mark Kellog of IBM similarly noted, “Rambus International Patent . . . suspect claims won’t hold.” F. 870, 1524. Thus, Richard Crisp’s refusal to

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comment on Rambus patents at both the May 1992 and September 1995 JC 42.3 meetings not only raised concerns regarding the possible existence of Rambus intellectual property, but put members on notice, both expressly and implicitly, of Rambus's intent to seek broad coverage of its patents. F. 807-25, 842-57.

By an email dated June 13, 1995 to Hans Wiggers, the Hewlett-Packard representative, Crisp clearly warned that "the Ramlink/Synlink proposals will have a number of problems with Rambus intellectual property . . . *but I must caution you that there is a lot of material that is currently pending and we will not make any comment at all about it until it issues.*" F. 754 (emphasis supplied). In August 1995, Rambus again informed the SyncLink working group that its work might infringe Rambus's intellectual property. F. 853.

At the September 1995 JEDEC meeting, Crisp presented a written response to the questions about intellectual property that had been raised at the May 1995 meeting. F. 855. Rambus's statement, *published in full in the JEDEC minutes*, indicates in part:

Rambus elects to not make a specific comment on our intellectual property position relative to the Synlink proposal. Our presence or silence at committee meetings does not constitute an endorsement of any proposal under the committee's consideration nor does it make any statement regarding potential infringement of Rambus intellectual property.

F. 855.

JEDEC members should have clearly understood from this statement that Rambus might have or might attempt to obtain patents covering technology utilized in JEDEC standards. Intel Corporation ("Intel") representative Sam Calvin testified that he understood that any silence by Rambus should not be taken as an

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indication that Rambus did not have intellectual property relating to JEDEC's work. F. 857. Gordon Kelley testified regarding Crisp's refusal to comment in 1992 that Rambus's lack of comment was "unusual on the committee and is surprising" and that a "comment of no comment is notification to the committee that there should be a concern" about intellectual property issues. F. 819. The same logic would apply to Crisp's representation in 1995. Thus, again, the evidence does not support the contention that JEDEC was misled.

Rambus representatives attended their last JEDEC Meeting in December of 1995. F. 871. Rambus's separation from JEDEC was formalized on June 17, 1996, when Rambus sent a letter to JEDEC that stated that "Rambus plans to continue to license its proprietary technology on terms that are consistent with the business plan of Rambus We trust that you will understand that Rambus *reserves all rights regarding its intellectual property.*" F. 871, 874, 968 (emphasis added). Rambus included with the letter a list of issued patents. F. 874. The list did not include the '327 patent. F. 875. The evidence is inconclusive regarding whether the '327 patent was left off of the list intentionally or inadvertently. F. 876.

In any event, JEDEC members were clearly aware of the technology invented by Rambus founders Farmwald and Horowitz as well as Rambus's business model which sought to protect and profit from these inventions. *Infra* Section III.E.3. The evidence presented by Complaint Counsel is thus insufficient to provide a factual basis to find that Rambus affirmatively misled JEDEC.

5. Amendments to Claims to Broaden Patent Applications Were Not Improper

Complaint Counsel charge that Respondent's conduct constituted anticompetitive behavior and exclusionary conduct in that Respondent set out to amend and broaden its pending patent

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applications for the specific purpose of covering technological features that were adopted or being considered for adoption in JEDEC's SDRAM standards, while deliberately keeping these patent applications secret from JEDEC. CCPTB at 6, 88. This argument fails for two reasons. First, as a matter of patent law, it was entirely legitimate for Respondent to seek claims covering technologies promoted by other JEDEC members that were originally disclosed in the '898 application. Second, as a matter of fact (discussed in F. 587-785 and the previous section of this analysis) there was no disclosure obligation under the JEDEC patent policy which attached to Rambus. As such, there can be no finding that Respondent, in violation of JEDEC rules, deliberately concealed proprietary technology from JEDEC that it was otherwise entitled to have.

The patent laws dictate that Rambus's patents could be based only on the "ideas" or inventions described in the original Farmwald-Horowitz patent application (the '898 application). Thus, under law, Rambus could not have "taken" ideas from JEDEC to be incorporated into its patent applications. The PTO's determination that Rambus's numerous divisional and continuation applications properly claim priority to the original '898 application (F. 168-78; *see Infineon*, 318 F.3d at 1084) cannot be second guessed. The patent laws make clear that Rambus was within its rights to protect the inventions disclosed in the '898 application that it saw being considered for use by JEDEC members.

The patent document which grants the patentee a right to exclude others . . . consists of two primary parts:

- (1) a written description of the invention, which may . . . include drawings, called the "specification," enabling those skilled in the art to practice the invention, and (2) claims which define or delimit the scope of the legal protection which

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the government grant gives the patent owner, the patent “monopoly.”

General Foods Corp. v. Studiengesellschaft Kohle mbH, 972 F.2d 1272, 1274 (Fed. Cir. 1992). To obtain a patent claim the inventor must adequately set forth in the written description: (1) the invention, (2) the manner and process of making and using the invention, and (3) the best mode contemplated by the inventor of carrying out the invention. 35 U.S.C. § 112; *see also* 3-7 CHISUM ON PATENTS § 7.01 (2003).

The patent system recognizes that an inventor might not fully claim all the inventions nor the full scope of the individual inventions in an initial application. To allow the inventor to claim the full scope of the inventions disclosed in the application, patent law allows the inventor to amend its claims, to file continuation applications, or to file divisional applications. *See* 37 C.F.R. § 1.141(a); 35 U.S.C. § 121; *see also* 4-12 CHISUM ON PATENTS § 12.04, 13.03[2](2003). Here, the PTO determined that the ‘898 application covered multiple inventions. F. 169-71. The PTO issued an eleven way restriction requirement requiring Rambus to elect one invention to pursue in the ‘898 application. F. 171. Thereafter, Rambus filed numerous divisional and continuation applications based on the original ‘898 application. F. 172. As of April 2003, Rambus had filed a total of sixty-three continuation and divisional applications and has been issued at least forty-three patents. F. 174.

To maintain the same priority date as the original application, any amendment, continuation application, or divisional application must be supported by the disclosure in the original application. 35 U.S.C. §§ 112, 120, 121, 132. To be adequate, a written description must “convey with reasonable clarity to those skilled in the art that, as of the filing date sought, [the inventor] was in possession of the invention.” *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991). *See also Markman v.*

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Westview Instruments, Inc., 52 F.3d 967, 986 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996).

To maintain the same priority date as the original application, neither an amendment to a continuation application nor a divisional application may add any “new matter.” 35 U.S.C. § 132 (“No amendment shall introduce new matter into the disclosure of the invention.”); 35 U.S.C. § 120 (giving benefit of original application filing date under certain circumstances); *Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.*, 98 F.3d 1563, 1579 (Fed. Cir. 1996) (Mayer, J., concurring) (“By definition, a continuation adds no new matter and is akin to an amendment of a pending application.”); 35 U.S.C. § 121 (according original priority date to divisional application only if the divisional conforms to section 120). These requirements – that any amendment, continuation application, or divisional be supported by the original disclosure without any “new matter” – ensure that the inventor is limited to claiming only those inventions disclosed in the original application. *TurboCare Div. of Demag Delaval Turbomachinery Corp. v. General Elec. Co.*, 264 F.3d 1111, 1118 (Fed. Cir. 2001).

Thus, while the ‘898 application continues to be the progenitor of numerous patents, the PTO has determined that each and every claim contained in these new patents is supported by the original written description filed by Farmwald and Horowitz in 1990. F. 178. Consequently, each invention and the full scope of each invention claimed by Rambus was described in the written description of the ‘898 application (and therefore in the PCT application that became public in 1991).

Once an inventor has staked out his inventions in the written description of his application, the fact that someone uses one of the inventions in a competing product after the application has been filed but before the inventor claims that specific invention does not override the inventor’s entitlement to claim the invention. As noted by the Federal Circuit:

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It should be made clear at the outset of the present discussion that there is nothing improper, illegal or inequitable in filing a patent application for the purpose of obtaining a right to exclude a known competitor's product from the market; nor is it in any manner improper to amend or insert claims intended to cover a competitor's product the applicant's attorney has learned about during the prosecution of a patent application.

Kingsdown Medical Consultants, Ltd. v. Hollister, Inc., 863 F.2d 867, 874 (Fed. Cir. 1988).

Further, the Federal Circuit has rejected the notion that amending a pending patent application to cover a competing product constitutes acting in "bad faith." *Multiform Desiccants, Inc. v. Medzam Ltd.*, 133 F.3d 1473, 1482 (Fed. Cir. 1998). In fact, amending a pending patent application to cover "a product containing a variant of the inventor's brainstorm" is "standard practice and has been for a long time." MERGES, MENELL & LEMLEY, *INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE* 225 (2d ed. 2000).

These principles apply in the DRAM industry as they do in any other. In *Texas Instruments, Inc. v. U.S. Int'l Trade Comm'n*, 871 F.2d 1054 (Fed. Cir. 1989), the patentee, Texas Instruments, amended its pending patent claims to cover a DRAM device sold by a company called MOSTEK. *Id.* at 1064-65. Specifically, Texas Instruments broadened its pending claims by deleting certain claim limitations. *Id.* at 1065. The Federal Circuit held that the broadening of the claims to cover the competing DRAM was not improper. *Id.*

It was therefore legitimate for Rambus to seek claims covering technologies proposed at JEDEC that were originally disclosed in its '898 application. In amending its pending claims, Respondent

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did not add new matter, and because it was under no disclosure duty, Respondent was not acting in bad faith or concealing secret patents from JEDEC. For the reasons stated herein, Complaint Counsel's claim that Respondent engaged in a pattern of anticompetitive acts and practices fails. In so holding, the Court next considers whether the challenged conduct was exclusionary in nature.

C. No Exclusionary Conduct**1. Exclusionary Conduct Defined**

Exclusionary conduct is “behavior that not only (1) tends to impair the opportunities of rivals, but also (2) either does not further competition on the merits or does so in an unnecessarily restrictive way.” *Aspen Skiing*, 472 U.S. at 605 n.32 (quoting 3 P. Areeda & D. Turner, *Antitrust Law* 78 (1978)). “Generally, a finding of exclusionary conduct requires some sign that the monopolist engaged in behavior that – examined without reference to its effects on competitors – is economically irrational.” *Stearns Airport Equipment Co., Inc. v. FMC Corp.*, 170 F.3d 518, 523 (5th Cir. 1999). *See also Aspen Skiing*, 472 U.S. at 608, 610-11 (conduct was exclusionary where defendant failed to offer “any efficiency justification whatever” for its pattern of conduct); *In re E.I. Du Pont de Nemours & Co.*, 96 F.T.C. 652, 738 (1980) (To determine whether conduct by monopolists is unreasonably exclusionary or if it constitutes legitimate competitive behavior, the courts have fashioned a variety of criteria such as whether the behavior amounted to ordinary marketing practices, whether it was profitable or economically rational, or whether it resulted in improved product performance.).

An example of conduct involving intellectual property that is not exclusionary, even though it adversely affects competitors, is where a firm develops a cost-saving technology, protects the technology through trade secrets or patents, and drives its rivals

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out of business by being the low cost competitor. (Rapp, Tr. 9913). Not disclosing information about pending or future patent applications is rational and profit maximizing for a firm; it is also procompetitive for the same reasons that preserving trade secrets is procompetitive. (Rapp, Tr. 9918). This type of nondisclosure preserves incentives to innovate because innovation depends on the ability to control intellectual property. (Rapp, Tr. 9918-19). Exercising intellectual property rights to exclude competitors and protecting trade secrets from use by other companies are not, by law, exclusionary conduct. (Rapp, Tr. 9229-30). Similarly, exercising intellectual property rights to charge royalties that might raise a rival's costs is not exclusionary conduct. (Rapp, Tr. 9229).

2. Legitimate Business Justifications

“The key factor courts have analyzed in order to determine whether challenged conduct is or is not competition on the merits is the proffered business justification for the act.” *Stearns Airport*, 170 F.3d at 522; *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039, 1062 (8th Cir. 2000) (The proffered business justification is the most important factor in determining whether the challenged conduct is not competition on the merits.); *Taylor Pub'l Co. v. Jostens, Inc.*, 215 F.3d 465, 475 (5th Cir. 2000) (“To determine whether conduct is exclusionary, we look to the proffered business justification for the act.”). “A defendant may avoid liability by showing a legitimate business justification for the conduct.” *Multistate Legal Studies, Inc. v. Harcourt Brace Jovanovich*, 63 F.3d 1540, 1550 (10th Cir. 1995). *See also Du Pont*, 729 F.2d at 140 (“[I]n the absence of proof of a violation of the antitrust laws or evidence of collusive, coercive, predatory, or exclusionary conduct, business practices are not ‘unfair’ in violation of § 5 unless those practices either have an anticompetitive purpose or cannot be supported by an independent legitimate reason.”).

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Legitimate business justifications or “normal business purpose[s]” (*Aspen Skiing*, 472 U.S. at 608-10), include protecting trade secrets and proprietary information. *Technical Resource Servs. v. Dornier Med. Sys., Inc.*, 134 F.3d 1458, 1467 (11th Cir. 1998). See also *In re Indep. Serv. Orgs. Antitrust Litig.*, 203 F.3d 1322, 1329 (Fed. Cir. 2000) (excluding others from use of copyrighted work is a “presumptively valid business justification for any immediate harm to consumers”); *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.2d 263, 281-82 (2d Cir. 1979) (“a firm may normally keep its innovations secret from its rivals as long as it wishes”). Where there is a business justification, the challenged conduct is not exclusionary even if “one reason for [defendant’s conduct] was to disadvantage the competition.” *Universal Analytics, Inc. v. MacNeal-Schwendler Corp.*, 914 F.2d 1256, 1259 (9th Cir. 1990). It is the defendant’s burden to demonstrate that its business justification is supported by facts. See *Microsoft*, 253 F.3d at 59, 66 (Microsoft’s failure to offer procompetitive justification for certain conduct led to conclusion it was exclusionary).

Respondent has demonstrated that there were legitimate business justifications for the conduct challenged by Complaint Counsel. F. 1064-87. Rambus believed that if it revealed its patent applications, other companies could file interference actions and that, in other countries where the rules are first to file, someone could file a claim before Rambus did. F. 1064. A contemporaneous document shows that Rambus decided that it could not be expected to talk about potential infringement for patents that had not issued both from the perspective of not knowing what would wind up being acceptable to the examiner and from the perspective of not disclosing its trade secrets earlier than necessary. F. 1065.

The protection of trade secrets is a valid business justification for not disclosing information regarding pending patent applications and intentions to file applications or to amend pending claims in the future. F. 1076. Disclosure of trade secrets,

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including pending patent applications or intentions to file or amend future applications, even after a parent patent application becomes public, may: (1) jeopardize the issuance of pending claims by enabling competitors to file patent interferences or to race to be first-to-file in certain foreign jurisdictions; and (2) result in a loss of competitive advantage by informing competitors of the firm's research and development focus or by inducing competitors to begin work around efforts earlier. F. 1078-87. Even after the '898 application had been disclosed (in the form of the PCT application), Rambus still had trade secrets (additional pending applications and intentions to file additional applications) that it could legitimately protect from disclosure. F. 1080. Rambus's keeping information about its pending or future patent applications confidential did not impose on Rambus costs or risks that were compensable only by excluding rivals and thereby gaining market power. F. 1086. These facts demonstrate that Respondent's conduct, in maintaining the confidentiality of the proprietary information contained in its patent applications, clearly related to a legitimate and normal business purpose. The presence of these legitimate business justifications, that were not done in an unnecessarily restrictive way, precludes a finding of exclusionary conduct.

3. Conduct Before Standard Setting Organizations

Complaint Counsel further argue that Respondent's bad-faith, deceptive acts to a standard setting organization constitute exclusionary conduct. CCPHB at 19. This argument is not convincing for three reasons. First, as set forth above, Complaint Counsel did not prove that JEDEC had a clear and unambiguous requirement that its members disclose patents or patent applications. *Supra* Section III.B.3. Second, the legitimate business justifications of a company not disclosing information regarding its pending patent applications or its intentions to file future patent applications, regardless of what standards are developed, are not altered by mere participation in a standard setting organization. F. 1087. Third, Complaint Counsel's legal

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support for their proposition is clearly distinguishable from the facts of this case.

First, a cornerstone of any standard setting organization is a clearly stated and clearly *understood* intellectual property policy. See *Amicus Brief of Consumers Electronics Association, et al., On Petition For a Writ of Certiorari to the United States Supreme Court, Infineon Technologies, et al., v. Rambus, Inc.*, No. 03-37, Attachment 4 to CCPHB at 3 (emphasis added). EIA/JEDEC's patent policy did not meet this standard and the Court will not rewrite the patent policy to impute "requirements" that were not within its actual scope. See *Infineon*, 318 F.3d at 1098. As patent disclosure policies usually vary by organization, each reflects the collective judgment of the organization's participants as to what disclosure requirements best serve the purposes of the group. See *Amicus Brief of Commonwealth of Virginia, et al., On Petition For Writ of Certiorari To United States Supreme Court, Infineon Technologies AG, et al. v. Rambus, Inc.*, No. 03-37, Attachment 5 to CCPHB at 7. Any such requirements, however, must be clearly and unequivocally articulated. Here, they were not.

The EIA/JEDEC patent policy has been shown to be a loosely defined amalgam of confusing, contradictory documents and presentations. It failed to clearly define members' rights, or more importantly, their obligations. See F. 587-785. It bound participants with actual knowledge of intellectual property, but did not require the participants to check for intellectual property within their companies. F. 778-80. Although it sought assurance that members would license patents at RAND rates, it did not always take steps to insure that such assurances could or would be made. It did not maintain a complete patent tracking list and responded inconsistently when members failed to disclose intellectual property. F. 666-69. Compare F. 691-700 with F. 686-690.

As to the second point, an open standards committee, to function effectively, needs to be able to assure member companies

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that legitimate business justifications for protecting innovative, proprietary information will not be undermined by inconsistent, inartfully drafted and practiced disclosure policies. To hold otherwise would have a chilling effect on procompetitive participation in such bodies and in the marketplace generally. As such, Rambus's mere membership in such an organization, without more, cannot form the basis for excluding its legitimate right to protect its trade secrets from disclosure.

Finally, as to the third point, Complaint Counsel again rely on the consent decree entered in *Dell*, 121 F.T.C. 616 and on *Indian Head*, 817 F.2d 938. As noted above, the *Dell* consent decree provides no precedential value. The facts in *Indian Head* are dramatically different from the circumstances presented here. In *Indian Head*, defendant conspired with other steel companies to exclude the plaintiff's competing plastic products from standards set by the organization. 817 F.2d at 497. The conduct was plainly the kind of egregious unlawful activity that has traditionally concerned antitrust courts about standard setting bodies – agreements among some or all members acting in cartel-like fashion to exclude rival technologies.

On appeal from the Second Circuit, the Supreme Court in *Allied Tube* found that defendant “did not violate any rules of the Association” but “nonetheless did ‘subvert’ the consensus standard-making process of the Association,” and concluded that “[t]he antitrust validity of these efforts is not established, without more, by petitioner’s literal compliance with the rules.” *Allied Tube*, 486 U.S. at 498.

Allied Tube does not compel a finding that Rambus's conduct before JEDEC constitutes exclusionary conduct. Here, Rambus did not at any time encourage JEDEC to promote or adopt any feature or technology for inclusion in the SDRAM standard. When asked on two occasions at JEDEC meetings if it would care to comment about its intellectual property rights, it merely declined to do so. F. 809, 855. It did not lie about its patent rights

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or its intention to assert them. It was not even allowed to present its technology for standardization. F. 824-25. By contrast, in *Indian Head*, defendant packed the annual meeting with newly registered members, by arranging and paying for people to join the industry and register as voting members, and instructed its personnel how to vote. 817 F.2d at 947. The steel interest's recruitment of 230 members for purposes of casting a single vote gave it a disproportionate voice, inconsistent with the concept of "consensus" standard making. *Id.* Respondent's conduct, under the facts established in this case, does not rise to the level found to constitute exclusionary conduct in *Allied Tube*.

4. Violations of Extrinsic Duties or Deception Affecting Consumers Not Exclusionary Conduct

Complaint Counsel also argue that exclusionary conduct includes conduct that is improper for reasons extrinsic to the antitrust laws. CCPHB at 89. Complaint Counsel argue that Respondent's conduct was exclusionary because it amounted to "deception" or violated "extrinsic duties," such as the duty of good faith and duty to disclose relevant patent information established by JEDEC's rules. CCPHRB at 67. This argument also fails. First, as set forth in Section III.B.3., *supra*, Complaint Counsel have not proven that Respondent's conduct constituted deception or violated any clear duty of good faith or duty to disclose, whether established by open standards, JEDEC's rules, or otherwise. Second, case law establishes that exclusionary conduct is not determined by liability "in tort or contract law, under theories of equitable or promissory estoppel or implied contract . . . or by analogy to the common law tort" rules. *Olympia Equipment Leasing Co. v. Western Union Tel. Co.*, 797 F.2d 370, 376 (7th Cir. 1986). Rather, as the Commission has acknowledged in an amicus brief, exclusionary conduct is an antitrust concept. Brief for the United States and the Federal Trade Commission as *Amicus Curiae* on Petition for a Writ of Certiorari, *Verizon Communications, Inc. v. Trinko*, No. 02-682, at 13 (December 2002) <http://www.usdoj.gov/osg/briefs/2002/2pet/5ami/2002->

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[0682.pet.ami.pdf](#) (“Conduct is ‘exclusionary’ or ‘predatory’ in antitrust jurisprudence if the conduct would not make economic sense for the defendant but for its elimination or softening of competition.”) (citation omitted). Thus, exclusionary conduct should be analyzed using antitrust principles.

Complaint Counsel argue that “‘where conduct contributes to establishing or maintaining monopoly power, a court will be especially likely to find that conduct predatory or anticompetitive if it is *also improper* for reasons extrinsic to the antitrust laws [listing “false advertising” and “product disparagement” as two examples].” CCPHB at 89 (quoting ABA SECTION OF ANTITRUST LAW, ANTITRUST LAW DEVELOPMENTS at 247-49 (5th ed. 2002)) (emphasis added). Complaint Counsel’s only support for this proposition, the ABA handbook, is not persuasive legal authority and does not support Complaint Counsel’s position. By its terms, it refers only to conduct that is improper in an antitrust sense and is “*also improper*” for extrinsic reasons. Thus, Complaint Counsel have provided no basis to avoid traditional legal requirements for proving exclusionary conduct.

Moreover, courts have repeatedly held that a violation of an extrinsic rule, statute, or ethic is not itself exclusionary conduct. *E.g.*, *Olympia Equipment*, 797 F.2d at 376; *Goldwasser v. Ameritech Corp.*, 222 F.3d 390, 399-401 (7th Cir. 2000) (plaintiff must state “freestanding antitrust claim” and cannot base its antitrust claim simply on violations of the 1996 Telecommunications Act. “It would be undesirable here to assume that a violation of the 1996 Act requirement automatically counts as exclusionary behavior for purposes of Sherman Act § 2.”); *Bucher v. Shumway*, 452 F. Supp. 1288, 1291 (S.D.N.Y. 1978) (no antitrust liability for violation of laws preventing “deception or overreaching” in the securities markets).

Further, a breach of a duty of good faith and fair dealing in itself does not constitute exclusionary conduct. In *Conoco, Inc. v. Inman Oil Co.*, 774 F.2d 895 (8th Cir. 1985), a distributor of

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petroleum products brought suit against its franchisor alleging that the franchisor's low bidding for contracts that the distributor was also seeking constituted an attempt to monopolize and a breach of the implied obligation of good faith and fair dealing between the parties. While holding that bidding against its franchisee did breach the franchisor's implied obligation of good faith and fair dealing, the Eighth Circuit held that the conduct was not exclusionary because the franchisor had a legitimate business reason unrelated to the elimination of competitors – obtaining a new customer. *Id.* at 905-06, 908-09.

Complaint Counsel also argue that deceptive and misleading conduct that deprives consumers of information constitutes exclusionary conduct. CCPHRB at 67-68 (citing *Microsoft*, 253 F.3d at 76-77; *44 Liquormart, Inc. v. Rhode Island*, 517 U.S. 484, 503 (1996); *Conwood Co. v. United States Tobacco Co.*, 290 F.3d 768 (6th Cir. 2002), *cert. denied*, 123 S. Ct. 876 (2003); *Du Pont*, 729 F.2d at 137; *National Ass'n of Pharm. Mfrs. v. Ayerst Labs.*, 850 F.2d 904, 916 (2d Cir. 1988); *Caribbean Broadcasting Sys. v. Cable & Wireless PLC*, 148 F.3d 1080, 1087 (D.C. Cir. 1998). However, Complaint Counsel's economic expert, Professor McAfee, admitted that a misrepresentation, even if it has an impact on competition, is not always exclusionary. *See* F. 1088-89. Further, none of the cases relied upon by Complaint Counsel compel a finding that Respondent's conduct here, alleged misrepresentations through omission, constitutes exclusionary conduct.

In the majority of the cases relied upon by Complaint Counsel, the conduct at issue went far beyond the conduct Respondent is alleged to have engaged in. In *Microsoft*, defendant was found to have engaged in exclusionary conduct based not solely on its misleading statements regarding the capabilities of its Java development application, but also based on designing a Java Virtual Machine that was incompatible with the one developed by Sun, entering into contracts requiring major independent software vendors to promote Microsoft's Java Virtual Machine exclusively,

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and coercing Intel to stop aiding Sun in improving the Java technologies. 253 F.3d at 74. In *Conwood*, the conduct found to be exclusionary was defendant's pervasive practice of destroying competitor's racks and point of service materials and reducing the number of competitor's facings through exclusive agreements with and misrepresentations to retailers. 290 F.3d at 768. In *Caribbean Broadcasting Sys.*, defendants' fraudulent misrepresentations to advertisers and sham objections to a government licensing agency in order to defeat the application of a potential competitor were found to constitute anticompetitive conduct. 148 F.3d at 1087.

The court in *National Ass'n of Pharm. Mfrs.* did not reach the question of whether deception amounts to exclusionary conduct. 850 F.2d at 916-17. There, the Court of Appeals reversed an order dismissing the complaint and held that whether the publication of a letter to pharmacists alleged to have disparaged a competitor's drug stated a claim under Section 2 of the Sherman Act required an analysis of several factors – whether the representations were clearly false, clearly material, clearly likely to induce reasonable reliance, made to buyers without knowledge of the subject matter, continued for prolonged periods, and not readily susceptible of neutralization or other offset by rivals – and could not be adequately evaluated until the discovery process had moved forward. *Id.*

Other cases relied upon by Complaint Counsel do not hold that deception amounts to exclusionary conduct. *44 Liquormart* does not even address anticompetitive conduct. In *44 Liquormart*, Rhode Island's statute banning price advertising on liquor was found to constitute a blanket prohibition against truthful, nonmisleading speech about a lawful product and was held to abridge speech in violation of the First Amendment of the Constitution. 517 U.S. at 504, 516. In *Du Pont*, the Court of Appeals for the Second Circuit did not hold that deceitful conduct amounts to exclusionary conduct. Instead, in the language quoted by Complaint Counsel, the Second Circuit noted that “[i]n

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prosecuting violations of the spirit of the antitrust laws, the Commission has, with one or two exceptions, confined itself to attacking collusive, predatory, restrictive, or deceitful conduct that substantially lessens competition.” 729 F.2d at 137.

Thus, the cases relied upon by Complaint Counsel do not support a finding of exclusionary conduct from the facts established in this case. “Antitrust law is rife with . . . examples of what competitors find to be disreputable business practices that do not qualify as predatory behavior.” *Taylor Publ’g Co.*, 216 F.3d at 476. To prove monopolization, even if JEDEC’s rules were violated, Complaint Counsel would have to demonstrate that Rambus’s conduct was exclusionary within the meaning of the antitrust laws – i.e., that it lacked a legitimate business justification. Complaint Counsel have failed to do so. Thus, exclusionary conduct, an element of Counts I, II, and III, has not been proved. Having so held, the analysis turns next to the issue of intent.

D. No Intent**1. Intent Defined**

The Supreme Court, in *Aspen Skiing*, characterized intent as “merely relevant to the question whether the challenged conduct is fairly characterized as ‘exclusionary’ or ‘anticompetitive’” in a monopolization claim. 472 U.S. at 602. The *Microsoft* court held: “in considering whether the monopolist’s conduct on balance harms competition and is therefore condemned as exclusionary for purposes of § 2, our focus is upon the effect of that conduct, not upon the intent behind it. Evidence of the intent behind the conduct of a monopolist is relevant only to the extent it helps us understand the likely effect of the monopolist’s conduct.” *Microsoft*, 253 F.3d at 59 (citing *Chicago Bd. of Trade v. United States*, 246 U.S. 231, 238 (1918) (“knowledge of intent may help the court to interpret facts and to predict consequences”)); *Aspen Skiing*, 472 U.S. at 603. To the extent that intent is an element for

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proving the violations alleged, courts have described varying degrees of the level of intent required.

Count I, monopolization, has as one of its elements, “the *willful* acquisition . . . of [monopoly] power, as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.” *Grinnell*, 384 U.S. at 570-71 (emphasis added). “The willfulness element certainly requires proof of intent.” *United States Football League*, 842 F.2d at 1359 (citing *Aspen*, 472 U.S. at 602 n.28). “Under § 2, intent to obtain a monopoly is unlawful only where an entity seeks to maintain or achieve monopoly power by anti-competitive means.” *Endsley v. City of Chicago*, 230 F.3d 276, 283 (7th Cir. 2000) (“By intent we do not mean intent to obtain a monopoly or to capture an ongoing increase in market share. This of course is the aim of every business endeavor.”).

Count II, attempt to monopolize, requires proof of a “specific intent” to accomplish the forbidden objectives; that is – “an intent which goes beyond the mere intent to do the act.” *Aspen Skiing*, 472 U.S. at 602 (quoting *United States v. Aluminum Co. of America*, 148 F.2d 416, 432 (2d Cir. 1945)). Specific intent entails the intent to destroy competition, control prices, or build monopoly. *Times-Picayune Publ’g Co. v. United States*, 345 U.S. 594, 626 (1953); *McGlinchy v. Shell Chem. Co.*, 845 F.2d 802, 811 (9th Cir. 1988).

Count III, unfair methods of competition, also includes an inquiry into intent. *Du Pont*, 729 F.2d at 139. In the consent decree in *Dell*, the Commission expressly stated that its “order should not be read to create a general rule that inadvertence in the standard setting process provides a basis for enforcement action.” *Dell*, 121 F.T.C. at 626. In other words, intent to mislead was an implicit element of the Commission’s cause of action.

The intent necessary to support Counts I, II, or III – an intent to gain monopoly through anticompetitive conduct – must be

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distinguished from an intent to achieve market position through lawful competition:

The “intent” to achieve or maintain a monopoly is no more unlawful than the possession of a monopoly. Indeed, the goal of any profit-maximizing firm is to obtain a monopoly by capturing an ever increasing share of the market. Virtually all business behavior is designed to enable firms to raise their prices above the level that would exist in a perfectly competitive market. Economic rent – the profit earned in excess of the return a perfectly competitive market would yield – provides the incentive for firms to engage in and assume the risk of business activity. Monopolies achieved through superior skill are no less intentional than those achieved by anticompetitive means so the intent relevant to a § 2 Sherman Act claim is only the intent to maintain or achieve monopoly power by anti-competitive means.

Illinois, ex rel. Burris v. Panhandle E. Pipe Line Co., 935 F.2d 1469, 1481 (7th Cir. 1991).

2. Complaint Counsel Have Not Demonstrated That Respondent Intended to Mislead or Deceive JEDEC

Here, the anticompetitive conduct alleged by Complaint Counsel is that Respondent intentionally sought to mislead JEDEC through bad faith, deceptive conduct. Complaint Counsel must therefore prove that Rambus intended through its actions or omissions to mislead or deceive JEDEC by knowingly violating JEDEC rules or clear policies. *Cf. Pence v. United States*, 316 U.S. 332, 337 (1942) (for federal common law fraud claim, plaintiff must show that representation was made with knowledge of its falsity and with intent to deceive); *MCI Communications Corp. v. American Tel. & Tel. Co.*, 708 F.2d 1081, 1129 (7th Cir.

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1983) (holding that a representation about products must be “knowingly false or misleading before it can amount to an exclusionary practice”); *ILC Peripherals Leasing Corp. v. International Business Machines Corp.*, 458 F. Supp. 423, 442 (N.D. Cal. 1978), *aff’d per curiam sub nom. Memorex Corp. v. IBM Corp.*, 636 F.2d 1188 (9th Cir. 1980) (granting directed verdict on monopolization and attempted monopolization claims based on allegedly misleading statements where there was “nothing knowingly false” about the representations).

The record evidence in this case does not prove that Respondent intentionally misled JEDEC or intentionally violated its rules. There is no direct evidence that Respondent misappropriated any information from JEDEC that it was not otherwise entitled to receive. Rambus, like other members, began attending JEDEC meetings, in part, to learn what the competition was working on. F. 914. Gordon Kelley, IBM JEDEC representative and JC 42.3 Chairman, along with Siemens JEDEC representative Willi Meyer, monitored JEDEC activities and reported to a joint DRAM development team that they had created expressly for that same purpose. F. 915.

Gordon Kelley testified that he did not feel “that the *use of JEDEC confidential information was an abuse as long as the people using the information were members.*” F. 916 (emphasis supplied). It is also clear that membership in JEDEC entitled companies, *inter alia*, to receive minutes from JEDEC meetings, which record the key decisions that are made during the standard development process, including motions and votes. F. 255-56. The minutes were kept as a chronological statement of the events and occurrences at the meetings, including presentations on technological proposals. F. 256. The minutes of JC 42.3 meetings were also publicly available. F. 278. Thus, Rambus did not intentionally or secretly acquire any information from JEDEC that other member companies did not also have readily available.

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Contrary to Complaint Counsel's assertions, the record shows numerous occasions when Rambus intentionally *disclosed* its proprietary RDRAM technology to DRAM manufacturers and systems companies. *E.g.*, F. 63, 102, 161. Apart from the early press events in 1992 and the numerous articles, marketing brochures and technical descriptions published on the subject, Rambus described its inventions through not only the '898 application, but also the PCT application, which was publicly available as of October 31, 1991. F. 97-219. The PCT application is identical in all material respects to the '898 application. F. 183-85. These descriptions continued with release of the '703 patent on September 7, 1993. F. 179-82. An analysis of any or all of these descriptions and the claims contained therein, should have raised concerns within the industry that Rambus might be able to obtain patents over the four technologies in issue.

Further evidence of Rambus's lack of intent to mislead or deceive JEDEC members is found in its meetings in October 1995 with several DRAM manufacturers in which Rambus expressly warned that it had or might obtain intellectual property rights that apply to SyncLink and new SDRAMs. F. 454-56. During this time, Rambus informed Intel that it did not see how future memory chips could meet performance goals without using some or all of Rambus's inventions. F. 863.

The record on this issue is conclusive. There was no duty under JEDEC rules that required Respondent to disclose its intellectual property. There is no evidence that Respondent acquired or intentionally misappropriated confidential JEDEC information that it was not otherwise entitled to have. There is no evidence that it ever made a knowingly false statement to JEDEC or member companies regarding its patent position. Given the widespread knowledge of Rambus's intellectual property in the DRAM industry, and Rambus's ongoing efforts to promote its technologies, including warning companies of possible infringement, there are no actions or omissions on behalf of Rambus which constitute an intent to mislead or deceive by

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knowingly violating a JEDEC disclosure rule. Complaint Counsel's argument on this issue thus fails for lack of proof.

3. No Inference of Intent

Complaint Counsel alternatively argue that the requisite intent can, nevertheless, "be inferred from anticompetitive conduct." (CCPHB at 90 (citing *M&M Medical Supplies & Service, Inc. v. Pleasant Valley Hosp., Inc.*, 981 F.2d 160, 166 (4th Cir. 1993))). But that is true only if the conduct is clearly exclusionary. *Drinkwine v. Federated Publications, Inc.*, 780 F.2d 735, 740 (9th Cir. 1985) (where conduct was not "clearly threatening to competition or clearly exclusionary," specific intent element was missing). See *Tops Mkts., Inc. v. Quality Mkts., Inc.*, 142 F.3d 90, 101 (2d Cir. 1998) (a fact finder could infer intent from conduct that "was not motivated by a valid business justification"); *Thurman Industries, Inc. v. Pay 'N Pak Stores, Inc.*, 875 F.2d 1369, 1378 (9th Cir. 1989) (specific intent may be inferred by anticompetitive conduct only if the conduct is predatory or clearly in restraint of competition such as a *per se* violation under Section 1). Complaint Counsel have not shown that Respondent's conduct rises to such level. Under these facts, intent, having not been demonstrated, will not be inferred.

4. Other Factors Demonstrating That The Intent Element Is Not Met

A finding that Respondent had legitimate business justifications for not disclosing its patent claims, in addition to assessing whether conduct is exclusionary, can also preclude a finding of intent. *Technical Resource Services*, 134 F.3d at 1466-67 ("A fair and reasonable reading of the jury's verdict is that the jury chose to credit some or all of [defendant's] business justifications, and consequently concluded that [defendant] did not willfully maintain its monopoly and did not have the specific intent to achieve monopoly."); *Byars v. Bluff City News Co., Inc.*, 609 F.2d 843, 862 n.53 (6th Cir. 1980) ("valid business purpose

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can offset a finding of monopolist intent”). Moreover, actions “predominately motivated by legitimate business aims . . . cannot bear out the specific intent essential to sustain an attempt to monopolize under § 2.” *Times-Picayune*, 345 U.S. at 626. As set forth in Section III.C.3, *supra*, Respondent has demonstrated that its actions were not intentionally misleading or deceptive, but were, in fact, predominately motivated by legitimate business aims.

In addition, a finding that Respondent’s acquisition of monopoly power in the relevant markets is attributable to its development of superior products defeats a finding of willful monopolization under the *Grinnell* standard. As set forth in Findings 1128-1402 and summarized below in Section III.F.2., JEDEC considered alternatives to the Rambus technologies, but rejected these alternatives as inferior. In addition, as described in Findings 1056-63 and summarized below in Section III.F.3., Rambus’s technologies were utilized by the industry because of Intel’s decision to incorporate RDRAM in its microprocessors. Because Respondent has demonstrated that its acquisition of monopoly power is a consequence of the market demand for Respondent’s superior products, the intent element has not been satisfied. Having so held, the analysis turns next to the issue of causation.

E. No Causation

1. Causation Defined

“To establish a monopolization claim, the plaintiff must demonstrate that the defendant in fact acquired monopoly power *as a result* of unlawful conduct.” *Association for Intercollegiate Athletics for Women v. N.C.A.A.*, 735 F.2d 577, 584 and 586 (D.C. Cir. 1984) (emphasis added); *Trans Sport*, 964 F.2d at 188 (To sustain a § 2 claim, “requires proof that the defendant willfully acquired or maintained its power, thereby *causing* unreasonable ‘exclusionary,’ or ‘anticompetitive’ effects.”) (emphasis added)

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(citations omitted). *See also Taylor*, 216 F.3d at 484 (§ 2 claim failed because plaintiff failed to show that its injuries were caused by defendant's conduct); *Concord Boat*, 207 F.3d at 1063 (§ 2 claim failed because plaintiff failed to establish antitrust injury or causation). In an attempted monopolization case, "a violation will only be found where there is a causal link between the anticompetitive behavior and the dangerous probability of success." *Ashkanazy v. I. Rokeach & Sons, Inc.*, 757 F. Supp. 1527, 1540 (N.D. Ill. 1991).

Causation is also an element of a cause of action for unfair methods of competition in violation of Section 5 of the FTC Act. *Du Pont*, 729 F.2d at 141 (Commission's order vacated where the record did not "contain substantial evidence . . . showing a causal connection between the challenged practices and market prices"); *In re Boise Cascade Corp.*, 113 F.T.C. 956, 993 (1990) (requiring "causal connection" between price discrimination and alleged resulting injury). *See also In re Ethyl Corp.*, 101 F.T.C. 425, 598 (1983) (Section 5 prohibits only conduct that leads to an undesired result (e.g., sustained supracompetitive prices) and violates the basic legislative goals of the Sherman Act.).

Antitrust cases based on subversion of a standard setting process also require the causal link to be proved. In *Indian Head*, the Court of Appeals found that defendant's behavior caused antitrust injury. 817 F.2d at 945. In *Clamp-All Corp.*, plaintiff's antitrust claim failed where there was no "concrete evidence that the submission of [defendant's] proposal caused (or even influenced) [the standard setting organization's] decision not to adopt any standard." *Clamp-All Corp. v. Cast Iron Soil Pipe Inst.*, 851 F.2d 478, 489 (1st Cir. 1988). In *Townshend*, the monopolization charge failed where plaintiff had "not asserted that the [standard setting organization] could have adopted a V.90 standard which did not encompass [defendant's] technology." *Townshend*, 2000 U.S. Dist. LEXIS 5070 at *33. Thus, the courts require causation – the showing of a causal link between the standard setting conduct and the adoption of a standard that

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infringed the wrongdoer's patent. The court in *Townshend* distinguished the facts before it from those leading to the consent decree in *Dell*, stating that in *Dell*, the standards setting body was choosing among options, and there was a possibility that it could have adopted a standard which did not incorporate Dell's patent. *Id.* In the statement accompanying the consent decree, the Commission demonstrated the causal link. "[H]ad [the standard setting organization] known of the Dell patent, it could have chosen an equally effective, non-proprietary standard." *Dell*, 121 F.T.C. at 624 n.2. In contrast to the facts described in *Dell*, as discussed *infra* Section III.F.2, the facts here do not establish that JEDEC could or would have chosen an equally effective, non-proprietary standard.

2. No Causal Link Between JEDEC Standardization and Respondent's Acquisition of Monopoly Power**a. Rambus Did Not Acquire Monopoly Power by Virtue of JEDEC's Standard Setting**

Although Complaint Counsel argue that Respondent acquired its monopoly power because its technologies were incorporated in the JEDEC standards, the evidence demonstrates that DRAM standards succeed, even if not selected by JEDEC, and fail, even if chosen by JEDEC. F. 1039, 1041. The network effects in the DRAM industry are weak, thus different DRAM standards can coexist in the market. F. 1037-38. Standardization by JEDEC is not necessary for marketplace success. F. 1039. For example, Samsung brought technology to JEDEC for standardization, but JEDEC declined to adopt it. Samsung produced the product anyway and it became a high volume DRAM product. F. 1039. Similarly, reduced latency DRAM ("RLDRAM") was developed and produced by Infineon and Micron with little or no involvement by JEDEC. F. 1040. Standardization by JEDEC is also sometimes insufficient to ensure market success. For example, JEDEC standardized Burst EDO, yet it failed in the marketplace. F. 1041.

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The publication of JEDEC's SDRAM standard was insufficient to ensure market success or even interoperability. F. 1043. Prompted by these incompatibilities, Intel – not JEDEC – developed the “PC SDRAM” standard in 1996. F. 1044. The Intel PC SDRAM specification set forth what would become the industry specification for PC100 SDRAM. F. 1045. The PC133 SDRAM standard was developed by DRAM manufacturers and Personal Computer (“PC”) Original Equipment Manufacturers (“OEMs”) and was later incorporated into the Intel PC SDRAM standard. F. 1047. Intel's adding of the PC SDRAM standard specifications demonstrates that there are powerful forces in the DRAM industry that affect DRAM standards. F. 1048. Formal standard setting is therefore not the only way in which an iteration of DRAM can become prominent.

Rambus did not obtain additional market power due to any alleged failure to disclose its intellectual property interests before standardization by JEDEC. Standardization of the Rambus technologies by JEDEC did not reduce the substitution possibilities of alternatives, and Rambus's market power was unchanged by formal standard setting by JEDEC. *See* F. 1051. In addition, Rambus did not obtain or retain any additional market power due to any alleged failure to disclose its intellectual property interests after standardization by JEDEC (i.e., *ex post*) because, even after standardization, switching costs would not have prevented a shift to an available technology that was as good or better than Rambus's technology. F. 1645-65. Thus, Respondent's acquisition of monopoly power is not attributable to the inclusion of its technology in JEDEC standards.

b. Rambus Acquired Monopoly Power as a Result of its Superior Technology and Intel's Choice of its Technology

Intel's choice of Rambus's proprietary DRAM (“RDRAM”) conferred monopoly power. F. 1056-63. Intel played a significant

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role in selecting among future memory architectures. Intel built both microprocessors and chipsets that connected the microprocessors to the system main memory. Intel controlled eighty percent of the market for microprocessors used in personal computers. F. 1060. Intel saw a growing performance gap in the mid-1990's between central processing unit ("CPU") performance and DRAM performance. F. 1056. After examining the alternatives for a year, Intel chose RDRAM to be its next generation DRAM technology. F. 1058. Intel chose RDRAM because of the need for higher bandwidth for use with faster CPUs and the desire to satisfy memory needs driven by more I/O demands and new applications. F. 1060.

Intel's choice of RDRAM was significant. Representatives of Advanced Micro Devices ("AMD"), Intel's competitor in the microprocessor market, explained that, in the late 1990's, AMD believed RDRAM would become the next volume memory product and a *de facto* standard because it had been chosen by Intel. "Given that . . . Intel . . . owns 80% of the market . . . our customers were saying . . . Rambus, it's a revolutionary change . . . but, you know, that's the way industry is going, that's the way we're going to go, and Rambus is it." F. 1060. "[Intel] drove the volume, and if the volume DRAM was Rambus that would become the commodity part if the indications were most of the DRAMS in the world were going to be Rambus DRAM's, we better be compatible with them." F. 1061.

Intel's selection of RDRAM was also significant to the PC OEMs. F. 1062. A representative of Compaq explained Compaq's sentiment in 1998 that "Rambus is the clear next generation memory" as based on the fact that Intel had told Compaq that Intel was going to produce chip sets for RDRAM. F. 1063. This is significant because ninety percent of Compaq's PC applications used Intel chipsets. F. 1063. Thus, it was Intel's selection of Rambus's superior technologies that created market power. This conclusion is strongly supported by evidence of the extraordinary reaction and resulting conduct of certain DRAM manufacturers to

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Intel's announcement in 1996 that it would exclusively support RDRAM as its next generation of main memory. See F. 437-586.

For these reasons, and, as discussed in a following section, because Respondent's technologies were superior to any proposed alternative, Complaint Counsel have not demonstrated that Respondent acquired monopoly power as a result of unlawful conduct. The analysis continues with an examination of the issue of reliance.

3. No Reasonable Reliance by JEDEC

Antitrust cases based on misrepresentations require evidence of reliance. In a monopolization case based on a patent allegedly procured by fraud on the PTO, the plaintiff must make a "clear showing of reliance, i.e., that the patent would not have issued but for the misrepresentation or omission" that "cause[d] the PTO to grant an invalid patent." *Nobelpharma AB v. Implant Innovations, Inc.*, 141 F.3d at 1070-71. To prove that false and misleading advertising or defamation constitutes exclusionary conduct requires proof that consumers are clearly likely to reasonably rely on the misrepresentations. *American Professional Testing Serv. v. Harcourt Brace Jovanovich Legal & Professional Publ'g*, 108 F.3d 1147, 1152 (9th Cir. 1997); *National Ass'n of Pharm. Mfrs. v. Ayerst Labs.*, 850 F.2d 904, 916 (2d Cir. 1988).

To the extent that Complaint Counsel's Section 5 cause of action is based upon a breach of a duty to disclose, if any duty existed and if Respondent had breached any such duty, Complaint Counsel would still have to demonstrate that JEDEC members relied upon Respondent's omissions or misrepresentations and that such reliance was reasonable. A plaintiff making similar allegations in support of a fraud claim would have to prove that JEDEC and its members acted in reliance on Rambus's alleged failure to disclose. See *Alicke v. MCI Communications Corp.*, 111 F.3d 909, 912 (D.C. Cir. 1997) (federal common law fraud and unfair trade practice); *Bank of Montreal v. Signet Bank*, 193 F.3d

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818, 827 (4th Cir. 1999) (under Virginia law, fraud by omission requires a showing that the accused knew “the other party [was] acting upon the assumption that the [concealed] fact does not exist”) (internal quotation marks omitted).

In addition, Complaint Counsel bear the burden of proving that such reliance is reasonable. “The ‘justifiable reliance’ requirement ensures that a causal connection exists between the misrepresentation and the plaintiff’s injury.” *Grubb v. Federal Deposit Ins. Corp.*, 868 F.2d 1151, 1162 (10th Cir. 1989). Where a party had information available that put him on notice that the representations could not be trusted, reliance on those representations is not reasonable. *See, e.g., Hershey v. Donaldson, Lufkin & Jenrette Sec. Corp.*, 317 F.3d 16, 25 (1st Cir. 2003). Moreover, where a plaintiff has made an investigation, even a partial investigation, reliance on the misrepresentation is not reasonable. *See, e.g., Bank of Montreal*, 193 F.3d at 827.

The record evidence shows that members of JEDEC did not rely on any omission by Rambus and that, if they had, such reliance would not have been reasonable. As set forth in Findings of Fact F. 58-219 and 786-901, and summarized below, JEDEC and its members were well aware that Rambus was seeking broad patent protection for its inventions and knew that Rambus might obtain patent claims covering features being considered for standardization.

As noted in Section III.D.2., the DRAM industry was well aware of Rambus’s inventions. The DRAM industry was also aware of Rambus’s business model and witnesses testified that they understood that Rambus would seek broad patent protection of its inventions. F. 164; *see* F. 808, 877-901. The technologies had been first disclosed in 1989-90 when Drs. Farmwald and Horowitz made visits to many DRAM manufacturers (including Texas Instruments, IBM, Toshiba, Fujitsu, Mitsubishi, NEC, Matsushita, Micron and Siemens) and systems companies (including Sun Microsystems, Motorola, Apple, SGI and Tandem)

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to try to convince them about the benefits of their approach and to get feedback from them. F. 102-04. In the 1990-91 period, Dr. Horowitz prepared detailed technical descriptions of the Rambus technology for use with customers and potential customers to convince them of the merits of Rambus technology and to help them build it. F. 110-21. A still later Rambus technical description was released on April 1, 1991 which was a more complete version with many more technical details. F. 130-34. Rambus subsequently entered into non-disclosure agreements to protect its proprietary technology. F. 63, 159-66.

On March 9, 1992, Rambus held simultaneous events in the Silicon Valley and in Tokyo to publicly announce its technology and business plan. F. 135. Rambus produced and distributed its first marketing brochure about Rambus technology which disclosed the four features of Rambus technology at issue here. F. 149-53. In connection with the public announcement of Rambus's technology and business plan in March 1992, Rambus provided information to the press regarding Rambus's inventions, and numerous articles about Rambus appeared. F. 144. Many of these articles contained a significant amount of technical detail. For example, an article entitled "Rambus Unveils Revolutionary Memory Interface" in the March 4, 1992 Microprocessor Report describes Rambus's technology in some depth and describes three of the four features of Rambus technology at issue here, as well as aspects of the fourth. F. 145-48. In addition, The Journal of Solid State Circuits, the most widely read journal for circuit designers, published a paper about the Toshiba 4.5 megabit Rambus DRAM. F. 158.

Indeed, the evidence shows that members of JEDEC were also aware of the technologies invented by Rambus. As noted in Section III.B.4, G. Kelley, IBM representative and JC 42.3 subcommittee chair, prepared a "Rambus Assessment" from which it is clear that he was aware of Rambus technology and the possibility that Rambus might assert some intellectual property claims over SDRAM. F. 791-95. On this point, Siemens JEDEC

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representative Willi Meyer observed: “IBM is still keeping its eye on [Rambus] . . . IBM is seriously considering to preemptively obtain a license as soon as possible.” F. 797.

As a result of the May 1992 episode, when Crisp declined to comment on whether Rambus had patents or potential patents (F. 819), in a June 1992 follow-up meeting presentation, Gordon Kelley specifically noted “Patent Problems? (Motorola/Rambus).” F. 831. At this same meeting, Sussman of NEC stated that he had reviewed Rambus’s PCT application and noted that nothing in the application “related to the work ongoing at JEDEC.” F. 810, 828. There was additional discussion of the PCT application at the September 1993 meeting, including comments that the claims were barred by prior art; copies of the application were offered to the members of JEDEC. F. 836-41.

During this period, DRAM manufacturers and members of JEDEC were actively following and continuing to investigate Rambus’s patent portfolio. Siemens’s representative Meyer testified he obtained the serial number for Rambus’s WIPO application and “sent it back to the [Siemens] patent department” for analysis. F. 840. Thereafter, in March 1994, Meyer, in a clearly foreboding comment, noted: “[a]ll computers will (have to be) built like this someday, but hopefully without royalties to Rambus.” F. 841.

In 1995, Rambus informed LG Semiconductor, Samsung, NEC, OKI, Intel and Micron Technologies that SDRAMs might infringe on Rambus’s patents. F. 859-63. Micron’s concern about Rambus’s intellectual property was evident in 1995 and 1996, when executive Jeff Mailloux sent a memorandum entitled, “Rambus Inc. Patents” to several Micron employees, including JEDEC representative Terry Walther, attaching abstracts of Rambus patents for an analysis of “both the quality (is there prior art?) and the breadth (apply to more than just RAMBUS?”). F. 864. Mailloux subsequently advised Micron CEO Steve Appleton in December 1996, that “from our research, we think many

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Rambus patents read on prior art or other patents.” F. 878. At the same time, Mitsubishi’s Japanese patent department was reviewing Rambus intellectual property for any prior art. F. 865.

After Rambus withdrew from JEDEC in June 1996, JEDEC members continued to engage in continuing discussions about Rambus intellectual property. F. 877-901. By 1997, numerous emails by Micron employees suggest ongoing concerns with Rambus patents. F. 884-96. By March 1997, Terry Lee of Micron agreed that he thought that Rambus might have intellectual property claims relating not just to RDRAMs but to the work of the JEDEC JC 42.3 committee as well. F. 808.

Similarly, the SyncLink Consortium was well aware that their work could or would violate the claims in Rambus’s pending patent applications if those applications issued as patents. For example, a September 1995 trip report by Motorola JEDEC representative Mark Farley stated that “SyncLink told Motorola confidentially that there were very likely patents violated by their proposal.” F. 856. The January 1996 SyncLink Consortium meeting minutes state that “Rambus says their patents may cover our SyncLink approach even though our method came out of early RamLink work.” F. 866. Dr. Gustavson determined that Rambus’s pending European patent applications covered everything that the Ramlink and SyncLink groups were doing, but concluded that the applications would never issue. F. 867. Crisp’s May 1997 email reports that a VIA Technologies executive had said that “he thinks that SyncLink is going to be stepping all over Rambus patents.” F. 898. The January 1997 SyncLink Consortium meeting minutes show a desire to “collect information relevant to prior art and Rambus filings,” because of a concern that “Rambus will sue individual companies” for patent infringement.” F. 899. Many of the SyncLink Consortium and IEEE members were also members of JEDEC. *See* F. 438, 464; *see also* Respondent’s Submission Regarding Company Attendance at SyncLink and JEDEC 42.3 Meetings, filed October 28, 2003.

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This evidence, along with the Findings of Fact regarding the response of certain individuals in the DRAM industry to Intel's decision to adopt RDRAM for its desktop memory architecture, demonstrates that members of JEDEC investigated Rambus's intellectual property, dismissed it as a collection of prior art despite Rambus's warnings that it would enforce its patents, and made the strategic decision to introduce the claimed Rambus technology into the JEDEC standards. On these facts, there can remain little doubt that JEDEC, if not the majority of the DRAM industry, was on notice and fully aware of Rambus's patent portfolio, and therefore could not have reasonably relied on any alleged misrepresentation or omission by Respondent in failing to disclose such technology to JEDEC.

4. No Inference of Causation

Complaint Counsel acknowledge that "there must be a causal link between the conduct at issue and the acquisition of monopoly power." CCPHB at 107 (citing T. Muris, *The FTC And The Law Of Monopolization*, 67 ANTITRUST L.J. 693, 694 (2000)). However, Complaint Counsel assert that they do not have to prove a causal link; rather, they urge, causation can be inferred from the allegedly anticompetitive conduct itself. CCPHB at 107-08. For this proposition, Complaint Counsel rely on the statement by the Court of Appeals in the *Microsoft* case that "courts will infer 'causation' from conduct that "reasonably appear[s] capable of making a significant contribution to . . . monopoly power." CCPHB at 107 (quoting *Microsoft Corp.*, 253 F.3d at 79). However, *Microsoft* does not support Complaint Counsel's proposition on the facts presented in the instant case.

In *Microsoft*, the government proved the first basic element of causation: that Microsoft had engaged in a widespread pattern of anticompetitive and exclusionary conduct that had the purpose and effect of denying rival Netscape access to the most effective means of distribution which made it impossible for Netscape to compete effectively against Microsoft. *Microsoft*, 253 F.3d at 58,

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64-67, 78; *United States v. Microsoft Corp.*, 87 F. Supp. 2d 30, 39 (D.D.C. 2000), *aff'd in relevant part*, 253 F.3d 34 (D.C. Cir. 2001). The court found, that, but for that conduct, Netscape might have flourished as an internet browser in competition with Microsoft's Internet Explorer browser and that a successful Netscape browser might have served as a middleware platform that would have stimulated entry into the desktop operating system market and thus eroded Microsoft's monopoly there. *Microsoft*, 253 F.3d at 79; 87 F. Supp. 2d at 38-39. The court also found that Microsoft's success in crippling Netscape by its exclusionary conduct made it impossible for the court to determine directly whether these other subsequent events would have occurred. *Microsoft*, 253 F.3d at 79. Under those circumstances, the court said that, for purposes of determining liability, it would infer that Microsoft's exclusionary conduct had the required effect on competition. *Id.* at 78-79.

The facts of this case are distinguishable on two grounds. First, while, in *Microsoft*, the government *proved* that Microsoft's conduct had the alleged effect on Netscape, Complaint Counsel, in this case, want to *infer* that first step of causation (i.e., that JEDEC would have adopted a different standard). *See* CCPHB at 107. Second, the subsequent events alleged by the government in the *Microsoft* case – the development of Netscape into a middleware platform and the resulting new entry into the operating system market – had no historical precedents, and Microsoft's conduct made it impossible for the court to know whether that unprecedented chain of events would have ensued if Microsoft had not excluded Netscape from the effective means of distribution. 253 F.3d at 78-79.

Here, by contrast, there is substantial experience with the events alleged by Complaint Counsel. The evidence clearly demonstrates that Complaint Counsel have failed to prove the required "causal link" between the challenged conduct and Respondent's market power. Short of such proof, nothing in *Microsoft* allows causation to be inferred by the Court. Thus,

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causation, an element of Counts I, II, and III, has not been proved. Having so held, the analysis proceeds to the issue of anticompetitive effects.

F. No Anticompetitive Effects**1. Anticompetitive Effects Defined**

“To sustain a § 2 claim, the plaintiff must prove not only that the defendant had the power to monopolize, but also that it willfully acquired or maintained its power, thereby causing unreasonable ‘exclusionary,’ or ‘anticompetitive’ effects.” *Trans Sport*, 964 F.2d at 188 (internal citations omitted). “[T]o be condemned as exclusionary, a monopolist’s act must have an ‘anticompetitive effect.’ That is, it must harm the competitive process and thereby harm consumers.” *Microsoft*, 253 F.3d 58. “[T]he plaintiff, on whom the burden of proof of course rests must demonstrate that the monopolist’s conduct indeed has the requisite anticompetitive effect.” *Id.* See also *Muris*, 67 ANTITRUST L.J. at 695 (“exclusionary conduct can be condemned as monopolistic only after a full analysis, including consideration of whether the practice in fact has an anticompetitive impact”).

In an attempted monopolization case, while actual effects are not necessary, courts must find threatened anticompetitive effects. *Taylor Publ’g Co.*, 216 F.3d at 474 (“in an attempt case we focus on the harm that potentially might have been caused by the conduct in light of the state of the market”).

Effects must also be proved to support a cause of action for unfair methods of competition in violation of Section 5 of the FTC Act. See *Atlantic Refining*, 381 U.S. at 370 (Supreme Court upheld Commission’s cease and desist order, noting “[i]t is beyond question that *the effect* on commerce was not insubstantial.”); *Boise Cascade Corp. v. FTC*, 637 F.2d 573, 582 (9th Cir. 1980) (absence of evidence reflecting an anticompetitive effect rendered Commission order unenforceable). See also *In re*

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Ethyl, 101 F.T.C. at 598 (application of Section 5 requires careful review of the facts to insure there is persuasive evidence of effects); *In re General Motors Corp.*, 103 F.T.C. 641, 701 (1984) (declining to find violation of Section 5 where there had been no demonstration of an anticompetitive impact).

Complaint Counsel assert that the anticompetitive effects in this case are substantial costs on DRAM makers, including but not limited to the costs of the anticompetitive and discriminatory royalties that Respondent has charged. CCPHB at 14. Complaint Counsel further assert that Respondent's conduct threatens to lead to increases in prices in SDRAM and DDR SDRAM devices, disrupt JEDEC's ability to develop timely DRAM industry standards, impose additional costs on DRAM makers, who may be forced to expend resources in developing and implementing alternative standards that avoid Respondent's patents, and discourage industry participation in standards organizations, while at the same time discouraging reliance upon standards developed by such organizations. CCPHB at 14.

However, as described above, Complaint Counsel have not proved that Respondent acquired its market power through anticompetitive conduct, as distinguished from Respondent's development of superior technologies. Further, as set forth below, Complaint Counsel have not demonstrated that JEDEC would have chosen different standards had Respondent made the disclosures Complaint Counsel allege should have been made. In addition, Complaint Counsel did not prove that Respondent's conduct resulted in higher prices to consumers. Thus, Complaint Counsel have not demonstrated that Respondent's conduct resulted in any anticompetitive effects.

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2. Complaint Counsel Have Not Demonstrated That There Were Viable Alternatives to Rambus Technologies

Complaint Counsel have not proved that if Respondent had made additional disclosures, JEDEC could or would have adopted any viable alternatives to the Rambus technologies. F. 1128-1402. Complaint Counsel state that they do not bear the burden of showing that the proposed alternative technologies were non-infringing. CCPHRB at 56. Complaint Counsel suggest that, instead, the burden rests upon Respondent, as the patent holder, to show the absence of non-infringing alternatives. CCPHRB at 57, citing, among other authorities, *Nutrinova Nutrition Specialties and Food Ingredients GMBH v. International Trade Comm'n*, 224 F.3d 1356, 1359 (Fed. Cir. 2000) (“As a general proposition, the law places the burden of proving infringement on the patentee who alleges it.”). It is true that in patent infringement suits, the burden rests upon the patent holder to show that the party alleged to have infringed did infringe. *See, e.g., Carroll Touch, Inc. v. Electro Mechanical Systems, Inc.*, 15 F.3d 1573, 1578 (Fed. Cir. 1993). However, Complaint Counsel, as the proponent of the factual proposition that JEDEC could have chosen alternatives, has the burden of proof thereto. *See* 16 C.F.R. § 3.43(a). A recent decision by the Commission is instructive on this issue.

In *In re Schering-Plough*, perhaps the most important issue in the underlying patent litigation between Schering Plough and Upsher-Smith, which resulted in a settlement agreement found by the Commission to be anticompetitive, was whether the product made by Upsher, the generic manufacturer, infringed on Schering’s branded, patented product. *In re Schering Plough Corp.*, 2003 FTC LEXIS 187, *69-70 (2003). The Commission held: “We cannot assume that Schering had a right to exclude Upsher’s generic competition for the life of the patent any more than we can assume that Upsher had the right to enter earlier.” *Id.* In so holding, the Commission thus *refused to assume* that an alleged infringer’s product did not infringe. Yet this is precisely

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what Complaint Counsel seek here: an assumption by the Court that the alternatives to Rambus's technologies considered by JEDEC and proposed by Complaint Counsel's technical expert did not infringe. In this case, which is *not* a patent infringement suit, such an assumption, in lieu of demonstrable proof by the proponent, is unwarranted.

In addition, it is not sufficient for Complaint Counsel to simply assert that alternatives were available, acceptable, and noninfringing. "Mere speculation or conclusory assertions will not suffice"; rather, there must be "concrete factual findings" sufficient to support an inference that acceptable alternatives were available. *Grain Processing Corp. v. American Maize-Products Co.*, 185 F.3d 1341, 1353 (Fed. Cir. 1999). *See also Du Pont*, 729 F.2d at 141-42 (finding insufficient the testimony of complaint counsel's expert that the market would have operated differently absent these practices without estimating the extent of that difference). Whether Complaint Counsel established that viable alternatives were available with respect to the disputed Rambus technologies follows.

a. Programmable CAS Latency

Complaint Counsel, through the testimony of their technical expert, Professor Jacob, did not demonstrate that there were viable alternatives to programmable CAS latency in SDRAMs and DDR SDRAMs because the evidence presented shows that the use of fixed CAS latency parts would have required multiple fixed CAS latency parts, leading to higher costs and logistical difficulties for DRAM manufacturers and users. F. 1136-64. Programming CAS latency with fuses, as with the fixed CAS latency alternative, would have required multiple parts with different CAS latencies, leading to higher costs and logistical difficulties for DRAM manufacturers and users. F. 1165-77. Scaling CAS latency with clock frequency would have resulted in higher costs and, upon a formal infringement analysis, might be found to infringe Rambus's patents. F. 1178-86. Using dedicated pins on the

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DRAM to select CAS latency would be more expensive and less reliable. F. 1187-1200. Identifying CAS latency in the read command would still require storing latency information in a programmable register like the mode register in SDRAMs. F. 1201-06. Staying with asynchronous technology was not a viable alternative because asynchronous technology was not capable of achieving the performance necessary for high speed operation. F. 1207-14.

b. Programmable Burst Length

Complaint Counsel, through the testimony of Professor Jacob, did not demonstrate that there were viable alternatives to programmable burst length in SDRAMs and DDR SDRAMs because the evidence presented shows that the use of fixed burst length parts would have required multiple fixed burst length parts, leading to higher costs and logistical difficulties for DRAM manufacturers and users. Setting burst length with fuses would have required multiple parts with different burst lengths, leading to higher costs and logistical difficulties for DRAM manufacturers and users. F. 1216-30. Using dedicated pins on the DRAM to identify burst length would be significantly more expensive and, upon a formal infringement analysis, might be found to infringe Rambus's patents. F. 1239-45. Using dedicated pins to explicitly identify burst length in the read command, upon a formal infringement analysis, might also be found to violate Rambus patents. F. 1246-47. Using a burst terminate command would result in significantly lower performance. F. 1248-56. Using a CAS pulse to control data output would lead to cost, testing and performance problems. F. 1257-59.

c. Dual-edge Clocking

Complaint Counsel, through their expert's testimony, did not demonstrate that there were viable alternatives to dual-edge clocking in DDR SDRAMs because the evidence presented shows that interleaving on-chip banks suffer from performance and cost

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disadvantages and, upon a formal infringement analysis, might be found to infringe Rambus patents. F. 1281-91. Interleaving on-module ranks would be significantly more expensive, have performance problems, and provide less flexibility than dual-edge clocking and would not be available for all applications. F. 1292-1305. Increasing the number of pins on the DRAM would be significantly more expensive, in addition to having performance problems. F. 1306-16. Increasing the number of pins per module would be significantly more expensive and would be unavailable in certain applications. F. 1317-21. Doubling the clock frequency would be significantly more expensive, in addition to being difficult to implement and having performance problems. F. 1322-35. Using simultaneous bidirectional I/O drivers would be very expensive and difficult, if not impossible, to implement and would not provide the performance of dual-edge clocking. F. 1336-41. Toggle mode would be significantly more expensive and could not achieve the performance of DDR SDRAMs with dual-edge clocking. F. 1342-49.

d. On-Chip DLL

Complaint Counsel, through Professor Jacob's testimony, did not demonstrate that there were viable alternatives to on-chip delay locked loop ("DLL") in DDR SDRAMs because the evidence presented shows that putting a DLL on the memory controller would not be sufficient for high speed performance. F. 1358-60. Putting a DLL on the module would be significantly more expensive and difficult to implement. F. 1361-69. Using a vernier method would not be sufficient for high speed performance and, upon a formal infringement analysis, might be found to infringe patents. F. 1370-77. Using more DRAM pins and not clock frequency is the same as the alternative proposed of using more pins per DRAM rather than using dual-edge clocking and thus suffers from the same infirmities and the same performance and cost disadvantages. F. 1378-80. Relying on the DQS data strobe would not be sufficient for high speed performance. F. 1381-84. Read clocks would have required

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relying on a strobe and would have still required a DLL. F. 1385-87.

In drawing these conclusions, the Court notes Professor Jacob's lack of experience in DRAM circuit design. Aside from reviewing some DRAM data sheets, Professor Jacob had no particular DRAM-related experience in the mid-1990's. F. 1128. By contrast, Respondent's technical experts, Dr. Soderman and Michael Geilhufe, have a combined sixty years of experience in the DRAM and semiconductor industries involving the design of DRAMs, as well as various other types of integrated circuits. F. 1129-30. Their testimony effectively rebutted the conclusions put forth by Professor Jacob with respect to the issue of viable alternatives. F. 1128-34. Moreover, in considering Professor Jacob's testimony, the Court notes that his methodology failed, *inter alia*, to employ software simulation to model the performance of the alternatives that he proposed; failed to provide sufficient detail to enable an actual circuit design for the proposed alternatives; and failed to do any investigation to determine whether the proposed alternatives were covered by patents held by Rambus or others. F. 1128-34. Having so concluded, the Court next considers the economic evidence presented in this case.

3. Analysis of the Economic Evidence

a. The Methodology Used by Complaint Counsel's Economic Expert Is Flawed

At trial, Complaint Counsel's economic expert, Professor McAfee, testified that he believed that equal or superior alternatives were excluded by Rambus's alleged conduct. F. 1096. However, Professor McAfee's definition of "equal or superior" is flawed, as it does not stand up to the rigors of traditional economic analysis. F. 1096. To determine whether equal or superior alternatives were excluded, Professor McAfee evaluated whether alternatives were "commercially viable." F. 1096-98. According to Professor McAfee, an alternative was

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“commercially viable” if it constrained the price of Rambus’s technologies. F. 1098. But defined that way, the concept of “commercially viable” does not mean that the technology is “equal or superior,” as even weak substitutes can constrain the price of a technology. F. 1098. Further, when determining whether an alternative was price constraining, Professor McAfee did not consider the price level required before the alternatives would actually constrain the price. F. 1099. Thus, even if alternatives were “price constraining” with respect to Rambus’s technologies, that does not make them a viable alternative that would have been chosen by JEDEC. F. 1098, 1483. A technology that is price constraining is not the same as an economic substitute. F. 1483. An economic substitute must be equivalent in terms of cost-performance features. F. 1483. What is important to compare is the overall attractiveness of the alternatives on a quality/cost-adjusted basis. F. 1483-84. Although he claimed that his methodology was “parallel” to standard economic tests, Professor McAfee admitted that he was aware of no economic literature that describes the use of a “commercial viability” test to determine market substitutability of alternatives. F. 1097.

Rather than examining the actual cost differences between the Rambus technologies and the proposed alternatives, Professor McAfee opined that he had considered an amalgam of factors and determined that certain alternatives were “commercially viable” based on the information he analyzed. F. 1091, 1106. The information upon which Professor McAfee tied his notion of commercial viability included the subjective perceptions of JEDEC members at the time, regardless of whether those perceptions were ultimately correct. F. 1100. While this factor may speak to whether JEDEC would have selected a technology, it does not go to whether an alternative is equal or superior in objective terms. F. 1103. Further, while Professor McAfee testified that it was likely that at least one of the technologies he deemed to be a commercially viable alternative to Rambus’s technology was equally efficient or superior to Rambus’s

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technology, he could not identify any such technology as equal or superior. F. 1107.

In addition, several economic assumptions made by Professor McAfee, when measured against the Court's findings on the evidence, undermine the stated opinions that rely on those assumptions. For example, Professor McAfee admitted that the only "candidate purpose" he considered for Rambus's decision to withhold patent information from JEDEC was monopolization, i.e., McAfee did not consider other purposes, such as the protection of trade secrets, that might have led Rambus to take the risk that McAfee identified. F. 1071. In addition, Professor McAfee erroneously judged patented technologies to be "hobbling" because he believed, contrary to the evidence, that JEDEC rules put a "penalty" on technologies that were covered by intellectual property. F. 1101. He thus regarded patented technologies, such as Rambus's, as inferior based on the presence of intellectual property issues without regard to the level of royalties sought for the technology. F. 1101.

Similarly, Professor McAfee relied on his notion of "satisficing" to conclude, in effect, that the term "equal" included technologies that were inferior to Rambus's technologies. F. 1105. Professor McAfee defined satisficing as referring to the process by which an organization like JEDEC will choose an adequate solution to a problem it faces rather than expending the effort to find the perfect solution. F. 1105. However, the conclusion that JEDEC would have adopted Rambus's technologies in SDRAM and DDR once it received a RAND assurance from Rambus is not undermined by the possibility that JEDEC might have been satisficing. F. 1485. If JEDEC had avoided patented technologies in favor of alternative technologies without a lot of analysis, it would not have been satisficing; such conduct is merely biased behavior. F. 1485. If JEDEC were satisficing, it would be willing to go forward with patented technology upon the receipt of a RAND letter. F. 1485.

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Professor McAfee based his analysis that Rambus's conduct was exclusionary on several mistaken assumptions, including the assumption that Rambus's conduct constituted a violation of a JEDEC rule or process and that Rambus had made misrepresentations to JEDEC. F. 1110-18. McAfee further assumed that Rambus knowingly took a risk that it might lose the ability to enforce its patents by not disclosing patent interests, but conceded that Rambus would have understood that Rambus's enforcement of its patents, once they issued, would have triggered an inquiry into whether Rambus should have disclosed its patents. F. 1108-09. Professor McAfee admitted that exclusion of inferior products from the market is not exclusionary in an economic sense. F. 1088.

Professor McAfee further admitted that he had done no analysis to determine the economic efficiency of JEDEC's rules or whether they advanced the interests of antitrust law. F. 1120-21. Professor McAfee admitted that JEDEC's disclosure rules do little to mitigate risk of hold up because the disclosure obligation applies only to the knowledge of the representative at the meeting, rather than that of the member company. F. 1126. Professor McAfee further admitted that it is plausible with his assumptions that if Rambus never joined JEDEC, JEDEC would still have selected the four Rambus technologies for inclusion in its standards. *See* F. 1127.

b. In the “But/For” World, JEDEC Would Not Have Rejected the Rambus Technologies Even if Alternatives Did Exist and Rambus Had Made the Additional Disclosures

Professor Teece's testimony on this issue is highly persuasive. Professor Teece is a chaired professor in the School of Business at the University of California at Berkeley. F. 1404. He is also the Director of the Institute for Management, Innovation, and Organization at the University of California at Berkeley. F. 1404. Professor Teece's specialization within the field of industrial

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organization is in technology policy and particularly antitrust policy as it relates to high technology industries. F. 1408. He also has substantial expertise in the area of the economics of standard setting. F. 1409.

The “but/for” world may be analyzed by the use of a decision tree, which is a device commonly used in economics to understand the different possible scenarios and outcomes in a “but/for” world. F. 1411. In this case, the decision tree starts with the assumption that Rambus made the additional disclosures that Complaint Counsel allege Rambus should have made. F. 1412. Had Rambus made these additional disclosures, JEDEC would have had a choice; it could either proceed without seeking a RAND letter from Rambus, or it could ask Rambus to provide a RAND letter. F. 1412. If JEDEC had asked for a RAND letter, Rambus would have to decide whether to give a RAND letter. F. 1412. If Rambus agreed to give a RAND letter, JEDEC members would (as a theoretical matter) have sought to negotiate licenses from Rambus before the standard was adopted and before any relevant patents issued (*ex ante*) or it could have proceeded without such negotiations. F. 1412. If there were no *ex ante* negotiations, JEDEC could have adopted the standards incorporating Rambus’s technologies or it could have adopted different standards. F. 1412. Had JEDEC adopted the same standards as it actually adopted, the same outcome would have occurred in the but/for world as in the actual world. F. 1413.

An economic analysis shows that there are a number of considerations that suggest that JEDEC might not have sought a RAND assurance from Rambus even if Rambus had made the disclosures. First, JEDEC might have perceived that Rambus was trying to derail the standard setting process by gaming the system. F. 1414-1415. Second, JEDEC might not have asked for a RAND letter because members might have believed that Rambus would not obtain patents (because of invalidity based on prior art) that would cover products consistent with the JEDEC standard. F. 1416. Third, JEDEC might not have asked for a RAND letter

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from Rambus because, in the real world, JEDEC did not seek, and to this day has not sought, a RAND assurance from Rambus regarding SDRAM, DDR or DDR2, despite JEDEC's knowledge of and concerns about Rambus's patent coverage. F. 1417. Litigation between Rambus and various DRAM manufacturers would not explain JEDEC's failure to seek RAND assurances from Rambus. F. 1418. JEDEC had previously sought RAND assurances from Texas Instruments regarding the Quad-CAS technology even though Texas Instruments was in litigation with Micron at the time. F. 1418.

Had Rambus made the additional disclosures that Complaint Counsel contend it should have made and had JEDEC not sought a RAND letter, economic analysis shows that JEDEC would have adopted the same standards that it did in the real world – the standards incorporating Rambus's technologies. F. 1419. Complaint Counsel's expert, Professor McAfee conceded that in such a case, "it would lead to the same outcome as the actual world." F. 1419.

The economic evidence further shows that had JEDEC sought a RAND assurance, it still would have adopted Rambus's technologies. F. 1435-85. First, Professor Teece concluded that, with respect to the RAND requirement of making licenses available to all interested parties, the evidence shows that a patent holder would agree to such a provision, as it ensures that it would likely receive royalties that it otherwise would not receive if it selectively decided to whom it would license. F. 1437. The second provision of the RAND assurance, that the licensor agrees to license on reasonable terms, provides an economic incentive to the patent holder as patentees are assured that royalties are not unreasonable, thereby making them more likely to adopt the technology. F. 1438. The third requirement of the RAND assurance, that the license be demonstrably free of any unfair discrimination, is also attractive to the patent holder because it makes it more likely that licensees will adopt the patented technology. F. 1440. Thus, economic analysis leads to the

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conclusion that if JEDEC had asked Rambus to provide a RAND letter, Rambus would have provided such a commitment. F. 1442.

The economic analysis also shows that it is unlikely that there would have been any *ex ante* negotiations. F. 1452-63. Professor McAfee testified that once Rambus issued a RAND letter, JEDEC members would have an incentive to engage in *ex ante* negotiations, i.e., to negotiate with Rambus prior to the adoption of Rambus's technologies into the SDRAM and DDR standards. F. 1452. He further concluded that if any one firm engaged in *ex ante* negotiations with Rambus, that firm would "report" the royalty rates back to other JEDEC members. F. 1452. This conclusion, however, failed to take into account all relevant factors that go into such a decision, including the fact that any such licensing agreements would be done under confidentiality agreements. F. 1452.

Moreover, Complaint Counsel's expert's conclusion is undermined by the fact that there is no evidence of *ex ante* negotiations for naked licenses for patent applications outside of the DRAM industry. F. 1453. The rationale for the absence of negotiations before patents issue is that patent application "rights" have not matured into issued patents and the parties cannot know for what they are bargaining. F. 1454. There is great uncertainty in negotiating such rights because patent applications, during the course of prosecution, often undergo changes – claims get amended, get withdrawn or abandoned – and it is impossible to know what claims will ultimately issue. F. 1454. Because of this uncertainty, negotiations before patents issue are extraordinary complex and costly, and in the real world, firms do not engage in this type of negotiations with any frequency. F. 1455.

The economic evidence thus shows that JEDEC would have adopted Rambus's technologies with a RAND assurance. The record has also demonstrated that the alternatives to Rambus's technologies were inferior in cost performance terms, despite Rambus's royalties. F. 1464. Moreover, JEDEC has repeatedly

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demonstrated a willingness to adopt patented technologies, and it would likely do the so again with Rambus's technologies. F. 1466-82. For example, during the period when Rambus attended JEDEC, Desi Rhoden could not recall any incident of a JEDEC committee seeking an alternative technology after a JEDEC member disclosed a relevant patent or application and the member announced it would license on RAND terms. F. 1468. Similarly, Gordon Kelley, a long time chair of JC 42.3 testified that, while he could not recall any instances in which JEDEC pursued alternatives to what the committee thought was a best alternative after receiving a RAND commitment, he did recall some instances in which JEDEC dropped all consideration of alternatives after receiving a RAND assurance. F. 1467.

c. JEDEC's "Revealed Preference" For Rambus's Technologies

Finally, the theory of "revealed preference" shows that JEDEC preferred Rambus's technologies. F. 1465. The theory of revealed preference holds that one draws inferences about people's preferences by observing their choices. F. 1486-87. According to this theory, the choices of JEDEC and DRAM manufacturers to use the Rambus technologies when there were opportunities to use other technologies shows that the Rambus technologies were superior to any alternatives in cost performance terms. F. 1488.

In the real world, JEDEC revealed its preferences by selecting Rambus technologies over all others. For SDRAM, JEDEC selected two Rambus technologies – programmable CAS latency and programmable burst length – over all available alternatives. F. 1489. For DDR, JEDEC selected four Rambus technologies – programmable CAS latency, programmable burst length, dual-edge clocking, and on-chip PLL/DLL – over all available alternatives. F. 1491.

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For both the SDRAM and DDR standards, JEDEC considered and rejected several alternatives that Complaint Counsel now assert JEDEC could have adopted in lieu of the Rambus technologies. F. 1489-91. Even with respect to the DDR2 standard development by JEDEC in 2000 and 2001, such work was done with full knowledge of Rambus's patents and demands for royalties. F. 1494-97. Meeting minutes of the Future DRAM Task Group show that JEDEC considered entirely different architectures for the next generation DRAM, but ultimately adopted Rambus technologies. F. 1493, 1502-04, 1584. Thus, according to the theory of revealed preference, the choices of JEDEC and DRAM manufacturers to use the Rambus technologies where there were opportunities to use other technologies, demonstrates that the technologies were superior to any alternatives in cost/performance terms. F. 1486-1518. As stated by Gordon Kelly, JEDEC considered the available technologies and selected what was considered the best. F. 1489.

Thus, neither the technical nor the economic evidence supports Complaint Counsel's argument that there were viable alternatives to the four technologies of Rambus. The evidence further shows that even if Respondent had made additional disclosures, rational DRAM manufacturers and a rational JEDEC would have selected Rambus's technologies because the proposed alternatives were inferior. F. 1464. The evidence also shows that JEDEC might not have sought a RAND assurance from Rambus, but if it had, Rambus would have given it and it is unlikely that there would have been any *ex ante* negotiations. F. 1435-63. Having so concluded, Respondent's conduct before JEDEC with respect to nondisclosure of its patents and patent applications did not cause JEDEC to adopt these technologies into its SDRAM and DDR standards.

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4. Complaint Counsel Have Not Demonstrated That Rambus's Conduct Resulted in Higher Prices to Consumers

In *Indian Head*, defendant was found to have violated the integrity of the standard setting organization's procedures for the sole purpose of achieving an *anticompetitive result* – the exclusion of PVC conduit from the marketplace. 817 F.2d at 947. The jury in that case had found that as a proximate result of defendant's restraint of trade, plaintiff lost \$3.8 million in profits. *Id.* at 939. Thus, anticompetitive effects were proven. *See also Allied Tube*, 486 U.S. at 509-10 (no *Noerr* immunity from any antitrust liability flowing from the *effect* the standard has of its own force in the marketplace). Here, the evidence shows that competition has not been adversely affected by Rambus's alleged failure to disclose. It is worth noting on this issue that Complaint Counsel's expert, Professor McAfee, admitted that the alleged conduct of Rambus has had no impact on DRAM prices, no effect on consumers, and no effect on the final PC market as of the time of trial (over three and one-half years after Rambus began asserting its patents). F. 1053. Complaint Counsel have not demonstrated any anticompetitive result because Complaint Counsel have not shown consumer harm or that Respondent's royalty rates were anything but reasonable and nondiscriminatory.

a. Rambus's Royalty Rates Are Reasonable

The next question before the Court is, if Rambus had made additional disclosures, would JEDEC members pay the same royalties as they currently do. John Kelly, EIA's President and General Counsel, testified that EIA does not get involved in the determination of whether rates are reasonable and nondiscriminatory. F. 1542. Rather, such questions are left to negotiation by the parties or market forces or are resolved by the courts. F. 603, 1542. Robert Goodwin of Kentron testified that he understood a reasonable rate to be what the market will agree to pay. F. 1544. Similarly, Desi Rhoden testified that what were "fair

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and reasonable” licensing terms were left to the courts. F. 1545. A review of the evidence demonstrates that Rambus’s royalties are comparable to other licensing rates in the industry and thus are reasonable under the JEDEC rules.

Rambus’s royalty rate for its SDRAM licenses is 0.75%. F. 1546. Its royalty rate for DDR licenses in most cases is 3.5%. F. 1546. By way of comparison, the IBM Worldwide Licensing policy sets forth royalty rates from one to five percent of selling price, depending on the category of patent. F. 1548. There is no evidence that the rates contained in IBM’s Licensing Policy are unreasonable. F. 1549.

Professor Teece’s testimony on this issue is, again, highly persuasive. Professor Teece is a preeminent authority in licensing and cross-licensing in the semiconductor industry. Based on a review of rates charged by IBM, AMD, Kentron, and others, Professor Teece concluded that Rambus’s royalty rates were reasonable. F. 1558. The industry rates he stated, cluster around four to five percent. F. 1558. The Rambus SDRAM royalty rate of 0.75% is at the low end of what comparable technologies command. F. 1558. Rambus’s DDR royalty rate is near the low end of the middle of comparable rates. F. 1558. This is consistent with Rambus’s 1992 business plan which recognized that its royalty rates were in line with semiconductor “traditional royalty levels of 1-5%.” F. 1557.

Professor Teece also noted that the industry rates used in this comparison underestimated actual rates because the semiconductor industry rates tend to reflect balancing payments on cross-licenses rather than rates for a straight license like Rambus’s. F. 1559. A company can get economic value from internally developed patented technology because it gives the company a benefit in cross-licensing negotiations. F. 1560.

The evidence shows that Rambus’s royalty rates were agreed to in arms-length negotiations with major industry players. F.

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1561. Complaint Counsel's expert admitted that he had no expertise in how to determine a reasonable royalty rate and Complaint Counsel failed to introduce any evidence to rebut Respondent's showing that its royalty rates were reasonable. F. 1566.

b. Rambus's Royalty Rates Are Non-discriminatory

Professor Teece testified that discrimination in licensing is a circumstance where different parties are offered different deals. A nondiscriminatory license is one where everyone is offered the the same deal at about the same time. F. 1573. The evidence shows that Rambus offered its SDRAM and DDR licenses to everybody on more or less the same terms. F. 1574. The evidence also shows that higher royalties for litigating parties are not discriminatory in an economic sense because litigation involves costs, including legal costs and the diversion of management and litigation involves a risk that the patent will be found invalid or not infringed. F. 1575. Charging higher royalties to litigating parties is therefore cost justified in the sense that it avoids future litigation costs. F. 1578.

Complaint Counsel's economic expert effectively admitted that litigation imposes costs on Rambus and that it is economically rational to develop a strategy to avoid those costs. F. 1580. It would be consistent with economic theory to charge a higher royalty rate to licensees that require the patent holder to incur costs before taking a license. F. 1580. Complaint Counsel's economic expert recognized that litigation imposes risks on Rambus and that a licensing strategy of charging more to companies that choose to litigate would maximize Rambus's profits by reducing its future costs. F. 1580.

Based on this evidence, Complaint Counsel have failed to show that Rambus's royalty rates were anything other than nondiscriminatory. Thus anticompetitive effects, an element of

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Counts I, II, and III, has not been proved. Having so held, the liability analysis concludes with an examination of Complaint Counsel's lock in theory.

G. JEDEC Is Not Locked In

Complaint Counsel assert that another element of their legal theory relates to the economic concept of lock in. CCPHB at 22. "Lock in" is a term used in economics to identify a situation where switching costs prohibit consumers from changing to another product or technology. F. 1646. Complaint Counsel argue that "the theory of liability set forth in the Complaint is predicated in part on the allegation that Rambus's bad-faith, deceptive conduct permitted it to acquire monopoly power because by the time Rambus finally began to reveal, publicly, that it possessed patents covering JEDEC's SDRAM standards, the DRAM industry had become locked-in to the existing JEDEC standards and thus was unable to avoid Rambus's patents by switching to alternative, non-infringing standards." CCPHB at 22.

Complaint Counsel, however, have not presented evidence, contemporaneous or otherwise, that the industry is locked in. F. 1582. To the contrary, the evidence demonstrates that DRAM manufacturers are constantly redesigning DRAM products and changing their manufacturing lines to incorporate new designs and manufacturing techniques. For instance, Micron "taped out" numerous new DRAM designs each year. F. 1596-1603. In fact, Micron taped out new designs for SDRAM and/or DDR each year from 1995 to 2002. F. 1597-1602. Infineon's Richmond plant, which started production in 1998, has produced eight different types of SDRAM and two different types of DDR. F. 1608. In 2002, Infineon produced or planned to produce thirty-four different types of DDR, twenty-seven different types of SDRAM, seven different types of Graphics RAM, twenty different types of Mobile-RAM, and six different types of RLDRAM. F. 1612-14. Plainly, economic forces – such as economies of scale and network effects – do not lock in DRAM manufacturers.

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As noted earlier, JEDEC's Future DRAM Task Group considered alternatives to each of Rambus's technologies, but ended up adopting the Rambus technologies with full knowledge of Rambus's issued patents and demand for royalties. For example, as late as March and April 2000, JEDEC considered alternatives for programmable CAS latency in DDR SDRAMs. F. 1500. In response to proposals by Micron entitled "Avoid Programmable Latency in SDR/DDR SDRAMs," Bob Fusco of Hitachi wrote, "for DDR2, we have no legacy to live with, so I like the Micron proposal. For DDR-1 it's not too late for minor, carefully considered changes, so I'm open to either proposal." F. 1505-06. Similarly, Bill Hovis of IBM rejected these proposals but stated that he was "*currently not locked in.*" F. 1507, 1656 (emphasis added). As Complaint Counsel's own expert testified, JEDEC members would not be discussing alternatives to Rambus technologies, even as late as 2000, unless they thought that such alternatives could be adopted. F. 1501.

The evidence also demonstrates that the DRAM industry routinely coordinates transitions to new DRAM standards. AMD, starting from scratch in June 1997, so quickly coordinated the design and production of every complementary product – motherboards, chip sets, BIOS, etc. – for its newly designed microprocessors, that complete computer systems were shipping in 1999. F. 1624-34. Since then, the industry has coordinated transitions for the AMD microprocessor from PC100 to PC133 to DDR200 and 266 to DDR 333 to DDR400 in the period from June 1999 to May 2003. F. 1625-34. Similarly, from 1995 to 2002, Compaq coordinated transitions for its computers from EDO to PC66 to PC100 to PC133 to DDR266 to DDR333. F. 1635-42. These transitions required the design, manufacture and coordination of complementary components – new chipsets, new motherboards, etc. F. 1644. Based on the evidence of transitions by such companies, a shift to alternative technologies would thus incur few additional costs or coordination difficulties beyond

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those that would be incurred when the industry was in transition to a new standard. F. 1655.

The economic evidence shows that switching costs and coordination issues would not prevent the DRAM industry from going to alternatives, if they existed. Complaint Counsel's economic expert did not produce any evidence quantifying switching costs. F. 1650. It is not possible for an economist to make a sound judgment about whether switching costs are high enough to create lock in without quantifying those costs. F. 1651. Rambus's experts, however, did quantify such costs. F. 1650. They showed that the largest part of a DRAM is the memory array, which comprises ninety percent of the active area. F. 14. The remaining ten percent consists of peripheral circuitry, which, if implemented, would include the four features at issue in this proceeding. F. 14. Thus, the vast majority of DRAM development costs is spent on the memory array portion of the DRAM, and not on the peripheral circuitry. F. 14-15. These calculations show, at least in part, that switching costs for these technologies would be modest compared to DRAM costs of production or the costs of Rambus's royalties. F. 1655. If there were acceptable alternatives, switching costs would not be a barrier to adopting those alternatives. Similarly, the economic evidence shows that coordination issues associated with replacing the four technologies in question with alternatives are not any more costly or difficult than those faced and solved by the DRAM industry in the ordinary course of business and, thus, do not create lock in. F. 1660.

The record in this proceeding thus demonstrates that DRAM manufacturers were not locked in to using Rambus's technologies at any point in time from 1990 to the present. F. 1664. JEDEC membership includes virtually every DRAM and major electronics manufacturer in the world. It therefore had access to the research and development departments of every DRAM manufacturer to design the best memory technology possible. If they wished to avoid paying royalties, they would have been

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highly motivated to seek alternatives to Rambus's innovations. This is true for the two Rambus technologies used in SDRAM, the four used in DDR, and the four used in DDR2. The fact that the DRAM industry continues in 2004 to use the four Rambus technologies in DDR2, even after it was well aware of Rambus's patents is persuasive evidence that Rambus's technologies were superior, in cost/performance terms, to any alternatives, despite Rambus's royalty rates. *See* 1665.

IV. SUMMARY OF LIABILITY

For the above stated reasons, Complaint Counsel, the party with the burden of proof, have failed to establish the elements necessary for finding liability on Counts I, II, and III of the Complaint. A review of the three violations alleged in the Complaint shows that although Respondent is in possession of monopoly power in the relevant markets, Complaint Counsel have failed to demonstrate that Respondent engaged in a pattern of exclusionary, anticompetitive conduct which subverted an open standards process, or that Respondent utilized such conduct to capture an unlawful monopoly in the technology-related markets. Analyzing the challenged conduct under established principles of economics and antitrust law and utilizing the preponderance of evidence standard, Complaint Counsel have not proven the elements necessary to support a finding of liability.

PART FOUR: SUMMARY OF CONCLUSIONS OF LAW**Jurisdiction and Burden of Proof**

1. Pursuant to Section 5 of the FTC Act, 15 U.S.C. § 45, the Commission has jurisdiction over the subject matter of this proceeding and over Respondent, Rambus Inc.

2. Respondent is organized, existing and doing business under and by virtue of the laws of the state of Delaware, with its office

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and principal place of business located at 4440 El Camino Road Real, Los Altos, California 94022.

3. Respondent is a corporation, as “corporation” is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44.

4. Respondent’s acts and practices, including the acts and practices alleged in the Complaint, are in or affect commerce as “commerce” is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44.

5. Pursuant to § 3.43 (a) of the Federal Trade Commission’s Rules of Practice, Complaint Counsel bear the burden of proof of establishing each element of the violations alleged in the Complaint by a preponderance of the evidence.

The Relevant Markets and Monopoly Power

6. The relevant geographic market for purposes of determining the possession of monopoly power in this case is the world.

7. The relevant product markets at issue in this proceeding involve technologies that are incorporated in DRAMs for use in current and recent generation personal computers and other electronic memory devices. Each market consists of a type of technology that addresses a specific aspect of memory design and operation. The four relevant product markets are: (1) the latency technology market; (2) the burst length technology market; (3) the data acceleration technology market; and (4) the clock synchronization technology market. In addition, there is a cluster market of synchronous DRAM technologies.

8. Complaint Counsel have demonstrated that Respondent has acquired monopoly power in the relevant markets. However, Complaint Counsel have not demonstrated that Respondent’s acquisition or maintenance of monopoly power was unlawful.

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No Pattern of Anticompetitive Acts and Practices

9. Complaint Counsel have failed to demonstrate that Respondent's challenged conduct amounted to a pattern of anticompetitive acts and practices.

10. Complaint Counsel's legal theory, i.e., that Respondent's challenged conduct violated Section 5 of the Federal Trade Commission Act, which proscribes "unfair methods of competition," lacks a reasonable basis in law.

11. Complaint Counsel have failed to demonstrate that the duties upon which they base their challenge are clear and unambiguous.

12. The evidence presented at trial does not provide a factual basis for finding a pattern of anticompetitive acts and practices.

13. Complaint Counsel have failed to demonstrate that amendments to broaden patent applications are improper, either under patent law or EIA/JEDEC rules.

No Exclusionary Conduct

14. Respondent has demonstrated that there were legitimate business justifications for the conduct challenged by Complaint Counsel. Maintaining the confidentiality of the proprietary information contained in its patent applications clearly related to a legitimate and normal business purpose and thus precludes a finding of exclusionary conduct in this case.

15. Complaint Counsel have failed to demonstrate that mere participation in a standard setting organization, without more, can form the basis for excluding a member's legitimate right to protect its trade secrets from disclosure.

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16. Complaint Counsel have failed to demonstrate that Respondent engaged in exclusionary conduct for reasons extrinsic to the antitrust laws.

No Intent

17. Complaint Counsel have failed to demonstrate that Respondent intended to mislead or deceive JEDEC.

18. Complaint Counsel have failed to demonstrate that Respondent's challenged conduct rises to a level where intent can be inferred.

19. Evidence in the record indicates that Complaint Counsel have failed to demonstrate that the intent element has been met.

No Causation

20. Complaint Counsel have failed to demonstrate a causal link between JEDEC standardization and Respondent's acquisition of monopoly power.

21. Complaint Counsel have failed to demonstrate that Respondent acquired monopoly power by virtue of JEDEC standard setting.

22. The evidence demonstrates that Respondent acquired monopoly power as a result of its superior technology and Intel's choice of Rambus's technology.

23. To the extent that Complaint Counsel's Section 5 cause of action is based upon a breach of duty to disclose under JEDEC's rules, Complaint Counsel have failed to demonstrate that Respondent's omissions or misrepresentations were relied upon by JEDEC or that such reliance was reasonable.

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No Anticompetitive Effects

24. Complaint Counsel have failed to demonstrate that there were viable alternatives to Respondent's technologies.

25. Complaint Counsel's economic expert failed to demonstrate that "equal or superior" alternatives were excluded by Respondent's challenged conduct.

26. Under the economic theory of "revealed preference," the evidence demonstrates that even if Respondent had made the additional disclosures alleged to have been required, rational manufacturers and a rational JEDEC would have selected Respondent's technologies because the proposed alternatives were inferior.

27. Complaint Counsel have failed to demonstrate that Respondent's challenged conduct resulted in higher prices to the consumer.

28. The evidence indicates that Respondent's royalty rates are reasonable.

29. The evidence indicates that Respondent's royalty rates are nondiscriminatory.

JEDEC Is Not Locked In To Respondent's Technologies

30. The evidence indicates that DRAM manufacturers were not locked in to using Respondent's technologies at any point from 1990 to the present.

31. JEDECs continued use of Respondent's technologies is due to the fact that Rambus's technologies are superior in cost/performance terms to any alternatives, despite Rambus's royalty rates.

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ORDER

Accordingly, Complaint Counsel having failed to sustain its burden of establishing liability for the violations alleged, the Complaint is **DISMISSED**.

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OPINION OF THE COMMISSION

By HARBOUR, Commissioner, for a unanimous Commission.

I. INTRODUCTION¹

Rambus Inc. is a developer and licensor of computer memory technologies. For more than four years during the 1990s, Rambus participated as a member of the Joint Electron Device Engineering Council (JEDEC), an industrywide standard-setting organization (SSO) that operated on a cooperative basis. Through a course of deceptive conduct, Rambus exploited its participation in JEDEC to obtain patents that would cover technologies incorporated into now-ubiquitous JEDEC memory standards, without revealing its patent position to other JEDEC members. As a result, Rambus was able to distort the standard-setting process and engage in anticompetitive “hold up” of the computer memory industry. Conduct of this sort has grave implications for competition. The Federal Trade Commission (FTC or Commission) finds that Rambus’s acts of deception constituted exclusionary conduct

¹ This opinion uses the following abbreviations:

CA - Complaint Counsel’s Appendix
CE - Order Granting Complaint Counsel’s Motion for Collateral Estoppel
CCAB - Complaint Counsel’s Appeal Brief
CCRB - Complaint Counsel’s Reply Brief
CX - Complaint Counsel’s Exhibit
DX - Demonstrative Exhibit
ID - Initial Decision of the Administrative Law Judge (ALJ)
IDF - Numbered Findings of Fact in the ALJ’s Initial Opinion
JX - Joint Exhibits
RA - Respondent’s Appendix
RB - Respondent’s Brief on Appeal and Cross-Appeal
RFF - Respondent’s Proposed Findings of Fact
RRB - Respondent’s Rebuttal Brief
RX - Respondent’s Exhibit
Tr. - Transcript of Trial before the ALJ.

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under Section 2 of the Sherman Act, and that Rambus unlawfully monopolized the markets for four technologies incorporated into the JEDEC standards in violation of Section 5 of the FTC Act.

Standard setting occurs in many industries and can be highly beneficial to consumers. Standards can facilitate interoperability among products supplied by different firms, which typically increases the chances of market acceptance, makes the products more valuable to consumers, and stimulates output. But standard setting also poses some risks of harm to competition. By its very nature, standard setting displaces the competitive process through which the purchasing decisions of customers determine which interoperable combinations of technologies and products will survive.

Typically, the procompetitive benefits of standard setting outweigh the loss of market competition. For this reason, antitrust enforcement has shown a high degree of acceptance of, and tolerance for, standard-setting activities. But when a firm engages in exclusionary conduct that subverts the standard-setting process and leads to the acquisition of monopoly power, the procompetitive benefits of standard setting cannot be fully realized.

At the beginning of a standard-setting process, if there are a number of competing technologies, and if any one of them could win the standards battle, then no single technology will command more than a competitive price. Once the standard has been set, however, the dynamic changes. Soon after a standard is adopted, industry participants likely will start designing, testing, and producing goods that conform to the standard. Early in the process of implementing a standard, industry members still might find it relatively easy to abandon one technology in favor of another. But as time passes, and the industry commits greater levels of resources to developing products that comply with the standard, the costs of switching to alternative technologies begin to rise. Industry members may find themselves “locked in” to the

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standardized technology once switching costs become prohibitive. Once lock-in occurs, the owner of the standardized technology may be able to “hold up” the industry and charge supracompetitive rates.

Many SSOs have taken steps to mitigate the risk of hold-up by avoiding unknowing lock-in to a technology that may command supracompetitive rates. Many SSOs, for example, require their members to reveal any patents and/or patent applications that relate to the standard. These types of disclosures enable SSO members to evaluate potential standards with more complete information about the likely consequences, before the standard is finalized. Some SSOs also require members to commit to license their patented technologies on reasonable and nondiscriminatory (RAND) terms, which may further inform SSO members’ analysis of the costs and benefits of standardizing patented technologies.

JEDEC operated on a cooperative basis and required that its members participate in good faith. According to JEDEC policy and practice, members were expected to reveal the existence of patents and patent applications that later might be enforced against those practicing the JEDEC standards. In addition, JEDEC members were obligated to offer assurances to license patented technologies on RAND terms, before members voted to adopt a standard that would incorporate those technologies. The intent of JEDEC policy and practice was to prevent anticompetitive hold-up.

Rambus, however, chose to disregard JEDEC’s policy and practice, as well as the duty to act in good faith. Instead, Rambus deceived the other JEDEC members. Rambus capitalized on JEDEC’s policy and practice – and also on the expectations of the JEDEC members – in several ways. Rambus refused to disclose the existence of its patents and applications, which deprived JEDEC members of critical information as they worked to evaluate potential standards. Rambus took additional actions that misled members to believe that Rambus was not seeking patents

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that would cover implementations of the standards under consideration by JEDEC. Rambus also went a step further: through its participation in JEDEC, Rambus gained information about the pending standard, and then amended its patent applications to ensure that subsequently-issued patents would cover the ultimate standard. Through its successful strategy, Rambus was able to conceal its patents and patent applications until after the standards were adopted and the market was locked in. Only then did Rambus reveal its patents – through patent infringement lawsuits against JEDEC members who practiced the standard.²

The Commission finds that Rambus violated Section 5 of the FTC Act by engaging in exclusionary conduct that contributed significantly to the acquisition of monopoly power in four relevant and related markets. We further find a sufficient causal link between Rambus's exclusionary conduct and JEDEC's adoption of the SDRAM and DDR-SDRAM standards (but not the subsequent DDR2-SDRAM standard). Questions remain, however, regarding how the Commission can best determine the appropriate remedy. Accordingly, the Commission orders additional briefing for further consideration of remedial issues.

II. BACKGROUND

A. Technology Background

The dispute before us involves four relevant product markets: (1) latency technology; (2) burst length technology; (3) data

² Complaint Counsel also allege that Rambus engaged in spoliation of evidence. Rambus instituted a document retention policy that entailed the systematic destruction of a large volume of documents. This destruction policy included documents related to Rambus's participation in JEDEC and Rambus's patent prosecution files. As discussed in greater detail *infra*, Section V, however, we need not resolve the spoliation question because our findings are firmly grounded on the surviving evidence.

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acceleration technology; and (4) clock synchronization technology. These markets include technologies that, beginning in 1993, have been incorporated into the JEDEC standards for computer memory, and over which Rambus now claims patent rights.³

1. The Function of Computer Memory

Main memory – often referred to as random access memory, or RAM – consists of integrated circuits that hold temporary instructions and data for the central processing unit (CPU), the central “brain” of a computer system⁴. The CPU performs each command given by a computer user by extracting instructions from the computer’s memory, then decoding and executing them. Most computers use a type of RAM known as dynamic random access memory (DRAM),⁵ which stores and processes information while the computer is on.⁶

DRAM is only one piece in the computer hardware infrastructure. A typical personal computer is built around a motherboard – the main circuit board upon which many of the important components of a computer system are fastened. The

³ Rambus has not contested the definition of the four relevant product markets delineated by Complaint Counsel. *See infra* note 394. Nor does Rambus contest Complaint Counsel’s allegation, or the ALJ’s finding (which we adopt), that the relevant geographic market is worldwide. Complaint ¶ 117; IDF 1016-17; ID 250.

⁴ Rhoden, Tr. 271-72; RA 3. Most types of RAM are volatile, which means they lose all data when the power is turned off or the system shuts down. CA A-3; RA 3.

⁵ DRAM is “dynamic” because it must be refreshed every fraction of a second to prevent memory loss. Rhoden, Tr. 266-67.

⁶ Rhoden, Tr. 267-68. DRAM also is incorporated into other electronic devices such as servers, printers, and cameras. IDF 3; Rhoden, Tr. 298; RA 3.

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motherboard includes, for example, the CPU, chipset, and graphics and sound cards. A computer system also includes a system clock, a power supply, mass storage devices (such as hard drives or CD ROM drives), assorted controllers that enable the computer to connect to external peripheral devices (such as monitors, printers, and scanners), and a main memory system (containing DRAM). The main memory circuits typically attach to the memory module (a small printed circuit board that plugs into the motherboard)⁷. Communications between the main memory circuits and the CPU are managed by a memory controller, which generally is part of the chipset⁸. DRAM must be compatible and interoperable with other components in the same computer system.⁹

2. Evolution of RDRAM and SDRAM Memory Technologies: Breaking Through the Memory Bottleneck

In the early 1980s, an imbalance emerged in the speed at which CPU technology was developing relative to memory technology¹⁰. CPU speeds have doubled every eighteen months for the past two decades,¹¹ while memory speeds have increased more slowly. This “memory bottleneck problem”¹² became a

⁷ Rhoden, Tr. 269, 272-73; RA 4.

⁸ Rhoden, Tr. 275-76; CA A-1; RA 2.

⁹ *See, e.g.*, IDF 6.

¹⁰ IDF 27-40.

¹¹ Farmwald, Tr. 8068 (describing “Moore’s law,” based on observations by Intel co-founder Gordon Moore regarding the rate of increase in CPU speeds).

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widely recognized concern in the computer hardware industry during the early 1990s¹³. The industry considered several different solutions.¹⁴

One of those solutions – Rambus DRAM, or RDRAM – was developed by Rambus¹⁵. Rambus was founded in March 1990 by two professors who wanted to commercialize their concept for a new DRAM design that would break the “memory bottleneck.”¹⁶ Rambus develops, secures patents on, and licenses technologies to companies that manufacture semiconductor memory devices.

¹² One of Rambus’s founders, Paul Michael Farmwald, testified that the “memory bottleneck” problem was a potential bottleneck in which memory chip performance could limit computer performance. Farmwald, Tr. 8068-69, 8071-73.

¹³ IDF 36-40.

¹⁴ *See, e.g.*, CX 711 at 1; Sussman, Tr. 1359-60, 1364; G. Kelley, Tr. 2584-85. In the last decade most DRAMs have been synchronized with the system clock, in order to maximize the number of instructions a CPU can process in a given time. This design is called “synchronous DRAM,” or SDRAM (as distinguished from earlier, asynchronous DRAMs). Jacob, 5394-95; CA A-4; RA 5.

¹⁵ RDRAM reflected innovations with respect to bus width, the interface between the bus and computer chips, and the DRAM. IDF 86-90; CA A-4; RX 81 at 3,7; Horowitz, Tr. 8618-20; Rhoden, Tr. 400-401. Buses essentially are a computer’s highway system. A memory bus comprises the lines that connect each memory device to the memory controller. Computer buses, like highways, can vary by width, which means they can have a differing number of lines linking the computer’s components (just as highways may have more or fewer lanes to carry traffic). The speed at which a computer operates is affected by its buses. Rhoden, Tr. 275-76; CA A-1.

¹⁶ IDF 27-48, 58; CX 533 at 8; CX 545 at 7; Farmwald, Tr. 8089-93; Horowitz, Tr. 8486.

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Rambus is not a manufacturing company; rather, Rambus earns its revenue through the licensing of its patents.¹⁷

A month after its founding, on April 18, 1990, Rambus filed Patent Application No. 07/510,898 (the ‘898 application) with the U.S. Patent Trademark Office (PTO)¹⁸. This application described many of the technologies developed and integrated into the initial RDRAM design. The ‘898 application also is the original source of the patents that Rambus has asserted with regard to the four technologies at issue in this case. The PTO issued a restriction requirement in late 1990, requiring Rambus to decide which of the multiple claimed inventions it wished to pursue in the ‘898 application. On March 5, 1992, Rambus responded to the PTO’s demand by filing ten divisional applications.¹⁹

Beginning in 1990, Rambus tried to license its RDRAM technology to manufacturers of DRAM chips and DRAM-compatible microprocessors²⁰. Rambus attempted to position RDRAM as the *de facto* standard²¹. Rambus made numerous presentations on RDRAM to the major DRAM manufacturers in

¹⁷ Parties’ First Set of Stipulations, Item 2 (April 23, 2003); *see also* CX 2106 (Farmwald FTC Dep.) at 220 (*in camera*) (“[r]oyalties are the lifeblood of Rambus”).

¹⁸ CX 1451.

¹⁹ A restriction requirement forces a patent applicant to separate each distinct invention or group of inventions into separate applications known as “divisionals.” Nusbaum, Tr. 1509-11.

²⁰ *See* CX 533 at 9-10. Major DRAM manufacturers included Samsung Electronics Co., Micron Technology, Inc., Hyundai Electronics Industries (subsequently, Hynix Semiconductor Inc.), LG Semicon Ltd., NEC Corporation, Siemens AG (subsequently, Infineon Technologies AG), Toshiba, Mitsubishi Electric Corporation, and Hitachi, Ltd. *See* CX 2747 at 7.

²¹ *Id.* at 3.

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an effort to persuade them to adopt the technology²². Rambus also tried to develop relationships with major systems companies, and pursued commitments from these companies to introduce systems using RDRAM technology²³. RDRAM failed to achieve significant market success, however, at least in part because manufacturers were reluctant to pay royalties and licensing fees to Rambus.²⁴

These manufacturers rejected RDRAM and instead turned to standards promulgated by JEDEC. JEDEC was a semiconductor engineering standardization body within the Electronic Industries Association (EIA). It comprised manufacturers and purchasers of DRAM, as well as producers of complementary products and computer systems²⁵. JEDEC's JC 42.3 committee was responsible

²² See, e.g., Sussman, Tr. 1429-31; CX 535 at 1, 4-5; CX 543a at 11; CX 2107 at 63 (Oh FTC Dep.) (*in camera*).

²³ See, e.g., Kellogg, Tr. 5049-54; Bechtelsheim, Tr. 5816-19; CX 535 at 2, 5-6.

²⁴ See, e.g., Rapp, Tr. 10248-49 (RDRAM sales represented less than 2% of the market for at least six years following the adoption of SDRAM) (providing market-share statistics); JX 36 at 7 ("Some Committee members did not feel that the Rambus patent license fee fit the JEDEC requirement of being reasonable."); CX 961 at 1 (September 1997 Intel e-mail to Rambus Chief Executive Officer (CEO) Geoff Tate, stating that, upon analyzing the royalty obligations attached to RDRAM, the industry would develop alternatives); RX 1482 at 12 (post-1996 Rambus Strategic Review stating, "Memory manufacturers need to focus on cost reduction to restore profitability" and describing RDRAM as "a guaranteed bad bet for margin enhancement").

²⁵ See J. Kelly, Tr. 1774-75; Rhoden, Tr. 293-94; Landgraf, Tr. 1685; JX 18 at 1-3. Between 1991 and 1996, JEDEC was an organization within the EIA. IDF 222; J. Kelly, Tr. 2075. EIA engages in a variety of different activities in support of the electronics industry in the United States, including government relations, marketing research, trade shows, and standard setting. J. Kelly, Tr. 1750-51, 1764. In 1998, EIA was renamed the Electronic Industries Alliance, and JEDEC became an EIA division. CX 302 at 11. By the first quarter of 2000, JEDEC became separately incorporated, but remained contractually affiliated with EIA. J. Kelly, Tr. 1752; CX 302 at 11.

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for RAM issues, and, in particular, for the development of DRAM standards.²⁶

At issue here are three generations of DRAM standards developed and adopted by JEDEC: synchronous DRAM (SDRAM),²⁷ DDR SDRAM,²⁸ and DDR2 SDRAM²⁹. In the course of designing these standards and determining which technologies would be incorporated, the JEDEC members evaluated numerous technologies relating to various aspects of

²⁶ Rhoden, Tr. 284-85, 288; Williams, Tr. 763; J. Kelly, Tr. 1769. JEDEC was divided into several committees. Each committee focused on a particular aspect of the semiconductor and solid state electronics industries, and was subdivided into several subcommittees.

²⁷ JEDEC designed the SDRAM standard during the early 1990s and first published it in 1993. IDF 297-315, 355-56. By 1998, JEDEC-compliant SDRAM was the most widely used type of memory device. IDF 370; CA A-5. The SDRAM standard incorporated technologies from the latency and burst length markets. IDF 355; 1013; RA 5. Rambus has asserted that its patents cover the implementations of these two technologies in the SDRAM standard. IDF 1022-29.

²⁸ DDR SDRAM was a second-generation standard promulgated by JEDEC. RA 2. DDR SDRAM included some of the features of SDRAM, and also incorporated new technologies that increased the speed and efficiency of the memory system. IDF 430; CA A-1. JEDEC first published DDR SDRAM in 1999. IDF 427-29; RA 2. JEDEC-compliant DDR SDRAM was forecast to overtake SDRAM as the predominant memory device by 2002-03. *See* McAfee, Tr. 7227 (presenting DX 141), 7430-31 (presenting DX 219). DDR SDRAM incorporated technologies from the latency, burst length, data acceleration, and clock synchronization markets. Rambus has asserted that its patents cover the implementations of these four technologies in the DDR SDRAM standard. IDF 1022-29.

²⁹ DDR2 SDRAM is the third-generation standard that JEDEC developed using SDRAM technology. RA 2; CA A-1. By the time of the 2003 trial, JEDEC had published to its members preliminary specifications for this standard that retained the latency, burst length, data acceleration, and clock synchronization technologies that Rambus has claimed infringe its patents. RA 2.

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main memory, including the technologies that comprise the four relevant product markets in this case. Rambus eventually claimed that its patents cover the specific versions of these four technologies that ultimately were adopted by JEDEC for the SDRAM, DDR SDRAM, and DDR2 SDRAM standards.

3. The Four Relevant Technology Markets

a. Latency Technology

Latency is a measure of the amount of time between a request and a response³⁰. Memory latency is the length of time between the memory's receipt of a read request and its release of data corresponding with the request³¹. Latency technology comprises those technologies used to control the length of this time period.³²

In the early 1990s, several types of latency technology were available, including programmable latency, fixed latency, blowing a fuse on a DRAM, and dedicated pins. These alternative solutions are discussed in greater detail below³³. JEDEC first incorporated programmable column address strobe (CAS) latency into its SDRAM standard and retained the technology in its DDR SDRAM and DDR2 SDRAM standards³⁴. Programmable CAS latency controls data output timing by determining the number of clock cycles that should be allowed to elapse after a defined point³⁵. Programmable CAS latency provides users of DRAMs

³⁰ IDF 114.

³¹ Horowitz, Tr. 8529-30.

³² McAfee, Tr. 7348.

³³ *See infra* Section IV.C.3.b.

³⁴ IDF 355, 433; RA 2, 5.

³⁵ CA A-3.

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with flexibility, *i.e.*, a single part can be programmed so as to provide the optimal latency in a variety of systems.³⁶

Rambus claims that its patents cover JEDEC's implementation of programmable CAS latency technology.

b. Burst Length Technology

Burst length technology controls the amount of data transferred between the CPU and memory in each transmission. JEDEC's SDRAM, DDR SDRAM, and DDR2 SDRAM standards adopted programmable burst length technology, which provides a means for varying the number of cycles of data that are transmitted to the memory controller in response to an individual command³⁷. Programmable burst length technology is similar to programmable CAS latency technology in that it allows DRAM customers to use one part for many different types of machines that require different burst lengths.³⁸

In the early 1990s several alternatives to programmable burst length were available, as discussed in greater detail below³⁹. One alternative was the use of fixed burst length parts⁴⁰. Another alternative was to use "burst terminate commands," which establish a long burst length as the default and use the memory

³⁶ Soderman, Tr. 9346-47, 9433-34; Kellogg, Tr. 5140.

³⁷ CA A-3.

³⁸ *See, e.g.*, G. Kelley, Tr. 2550-51 ("The programmable [burst length] feature allowing you to make that selection when the PC or computer powered up was a nice feature because it allowed you to use devices that were common from multiple suppliers, put them into many different types of machines. . . . One part number fits many applications.").

³⁹ *See infra* Section IV.C.3.b.

⁴⁰ Jacob, Tr. 5398-99.

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controller to terminate the burst if a shorter burst length is desired.⁴¹

Rambus claims that its patents cover JEDEC's implementation of programmable burst length technology.

c. Data Acceleration Technology

Data acceleration technology determines the speed at which data are transmitted between the CPU and memory. JEDEC's DDR SDRAM and DDR2 SDRAM standards adopted one particular type of data acceleration technology, known as dual-edge clocking, which captures data off both the rising and falling edges (the "tick" and the "tock") of the clock⁴². This technology enables twice the amount of data to be sent in each clock cycle compared to single-edge clocking, by which data are sent only on one edge of the clock.⁴³

When JEDEC was considering whether to adopt dual-edge clocking technology as part of its DDR SDRAM standard, several alternatives were available. As discussed in greater detail below,⁴⁴ alternative technologies included interleaving ranks on the module (using different clock signals for separate groups of DRAM chips), double clock frequency (operating a single-edge clock at twice the frequency of a dual-edge clock⁴⁵), and toggle mode

⁴¹ Jacob, Tr. 5409-10.

⁴² RA 3.

⁴³ CA A-2.

⁴⁴ *See infra* Section IV.C.3.b.

⁴⁵ Jacob, Tr. 5433-34.

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(which, as formulated by IBM, combined synchronous and asynchronous features⁴⁶).

Rambus claims that its patents cover JEDEC's implementation of dual-edge clocking technology.

d. Clock Synchronization Technology

Clock synchronization technologies coordinate the internal clock on each DRAM chip with the timing of the computer's system clock. Phase lock loop (PLL) and delay lock loop (DLL) technologies use circuits to align more closely the timing of the internal clock on each DRAM with the system clock⁴⁷. Rambus developed a technology that places a PLL/DLL⁴⁸ on the SDRAM chip itself⁴⁹. On-chip PLL/DLL clock synchronization technology was incorporated into JEDEC's DDR SDRAM and DDR2 SDRAM standards.

One alternative approach to on-chip PLL/DLL involved placing a PLL/DLL circuit on the memory controller that synchronizes all DRAMs⁵⁰. Another approach involved placing

⁴⁶ See Jacob, Tr. 5608, 5416-17; Soderman, Tr. 9398; G. Kelley, Tr. 2514.

⁴⁷ Jacob, Tr. 5442-43; Kellogg, Tr. 5150-55; RA 4; CA A-3. PLLs use voltage oscillators to synchronize the internal clock with the system clock. See Jacob, Tr. 5443, 5616-17; Soderman, Tr. 9401. In contrast, DLLs introduce a variable amount of delay into the internal clock to synchronize that clock with the system clock. See Jacob, Tr. 5443, 5616-17; Soderman, Tr. 9401.

⁴⁸ Horowitz, Tr. 8607 (Rambus co-founder testified that, under his usage of the terms, "a PLL is the generic term for any circuitry that adjusts phase, so a DLL is a kind of PLL").

⁴⁹ Farmwald, Tr. 8117-18; Horowitz, Tr. 8503-05; 8521-22, 8527-28.

⁵⁰ Jacob, Tr. 5445.

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one or more PLL/DLL circuits on the memory module⁵¹. Still other alternatives involved the use of vernier circuits, which introduce static delays on a signal to reduce timing uncertainties in a memory system, or reliance on a data strobe to signal the memory controller the timing of data capture⁵². These alternatives, which were considered by JEDEC prior to its adoption of on-chip PLL/DLL, are discussed in greater detail below.⁵³

Rambus claims that its patents cover JEDEC's implementation of on-chip PLL/DLL technology.

B. Procedural History1. History of FTC Matter

The Complaint in this matter was issued on June 18, 2002. The Complaint charged that Rambus: (1) monopolized certain memory technology markets through a pattern of anticompetitive and exclusionary conduct; (2) attempted to monopolize these markets; and (3) engaged in unfair methods of competition.⁵⁴

The Complaint's allegations focused on Rambus's participation in JEDEC. It alleged that Rambus deceived JEDEC's members by, for example, concealing the fact that it

was actively working to develop, and did in fact possess, a patent and several pending patent applications that involved specific technologies

⁵¹ Jacob, Tr. 5448-49.

⁵² Jacob, Tr. 5450, 5456-57.

⁵³ See *infra* Section IV.C.3.b.

⁵⁴ See Complaint ¶¶ 122-24.

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proposed for and ultimately adopted in the relevant standards. By concealing this information – in violation of JEDEC’s own operating rules and procedures – and through other bad-faith, deceptive conduct,

Rambus allegedly conveyed the “materially false and misleading impression that it possessed no relevant intellectual property rights”⁵⁵ and that it had no plans to enforce any intellectual property rights that might later become relevant, leaving a materially misleading impression of its intellectual property ownership and plans⁵⁶. The Complaint further alleged that Rambus’s conduct resulted in anticompetitive effects including: increased royalties; increased prices for memory products compliant with JEDEC standards; decreased incentives to produce memory using JEDEC-compliant memory technology; and decreased incentives to participate in, and rely on, standard-setting organizations and activities⁵⁷. According to the Complaint, Rambus gave no notice that it intended to claim patent rights over technologies used in JEDEC’s DRAM standards, and, by failing to do so, likely affected the content of those standards and/or the terms on which Rambus later licensed its patent rights.⁵⁸

a. Pre-Trial Orders

The case was first assigned to Administrative Law Judge (ALJ) James P. Timony and, upon his retirement, was reassigned

⁵⁵ See Complaint ¶ 2; see also *id.* ¶¶ 54 (alleging deception and bad-faith conduct), 71 (alleging that Rambus conveyed “a materially false and misleading impression”).

⁵⁶ See Complaint ¶¶ 70-78.

⁵⁷ See Complaint ¶¶ 119-120.

⁵⁸ See Complaint ¶¶ 62, 65, 69, 70-78, 86.

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to Chief ALJ Stephen J. McGuire⁵⁹. Before retiring, ALJ Timony issued two orders on February 26, 2003: first, an Order Granting Complaint Counsel's Motion for Collateral Estoppel; and second, an Order on Complaint Counsel's Motions for Default Judgment and for Oral Argument. Both orders influenced the trial and ALJ McGuire's Initial Decision.

On February 12, 2003, Complaint Counsel filed a motion seeking recognition of the collateral estoppel effect of prior factual findings that Rambus had destroyed material evidence. ALJ Timony granted the motion, thus barring Rambus from re-litigating certain findings of fact made by the district court in prior private litigation, *Rambus Inc. v. Infineon Technologies AG*⁶⁰. Those findings included:

1. When Rambus instituted its document retention policy in 1998, it did so, in part, for the purpose of getting rid of documents that might be harmful in litigation.
2. Rambus, at the time it implemented its document retention policy, ... [c]learly ... contemplated that it might be bringing patent infringement suits during this timeframe if its efforts to persuade semi-conductor manufacturers to license its JEDEC-related patents were not successful.
3. Rambus's document destruction was done in anticipation of litigation.⁶¹

⁵⁹ All references within this opinion to "the ALJ," unless otherwise specifically identified, will refer to ALJ McGuire.

⁶⁰ 155 F. Supp. 2d 668 (E.D. Va. 2001), *aff'd in part and rev'd in part*, 318 F.3d 1081 (Fed. Cir. 2001). The district court's findings, upon which ALJ Timony relied, were not raised on appeal to the Federal Circuit.

⁶¹ CE at 5 (internal quotations omitted).

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Complaint Counsel also moved for default judgment as a remedy to counter Rambus's intentional destruction of documents. ALJ Timony denied the motion, but set forth seven rebuttable adverse presumptions against Rambus. The presumptions included:

1. Rambus knew or should have known from its pre-1996 participation in JEDEC that developing JEDEC standards would require the use of patents held or applied for by Rambus;
2. Rambus never disclosed to other JEDEC participants the existence of these patents; [and]
3. Rambus knew that its failure to disclose the existence of these patents to other JEDEC participants could serve to equitably estop Rambus from enforcing its patents as to other JEDEC participants.⁶²

Four additional presumptions addressed the foreseeability of litigation and Rambus's document retention program.⁶³

b. ALJ McGuire's Initial Decision

On February 17, 2004, ALJ McGuire issued his Initial Decision and Proposed Order dismissing the Complaint in its entirety. Specifically, although he noted that Section 5 of the FTC

⁶² Order on Complaint Counsel's Motions for Default Judgment and for Oral Argument at 9 (Feb. 26, 2003).

⁶³ *Id.* (announcing presumptions that Rambus's document retention program failed to provide adequate guidance and direction to its employees and that Rambus knew or should have known that litigation over the enforcement of its patents was reasonably foreseeable).

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Act authorizes the FTC to define and proscribe unfair methods of competition, the ALJ determined that Complaint Counsel had established no basis for finding a violation of Section 5⁶⁴. He concluded that Complaint Counsel's arguments lacked a reasonable basis in law,⁶⁵ and ruled that Complaint Counsel's factual showing was insufficient to establish a violation even if the legal theories had been deemed adequate.⁶⁶

The ALJ found that the adverse presumptions entered by ALJ Timony were not material to the disposition of the case. The ALJ found no indication that Rambus had destroyed any relevant and material documents. He found that the first and second presumptions were moot because Rambus was not required to disclose its patents or patent applications⁶⁷. He also rejected the second presumption on the ground that Rambus's conduct raised sufficient red flags to put members of JEDEC on notice that Rambus had applications pending⁶⁸. The ALJ then found the remaining five adverse presumptions to be irrelevant to the material issues of the case.

The ALJ found that there was no causal link between JEDEC's adoption of Rambus's technology into its standards and Rambus's acquisition of monopoly power. Rather, the ALJ found that Rambus acquired its monopoly power as a result of superior technology and market preferences⁶⁹. Moreover, the ALJ found that JEDEC, and many members of the DRAM industry, were

⁶⁴ ID at 254.

⁶⁵ ID at 254-60.

⁶⁶ ID at 259-61.

⁶⁷ ID at 244.

⁶⁸ ID at 244-45.

⁶⁹ ID at 300-04.

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aware of Rambus's patent portfolio. Thus, according to the ALJ, no member of JEDEC reasonably could have relied on any misrepresentation or omission by Rambus in its dealings with JEDEC⁷⁰. The ALJ found no basis for ascribing to Rambus an intent to deceive.⁷¹

The ALJ concluded that the challenged conduct did not result in any anticompetitive effect because Complaint Counsel failed to prove there were viable alternatives to Rambus's technologies⁷². Furthermore, according to the ALJ, Complaint Counsel did not demonstrate that Rambus's conduct had resulted in higher prices to consumers⁷³. In contrast, the ALJ found that Rambus had put forth legitimate business justifications for its conduct. He agreed with Rambus that its secrecy regarding its patent applications constituted normal and legitimate protection of trade secrets. The ALJ concluded that this business justification precluded a finding of exclusionary conduct.⁷⁴

Finally, the ALJ found that the DRAM industry never became locked into using Rambus's technologies as incorporated into the JEDEC standards, because "economic evidence shows that switching costs and coordination issues would not prevent the DRAM industry from going to alternatives."⁷⁵

c. Questions Raised on Appeal/Cross Appeal

⁷⁰ ID at 304-09.

⁷¹ ID at 295-300, 331-32.

⁷² ID at 312-16.

⁷³ ID at 323-26.

⁷⁴ ID at 287-89.

⁷⁵ ID at 328, 326-29.

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Complaint Counsel filed a notice of appeal on March 1, 2004. They challenge virtually all of the ALJ's rulings and ask that the Initial Decision be set aside in its entirety. They contend that Rambus acquired monopoly power by pursuing a secret and deliberate pattern of conduct to obtain patents covering JEDEC standards. According to Complaint Counsel, Rambus's course of conduct undermined the fundamental purpose of JEDEC to adopt open standards; contravened JEDEC's procedures for adopting patented technologies only on the basis of full information and after securing a commitment to reasonable licensing terms; breached Rambus's duty of good faith; and also violated Rambus's specific obligation, as a member of JEDEC, to disclose patents and patent applications that might be involved in JEDEC's work⁷⁶. Complaint Counsel claim that the facts and a proper application of the law show that Rambus violated Section 5 of the FTC Act, and they offer a proposed cease and desist order to remedy the alleged violation.

Rambus filed a cross appeal arguing that the ALJ erred by applying a "preponderance of the evidence" standard to the government's case, rather than requiring Complaint Counsel to meet a "clear and convincing" burden of proof. Rambus contends that the heightened burden of proof is required due to an "inherent tension" between the interests served by the patent and antitrust laws, as well as by similarities to cases that have required clear and convincing evidence in assessing alleged failures to disclose material information and bad faith enforcement of patents. Rambus also argues that the nature of the remedy sought by Complaint Counsel (which Rambus views as essentially terminating its patent rights), and important policy considerations implicated by SSOs, merit application of the clear and convincing standard.

⁷⁶ CCAB at 27-28.

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d. Re-Opening of the Record Before the Commission

The ALJ closed the record on October 9, 2003. The Commission later reopened the record to admit supplemental evidence – entering orders on May 13, 2005, July 20, 2005, and February 2, 2006 – after finding compelling circumstances. The first two orders reopened the record to allow the admission of documents produced in the *Infineon* litigation relating to Rambus’s alleged spoliation of evidence, as well as the submission of amended proposed findings of fact and conclusions of law in light of this supplemental evidence. In the third order, the Commission reopened the record to admit documents on Rambus’s back-up tapes, described as newly found, from discovery produced during the *Hynix* litigation.⁷⁷

e. Motion for Sanctions

On August 10, 2005, Complaint Counsel moved for sanctions, asserting that Rambus had committed spoliation of evidence. Complaint Counsel asked for entry of default judgment or such other relief as the Commission deems appropriate. Rambus replied on August 17, 2005, arguing that Complaint Counsel failed to prove that Rambus acted in egregious bad faith when it adopted its document retention policy or that the effect of that policy has been to deprive Complaint Counsel of the ability to obtain a full and fair adjudication of this case.

2. Non-FTC Judicial Developments Relating to this Proceeding

Rambus is engaged in myriad litigations involving its efforts to enforce patents it claims cover JEDEC’s DRAM standards. Rambus has sued, or been sued by, several of the major DRAM

⁷⁷ For discussion of the *Infineon* and *Hynix* litigation, see *infra* Section II.B.2.

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manufacturers, including Samsung, Hynix, Infineon, and Micron⁷⁸. Although Rambus and Infineon settled their litigation in 2005, all of the actions involving other companies are ongoing. In addition, the U.S. Department of Justice (DOJ) is investigating whether the major DRAM manufacturers engaged in price fixing in the DRAM market; four of those manufacturers have entered plea agreements⁷⁹. While we will not discuss each of these non-FTC actions in detail, we will highlight certain relevant information.

In late 2000, Rambus sued Infineon Technologies AG, a manufacturer of semiconductor memory devices, in the U.S. District Court for the Eastern District of Virginia for infringement of four patents. Infineon counterclaimed, alleging Rambus committed fraud under Virginia state law by failing to disclose to JEDEC its patents and patent applications related to the organization's SDRAM and DDR SDRAM standards, as required

⁷⁸ These actions include a variety of patent infringement and antitrust-related allegations. *See, e.g.*, Hynix Semiconductor Inc. v. Rambus Inc., No. CV-00-20905 RMW (N.D. Cal.); Rambus Inc. v. Hynix Semiconductor Inc., *et al.*, No. CV-05-00334 RMW (N.D. Cal.); Rambus Inc. v. Samsung Electronics Co., No. CV-05-02298 RMW (N.D. Cal.); Samsung Electronics Co. v. Rambus, Inc., No. 3:05-CV-00406-REP (E.D. Va.); Micron Technology, Inc. v. Rambus Inc., No. 3:06-CV-00132-REP (E.D. Va.); Rambus Inc. v. Micron Technology, Inc., No. CV-06-00244 RMW (N.D. Cal.); Micron Technology, Inc. v. Rambus Inc., No. CV-00-792-KAJ (D. Del.); Rambus Inc. v. Micron Technology, Inc., *et al.*, No. 04-431105 (San Francisco Super. Ct.).

⁷⁹ *See* Plea Agreement, United States v. Samsung Electronics Co., No. CR 05-0643 (PJH) (N.D. Cal. Nov. 30, 2005), *available at* <http://www.usdoj.gov/atr/cases/f213400/213483.pdf>; Plea Agreement, United States v. Hynix Semiconductor Inc., No. CR 05-249 (PJH) (N.D. Cal. May 11, 2005), *available at* <http://www.usdoj.gov/atr/cases/f209200/209231.pdf>; Plea Agreement, United States v. Infineon Techs. AG, No. 04-299 (PJH) (N.D. Cal. Oct. 20, 2004), *available at* <http://www.usdoj.gov/atr/cases/f206700/206700.pdf>; *cf.* Information, United States v. Elpida Memory, Inc., No. CR 06-0059 (MMC) (N.D. Cal. Jan. 30, 2006), *available at* <http://www.usdoj.gov/atr/cases/f214300/214342.pdf>.

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by JEDEC's rules. During trial, Judge Payne granted judgment as a matter of law (JMOL) for Infineon, holding that Infineon did not infringe Rambus's patents. The jury later found Rambus liable for fraud associated with JEDEC's standard-setting activities on SDRAM and DDR SDRAM technologies. In response to post-trial JMOL motions by Rambus, the court set aside the jury's verdict of fraud regarding the DDR SDRAM technology, but let stand the fraud verdict regarding the SDRAM technology⁸⁰. The court then issued an injunction against Rambus and awarded attorney fees to Infineon. Both Rambus and Infineon appealed to the Federal Circuit.

In a 2-1 opinion, the U.S. Court of Appeals for the Federal Circuit vacated the JMOL of noninfringement and remanded the case for consideration under a revised claim construction⁸¹. In addition, the court reversed the denial of JMOL that had allowed the SDRAM fraud verdict to stand, holding that clear and convincing evidence did not support the implicit jury finding that Rambus breached a duty to disclose its patents or patent applications as required by JEDEC's rules. Finally, the Federal Circuit upheld the district court's decision to set aside the DDR SDRAM fraud verdict. These holdings rendered the injunction against Rambus moot, and required the Federal Circuit to vacate and remand the award of attorney fees for reconsideration.

Following remand, Infineon moved to compel production of various documents that Rambus was withholding on the basis of attorney-client and work product privileges. Specifically, the motion was a continuation of an earlier motion to compel under the "crime/fraud exception" to the attorney-client privilege. In ruling on the earlier motion, the district court had concluded that

⁸⁰ Rambus, Inc. v. Infineon Techs. AG, 164 F. Supp. 2d 743 (E.D. Va. 2001).

⁸¹ Rambus, Inc. v. Infineon Techs. AG, 318 F.3d 1081 (Fed. Cir. 2003).

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“Rambus implemented a ‘document retention policy,’ in part, for the purpose of getting rid of documents that might be harmful in litigation.”⁸²

On May 18, 2004, the district court entered a second order compelling Rambus to produce additional documents⁸³. Under this order, the court held that the crime/fraud exception extends to materials or communications created in planning, or in furtherance of, spoliation of evidence⁸⁴. The court also found that Rambus’s intentional destruction of documents was “an integral part of its licensing and litigation strategy.”⁸⁵ The court then required Rambus to produce certain documents that Rambus had claimed were privileged, and allowed Infineon to conduct discovery on the appropriate sanctions for Rambus’s behavior.⁸⁶

In March 2005, at the conclusion of a bench trial, Judge Payne orally dismissed Rambus’s patent claims against Infineon. The court found that Infineon had proven, by clear and convincing evidence, that Rambus possessed unclean hands and that Rambus had engaged in extensive spoliation of evidence⁸⁷. Before Judge Payne issued a written opinion setting forth his findings, however, Rambus and Infineon settled all of their pending litigation, including the case before Judge Payne.

⁸² See *Rambus, Inc. v. Infineon Techs. AG*, 155 F. Supp.2d 668, 682 (E.D. Va. 2001).

⁸³ *Rambus, Inc. v. Infineon Techs. AG*, 222 F.R.D. 280 (E.D. Va. 2004).

⁸⁴ *Id.* at 290.

⁸⁵ *Id.* at 298.

⁸⁶ *Id.* at 299.

⁸⁷ See *Samsung Elecs. Co. v. Rambus, Inc.*, 398 F. Supp. 2d 470, 473 (E.D. Va. 2005) (discussing Judge Payne’s ruling).

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As mentioned above, the *Infineon* litigation was only one of many actions involving Rambus and the major semiconductor companies. The other cases have yet to reach a resolution, but there have been some developments worth noting. In *Hynix Semiconductor, et al. v. Rambus Inc.*, the federal district court for the Northern District of California held a two-week trial on Hynix's unclean hands defense to Rambus's patent infringement claims. Judge Whyte issued an opinion on January 4, 2006, concluding that Hynix's defense failed, after finding that Rambus "did not engage in unlawful spoliation of evidence" and that "the evidence presented does not bear out Hynix's allegations that Rambus adopted its Document Retention Policy in bad faith."⁸⁸ On April 24, 2006, a jury found that Hynix had infringed Rambus's patents and awarded Rambus damages of \$307 million⁸⁹. On July 17, 2006, Judge Whyte granted summary judgment to Rambus on Hynix's claims based on breach of contract, promissory estoppel, and constructive fraud but denied summary judgment for Rambus on Hynix's claims based on allegations of actual fraud⁹⁰. The court also determined that "breach of the JEDEC disclosure policies, without more, cannot give rise to antitrust liability," but it ruled that "Hynix is not barred from asserting that Rambus's overall course of conduct, which may include the circumstances and intent behind its

⁸⁸ *Hynix Semiconductor Inc. v. Rambus Inc.*, No. CV-00-20905 RMW, 2006 WL 565893, at *25, *28 (N.D. Cal. Jan. 5, 2006).

⁸⁹ See Special Verdict Form, *Hynix Semiconductor Inc. v. Rambus Inc.*, No. CV-00-20905 RMW (N.D. Cal. Apr. 24, 2006), available at [www.cand.uscourts.gov/cand/judges.nsf/bc83a5777591b96f88256d480060b73c/3db5d3212d350fc88825715a005f7b13/\\$FILE/00-20905.pdf](http://www.cand.uscourts.gov/cand/judges.nsf/bc83a5777591b96f88256d480060b73c/3db5d3212d350fc88825715a005f7b13/$FILE/00-20905.pdf). The court subsequently ordered a new trial on the issue of damages, but gave Rambus the option of accepting damages in the amount of \$134 million. *Hynix Semiconductor Inc. v. Rambus Inc.*, No. CV-00-20905 RMW, 2006 WL 1991760 (N.D. Cal. July 14, 2006).

⁹⁰ *Hynix Semiconductor Inc. v. Rambus Inc.*, No. CV-00-20905 RMW, 2006 WL 2038357, at *5-9 (N.D. Cal. July 17, 2006).

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decision to not disclose its patents and patent applications, violated antitrust laws.”⁹¹ Hynix’s remaining contentions that the patents are unenforceable have not yet been tried.

In *Micron v. Rambus*, currently pending in the U.S. District Court for the District of Delaware, a Special Master recently issued recommendations to the court on the disposition of Micron’s motion to compel. Micron sought the production of certain privileged documents pursuant to the crime/fraud exception. In his report to the judge, the Special Master found that the exception did not apply, in part because there was no evidence of fraud. That finding, in turn, rested on an analysis of JEDEC’s rules, similar to the analysis set forth in the Federal Circuit’s *Infineon* decision⁹². The district court affirmed that analysis and conclusion, based on Virginia state fraud law.⁹³

Finally, in *Samsung v. Rambus*, the U.S. District Court for the Eastern District of Virginia recently concluded that Rambus had engaged in spoliation of evidence by destroying documents likely to be relevant at a time when Rambus anticipated or reasonably should have anticipated litigation⁹⁴. Ruling in the context of Samsung’s motion for an award of attorney’s fees, the court found that Rambus planned for litigation throughout 1998 and 1999 and, “as part of the plan . . . implemented a pervasive document

⁹¹ *Id.* at *12.

⁹² Special Master’s Report and Recommendations on Motion of Micron Technology to Compel Defendant Rambus to Produce Certain Documents, Testimony and Pleadings, *Micron Tech., Inc. v. Rambus Inc.*, CV-00-792-KAJ (D. Del. Mar. 6, 2006).

⁹³ Memorandum Order, *Micron v. Rambus*, CV-00-792-KAJ, 2006 WL 1653136 (D. Del. June 15, 2006).

⁹⁴ *Samsung Elecs. Co. v. Rambus Inc.*, No. 3:05-CV-00406-REP, 2006 WL 2038417 (E.D.Va. July 18, 2006).

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destruction program” that targeted “discoverable documents.”⁹⁵ The court deemed the contrary ruling in *Hynix* “not persuasive.”⁹⁶

III. STANDARD OF REVIEW

We review the record *de novo* by considering “such parts of the record as are cited or as may be necessary to resolve the issues presented and . . . exercis[ing] all the powers which [the Commission] could have exercised if it had made the initial decision.”⁹⁷ *De novo* review is particularly appropriate in this case because we must consider supplemental evidence, as well as new proposed findings of fact and conclusions of law, that were unavailable to the ALJ⁹⁸. In light of our plenary review, we set aside all findings and conclusions of the ALJ, other than those that are expressly cited and relied upon.

A. Standard of Proof: The Preponderance of the Evidence Standard Applies in FTC Adjudications

FTC enforcement actions typically are governed by the preponderance of the evidence standard⁹⁹. The Supreme Court has

⁹⁵ *Id.* at *42.

⁹⁶ *Id.* at *38.

⁹⁷ 16 C.F.R. § 3.54 (2005).

⁹⁸ The record was reopened on separate occasions after the Initial Decision to admit documents relating to Rambus’s alleged spoliation of evidence and documents on Rambus’s newly found backup tapes. *See supra* Section II.B.

⁹⁹ *See, e.g.*, *In re Adventist Health System West*, 117 F.T.C. 224, 297 (1994) (“Each element of the case must be established by a preponderance of the evidence”); *FTC v. Abbott Laboratories*, 853 F. Supp. 526, 535 (D.D.C. 1994) (government must show “by a preponderance of the evidence that [respondent’s] action was the result of collusion with its competitors”).

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held that Section 7(c) of the Administrative Procedure Act (APA), which is applicable to administrative adjudicatory proceedings unless otherwise provided by statute, establishes “a standard of proof and . . . the standard adopted is the traditional preponderance-of-the evidence standard.”¹⁰⁰ Furthermore, the preponderance of the evidence standard generally applies in civil suits to enforce federal statutes such as the antitrust laws¹⁰¹. Rambus acknowledges that the preponderance of the evidence standard applies in most agency adjudicatory proceedings, including FTC adjudications¹⁰². Nevertheless, Rambus advances four arguments why the Commission should apply the clear and convincing evidence standard in this matter.¹⁰³

1. Relationship between Patent and Antitrust Law in Cases Involving Fraud on the Patent Office or Patent Enforcement Initiated in Bad Faith

Rambus argues that “Complaint Counsel should bear the burden of proving the essential elements of their claims by clear and convincing evidence”¹⁰⁴ because of what it terms the “inherent tension between the patent and antitrust laws.”¹⁰⁵ Rambus’s attempt, however, to broaden the applicability of the clear and convincing evidence standard based on “inherent

¹⁰⁰ *Steadman v. SEC*, 450 U.S. 91, 95-102 (1981) (considering standard of proof in SEC proceedings adjudicating alleged violations of the anti-fraud provisions of the securities laws).

¹⁰¹ *See Herman & MacLean v. Huddleston*, 459 U.S. 375, 387-91 (1983).

¹⁰² RB at 134.

¹⁰³ RB at 134-40.

¹⁰⁴ RB at 140.

¹⁰⁵ RB at 134.

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tension” between the patent and antitrust laws is unavailing. Patents are not inherently in tension with antitrust law. Patents do not necessarily create market power¹⁰⁶. More fundamentally, competition and patent policy both are aimed at encouraging innovation that benefits consumers, and generally work well together in doing so.¹⁰⁷

Nevertheless, Rambus suggests that two cases, in particular, support an extension of the clear and convincing standard to the facts in this proceeding. Neither case creates such a broad rule. The first case Rambus relies on is the Supreme Court’s decision in *Walker Process Equipment v. Food Machinery & Chemical Corp*¹⁰⁸. In *Walker Process*, the Supreme Court held that a patentee may be liable for violation of the antitrust laws if it enforces a patent obtained by knowing and willful fraud on the PTO, and if all other elements of a violation of Section 2 of the

¹⁰⁶ Ill. Tool Works, Inc. v. Indep. Ink, Inc., 126 S. Ct. 1281 (2006); see also U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY ¶ 2.2 (1995) [hereinafter IP GUIDELINES], available at <http://www.ftc.gov/bc/0558.pdf>.

¹⁰⁷ See *Atari Games Corp. v. Nintendo of America, Inc.*, 897 F.2d 1572, 1576 (Fed. Cir. 1990) (“[T]he aims and objectives of patent and antitrust laws may seem, at first glance, wholly at odds. However, the two bodies of law are actually complementary, as both are aimed at encouraging innovation, industry and competition.”); IP GUIDELINES, supra note 106, ¶ 1.0 (the patent and antitrust laws “share the common purpose of promoting innovation and enhancing consumer welfare”); FED. TRADE COMM’N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY, ch. 1 at 7-9 (2003) [hereinafter FTC INNOVATION REPORT], available at <http://www.ftc.gov/os/2003/10/innovationrpt.pdf>. When market power does result, “Antitrust law recognizes that a patent’s creation of monopoly power can be necessary to achieve a greater gain for consumers.” *Id.* at 9. Correspondingly, “[T]he Patent Clause itself reflects a balance between the need to encourage innovation and the avoidance of monopolies which stifle competition without any concomitant advance in the ‘Progress of Science and useful Arts.’” *Bonito Boats, Inc. v. Thunder Craft Boats*, 489 U.S. 141, 146 (1989) (quoting Article 1, Section 8 of the Constitution).

¹⁰⁸ 382 U.S. 172 (1965).

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Sherman Act are established¹⁰⁹. The rationale for this holding was to achieve “a suitable accommodation” between policies of the patent and antitrust laws by enjoining enforcement of a patent that conferred monopoly power when the patent was “procured by deliberate fraud.”¹¹⁰ Complaint Counsel in this case do not, however, allege that Rambus procured its patents through fraud on the PTO. Rather, it is alleged that Rambus manipulated the JEDEC standard-setting process by engaging in deceptive conduct, resulting in the unknowing adoption of standards that included Rambus’s lawfully patented technologies.

Rambus’s reliance on *Handgards, Inc. v. Ethicon, Inc.*¹¹¹ is similarly misplaced. The plaintiff there based a monopolization claim on allegations that the patentee pursued infringement actions in bad faith – with the knowledge that the patents, though lawfully obtained, were invalid¹¹². To provide a “means whereby the bad faith infringement action can be identified post hoc with a sufficiently high degree of certainty,” the court held that an

¹⁰⁹ *Id.* at 172, 175-77.

¹¹⁰ *Id.* at 189-90 (J. Harlan, concurring); *see also id.* at 176; *Nobelpharma AB v. Implant Innovations, Inc.*, 141 F.3d 1059, 1068-69 (Fed. Cir. 1998) (discussing the context in which the Supreme Court established the requirement of knowing and willful fraud). Subsequent cases established that, in *Walker Process* contexts, knowing and willful fraud on the PTO must be proven by clear and convincing evidence. *See C. R. Bard, Inc. v. M3 Systems, Inc.*, 157 F.3d 1340, 1365 (Fed. Cir. 1998) (indicating that clear and convincing evidence is necessary because of “the ease with which routine patent prosecution may be portrayed as tainted conduct”); *Caphote Corp. v. DeSoto Chemical Coatings, Inc.*, 450 F.2d 769, 772 (9th Cir. 1971) (justifying the clear and convincing evidence standard for finding *Walker Process* fraud on grounds of the “tortuous” road to the Patent Office and the complexity of patent litigation).

¹¹¹ 601 F.2d 986 (9th Cir. 1979).

¹¹² 601 F.2d at 986, 993-94 (noting that bad faith “is a subjective state of mind the existence of which, while not susceptible to certain proof, easily can spring from suggestive and weakly corroborative circumstances”).

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infringement suit presumptively is filed in good faith, and that the presumption can be rebutted only by clear and convincing evidence¹¹³. The court acknowledged that the clear and convincing standard is “not one intended to be utilized in antitrust litigation generally,” and expressly limited its holding on the use of the clear and convincing standard to “proceedings in which the alleged violation of the antitrust law consists solely of one or more infringement actions initiated in bad faith.”¹¹⁴ This case, however, involves allegations of deceptive conduct in the context of SSO activities; Rambus is not accused of initiating infringement actions in bad faith.

In short, the cases cited by Rambus do not support its assertion that the clear and convincing standard applies to the elements of this antitrust case because it happens to involve a patent. The Commission is not charged with deciding whether Rambus committed fraud on the PTO, or whether Rambus initiated its infringement actions in bad faith. The issue in the case before the Commission is whether Rambus, through its participation in JEDEC and in the context of JEDEC’s standard-setting processes, engaged in a deceptive course of conduct under

¹¹³ *Id.* at 993, 996 (noting that the clear and convincing standard in *Walker Process* and *Handgards* is commensurate with the statutory presumption of patent validity, 35 U.S.C. § 282). *See also* *CVD, Inc. v. Raytheon Co.*, 769 F.2d 842, 850 (1st Cir. 1985) (“a patentee who has a good faith belief in the validity of a patent will not be exposed to antitrust damages even if the patent proves to be invalid, or the infringement action unsuccessful”), *cert. denied*, 475 U.S. 1016 (1986).

¹¹⁴ *Id.* Other cases cited by Rambus arose in similar contexts. *See* *Loctite Corp. v. Ultraseal, Ltd.*, 781 F.2d 861, 876-77 (Fed. Cir. 1985) (requiring a clear and convincing showing that a plaintiff brought a patent infringement suit in bad faith, knowing that there was no infringement), *overruled on other grounds*, *Nobelpharma AB v. Implant Innovations, Inc.* 141 F.3d 1059, 1068 (Fed. Cir. 1998); *CVD*, 769 F.2d at 849-51 (requiring an antitrust plaintiff to prove bad faith assertion of trade secrets – with knowledge that no trade secrets existed – by clear and convincing evidence).

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Section 5 of the FTC Act¹¹⁵. No court has held that clear and convincing evidence is required to establish Section 5 deception¹¹⁶. To the contrary, as previously stated, the Supreme Court held that Section 7(c) of the APA establishes “a standard of proof and that the standard adopted is the traditional preponderance-of-the evidence standard.”¹¹⁷

2. Standard of Proof Should Be Commensurate With Proposed Remedy

Rambus’s second argument – that a heightened standard of proof is necessary because Complaint Counsel seek to bar enforcement of Rambus’s patents under certain circumstances – in effect would allow one potential remedy to determine the standard for establishing whether a violation of the antitrust laws occurred. The potential remedy should not influence the standard of proof for liability¹¹⁸. To the extent Rambus’s arguments might be

¹¹⁵ See, e.g., Complaint ¶¶ 2, 122-24.

¹¹⁶ See generally *FTC v. Algoma Lumber Co.*, 291 U.S. 67, 78-81 (1934) (holding that proof of fraud is not required to prove Section 5 deception).

¹¹⁷ See *Steadman v. SEC*, 450 U.S. 91, 95-102 (1981).

¹¹⁸ None of the cases cited by Rambus in its briefs support this contention. See *CVD v. Raytheon Co.*, 769 F.2d 842 (1st Cir. 1985) (appeal to set aside jury verdict; no ruling that remedy sought should determine standard of proof); *Livingstone v. North Belle Vernon Borough*, 91 F.3d 515 (3d Cir. 1996) (action to determine voluntariness of an oral release-dismissal agreement that waived all civil claims in exchange for dismissal of criminal case; holding that “clear and convincing” evidentiary standard should apply in narrow context of evaluating voluntariness of oral release-dismissal agreements); *Shepherd v. Am. Broad. Cos., Inc.*, 62 F.3d 1469 (D.C. Cir. 1995) (appeal of judicial sanctions; “clear and convincing” evidentiary standard not used to determine merits of the case); *Lindahl v. Office of Personnel Management*, 470 U.S. 768 (1985) (addressed issue of whether a federal worker may appeal an agency’s denial of disability retirement claim to the Federal Circuit; no ruling that “clear and convincing” evidentiary standard should apply to determine merits of federal worker’s underlying claim).

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relevant to our consideration of particular remedies, we will address them in that context.

We note, however, that even a remedy barring enforcement of a patent does not necessarily require a heightened standard of proof. The equitable estoppel defense to patent infringement provides an example. A patentee's infringement claim may be barred if an alleged infringer establishes the elements of equitable estoppel (*i.e.*, misleading conduct, reliance, and material prejudice). The Federal Circuit has held that these elements ordinarily must be proven only by a preponderance of the evidence, noting that the clear and convincing standard applies to civil cases only when special circumstances are present.¹¹⁹

3. Chilling Participation in SSOs

We are unpersuaded by Rambus's third argument that a heightened burden of proof is necessary to avoid chilling procompetitive participation in standard-setting activities. This argument implicitly assumes that the usual burden of proof, if applied to antitrust claims involving SSOs, somehow will reduce incentives to engage in beneficial standard-setting activities. Rambus provides, and we find, no basis for that assumption.

Rambus's argument ignores the potentially serious chilling effect of deceptive conduct in the SSO context. The Complaint alleged that Rambus deliberately sought to acquire a monopoly by using a standard-setting process to engage in patent hold-up. That

¹¹⁹ See *A.C. Aukerman Co. v. R.L. Chaides Constr. Co.*, 960 F.2d 1020, 1045-46 (Fed. Cir. 1992) (because no "special considerations are implicated by the defense of equitable estoppel as we defined it, we adopt the preponderance of the evidence standard in connection with the proof of equitable estoppel factors, absent special circumstances, such as fraud or intentional misconduct"). The antitrust case before the Commission does not entail the types of circumstances that have supported the requirement of clear and convincing evidence in other cases.

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conduct, if established, might itself chill participation in cooperative standard-setting activities¹²⁰. The success of cooperative standard setting depends on some assurance that other participants will not exploit the process by acting deceptively¹²¹. Requiring a heightened burden of proof when analyzing deception in the SSO context would diminish that assurance.

4. Reliance on Testimony Rather than Contemporaneous Written Evidence

Rambus's fourth argument – that clear and convincing evidence should be required because Complaint Counsel rely on “strained and faded memories”¹²² – lacks both legal and factual support. Rambus has not identified a single judicial opinion to support its claim that delayed testimony triggers a heightened evidentiary standard, even though delayed testimony is hardly unusual in litigation. The absence of such opinions is unsurprising: the rule proffered by Rambus would reward

¹²⁰ See, e.g., CX 2384 (letter from G. Kelley of IBM regarding a member's failure to disclose patents to JEDEC, stating: “I am and have been concerned that this issue can destroy the work of JEDEC. If we have companies leading us into their patent collection plates, then we will no longer have companies willing to join the work of creating standards”); Appleton, Tr. 6331-32 (if a company enforced a patent after failing to disclose it to JEDEC, it would “very much affect whether Micron participated [in JEDEC] or not”); Rhoden, Tr. 535-38 (Rambus's suits to enforce its patents relating to the JEDEC standards would cause “a fundamental shift away from open industry standardization”); Bechtelsheim, Tr. 5889 (if the “trust into the nature of an open standards process is violated, it makes it very difficult for me to rely on the standards groups developing standards”).

¹²¹ Cf. HERBERT HOVENKAMP ET AL., II IP AND ANTITRUST § 35.6 at 35-53 (Supp. 2003) (terming a standard-setting organization's desire “to make a fully informed decision on whether to adopt a particular standard” a “presumptively legitimate reason for requiring” disclosure of intellectual property).

¹²² See RB at 140, RRB at 5.

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defendants/respondents who engage in protracted deception and then foster pre-trial delays. In any event, Complaint Counsel in this case rely on contemporaneous documentary evidence in addition to the testimony of numerous witnesses. Many of Complaint Counsel's documentary exhibits are discussed throughout this Opinion.

* * * * *

In sum, Rambus failed to establish a basis for the Commission to impose a heightened "clear and convincing" evidentiary standard to determine liability in this case. Rather, Complaint Counsel have the burden to prove the necessary elements of liability by a preponderance of the evidence, in keeping with the normal rules applicable in FTC adjudications.¹²³

¹²³ Although the ALJ rejected Rambus's proposed clear-and-convincing standard, he achieved much the same result by citing *United States v. United States Gypsum Co.*, 333 U.S. 364 (1948), for the proposition that "where trial testimony is in conflict with contemporaneous documents, the trial testimony is entitled to little weight." *See* ID at 264-65. *Gypsum* actually was considerably more limited. After noting that "counsel were permitted to phrase their questions in extremely leading form, so that the import of the witnesses' testimony was conflicting" and that the testimony dealt with whether known conduct had involved actions taken in concert, the Court ruled, "Where such testimony is in conflict with contemporaneous documents, we can give it little weight, particularly when the crucial issues involve mixed questions of law and fact." 333 U.S. at 395-96. The ALJ ignores *Gypsum*'s limits and misapplies its rule. We find no inconsistency between the documents and testimony sufficient to invoke broad usage of the rule in *Gypsum*.

The ALJ found the *Gypsum* rule "especially appropriate here, where witnesses would directly benefit from the outcome of this litigation because they work for companies that either manufacture or use DRAMS that may infringe Rambus's patents, work for entities that are entirely controlled by DRAM manufacturers, or are committed to developing technologies that will compete with Rambus's technologies." ID at 265. This standard would call into question the utility and reliability of trial procedures in virtually all antitrust cases. In antitrust litigation, witnesses inevitably are "interested," in the sense that they represent one economic actor or another. In this proceeding, *both* Rambus's and Complaint Counsel's witnesses have an interest in the

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IV. MONOPOLIZATION CLAIM¹²⁴

Section 2 of the Sherman Act makes it unlawful to “monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations”¹²⁵ The Supreme Court has identified the basic elements of the offense:

The offense of monopoly under § 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a

outcome; depreciating their evidence on that basis indicts all live witness testimony. Economic interest gives us no basis to find that trial procedures – such as requiring a foundation for evidence and subjecting witnesses to cross-examination – are inadequate to compile a reliable record. Therefore, absent a specific reason to question the credibility or reliability of a specific witness or a specific statement, we find no basis to discredit any of the testimony in the record.

¹²⁴ Because we find that Rambus unlawfully monopolized the four relevant markets delineated by Complaint Counsel (and whose definition was not contested by Rambus), we need not consider the further allegations that Rambus attempted to monopolize those markets or that Rambus’s conduct otherwise constituted an unfair method of competition.

¹²⁵ 15 U.S.C. § 2. The Commission’s authority under Section 5 of the FTC Act reaches conduct that violates the Sherman Act. *See, e.g.*, *FTC v. Cement Inst.*, 333 U.S. 683, 694-95 (1948); *Fashion Originators’ Guild of America v. FTC*, 312 U.S. 457, 463 (1941); *Polygram Holdings, Inc.*, 5 Trade Reg. Rep. (CCH) ¶15,453 at 22,452 n.11 (FTC 2003), *available at* <http://www.ftc.gov/os/2003/07/polygramopinion.pdf> (slip op. at 13 n.11), *enforcement ordered*, *Polygram Holding, Inc. v. FTC*, 416 F.3d 29 (D.C. Cir. 2005).

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consequence of a superior product, business acumen, or historic accident.¹²⁶

The fundamental issues in this case are: (1) whether Rambus engaged in exclusionary conduct; (2) whether Rambus acquired monopoly power; and (3) whether there is a causal link between Rambus's conduct and its monopoly power. We consider each of these issues in turn.

A. Exclusionary Conduct1. Framework for Analysis

From the earliest days of Section 2 jurisprudence, courts have held that unilateral conduct, absent an “anticompetitive” or “exclusionary” element, is benign – even if it creates or maintains monopoly power, or is dangerously likely to do so – because “the successful competitor, having been urged to compete, must not be turned upon when he wins.”¹²⁷ As the Supreme Court noted in *Spectrum Sports, Inc. v. McQuillan*,¹²⁸ “[t]he law directs itself not against conduct which is competitive, even severely so, but against conduct which unfairly tends to destroy competition itself.”¹²⁹

¹²⁶ *United States v. Grinnell Corp.*, 384 U.S. 563, 570-71 (1966); *see also* *Verizon Communs., Inc. v. Law Offices of Curtis V. Trinko*, 540 U.S. 398, 407 (2004) (terming the *Grinnell* formulation “settled law”).

¹²⁷ *United States v. Alcoa*, 148 F.2d 416, 430-31 (2d Cir. 1945). *See also* *Verizon v. Trinko*, 540 U.S. at 407 (“To safeguard the incentive to innovate, the possession of monopoly power will not be found unlawful unless it is accompanied by an element of anticompetitive conduct.”) (emphasis omitted).

¹²⁸ 506 U.S. 447 (1993).

¹²⁹ *Id.* at 458.

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Exclusionary conduct is “conduct other than competition on the merits – or other than restraints reasonably ‘necessary’ to competition on the merits – that reasonably appear[s] capable of making a significant contribution to creating or maintaining monopoly power.”¹³⁰ Stated differently, if “a firm has been attempting to exclude rivals on some basis other than efficiency,” it is engaging in exclusionary conduct¹³¹. The focus, at all times, is on harm to competition, not merely harm to competitors.¹³²

The exclusionary element alleged here is that Rambus engaged in a course of deceptive conduct¹³³. Complaint Counsel assert that Rambus created the misimpression that it was not seeking relevant patents, thereby misleading JEDEC members regarding the price of Rambus’s technology and thwarting their ability to make informed choices. This sort of deceptive conduct is not competition on the merits. Just as “false or misleading advertising has an anticompetitive effect,”¹³⁴ distorting choices

¹³⁰ III PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶ 651f, at 83-84 (2d ed. 2002). Several courts have relied on this definition. *See, e.g.*, *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 605 n.32 (1985); *Multistate Legal Studies, Inc. v. Harcourt Brace Jovanovich Legal & Prof'l Publ'ns, Inc.*, 63 F.3d 1540, 1550 (10th Cir. 1995), *cert. denied*, 516 U.S. 1044 (1996); *Town of Concord v. Boston Edison Co.*, 915 F.2d 17, 21 (1st Cir. 1990), *cert. denied*, 499 U.S. 931 (1991).

¹³¹ *See Aspen Skiing*, 472 U.S. at 605 (“If a firm has been ‘attempting to exclude rivals on some basis other than efficiency,’ it is fair to characterize its behavior as predatory”) (footnote omitted), quoting ROBERT H. BORK, *THE ANTITRUST PARADOX* 138 (1978).

¹³² *See, e.g.*, *Nynex Corp. v. Discon, Inc.*, 525 U.S. 128, 139 (1998) (requiring harm to “the competitive process”); *Town of Concord*, 915 F.2d at 21-22 (requiring harm to “the competitive process” such as by obstructing the achievement of lower prices, better products, or more efficient production methods); III AREEDA & HOVENKAMP, *ANTITRUST LAW* ¶ 651c, at 78-79.

¹³³ Complaint, ¶¶ 2, 122-24.

¹³⁴ *Cal. Dental Ass’n v. FTC*, 526 U.S. 756, 771 n.9 (1999).

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through deception obscures the relative merits of alternatives and prevents the efficient selection of preferred technologies.¹³⁵

The courts have established that deception may constitute “exclusionary conduct” that will support a Section 2 claim in appropriate circumstances¹³⁶. In *United States v. Microsoft*, for example, the United States Court of Appeals for the District of Columbia Circuit found that Microsoft’s deception with respect to Java applications was exclusionary¹³⁷. As discussion of the legal and factual circumstances and the nature of Rambus’s conduct makes clear, proof of the deceptive conduct alleged in this case would establish the exclusionary element required by Section 2.

We stand on familiar ground when we evaluate whether Rambus engaged in a deceptive course of conduct. Section 5 of the FTC Act proscribes, *inter alia*, deceptive acts and practices, and accordingly, the Commission has developed special expertise to determine whether conduct is deceptive¹³⁸. Lest there be any doubt as to the elements of deceptive conduct under Section 5, those elements were spelled out in the Commission’s 1983 Policy

¹³⁵ *Cf.* *FTC v. Ind. Fed’n of Dentists*, 476 U.S. 447, 461-62 (1986) (describing the anticompetitive consequences of “an effort to withhold (or make more costly) information desired by consumers for the purpose of determining whether a particular purchase is cost justified”).

¹³⁶ *See* *Conwood Co., LP v. U.S. Tobacco Co.*, 290 F.3d 768 (6th Cir. 2002) (maintaining monopoly power by, *inter alia*, providing misleading market data to retailers in order to distort their purchasing decisions violated Section 2); *Caribbean Broad. Sys. Ltd. v. Cable & Wireless PLC*, 148 F.3d 1080, 1087 (D.C. Cir. 1998); *International Travel Arrangers, Inc. v. Western Airlines*, 623 F.2d 1255, 1262-63, 1270 (8th Cir.), *cert. denied*, 449 U.S. 1063 (1980).

¹³⁷ *See* *United States v. Microsoft Corp.*, 253 F.3d 34, 76-77 (D.C. Cir. 2001); *see also infra* Section IV.A.1.b. (discussing the *Microsoft* case).

¹³⁸ *FTC v. Colgate-Palmolive Co.*, 380 U.S. 374, 391-92 (1965); *Kraft, Inc. v. FTC*, 970 F.2d 311 (7th Cir. 1992).

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Statement on Deception (Policy Statement),¹³⁹ which the courts have treated as the definitive description of those elements under the FTC Act.¹⁴⁰

According to the Policy Statement, for conduct to be found deceptive, there must have been a “misrepresentation, omission or practice” that was “material” in that it was likely to mislead “others acting reasonably under the circumstances” and thereby likely to affect their “conduct or decision[s].” Thus, in order to determine whether conduct (including a course of conduct) is deceptive, we must consider “the circumstances” in which the alleged “misrepresentation, omission or practice” occurred. We analyze the legal circumstances, factual circumstances, and nature of the conduct itself in assessing Rambus’s conduct.

a. Legal Circumstances

Because this is a monopolization case, Rambus’s allegedly deceptive conduct ultimately must be analyzed under Section 2 of the Sherman Act¹⁴¹. That requires two modifications to the analysis articulated by the Policy Statement. First, under the Policy Statement, the respondent’s state of mind is irrelevant in determining whether the respondent engaged in deceptive conduct under Section 5. Under Section 2, however, the defendant must act “willfully” in acquiring or maintaining monopoly power.

¹³⁹ Federal Trade Commission, *Policy Statement on Deception* (1983), reprinted in 4 Trade Reg. Rep. (CCH) ¶ 13,205 at 20,911-12 [hereinafter *Policy Statement*].

¹⁴⁰ *Novartis Corp. v. FTC*, 223 F.3d 783 (D.C. Cir. 2000); *FTC v. Pantron I Corp.*, 33 F.3d 1088 (9th Cir. 1994), *cert. denied*, 514 U.S. 1083 (1995).

¹⁴¹ Whatever the potential breadth of Section 5 of the FTC Act in these circumstances, our analysis in this opinion rests on the traditional criteria for evaluating allegations of monopolization under Section 2 of the Sherman Act.

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Thus, for Rambus's allegedly deceptive course of conduct to be actionable under the Sherman Act, Rambus must have acted "willfully," as opposed to inadvertently or even negligently.¹⁴²

Second, the Policy Statement does not require proof of competitive harm for a respondent's conduct to be deemed deceptive under Section 5. However, under Section 2, in order to be condemned as "exclusionary," defendant's conduct must harm the competitive process, and that anticompetitive harm must outweigh the conduct's procompetitive benefits, if any¹⁴³. Thus, for Rambus's alleged deceptive course of conduct to be actionable under Section 2, the conduct must have an anticompetitive effect that outweighs any procompetitive benefit.

Rambus argues that we should apply the "sacrifice test" as the framework for our analysis. That is, its conduct should be deemed exclusionary only if it would have been unprofitable to the defendant – if the defendant would have sacrificed profits – "but for" the expectation that the conduct would exclude rivals and permit the defendant to recoup its losses via the acquisition of long-run monopoly power¹⁴⁴. Stated more generally, the so-called sacrifice test condemns conduct that would not make "economic

¹⁴² Some commentators have noted that the term "willful" often provides only limited guidance: "every firm 'willfully' maintains its profits or market share . . ." III AREEDA & HOVENKAMP, ANTITRUST LAW, *supra* note 130, ¶ 651 at 76. They posit that courts often have "focused on conduct while talking about intent." *Id.* In the context of deceptive conduct, however, willfulness helps in determining "whether the challenged conduct is fairly characterized as 'exclusionary' or 'anticompetitive,'" *Aspen Skiing, Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 602 (1985), by distinguishing intentionally deceptive conduct from conduct that, while misleading, is merely inadvertent or negligent.

¹⁴³ *United States v. Microsoft Corp.*, 253 F.3d 34, 58-59 (D.C. Cir. 2001).

¹⁴⁴ RB at 110-12.

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sense” but for the elimination or lessening of competition¹⁴⁵. Rambus contends that keeping information about its patent applications secret and refusing to share that information with competitors was beneficial to Rambus, regardless of what happened at JEDEC, and therefore could not be exclusionary¹⁴⁶. The ALJ concurred¹⁴⁷. We believe this was error both as a matter of law and as a matter of fact.

As a matter of law, we recognize that the sacrifice test may be well-suited to certain types of Section 2 claims where the risk of interfering with vigorous competitive activity is heightened,¹⁴⁸ but the test is not appropriate here. It misses conduct that reduces consumer welfare, but happens to be inexpensive to execute, and therefore does not involve a significant profit sacrifice. For example, defrauding the PTO in order to secure a patent that

¹⁴⁵ See A. Douglas Melamed, *Exclusive Dealing Arrangements and Other Exclusionary Conduct – Are There Unifying Principles?*, 73 ANTITRUST L.J. 375, 389-403 (2006) (stating views of counsel for Rambus in this proceeding).

¹⁴⁶ RB at 113-15.

¹⁴⁷ See ID at 286-87, 289, 292.

¹⁴⁸ Some court decisions have employed the test’s underlying concept in the context of predatory pricing. See, e.g., *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 588-89 (1986) (explaining that pricing below competitive levels entails forgoing profits and that, to make this rational, there must be a reasonable expectation of later recoupment through monopoly profits); *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039, 1062 (Cir. 2000); *Conoco Inc. v. Inman Oil Co.*, 774 F.2d 895, 905-06 (8th Cir. 1985). Other court decisions have applied similar thinking to unilateral refusals to deal with rivals. See, e.g., *Morris Communications v. PGA Tour*, 364 F.3d 1288, 1295 (11th Cir.), *cert. denied*, 125 S.Ct. 87 (2004); cf. *Verizon Communs., Inc. v. Law Offices of Curtis V. Trinko*, 540 U.S. 398, 409 (2004) (explaining that in the *Aspen Skiing* refusal-to-deal case, “[t]he unilateral termination of a voluntary (and thus presumably profitable) course of dealing suggested a willingness to forsake short-term profits to achieve an anticompetitive end”) (emphasis original).

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confers a monopoly demands little profit sacrifice, yet the Supreme Court has held that such fraud can violate Section 2¹⁴⁹. Likewise, in this case, without reducing prices, forgoing sales, or even spending substantial funds beyond what it otherwise would have spent, Rambus's conduct may have imposed substantial costs on rivals and contributed significantly to the creation of monopoly power. In cases such as this, the *Microsoft* analysis – with its focus on determining “whether the monopolist’s conduct on balance harms competition”¹⁵⁰ – is the proper lens for scrutinizing allegedly exclusionary conduct.¹⁵¹

b. Factual Circumstances

The factual context in which the alleged conduct occurred is critical. For example, in *Microsoft*, the D.C. Circuit concluded that Microsoft violated Section 2 by making misleading statements to Independent Software Vendors (ISVs) in a context

¹⁴⁹ See *Walker Process Equipment, Inc. v. Food Mach. & Chem. Corp.*, 382 U.S. 172 (1965).

¹⁵⁰ *Microsoft*, 253 F.3d at 58-59.

¹⁵¹ See *Caribbean Broad. Sys. Ltd. v. Cable & Wireless PLC*, 148 F.3d 1080, 1087 (D.C. Cir. 1998) (noting that anticompetitive conduct takes “many different forms” and is highly “dependent on context”). Although Rambus highlights FTC/DOJ support for the sacrifice test in various briefs, the agencies have made it clear that exclusionary conduct “need not always entail economic sacrifice.” Brief of Amici Curiae United States & Federal Trade Commission on Writ of Certiorari at 11 n.2 (Dec. 2002), *Verizon v. Trinko*, 540 U.S. 398 (No. 02-682). Indeed, the agencies suggested a standard that would condemn conduct with harm to competition “disproportionate” to its benefits – along the lines of *Microsoft’s* balancing test – for purposes of assessing opportunistic behavior in the standard-setting process. Brief of Amici Curiae United States & Federal Trade Commission at 14-15 (May 2003), *Trinko* (No. 02-682). The agencies urged reserving the “sharper focus” provided by the sacrifice test for situations such as the refusal-to-aid-rivals claim presented in *Trinko*, for which antitrust interference was thought likely to offer “infrequent pro-competitive benefits” and “frequent anticompetitive risks.” *Id.* at 15, 17.

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in which the ISVs reasonably could have expected that Microsoft would *not* mislead them. Specifically, Microsoft publicly committed to cooperate with Sun Microsystems (Sun), and also offered ISVs a set of “Java implementation tools” that ostensibly would enable them to develop cross-platform applications¹⁵². Thus, there was a reasonable expectation that the relationship between Microsoft and Sun and, more importantly, between Microsoft and the ISVs, would be characterized by cooperation, not deception. The record showed, however, that Microsoft sought to use unwitting ISVs to generate Windows-dependent applications that were incompatible with other platforms. To that end, Microsoft surreptitiously included in its implementation tools certain key words or directives that could be executed solely by Microsoft’s version of the Java runtime environment for Windows¹⁵³. In light of the expectations of a cooperative relationship, Microsoft’s deceptive conduct was opaque. Consequently, countermeasures were hard, if not impossible, to implement, and there was a substantial threat of competitive harm.

In contrast, deceptive conduct in competitive environments is less likely to be actionable under Section 2, because misrepresentations, deceptive practices, or omissions in the context of competitive relationships are less likely to be material. For example, we agree with the reasoning in two recent appellate cases finding that misleading statements in the advertising contexts there at issue were not grist for Section 2 claims¹⁵⁴.

¹⁵² 253 F. 3d at 76.

¹⁵³ *Id.*

¹⁵⁴ *See* Am. Council of Certified Podiatric Physicians & Surgeons v. Am. Bd. of Podiatric Surgery, 323 F.3d 366, 370-72 (6th Cir. 2003) (applying a rebuttable presumption that effect on competition of misleading advertising material was *de minimis*); Am. Prof’l Testing Services v. Harcourt Brace Jovanovich Legal & Prof’l Publ’ns, Inc., 108 F.3d 1147, 1152 (9th Cir. 1997) (same).

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Those decisions make sense in the “rough and tumble” of the competitive marketplace because the allegedly misleading hyperbole was transparent to rivals, who generally could protect themselves by engaging in their own counter-advertising. Therefore, there was a relatively low risk that significant anticompetitive effects would occur in that context.

Unlike those advertising cases, the very different circumstances presented here suggest that deceptive conduct could have caused lasting competitive harm by obscuring crucial information, known only to one industry member, until it was too late to counteract the consequences. In this context, we cannot stress too strongly the importance we place on the fact that the challenged conduct occurred in the context of a standard-setting process in which members expected each other to act cooperatively. We recognize that standard setting of the type sponsored by JEDEC potentially yields significant efficiencies¹⁵⁵ – especially when the standards facilitate interoperability among various components, to the likely benefit of industry participants as well as consumers¹⁵⁶. Although standard setting displaces the normal process of selection through market-based competition – by which, without any agreement, the purchasing decisions of customers determine which interoperable combinations of products and technologies ultimately will survive – the efficiency benefits of consensus standard setting easily can outweigh that loss of competition.

Even under the best of circumstances, however, the standard-setting process has a unique potential to skew the competitive

¹⁵⁵ See *Moore v. Boating Indus. Ass'n*, 819 F. 2d 693, 695 (7th Cir. 1987); *cf.* United States Dep't of Justice and Federal Trade Comm'n, *Antitrust Guidelines for Collaborations Among Competitors* (2000) reprinted in 4 Trade Reg. Rep. (CCH) ¶ 13,160, available at <http://www.ftc.gov/os/2000/04/ftcdojguidelines.pdf>.

¹⁵⁶ See, e.g., *Williams*, Tr. 763; *Calvin*, Tr. 994; *Polzin*, Tr. 3972.

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process by aligning supply and demand in a prescribed direction¹⁵⁷. The risk of competitive harm is heightened in the face of exclusionary conduct that does not constitute competition on the basis of efficiency and that interferes with the cooperative nature of the standard-setting process. Exclusionary conduct such as deception may distort the selection of technologies and evade protections designed by SSOs to constrain the exercise of monopoly power, with substantial and lasting harm to competition¹⁵⁸. Additionally, unlike misleading statements made in advertising – which can be corrected quickly by a competitor’s counter-advertising – there are fewer “quick fixes” available to correct the competitive harm caused by deception in the SSO context, once a standard has been chosen and the industry has become locked in. If exclusionary conduct reduces or destroys the efficiencies to be gained through consensus standard setting, it may cause considerable harm to competition. If the anticompetitive harm exceeds any remaining efficiencies, standard setting is no longer beneficial on balance.

Consequently, courts have scrutinized conduct related to standard setting¹⁵⁹. For example, the Supreme Court has condemned efforts to bias the standard-setting process by

¹⁵⁷ See *Standard Sanitary Mfg. Co. v. United States*, 226 U.S. 20, 41 (1912); FTC Bureau of Consumer Protection, Standards and Certification Final Staff Report, at 28, 34 (April 1983); Michael Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. ECON. PERSPECTIVES 93, 105-06 (1994); Richard Gilbert, *Symposium on Compatibility: Incentives and Market Structure*, 40 J. INDUS. ECON. 1 (1992).

¹⁵⁸ See *infra* Sections IV.C.1, IV.C.2, and IV.C.3.c., d.

¹⁵⁹ See *Allied Tube & Conduit Corp. v. Indian Head, Inc.*, 486 U.S. 492, 500 (1988) (“Agreement on a product standard, is after all, implicitly an agreement not to manufacture, distribute, or purchase certain types of products. Accordingly, private standard setting associations have traditionally been objects of antitrust scrutiny.”); *Am. Soc’y of Mech. Engineers, Inc. v. Hydrolevel Corp.*, 456 U.S. 556, 571 (1982).

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“stacking” the decision making body with voters interested in excluding a competing product¹⁶⁰. The Court also has recognized that the power to distort the interpretation of standards is the “power to frustrate competition in the marketplace.”¹⁶¹ Likewise, prior Commission enforcement efforts have targeted distortions of standard-setting processes that have led to the creation of market power.¹⁶²

Antitrust scrutiny of possibly deceptive conduct in the standard-setting context is especially warranted when the standard-setting body has determined to carry out its work in an environment ostensibly characterized by cooperation, rather than rivalry – in other words, when the circumstances closely resemble those in *Microsoft* (as distinguished from the competitive environment in the Section 2 advertising cases mentioned above). In a consensus-oriented context, participants in the standard-setting process are likely to be less wary of deception; they are less likely to detect and take countermeasures to counteract it, and anticompetitive effects therefore are more likely to result. The magnitude of potential anticompetitive consequences may also be

¹⁶⁰ See *Allied Tube*, 486 U.S. at 508 (“petitioner was at least partially motivated by the desire to lessen competition and . . . stood to reap substantial economic benefits from making it difficult for respondent to compete”), 511.

¹⁶¹ See *Am. Soc’y of Mech. Engineers*, 456 U.S. at 571.

¹⁶² See *Union Oil Co.*, Dkt. No. 9305, Decision & Order, ___ F.T.C. ___, 2005 WL 2003365 (2005), available at <http://www.ftc.gov/os/adjpro/d9305/050802do.pdf> (consent order resolving allegations that Unocal illegally had acquired monopoly power by misrepresenting to a state standard-setting board that certain research was non-proprietary while pursuing patent claims that would have enabled Unocal to charge royalties for low-emission gasoline compliant with the standard); *Dell Computer Corp.*, 121 F.T.C. 616 (1996) (consent order resolving allegations that, after certifying that it had no relevant patents, Dell sought to enforce patents adopted by a standard-setting organization).

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as substantial as it was in *Microsoft*, given the potential for a standard to create market or monopoly power.¹⁶³

We do not hold, and our decision should not be read to mandate, that all SSOs should require disclosure of relevant intellectual property. An SSO may choose not to require such disclosures. If, however, an SSO does require such disclosures, then non-disclosure – followed by adoption of a standard incorporating the intellectual property, and royalty demands against those practicing the standard – may be considered a material omission and may constitute deceptive conduct under Section 5. If an SSO chooses not to require such disclosures, SSO members still are not free to lie or to make affirmatively misleading representations. In either case, whether the SSO requires disclosure should be judged not only by the letter of its rules, but also on how the rules are interpreted by its members, as evidenced by their behavior as well as by their statements of what they understand the rules to be.

c. Nature of the Conduct

In order to assess fully the circumstances under which the alleged deception occurred, we also must understand the nature of the allegedly deceptive course of conduct, which combined the acquisition and exploitation of patents with a cooperative standard-setting process. A patent holder's market power may be materially enhanced once the patented technology is incorporated into a standard, as alternatives become less attractive relative to the chosen technology and less able to constrain its price¹⁶⁴. For

¹⁶³ See HOVENKAMP ET AL., II IP AND ANTITRUST, *supra* note 121, at § 35.5b at 35-43 (Supp. 2006) (“the competitive risk is that the misrepresentation [defined to include omissions] will cause a standard-setting organization to adopt a standard it otherwise would have rejected, and that the adoption of that standard will in turn confer on the defendant market power it would not otherwise have obtained.”).

¹⁶⁴ See *Dell Computer Corp.*, 121 F.T.C. 616, 624 (1996) (Statement of the Federal Trade Commission); McAfee, Tr. 7494-95.

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this reason, Rambus's alleged course of conduct, if established, could be especially pernicious to the competitive process.

An SSO may elect to require disclosure of patent positions before standardization decisions are made, because this enables SSO participants to make their choices with more complete knowledge of the consequences – including the potential that those practicing the standard may be liable for patent infringement, unless they negotiate licenses and pay royalties. If the SSO members prefer a given technology, notwithstanding the prospect of royalties, they can vote to incorporate it into the standard. If, in light of likely royalty payments, members prefer an alternative technology, they can vote against inclusion of the patented technology.

Disclosure of potential patent liability also helps avoid the possibility of hold-up by enabling SSO participants to seek protection from excessive royalties “*ex ante*” – *i.e.*, before choosing which technologies to incorporate into the standard. For example, an SSO member expecting to sell products that conform to the standard, who gains knowledge of potential patent exposure, may have powerful economic incentives to negotiate a license *before* the technology becomes standardized, based on the lower, *ex ante* value of the patented technology¹⁶⁵. Similarly, the

¹⁶⁵ Complaint Counsel's economic expert sets out the basis for this reasoning in greater detail. *See* McAfee, Tr. 7260-75, 7294-7308; *see also* Brief Amicus Curiae of Economics Professors and Scholars at 6-7 (presenting the views of six university economists). Rambus's economic expert, Richard Rapp, has acknowledged that “[s]tandard setting has the potential to create market power and enhance the market value of a technology by reducing the number of close substitutes.” Richard T. Rapp & Lauren J. Stiroh, Testimony at FTC/DOJ Hearings Regarding Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, at 2 (Apr. 18, 2002), *available at* <http://www.ftc.gov/opp/intellect/020418rappstiroh.pdf>. Rapp continued, “In the absence of knowledge about proprietary IP rights in the technologies under consideration, manufacturers may find themselves the victims of opportunism after the standard has been set.” *Id.* at 5. (Rapp's testimony identified a number of conditions that he argued must be met for anticompetitive harm to

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owner of the patented technology may prefer to offer an *ex ante* license – even at a lower *ex ante* rate – knowing that the other SSO participants otherwise might engage in a cost/benefit analysis and opt to standardize an entirely different technology. Indeed, under certain circumstances, members of an SSO may even collectively negotiate these types of *ex ante* licenses, without necessarily running afoul of the antitrust laws.¹⁶⁶

In sum, standard setting can function as an efficient substitute for selecting interoperable technologies through direct competition. Rambus’s course of conduct allegedly impaired these processes within JEDEC. Complaint Counsel argue that Rambus deprived other JEDEC members of information needed to make an efficient selection of the “best” technologies for SDRAM standards, based on an analysis of likely costs as well as benefits. Rambus’s conduct also purportedly prevented other JEDEC members from avoiding exposure to monopoly pricing by securing commitments regarding future royalty rates at a time when alternative technologies still offered unblunted competition. Under the Policy Statement, these circumstances are relevant to our analysis of whether Rambus’s course of conduct constituted deception in violation of Section 5 of the FTC Act. Under Section 2 case law, these circumstances suggest exclusionary conduct: deceptive behavior that hides the price of a patented technology is not “competition on the merits,”¹⁶⁷ and deception that thwarts

occur. We quote his statements for their agreement with Complaint Counsel’s general theory, not as representative of any concession that anticompetitive conduct occurred in this case.)

¹⁶⁶ See Chairman Deborah Platt Majoras, Recognizing the Procompetitive Potential of Royalty Discussions in Standard Setting, Remarks Before Standardization and the Law: Developing the Golden Mean for Global Trade (Stanford, Cal., Sept. 23, 2005), available at <http://www.ftc.gov/speeches/majoras/050923stanford.pdf>.

¹⁶⁷ See, e.g., *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 605 n.32 (1985); *Multistate Legal Studies, Inc., v. Harcourt Brace Jovanovich Legal & Publ’ns, Inc.*, 63 F.3d 1540, 1550 (10th Cir. 1995),

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informed choice is not competition on the “basis [of] efficiency.”¹⁶⁸

2. Rambus’s Course of Conduct

Applying the analytical framework to the facts of this case, we first consider whether Rambus engaged in a course of conduct in its JEDEC activities that included potentially deceptive conduct – *i.e.*, “misrepresentations, omissions, or practices.”¹⁶⁹ There is little room for dispute about what Rambus did, because much of the evidence in the record regarding Rambus’s conduct came from Rambus’s own documents and witnesses.¹⁷⁰

Based on that evidence, we find that Rambus concealed the patent applications it filed, and the patents it obtained, until JEDEC had adopted its SDRAM and DDR SDRAM standards. Once those standards were adopted, Rambus abused their adoption by suing firms that practiced the standards for patent infringement. Rambus also used information derived from JEDEC meetings to develop a patent portfolio that would cover JEDEC’s SDRAM standards – a practice which, although it may not be clearly “deceptive” standing alone, nonetheless facilitates hold-up in a cooperative standard-setting context.

The record reveals the following chronology of events.

cert. denied, 516 U.S. 1044 (1996); *Town of Concord v. Boston Edison Co.*, 915 F.2d 17, 21 (1st Cir. 1990), *cert. denied*, 499 U.S. 931 (1991).

¹⁶⁸ See *Aspen Skiing*, 472 U.S. at 605 (“If a firm has been ‘attempting to exclude rivals on some basis other than efficiency,’ it is fair to characterize its behavior as predatory”) (footnote omitted), quoting ROBERT H. BORK, *THE ANTITRUST PARADOX* 138 (1978).

¹⁶⁹ *Policy Statement*, *supra* note 139, at 20,911-12.

¹⁷⁰ Of course, documents destroyed by Rambus might have provided additional details regarding Rambus’s activities. See *infra* Section V.

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a. The Chronology of Concealment

1991. JEDEC was in the early stages of work on the SDRAM standard¹⁷¹ when Rambus attended its first JEDEC meeting and joined JEDEC in December 1991¹⁷². Within a few days of that JEDEC meeting, Rambus's Executive Vice President (EVP), Allen Roberts, called Lester Vincent, Rambus's outside patent counsel, to speak with him about "patent deadlines"; Roberts also informed staff that a Rambus goal for the first quarter of 1992 was "patent filing."¹⁷³

1992. Rambus engineer William Garrett represented Rambus at its first JEDEC meeting as a member in February 1992. Following the meeting, Garrett reported to his supervisors that SDRAMs were inevitable and that SDRAM could be standardized sooner than expected¹⁷⁴. Shortly afterwards, on March 5, 1992, Rambus responded to the PTO's restriction requirement¹⁷⁵ by

¹⁷¹ Fully synchronous DRAM initially was proposed to JEDEC in May 1991. IDF 297. Rambus's patented versions of two of the relevant technologies are included in the SDRAM standard: programmable CAS latency and programmable burst length. Rambus's patented versions of the other two relevant technologies – dual-edge clocking and on-chip PLL/DLL – were included in the next generation of SDRAM, called DDR-SDRAM. All of these technologies were considered for inclusion into the SDRAM standard.

¹⁷² CX 602 at 1-3. Rambus already had met with a number of DRAM manufacturers in an effort to convince them to license RDRAM. *See supra* Section II.A.

¹⁷³ CX 1705 at 34.

¹⁷⁴ CX 672 at 1 ("SDRAMs will happen.").

¹⁷⁵ *See supra* note 19 and accompanying text.

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filing ten divisional applications, all claiming priority based on the 1990 filing date of the original '898 application.¹⁷⁶

On March 25, 1992, EVP Roberts and outside counsel Vincent discussed the steps Rambus would need to take to be in a position to accuse manufacturers of JEDEC-compliant SDRAM of infringement¹⁷⁷. Two days later, Roberts and Richard Crisp (an engineer who served as Rambus's primary JEDEC representative from May 1992 until Rambus withdrew from JEDEC membership)¹⁷⁸ met with Vincent again to discuss Rambus's patent position as a member of JEDEC. Vincent advised both Roberts and Crisp that "there could be [an] equitable estoppel problem if Rambus creates an impression on JEDEC that it would not enforce its patent or patent appln [application]," but that the case would be "less clear cut if Rambus is merely silent."¹⁷⁹

Early in April 1992, Crisp requested and received from Vincent abstracts of Rambus's current patent applications¹⁸⁰. In

¹⁷⁶ The patents that Rambus has asserted against SDRAM and DDR SDRAM manufacturers each derive from continuations of the '898 application or from continuations of one of these divisional applications. *See supra* Section II.A; IDF 171; Nusbaum, Tr. 1511-12.

¹⁷⁷ According to Vincent's notes, Roberts told Vincent with regard to JEDEC that Rambus "need[s] preplanning before accus[ing] others of infringement." CX 1941 at 1.

¹⁷⁸ Crisp, Tr. 2929.

¹⁷⁹ CX 1942. Equitable estoppel is a defense against infringement under patent law. It generally means that, if a patent holder's actions justify a belief that he has no intent to enforce the patent, then he is prevented (*i.e.*, equitably estopped) from enforcing the patent at a later date. *See, e.g.*, *Stambler v. Diebold*, 11 U.S.P.Q.2D (BNA) 1709 (E.D.N.Y. 1988). Vincent also advised that Rambus would be better able to defend against an equitable estoppel claim if Rambus abstained from voting at JEDEC. CX 1942.

¹⁸⁰ CX 1945 at 1; Crisp, Tr. 3050.

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April 1992, Crisp attended a JEDEC task group meeting that focused on SDRAMs. Reporting back to Rambus executives on the meeting's events, Crisp discussed the technologies under consideration, stressed the JEDEC members's concern with price, and concluded that "the group is pretty set on using the SDRAMs."¹⁸¹

On May 2, 1992, Roberts met with Vincent to discuss claims that Crisp wanted to add to Rambus's patent applications, including a claim covering programmable latency and, if needed, a claim involving programmable burst length – two technologies eventually incorporated into the SDRAM standard¹⁸². After attending a JEDEC meeting later that month, Crisp spoke with Vincent to discuss adding claims to the divisional applications¹⁸³. In that same month, Rambus CEO Tate called a meeting with Rambus executives, including Crisp and Roberts, to discuss: (1) how JEDEC SDRAMs might infringe Rambus's patents ("What patents do synchronous DRAMs violate of ours?"); (2) how Rambus might add claims to cover JEDEC standards ("What extensions should we be filing to add claims based on original inventions?"); and (3) the nature of Rambus's disclosure duties to

¹⁸¹ CX 1708.

¹⁸² CX 1946; Crisp, Tr. 3057-58. Vincent's notes state "Add claims to mode register to control latency output timing depending upon clock – specify clock cycle" and "check whether original application has

block s . . (?)." The latter is a reference to programmable burst length. *See* Horowitz, Tr. 8661-62 (stating that he uses "variable block size" and "variable burst length" interchangeably); Geilhufe, Tr. 9642-43 ("variable block size" and "programmable burst length" are "[d]ifferent terms describing the exact same function"). Crisp was unable "at this point in time" (*i.e.*, at trial) to remember what the reference – misread to him by trial counsel as "blocks" – dealt with, but he acknowledged that he was "unsure whether we had claims in that area" and that he had "suggested to Mr. Roberts that if we didn't, we should have some claims in those areas, including blocks." Crisp, Tr. 3059.

¹⁸³ CX 34 at 1, 59; CX 1947.

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JEDEC (“What obligation do we have to advise JEDEC that we have filed but unissued patents that sync do/may infringe?”).¹⁸⁴

In June and July 1992, members of the JC 42.3 subcommittee, including Rambus, voted on whether the SDRAM standard should include a programmable mode register to set CAS latency and burst length¹⁸⁵. The ballot asked the representative of each voting member whether he or she was aware of any relevant patents¹⁸⁶. The ballot also asked members voting against the proposal to explain their reasons and asked specifically about any patent issues. IBM, which voted against the proposal, noted that “patent issues need to be cleaned up before we proceed.”¹⁸⁷ Rambus omitted to disclose the existence of any pending or issued patents,¹⁸⁸ even though Rambus was working on claims relating to the mode register, programmable latency, and burst length at the time¹⁸⁹. Rambus voted against the proposal, citing technical reasons (*e.g.*, an inadequate number of power pins).¹⁹⁰

One week after the June 1992 ballot was circulated, Rambus CEO Tate forwarded to the firm’s executives a “specific” business plan that outlined a patent strategy regarding SDRAMs:

¹⁸⁴ See CX 5101 (Tate e-mail, asking questions under the heading “JEDEC”).

¹⁸⁵ CX 252a.

¹⁸⁶ *Id.* at 2.

¹⁸⁷ JX 13 at 9.

¹⁸⁸ *Id.*

¹⁸⁹ See CX 1946; CX 1947.

¹⁹⁰ Crisp, Tr. 3080; JX 13 at 9.

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[W]e believe that Sync DRAMs [SDRAMs] infringe on some claims in our filed patents, and that there are additional claims we can file for our patents that cover features of Sync DRAMs. Then we will be in position to request patent licensing (fees and royalties) from any manufacturer of Sync DRAMs. Our action plan is to determine the exact claims and file the additional claims by the end of Q3/92. Then to advise Sync DRAM manufacturers in Q4/1992.¹⁹¹

In August 1992, Rambus specifically assigned JEDEC representative Crisp responsibility for overseeing development of amended patent claims to “provide better coverage” against SDRAMs¹⁹². Crisp followed up with outside counsel Vincent regarding the status of the planned amendments¹⁹³. In September 1992, Crisp requested that Vincent file an amendment adding claims relating to “DRAM - multiple open row addresses” and “DRAM - programmable latency via control reg” to Rambus’s pending applications¹⁹⁴. Crisp requested these additional claims to “cause problems with synch DRAM.”¹⁹⁵ Crisp agreed to provide Vincent with a copy of the “synch DRAM spec.”¹⁹⁶ Crisp and Vincent also discussed adding claims relating to on-chip PLLs on

¹⁹¹ CX 543a at 14-17 (Rambus 1992-97 Business Plan, devoting a majority of discussion of competition to SDRAM).

¹⁹² See CX 5104 at 1 (Rambus CEO Tate’s “Notes from 8/26 Strategy Meeting” stating, “Richard [Crisp] will work to add modifications to our patents to provide better coverage, if possible, for Masters and against Ramlink/Synch DRAMs.”).

¹⁹³ See Crisp, Tr. 3087-88; CX 1930 at 42.

¹⁹⁴ Crisp, Tr. 3097, 3099-3100; CX 1949.

¹⁹⁵ CX 1949 at 1.

¹⁹⁶ *Id.* at 4.

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DRAMs, in response to a formal presentation at JEDEC¹⁹⁷. In November 1992, Crisp met with Vincent to follow up on claim amendments and received copies of Rambus's pending patent applications¹⁹⁸. A December 1992 Rambus planning document noted intentions to "get a copy of the SDRAM spec and check it for features we need to cover as well as features which violate our patents."¹⁹⁹

1993. In January 1993, Rambus CEO Tate scheduled an "Objectives meeting" to discuss, among other things, "patents – vs. SDRAM."²⁰⁰ In February 1993, per Crisp's instructions, Rambus worked on adding claims relating to programmable latency and on-chip PLL/DLL²⁰¹. The following month, the JC 42.3 subcommittee voted to send its proposed SDRAM standard, which included programmable CAS latency and burst length, to the JEDEC Council for approval.²⁰²

On May 17, 1993, while the proposed SDRAM standard was awaiting final approval by the JEDEC Council, Rambus filed a preliminary amendment to another of its divisional

¹⁹⁷ *Id.* at 1, 5-7.

¹⁹⁸ CX 682; CX 1930 at 59; CX 1951 at 1.

¹⁹⁹ CX 1821 at 24.

²⁰⁰ CX 5106.

²⁰¹ CX 686; Crisp, Tr. 3121-22 (explaining that Crisp provided Rambus engineer Fred Ware with a list of possible claim amendments including "DRAM with programmable access latency . . . [and] DRAM using PLL/DLL circuit to reduce input buffer skews"). Crisp and Vincent continued to communicate regarding patent application amendments during the following months. *See* CX 1930 at 83; CX 1957.

²⁰² IDF 351; JX 15 at 14.

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applications²⁰³. Rambus engineer Fred Ware shortly afterwards described the amendment, which involved programmable CAS latency, as “directed against SDRAMs.”²⁰⁴ Crisp agreed.²⁰⁵

One week after Rambus filed its amendment, on May 24, 1993, the JEDEC Council formally adopted the SDRAM standard²⁰⁶. The SDRAM standard incorporated programmable CAS latency and programmable burst length, two of the technologies that Rambus claims are covered by its patents.²⁰⁷

After the SDRAM standard was adopted, the JC 42.3 subcommittee turned to work on the next generation of SDRAM, which became DDR SDRAM²⁰⁸. At the same time, Rambus continued to amend its patent applications to cover JEDEC-compliant products. In June 1993, Rambus engineers worked with Vincent to amend Rambus’s patent applications with claims specifically directed against SDRAMs or future SDRAMs²⁰⁹. On June 18, 1993, an e-mail from Ware to Crisp and others noted that a claim for “DRAM with PLL clock generation” that was “directed against future DRAMs” was “partially written up” and

²⁰³ CX 1456 at 198-210 (amending Patent Application No. 07/847,651).

²⁰⁴ CX 1959 (June 18, 1993 Ware e-mail); Crisp Tr. 3153-56. Years later, in preparation for Micron’s litigation against Rambus, Ware examined the preliminary amendment and concluded that the scope of the claims was not as broad as he originally had thought. CX 2103 (Ware *Micron* Dep.) at 100 (*in camera*).

²⁰⁵ CX 703.

²⁰⁶ IDF 354-356.

²⁰⁷ IDF 355; JX 56 at 114.

²⁰⁸ See, e.g., Rhoden, Tr. 460-63, 1200; Williams, Tr. 820; Sussman, Tr. 1402, 1429; G. Kelley, Tr. 2567, 2585-87.

²⁰⁹ See CX 1959.

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needed to be finished and filed²¹⁰. Crisp responded that this “sounds really good [and] matches what I have requested and what I believe has happened.”²¹¹

1994. Rambus executives continued to correspond and meet with Vincent in early 1994 to “talk about patent strategies.”²¹² In March 1994 Rambus President David Mooring called for an “IP maximization strategy” to be put in place by the next quarter.²¹³

Throughout 1994, Rambus continued to work on amending its applications, focusing on SDRAMs or future SDRAMs such as DDR. In May of that year, Roberts requested that Vincent consider ways to add or strengthen claims covering programmable CAS latency and dual-edged clocking, which subsequently became features of DDR SDRAM²¹⁴. Rambus CEO Tate monitored the progress of Rambus’s patent activity and asked for progress reports, particularly regarding the claims “that read directly on current/planned sdrams.”²¹⁵

²¹⁰ CX 1959. *Compare* Nusbaum, Tr. 1584 *with* Fliesler Tr. 8867 (disagreeing as to whether claims filed on June 28, 1993 actually covered a subsequent PLL proposal).

²¹¹ CX 703.

²¹² CX 718 (e-mail dated January 5, 1994, setting up meeting with Vincent for January 12, 1994)CX 19__.

²¹³ CX 726 (e-mail dated March 15, 1994). Mooring’s e-mail also proposed that Rambus “kick-off another patenting spree focused on the controller side of things” to take advantage of “a window of opportunity left while we still have confidential information . . .” *Id.*

²¹⁴ CX 734.

²¹⁵ CX 740 (June 1994 e-mail from Tate to Roberts requesting “a list of which claims we are making that read directly on current/planned sdrams and on what most might be, so i can track progress from lester’s [Vincent’s] periodic status lists”).

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In September 1994, JEDEC participants made formal presentations relating to on-chip PLL/DLL technology for later-generation SDRAM (which became known as DDR SDRAM)²¹⁶. Although Crisp knew that Rambus had been pursuing patent claims covering on-chip PLL, he omitted to disclose any patents or patent applications at this meeting²¹⁷. His report to Rambus management on the meeting stated, “Obviously we need to think about our position on this for potential discussion with NEC regarding patent issues here.”²¹⁸ Crisp e-mailed Roberts that he thought Rambus eventually would bring infringement actions in areas such as “PLL on a DRAM . . . programmable access latencies and host of other areas.”²¹⁹ In that same month, September 1994, Rambus amended its 08/222,646 application (the ‘646 application) to add claim 151, relating to dual-edged clocking.²²⁰

²¹⁶ At the JC 42.3 meeting on September 13-14, 1994, NEC made a presentation that proposed “putting a PLL on board their SDRAMs to improve the output delay.” CX 711 at 36. This presentation led Crisp to conclude that “others are seriously planning inclusion of PLLs on board SDRAMs.” *Id.* at 37.

²¹⁷ Crisp, Tr. 3316.

²¹⁸ CX 711 at 36.

²¹⁹ CX 757 at 1. A few weeks later, another Crisp e-mail to Rambus executives described on-chip PLL as “one of our key technology patents” and emphasized, “If it is allowed, we need to be able to collect on it.” CX 763. *See also* CX 766 (October 1994 Crisp e-mail suggesting a strategy for encouraging “the SDRAM boys” to make use of on-chip PLLs so that Rambus could then sue them for infringement).

²²⁰ CX 1493 at 183-85. *Compare* Nusbaum, Tr. 1597-98 *with* Fliesler, Tr. 8858 (both observing that claim 151 involved receiving data in response to both the rising and falling edges of a clock signal but disagreeing as to further implications). Roberts previously had circulated to Rambus executives drafts of the claim amendments, which Roberts described as “[Lester Vincent’s] attempt to work the claims for the MOST/SDRAM defense.” CX 746 at 1.

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1995. In April 1995, Rambus CEO Tate reiterated objectives of “get[ting] royalties from competitive memory” that used just one or a few of Rambus’s technologies; called for verification that “all ideas we have requested to be filed as general patents re [SDRAM] have been [filed]”; and directed that Rambus “hold on patent issuances till then.”²²¹ In May 1995, Crisp recommended that Rambus continue to keep its patent position secret, explaining that “it makes no sense to alert them [JEDEC] to a potential problem they can easily work around.”²²² Through the summer, Crisp participated in work “on enhancing claim coverage.”²²³ In October 1995, Rambus amended one of its patent applications to insert claims relating to on-chip PLL/DLL technology²²⁴. One week after filing these amendments, Rambus received a JC 42.3 survey ballot on “Future Synchronous DRAM Features.” The ballot asked whether members believed that “on chip PLL or DLL is important to reduce the access time from the clock for future generations of SDRAMs,” and whether “future generations of SDRAMs could benefit from using BOTH edges of the clock for sampling inputs.”²²⁵ Rambus did not vote, and it failed to disclose the existence of any application that related to either on-chip PLL/DLL or dual-edge clocking²²⁶. At the meeting at which the ballot results were discussed, JEDEC member MOSAID disclosed that it had applied for a patent applicable to PLLs/DLLs; Crisp acknowledged that “even after seeing this disclosure of a patent

²²¹ CX 5110 at 2-3.

²²² CX 711 at 73.

²²³ CX 5112.

²²⁴ IDF 963; CX 1502 at 233-39.

²²⁵ CX 260 at 12 (emphasis original); JX 28 at 45.

²²⁶ Crisp, Tr. 3341; JX 28 at 45 (listing firms that provided responses).

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application,” he “did not say anything with respect to any Rambus patent application concerning PLLs or DLLs.”²²⁷

Crisp advised management in September 1995 that Rambus should “redouble [its] efforts to get the necessary amendments completed, the new claims added and make damn sure this ship is watertight before we get too far out to sea.”²²⁸ In fall 1995, Rambus’s new in-house counsel, Anthony Diepenbrock, outlined Rambus’s patent strategy at a company-wide retreat²²⁹. Diepenbrock’s presentation described Rambus’s “offensive” patent strategy as “find[ing] key areas of innovation in our IP that are essential to creating a competing device” and “claim[ing] these areas as broadly as possible within the scope of what we invented.”²³⁰ The first two examples cited in Diepenbrock’s presentation were DLLs and dual-edge clocking.²³¹

Meanwhile, Diepenbrock advised Crisp – just as Vincent had in 1992 – that Rambus faced a risk of equitable estoppel based on its participation in JEDEC²³². Diepenbrock urged that Rambus withdraw from JEDEC²³³. At his next JEDEC meeting, in December 1995, Crisp made private inquiries regarding JEDEC’s

²²⁷ Crisp, Tr. 3341-44. Crisp promptly reported MOSAID’s disclosure to Rambus management. *See* CX 711 at 192.

²²⁸ CX 837 at 2.

²²⁹ Diepenbrock, Tr. 6129-30.

²³⁰ CX 1267; Diepenbrock, Tr. 6131.

²³¹ CX 1267; Diepenbrock, Tr. 6132-33.

²³² Crisp, Tr. 3442.

²³³ *Id.* at 3442-43.

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patent policy²³⁴. Based on these discussions, as summarized in an e-mail to Rambus executives, Crisp stated that it was unacceptable “to not speak up when we know that there is a patent issue, to intentionally propose something as a standard and quietly have a patent in our back pocket we are keeping secret that is required to implement the standard and then stick it to them later (as WANG and SEEQ did).”²³⁵

Later that month, Vincent sent Diepenbrock “materials relating to the proposed [FTC] consent order involving Dell computer,” which resolved allegations of unfair methods of competition based on Dell’s assertion of patent rights after its representative had certified to an SSO that a standard under consideration did not infringe any Dell patents²³⁶. Vincent’s notes from the period conclude that there should be “no further participation in any standards body . . . do not even get close!!”²³⁷

1996. On January 11, 1996, Vincent met with Rambus executives – including Tate, Crisp, and Diepenbrock – to discuss *Dell* and other matters²³⁸. Rambus attended no JEDEC meetings after this date²³⁹. According to Crisp, Rambus was concerned that

²³⁴ *Id.* at 3440-44, 3447-48; CX 711 at 188 (Crisp e-mail describing conversations with Sanyo’s Howard Sussman and VLSI Technology’s Desi Rhoden). Crisp testified that he sought this information because Rambus was considering making a presentation regarding a proposed technology. Crisp, Tr. 3440-41, 3447-48.

²³⁵ CX 711 at 188. Crisp’s e-mail adds, “I am unaware of us doing any of this or of any plans to do this.” *Id.*

²³⁶ CX 1990. *See* *Dell Computer Corp.*, 121 F.T.C. 616 (1996).

²³⁷ CX 1928 (emphasis original).

²³⁸ CX 3126 (Vincent *Infineon* Dep.) at 536-38 (*in camera*).

²³⁹ Rambus Answer, ¶ 41.

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attendance at future meetings could leave Rambus in a vulnerable position in future litigation.²⁴⁰

During this period, however, Rambus continued to build its patent portfolio. On October 6, 1995, the PTO had sent Rambus's attorney a notice of allowability on the '646 application, which had claims relating to dual-edged clocking²⁴¹. According to Diepenbrock, this meant that "the patent office has reason to believe or believes that the claims should go to issuance."²⁴² Rambus paid the issuance fee on January 5, 1996, and the ensuing patent, No. 5,513, 327 ("the '327 patent") issued on April 30, 1996²⁴³. Issuance of this patent was a noteworthy event within Rambus²⁴⁴.

On June 17, 1996, Rambus sent a letter to JEDEC, signed by Crisp, stating that Rambus was not renewing its membership²⁴⁵. Rambus enclosed "a list of Rambus U.S. and foreign patents" and stated that "Rambus has also applied for a number of additional patents in order to protect Rambus technology."²⁴⁶ The letter emphasized that "Rambus reserves all rights regarding its intellectual property."²⁴⁷ Rambus omitted from the list that it provided to JEDEC the only then-issued patent that Rambus

²⁴⁰ CX 858 at 2 ("the current plan is to go to no more JEDEC meetings due to fear that we have exposure in some possible future litigation"); Crisp, Tr. 3358.

²⁴¹ CX 1482; Diepenbrock, Tr. 6190. *See supra* note 220.

²⁴² Diepenbrock, Tr. 6151.

²⁴³ *Id.* at 6185, 6192; CX 1494.

²⁴⁴ Diepenbrock, Tr. 6194.

²⁴⁵ CX 887.

²⁴⁶ *Id.*

²⁴⁷ *Id.*

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believed covered technology under consideration by JEDEC – the ‘327 patent.²⁴⁸

Rambus’s June 1996 withdrawal letter also omitted information that would have allowed JEDEC members to adopt standards that would avoid infringing Rambus’s intellectual property. While the letter mentioned inconsistency between JEDEC and Rambus with respect to the “terms” of licensing, and purported to reserve Rambus’s rights respecting its intellectual property, Rambus omitted to disclose that it had used information gleaned during JEDEC meetings to develop a patent portfolio covering JEDEC’s SDRAM and DDR SDRAM standards, and also omitted to disclose the patent applications Rambus had filed to implement its strategy. To the contrary, the letter stated, “To the extent that anyone is interested in the patents of Rambus, I have enclosed a list of Rambus U.S. and foreign patents.”²⁴⁹ Rambus’s list identified *only* patents unrelated to JEDEC’s work²⁵⁰. Rambus’s letter stated that Rambus had applied for “a number of additional patents” but the letter did not suggest that future patents would be any more applicable to JEDEC’s DRAM standards than were the issued patents on the list.

²⁴⁸ See CX 5013 (designated R401208-09) (Joel Karp presentation regarding “Enforcement Scenario for 1999,” stating, “ ’327 – covers DDR (dual-edged clocking)”). (The “R” designation refers to Bates stamp numbers that appear on this and other exhibits admitted into this record from the *Infineon* litigation.)

²⁴⁹ CX 887.

²⁵⁰ Although some of the listed patents derived from the ’898 application, none of them applied to JEDEC’s SDRAM and DDR SDRAM work, Jacob Tr. 5365-66, 5501-02, and none was named in Rambus’s infringement complaints or counterclaims against DRAM manufacturers. Compare CX 887 at 2 (Rambus’s list of issued patents) with CX 1855 (complaint against Hitachi), CX 1867 (complaint against Infineon), CX 1878 at 13-14 (counterclaims against Hyundai), CX 1891 at 2 (claims asserted against Hyundai/Hynix), and CX 1880 at 29-38 (counterclaims against Micron).

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*1997 and subsequent years*²⁵¹. Although Rambus terminated its JEDEC membership in 1996, Rambus continued to receive information on the activities of JEDEC after 1996. Beginning in 1997, Crisp received information from a source that he referred to as “deep throat.”²⁵² Crisp also received information from three other unsolicited sources known as “Mixmaster,” a reporter called “Carroll Contact,” and “secret squirrel.”²⁵³ According to Crisp, these sources provided information on the features of devices being proposed for standardization²⁵⁴. Crisp shared the information he obtained from these inside sources with Rambus’s executives and engineers,²⁵⁵ and this information was used in the

²⁵¹ By including herein a discussion of Rambus's post-resignation conduct, we do not mean to suggest that a firm that never participated in a standard-setting process – or that did so without deception, then resigned from the SSO – would be at risk of Section 2 liability if it monitored the standard-setting process from the outside and developed a patent portfolio covering standards it believed would be adopted. Rambus's post-resignation conduct was quite different. It represented the continuation, albeit in a different form, of a deceptive course of conduct that began more than four years before Rambus formally “resigned” from JEDEC. Rambus’s “resignation” did nothing to cure its prior course of conduct. If anything, the resignation operated to conceal further Rambus’s course of conduct, because Rambus’s resignation letter left the impression that Rambus had disclosed what was relevant when, in fact Rambus had done nothing of the sort. Under these circumstances, treating Rambus’s post-resignation conduct as benign could invite further abuses of standard-setting processes that otherwise might be procompetitive.

²⁵² CX 929; CX 932.

²⁵³ IDF 280-81; Crisp Tr. 3412-18.

²⁵⁴ Crisp Tr. 3417.

²⁵⁵ CX 935 at 1; CX 929 at 1; CX 973 at 1; CX 979 at 1; CX 1014 at 1.

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continuing process of filing and amending Rambus's patent applications.²⁵⁶

Additionally, although no longer a JEDEC member, Rambus continued to conceal its relevant patent applications. Rambus CEO Tate, for example, stated in a February 1997 e-mail to Rambus executives, "do *NOT* tell customers/partners that we feel DDR may infringe – our leverage is better to wait."²⁵⁷ Likewise, a July 1997 e-mail by Rambus Chairman of the Board Bill Davidow stated that "[o]ne of the things we have avoided discussing with our partners is intellectual property problem [infringement by SyncLink and SDRAM/DDR SDRAM] We are hoping that they will either drop their competitive efforts or discover for themselves that they have violated Rambus patents and will conclude that getting around them will be either extremely difficult or impossible and will take a lot of time."²⁵⁸ And in its October 1998 "strategy update," Rambus stated, "We should not assert patents against Direct partners until ramp reaches a point of no return."²⁵⁹ In sum, after leaving JEDEC, Rambus strategically maintained its silence, thereby prolonging the misimpression created by its prior conduct.

By March 1998, a DDR SDRAM standard incorporating all four of the technologies that Rambus claims are covered by its patents had been approved by the JC 42.3 committee²⁶⁰. The

²⁵⁶ Crisp Tr. 3418. *See generally* CX 5115 (November 1996 Tate e-mail announcing plans for an "IP strategy" panel to discuss Rambus efforts to use intellectual property "in process" to "block . . . SDRAM-2").

²⁵⁷ CX 919.

²⁵⁸ CX 938 at 1.

²⁵⁹ CX 5011 at 3 (designated R401155).

²⁶⁰ IDF 380; JX 40 at 7-8; CX 375.

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JEDEC Council approved that standard, and it was published as a JEDEC standard in August 1999²⁶¹. By November 1999, Rambus had obtained all four patents cited in its first complaint against JEDEC-compliant uses (filed against Hitachi) in January 2000.²⁶²

b. Rambus's "Notice" to JEDEC

Rambus claims that it twice gave notice to JEDEC of its patents and patent applications through responses to questions. Based on our review of the evidence regarding those incidents, we find that, far from giving notice, Rambus's responses were evasive and, indeed, misleading.

The first incident, in May 1992, was an outgrowth of concerns held by IBM and Siemens regarding possible Rambus patents on dual-bank designs. In the course of a discussion of that technology at a JEDEC meeting, some of the participants noted the possibility that Rambus and Motorola might have patents on multi-bank designs (a technology that is not at issue here)²⁶³. Motorola's representative promised to check and to get back to JEDEC with

²⁶¹ IDF 381; CX 234.

²⁶² CX 1855. Rambus followed this initial suit with a complaint against Infineon, filed in August 2000, CX 1867, and with counterclaims against Hyundai/Hynix, CX 1878, and Micron, CX 1880, filed in February 2001, all alleging infringement based on JEDEC-compliant uses. Rambus quickly induced other industry members to enter licenses covering production of JEDEC-compliant products. *See* CX 1391a at 8 (November 2000 Tate "Big Picture Update," stating that more than 40% of the "SDRAM/DDR market" had already accepted Rambus licenses); CX 1154 (November 2000 Tate e-mail noting that SDRAM/DDR SDRAM and RDRAM licenses already gave Rambus royalties from close to half of the entire DRAM market); [REDACTED]

²⁶³ *See* RX 297 at 4-5; CX 2089 at 133 (Meyer *Infineon* Trial Tr.) (*in camera*).

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an answer²⁶⁴. Expressing concern that Rambus might have a patent on multi-bank designs, and noticing that Rambus had stayed silent, Siemens's Meyer asked the DRAM task group chairman, Gordon Kelley of IBM, to pose a direct question to Rambus²⁶⁵. Kelley asked whether Rambus wanted to comment²⁶⁶. Rambus's representative, Crisp, shook his head "no."²⁶⁷ Crisp did not explain whether that gesture meant that Rambus lacked such a patent, whether he did not know the answer to the question posed, or something else. He did *not* say that the gesture meant that Rambus would not disclose relevant patents or patent applications, and the record shows that those present did not read that into his gesture.²⁶⁸

The second incident relates to a May 1995 JEDEC subcommittee discussion of the SyncLink memory technology.

²⁶⁴ See CX 2089 at 133 (Meyer *Infineon* Trial Tr.) (*in camera*).

²⁶⁵ See CX 673; CX 2089 at 133, 164 (Meyer *Infineon* Trial Tr.) (*in camera*).

²⁶⁶ See Crisp, Tr. 3066 (Kelley "asked me if I cared to comment and I declined to comment"); CX 673 (Crisp e-mail stating, "Gordon Kell[e]y of IBM asked me if we would comment which I declined."); CX 2089 at 136 (Meyer *Infineon* Trial Tr.) (*in camera*) (Kelley formulated the question as, "Do you want to give a comment on this"). *But cf.* G. Kelley, Tr. 2543 (unable to recall whether he had said anything to Rambus and suggesting that it was Meyer who asked Rambus whether it had patentable material).

²⁶⁷ See CX 673; CX 2089 at 135-37 (Meyer *Infineon* Trial Tr.) (*in camera*) ("he just shook his head"); Calvin, Tr. 1068-70 (Crisp responded in the negative); RX 290 at 3 ("NO RAMBUS COMMENTS"); RX 297 at 5 ("No comments given").

²⁶⁸ Intel's Calvin testified that the incident gave him no concern. Calvin, Tr. 1070-71. Meyer and Kelley ultimately concluded that Rambus had no relevant patents. CX 2089 at 151-52 (Meyer *Infineon* Trial Tr.) (*in camera*); G. Kelley, Tr. 2545-46, 2562. Only IBM's Kellogg termed the lack of response by Rambus a concern, Kellogg, Tr. 5323, but he also testified that the May 1992 meeting did not cause him to understand that Rambus had intellectual property applicable to SDRAM. *Id.* at 5056.

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This is not a technology at issue here²⁶⁹. A number of companies were asked whether they had relevant patents. Intel's Sam Calvin asked whether Rambus had patents relevant to SyncLink, and then DRAM task group chairman, IBM's Gordon Kelley, addressed to Crisp a request that Rambus provide a statement as to whether Rambus had patents that covered SyncLink.²⁷⁰

At the next JEDEC subcommittee meeting on September 11, 1995, Rambus furnished a written response that focused on its patents and patent applications relevant to SyncLink alone²⁷¹. Indeed, except for the concluding sentence, the entire statement referred exclusively to SyncLink. The record shows that the JEDEC meeting attendees interpreted the statement as relating to SyncLink only and therefore of no moment²⁷². Moreover, Rambus

²⁶⁹ Crisp agreed that "the SyncLink proposal was similar to the Rambus architecture in a number of places." Crisp, Tr. 3254-55. SyncLink, like RDRAM but unlike SDRAM and DDR SDRAM, involved a narrow-bus technology, using multiplexing and packetization for command and address information. *See, e.g.*, Becker, Tr. 1203-04; Sussman, Tr. 1405 (SyncLink a "totally different architecture" from SDRAM and DDR SDRAM); G. Kelley, Tr. 2573; Crisp, Tr. 3254 (SyncLink packetized); CX 1069 (same); Kellogg, Tr. 5090-91 and 5095 (SyncLink involved a narrow bus and packetization; it had some similarities to RDRAM); Tabrizi, Tr. 9119. RamLink, from which SyncLink evolved, used a narrow-bus, packetized, and fully multiplexed architecture, as did RDRAM. *See id.* at 9116-17, 9119; *see generally* RX 555 at 5 (April 1995 Crisp letter noting that RamLink and RDRAM "work in a very similar manner").

²⁷⁰ *See* CX 711 at 73 (Crisp's meeting report, indicating that "Kelley asked to have us state whether or not Rambus knows of any patents especially ones we have that may read on Synchronlink"); Crisp, Tr. 3266-67 (agreeing that Kelley asked for a report as to whether "Rambus knows of any patents that may read on SyncLink"); G. Kelley, Tr. 2578. JEDEC minutes of the meeting provide no specifics. *See* JX 26 at 10 (stating only, "Patent issues were a concern in this proposal.").

²⁷¹ *See* JX 27 at 26.

²⁷² *See* Sussman, Tr. 1411-13; Kellogg, Tr. 5093-96. Indeed, JEDEC's minutes described the discussion entirely in terms of SyncLink and its

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took additional steps to deflect attention from the potential breadth of the statement's final sentence²⁷³. After Kelley commented that Rambus had not said anything, Crisp re-framed the final sentence in terms of SyncLink: "I reminded them . . . that our silence was not an agreement that we have no IP *related to SyncLink* (sic). . . ."²⁷⁴ In addition, Crisp reminded the members

predecessor, RamLink. *See* JX 27 at 4 ("SyncLink/ RamLink patents were discussed. Rambus noted at the general meeting their position (see [the message presented by Crisp]).").

Between April and August 1995, Crisp told several people that SyncLink and RamLink likely violated Rambus's patents. *See* RX 555 at 5 (statement to Hyundai regarding RamLink); CX 711 at 73 (statement to Intel representatives regarding SyncLink), 80 and 90-91 (statement to JEDEC consultant regarding RamLink, forwarded by recipient to IBM and Hewlett Packard (HP) JEDEC participants, among others), 104-05 (statement to HP JEDEC participant regarding RamLink and SyncLink); RX 592 at 2 (August 1995 statement to SyncLink Consortium regarding RamLink and SyncLink). Although the ALJ treated Crisp's SyncLink/RamLink disclosures as giving notice regarding JEDEC standards, ID at 280-81, the record shows only that the disclosures raised concerns regarding SyncLink. For example, on June 12, 1995 – two days after receiving a copy of Crisp's statement regarding Rambus patents covering RamLink, CX 711 at 90 – IBM's Gordon Kelley called for an IBM review of possible Rambus patents on SyncLink. RX 575 at 6-7.

In this context, Rambus's September 1995 message sounded no alarm. As Crisp phrased it, subcommittee chairman Kelley's reaction was that "he heard a lot of words, but did not hear anything said." CX 711 at 166. Similarly, Motorola's meeting report termed the Rambus letter a "non-statement statement." RX 615 at 1. Crisp even encouraged the reaction that Rambus was revealing nothing new. *See* RX 576 at 2 (June 1995 Crisp e-mail to an HP JEDEC participant, noting that Crisp already had shared his personal opinion that Rambus patents would cover SyncLink and RamLink, and that in September Rambus would provide an "official" response to JEDEC's request "to report on our patent coverage relative to SyncLink").

²⁷³ Rambus's statement ends, "Our presence or silence at committee meetings does not constitute an endorsement of any proposal under the committee's consideration nor does it make any statement regarding potential infringement of Rambus intellectual property." JX 27 at 26.

²⁷⁴ CX 711 at 167 (emphasis added).

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that Rambus previously had reported a patent to JEDEC, suggesting that this placed Rambus in the category of JEDEC members who had disclosed patents.²⁷⁵

* * * * *

The record demonstrates that Rambus's course of conduct included two species of potentially deceptive conduct set forth in the Policy Statement:

- Rambus made potentially deceptive omissions via its continuing concealment of its patents and patent applications until after the DDR SDRAM standard was in place; and
- Rambus made outright misrepresentations when it gave evasive and misleading responses to questions about its conduct.

In addition, Rambus used information gained through its participation in JEDEC to help shape a patent-filing strategy that included filing patent applications covering key parts of the SDRAM and DDR SDRAM standards.

This course of conduct was intentionally pursued, in accordance with a strategy that was spelled out in Rambus's own internal documents and e-mails. We conclude that Rambus's course of conduct had the potential to be deceptive and, under the circumstances of this case, exclusionary.

²⁷⁵ CX 711 at 167; Crisp, Tr. 3312-13. During its membership, Rambus disclosed no patent applications and only one issued patent to JEDEC, U.S. Patent No 5,243,703 ("the '703 patent"), which Rambus disclosed in September 1993. Crisp, Tr. 3173, 3176; CX 1801 at 3; Parties' First Set of Stipulations, Item 11. None of the claims of the '703 patent covered SDRAM or DDR SDRAM. *See* Parties' First Set of Stipulations, Item 10 (stating that as of January 1996 Rambus held no issued U.S. patents essential for compliance with any JEDEC standard); Crisp, Tr. 3173-74; Jacob, Tr. 5498-99.

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3. The JEDEC Environment

Next, we consider the standard-setting environment at JEDEC. The ALJ focused on whether JEDEC's rules imposed on JEDEC members an affirmative duty to disclose their patents and patent applications. Finding that the rules did not expressly contain such a requirement, the ALJ concluded that Rambus had no duty to disclose its patent filings and, therefore, that Rambus had not engaged in any wrongful conduct²⁷⁶. We respectfully find that this analysis and conclusion were erroneous. The Complaint in this case alleged not just a breach of a duty to disclose under JEDEC rules, but a course of conduct that was materially deceptive under *all* of the circumstances in which the standard setting occurred.²⁷⁷

²⁷⁶ See IDF 766-85, 902, 939-82; ID at 260-79.

²⁷⁷ We recognize that the Federal Circuit in *Infineon* found Rambus not liable, ruling that Rambus had not breached a duty to disclose. However, the case before the Federal Circuit in *Infineon* was very different from the case here. In particular, the claim before the Federal Circuit was a state law fraud claim. *Rambus, Inc. v. Infineon Tech. AG*, 318 F.3d 1081, 1084, 1087 (Fed. Cir. 2003). In contrast, this case involves a federal antitrust claim alleging exclusionary, deceptive conduct. See *FTC v. Freecom Commc'ns., Inc.*, 401 F.3d 1192, 1203 n.7 (10th Cir. 2005) ("A § 5 claim simply is not a claim of fraud as that term is commonly understood . . ."). The standards of proof for these claims are different. To prove a fraud case in Virginia, the plaintiff had to meet a clear and convincing evidence standard. *Id* at 1096. Here, Complaint Counsel must satisfy a lower preponderance of the evidence burden. See *supra* Section III.

Not only are the claims and evidentiary standards different, but so are the records. We take note that the joint appendix that presented the evidentiary record on which the Federal Circuit relied contained the testimony of only *two* industry witnesses (other than witnesses from Rambus and Infineon and the parties' experts) – AMI-2's Desi Rhoden (previously employed by HP and then by VLSI) and IBM's Gordon Kelley. In contrast, the record in this proceeding, from which we have assessed the industry's understandings and expectations, contains testimony from approximately 30 non-Rambus, industry witnesses. Our record includes testimony from five DRAM manufacturers and from major DRAM customers and developers of systems and complementary components,

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In order to determine whether Rambus's course of conduct actually was deceptive, we need to consider the totality of the circumstances in which that conduct occurred. For the reasons discussed below, we find that JEDEC's policies (including the policies of its parent, EIA) and practices, considered as a whole, gave JEDEC's members reason to believe the standard-setting process would be cooperative and free from deceptive conduct. In that environment, we find that Rambus's course of conduct was likely to be "material" because it was likely to infect the decisions of JEDEC members with respect to the SDRAM standards to be adopted.

a. EIA/JEDEC Policies and their Dissemination

The record shows that although EIA/JEDEC policies are not a model of clarity, a duty of good faith underlies the standard-setting process under those policies. Specifically, under the EIA/JEDEC rules, "[a]ll EIA standardization programs . . . shall be carried on in good faith under policies and procedures which will assure fairness and unrestricted participation"²⁷⁸ Another general EIA regulation provides that EIA standardization programs "shall not be proposed or indirectly result in . . . restricting competition, giving a competitive advantage to any manufacturer, excluding competitors from the market . . . except where required to meet one or more of the" enumerated "legitimate public interest" objectives²⁷⁹.

To accomplish that EIA goal, as the majority opinion in *Rambus v. Infineon Technologies A.G.* declared,²⁸⁰ JEDEC's

such as Sun, Compaq, Cray, Cisco, Intel, AMD, ATI, nVIDIA, Texas Instruments, and Sanyo, in addition to multiple witnesses from HP and IBM.

²⁷⁸ CX 204 at 5.

²⁷⁹ *Id.*

²⁸⁰ 318 F. 3d 1081, 1098 (Fed. Cir. 2003).

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Manual of Organization and Procedure (the JEDEC manual) expressly obligated the subcommittee chairperson to remind members to inform the meeting of any patents or applications “that might be involved in the work” being undertaken²⁸¹. EIA General Counsel/JEDEC legal counsel John Kelly testified that JEDEC’s rules required disclosure of patents and patent applications²⁸². For most of the time that Rambus was a member

²⁸¹ CX 208 at 19 (JEP21-I, JEDEC Manual of Organization and Procedure) (Oct. 1993). Although Rambus and the ALJ question whether this manual was officially adopted, *see* RB at 15-16, IDF 627-28, the record does not support that speculation. *See* CX 205 at 15 (establishing procedure for amending predecessor manual 21-H); CX 54 at 7, G. Kelley, Tr. 2428, and J. Kelly, Tr. 1925 (together establishing that the specified steps occurred). For present purposes, however, the important point is that manual JEP21-I was operative – it shaped JEDEC members’ expectations. Numerous JEDEC members understood that the JEP21-I manual set out JEDEC’s disclosure policies. *See, e.g.*, Rhoden, Tr. 311-13; Sussman, Tr. 1349; Landgraf, Tr. 1702-04; G. Kelley, Tr. 2408-09. Indeed, when Crisp requested a copy of JEDEC’s patent policies in 1995, JEDEC sent him JEP21-I. CX 2104 at 215-16 (deposition transcript at 851-52) (Crisp *Micron* Dep.) (*in camera*).

²⁸² *See* J. Kelly, Tr. 1903-04 (disclosure “not optional”), 1925-27 (a “requirement to disclose”), 1870 (EIA Publication EP-3 means that participants need to disclose known patents and patent applications), 1894 (Kelly always understood “patent” to include applications), 1897 (coverage of applications was necessary to make the protections effective), 1931-33 (JEP21-I was an effort “to make it abundantly clear” and “to be emphatic, to pound the table” after WANG had argued that JEDEC patent policy did not reach applications), 1935-36 (“patentable” in sign-in sheets refers to applications). John Kelly served as General Counsel of EIA and legal counsel for JEDEC from September 1990 through the time of the Commission’s trial. *Id.* at 1750, 1754. He also became President of JEDEC in early 2000. *Id.* at 1751. Kelly was responsible for providing “legal guidance relating to standardization activities,” including dealing with questions regarding “the patent policy of EIA and JEDEC.” *Id.* at 1813-14. He testified that he had the “last word” within EIA on how rules were to be interpreted and applied and the “final word” in interpreting and applying JEDEC’s separate rules. J. Kelly, Tr. 1822, 1915. Others supported Kelly’s descriptions. *See* Rhoden, Tr. 313-14, 345; Sussman, Tr. 1348-49 (people with questions regarding patent policy were referred to Kelly); Grossmeier, Tr. 10957 (same); CX 208 at 18 (JEDEC manual stating, “EIA Legal Counsel can advise the Council and committees from time to time

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of JEDEC, the JC 42.3 sub-committee chairman was James Townsend. Townsend created and delivered presentations designed to advise members of JEDEC's patent policy at each JC 42.3 subcommittee meeting, as well as at other JC 42 subcommittee meetings²⁸³. He also delivered this presentation to new members during their orientation²⁸⁴.

Furthermore, JEDEC's policies expressly required those disclosing relevant patents or patent applications to supply full technical information and to provide RAND assurances (*i.e.*, that royalties on patents covering any standard would be reasonable and non-discriminatory) before their patents were incorporated into JEDEC standards. As presented in Appendix E to the JEDEC manual, "Standards that call for use of a patented item or process may not be considered by a JEDEC committee unless all of the relevant technical information covered by the patent or pending patent is known to the committee, subcommittee, or working group," and the patent holder submits written assurance that it will license without charge or under "reasonable terms and conditions that are demonstrably free of any unfair discrimination."²⁸⁵

concerning interpretation of legal guides."); CX 306 (EIA/JEDEC Meeting Attendance Roster, referencing EIA patent policy and stating, "Consult the EIA General Counsel about any doubtful question.").

²⁸³ See, e.g., Rhoden, Tr. 324-25, 330; Williams, Tr. 771, 785; Calvin, Tr. 1007-08; Landgraf, Tr. 1694-95; CX 42 at 3. The JC 42 committee and its subcommittees met four to eight times per year, and these meetings lasted several days. Rhoden, Tr. 340. The subcommittee meetings were staggered, permitting Townsend to make his patent presentation at multiple subcommittee meetings. If a JEDEC member participated in more than one subcommittee, the member would hear Townsend's patent presentation multiple times. *Id.* at 338-42.

²⁸⁴ Rhoden, Tr. 337-42.

²⁸⁵ CX 208 at 27; see also J. Kelly, Tr. 1885-86; CX 208 at 19 (noting that "the word 'patented' also includes items and processes for which a patent has been applied and may be pending"); CX 203a at 11 (EIA Engineering

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b. Rambus's Understanding of JEDEC's Policies

Following the lead of the Federal Circuit's *Infineon* opinion, we look to the behavior, understandings, and expectations of JEDEC members, including Rambus, to inform our understanding of the JEDEC environment²⁸⁶. Rambus's own documents and witnesses indicate that the company believed it should have disclosed its patent filings. For example, Rambus's JEDEC representative, Crisp, understood that "[t]he job of JEDEC is to create standards which steer clear of patents which must be used to be in compliance with the standard whenever possible."²⁸⁷ Rambus was aware of JEDEC's disclosure policy through written manuals and oral presentations²⁸⁸. Crisp understood that disclosure of patents was mandatory,²⁸⁹ and as early as December 1992, he acknowledged that he understood that patent applications

Publication EP-3-F) (1981); CX 207a at 8 (EIA Engineering Publication EP-7-A) (1990); JX 55 at 28 (EIA Engineering Publication EP-7-B) (1995).

²⁸⁶ See *Rambus, Inc. v. Infineon Techs. AG*, 318 F.3d 1081, 1098 (Fed. Cir. 2003).

²⁸⁷ CX 903 at 2; Crisp, Tr. 2941-42.

²⁸⁸ Crisp attended a JEDEC meeting at which revisions subsequently incorporated into the JEDEC manual – including specific references to pending patents and to the participants' obligation to disclose – were presented. See JX 14 at 1, 3, 25 (minutes of JC 42.3 meeting, December 9-10, 1992, providing text with proposed changes underlined); Rhoden, Tr. 312; G. Kelley, Tr. 2418.

²⁸⁹ Crisp, Tr. 3477-78 (stating that "[n]on-presenters were obligated to disclose any known patents they had at the time of the committee letter ballot if those patents were required to – were required by the standard" and that presenters were required to disclose patents and applications earlier); see also CX 868 (February 1996 Crisp e-mail stating, with reference to a presentation to JEDEC by Micron, "I think we should have a long hard look at our IP and if there is a problem, I believe we should tell JEDEC there is a problem.").

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had to be disclosed under JEDEC's policies at least "in some circumstances."²⁹⁰

c. Other JEDEC Participants' Understanding of JEDEC's Policy Objectives

Other witnesses besides Crisp testified that JEDEC had determined that prompt disclosure of relevant intellectual property was important for its standard-setting process to work²⁹¹. Absent such disclosure, JEDEC members would face the possibility of patent hold-up. A member possessing relevant intellectual property could stay silent while JEDEC adopted a standard. Then, after a standard had been adopted and it had become expensive to switch to what initially were good alternatives, the patentee could assert its patent and "hold up" the industry by charging higher royalties than could have been extracted before the standard was set. Witnesses testified that early disclosure of intellectual property helped to identify potential hold-up situations while there still was time to avoid the problem.²⁹²

²⁹⁰ Crisp, Tr. 2978, 2982, 3477-78. *See also* CX 5105 (December 1992 Crisp e-mail stating "I know that JEDEC takes the position that we should disclose," but commenting, "Of course, we believe that we do not want to do this [disclose patent applications] yet.").

²⁹¹ *See, e.g.*, Rhoden, Tr. 536 (describing a "fundamental premise inside JEDEC" that standards that are developed are "either free of intellectual property or at least all intellectual property is known at the time of creation of the standard"); Calvin, Tr. 1002 ("you at least needed to understand the [e]ffect of patents upon things that you were standardizing"); Landgraf, Tr. 1694 ("the purpose of the policy is to disclose and make sure that standards do not have any conflicts down the road with their potential use").

²⁹² *See* Landgraf, Tr. 1694 ("The worst thing to have is a standard and products made according to that standard and then later you find an infringement . . ."); J. Kelly, Tr. 1908 ("It's essential to know what impediments there are to the process, what issues there are going forward, and to know when it's necessary to obtain the written assurances."). Even if the standard later could, in theory, be revised to avoid patent issues, that would entail added cost and potentially crippling delay. *See* Rhoden, Tr. 299-300

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For example, EIA General Counsel/JEDEC legal counsel John Kelly testified that JEDEC sought to prevent members with patents covering JEDEC standards from exercising “unbridled discretion to license that IP on any terms and conditions that they elect.”²⁹³ He explained:

Having the technology included in the standard is a privilege, and the condition for that – for having that privilege is to agree to a restriction on licensing. That in turn allows the marketplace to know that they’re dealing with a standard that anyone can comply with on a – on a reasonable basis without – without being, if you’ll excuse the expression, gouged in terms of IP licensing royalties²⁹⁴.

Other witnesses agreed that JEDEC wished to secure knowledge of potential patents and protections against the unrestricted exercise of patent rights²⁹⁵.

(“delay is not a viable market option. . . . You have to move in real time at the time that technology is being developed to create the standards.”).

²⁹³ J. Kelly, Tr. 1777.

²⁹⁴ *Id.* at 1782.

²⁹⁵ *See, e.g.*, Williams, Tr. 771-72, 794; Calvin, Tr. 1002; Sussman, Tr. 1333. Rambus suggests that a portion of the EIA Legal Guides rejects any goal of avoiding hold-up. RB at 9-10; *see also* ID at 261-62. According to those Guides, “Standards are proposed or adopted by EIA without regard to whether their proposal or adoption may in any way involve patents” CX 204 at 4. The Initial Decision correctly construes this as a “non-liability disclaimer,” IDF 633 – the next sentence of the EIA Legal Guides states that EIA does not assume any obligation to parties adopting EIA standards. CX 204 at 4; *see also* J. Kelly, Tr. 1836-37. Treating this as evidence that JEDEC had no goal of avoiding hold-up stretches a mere disclaimer beyond its limits. The language reveals a willingness to accept patented technologies for standardization under stated conditions, but that does not negate a parallel objective to protect against

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d. Disclosure Expectations of JEDEC Members

A number of witnesses besides Crisp testified that they understood that the disclosure of *patents* and *patent applications* was expected. For example, witnesses from Micron,²⁹⁶ NEC/Sanyo,²⁹⁷ AMI-2,²⁹⁸ Intel,²⁹⁹ and Hewlett Packard (HP),³⁰⁰ among other JEDEC participants,³⁰¹ consistently testified that

hold-up whenever patented technologies are adopted. *See* J. Kelly, Tr. 1837-40.

²⁹⁶ *See* Williams, Tr. 771-72, 774 (members “had to” disclose), 788-89, 791-96 (disclosure of applications required during 1991-93 period); Lee, Tr. 6595-96 (from the time that he started attending JEDEC meetings in the mid-1990s, disclosure of applications was required); Lee, Tr. 6695-96 (“a requirement to disclose”).

²⁹⁷ *See* Sussman, Tr. 1333, 1346 (disclosure “required,” not voluntary), 1333-34 (disclosure of applications required), 1341-42 (requirement to disclose applications antedated JEP21-I by at least 10 years).

²⁹⁸ *See* Rhoden, Tr. 309, 317-19, 344-45 (“everyone had the obligation to disclose”), 619 (“you were obligated to disclose”), 627, 317 (disclosure of applications was always required), 320-21, 332 (Townsend would always say disclosure of applications was required), 357 (duty to disclose covered applications), 637 (same).

²⁹⁹ *See* Calvin, Tr. 1003-04 (“anyone who was aware of patent – patented items, that could affect policy, had an obligation to bring that awareness to the group); 1006-07 (a requirement to disclose patent applications), 1012-13 (same).

³⁰⁰ Landgraf, Tr. 1693-95 (from the time that he started attending JEDEC meetings in 1994, disclosure of applications was required).

³⁰¹ *See, e.g.,* [REDACTED] ; McGrath, Tr. 9245 (during the 1992-96 period there was “an expectation that patent applications would be disclosed”); CX 2089 at 142-43 (Meyer *Infineon* Trial Tr.) (*in camera*) (JEDEC disclosure rules covered applications in April-July 1992).

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JEDEC members were “obligated” or “required” to disclose both patents and applications.³⁰²

Several of these witnesses also testified to an expectation that members would disclose planned amendments to pending applications. One witness testified that there was an obligation to disclose “everything that is in the patent process . . . if you intend to seek protection of your intellectual property as it relates to the standard”³⁰³ Similarly, another witness testified that the disclosure obligation focused on the reasonable possibility that a firm’s “invention” might apply to what was being discussed within JEDEC, “no matter what stage a patent might be.”³⁰⁴ As stated succinctly by a former HP employee, “the expectation was that members would disclose anything they’re working on that they potentially wanted to protect with patents down the road.”³⁰⁵

³⁰² IBM’s Gordon Kelley believed that the understanding that disclosure of applications was mandatory may have developed over time, with two JEDEC Committees, JC 42 and JC 16, requiring disclosure of applications by 1991 and JEDEC as a whole doing so by 1993. *See* G. Kelley, Tr. 2667-70, 2685-86, 2690-92. A witness from Mitsubishi presented varying descriptions. *See*

[REDACTED]

. One other witness stated that it was his understanding that applications did not have to be disclosed if any ensuing patents would be made available under reasonable and nondiscriminatory terms, but that that “may have been wrong.” Wiggers, Tr. 10591.

³⁰³ Rhoden, Tr. 317-21, 636.

³⁰⁴ Williams, Tr. 788, 791.

³⁰⁵ Landgraf, Tr. 1698-99. *See also* Sussman, Tr. 1341 (“something that you’re about to apply for”); G. Kelley, Tr. 2406-07 (there was an obligation to disclose “material that would probably become a patent”). EIA General Counsel/JEDEC legal counsel John Kelly explained that the need to disclose when making plans to amend derived from the *present* “interpretation of the original patent or patent application,” not from “the future plan, as such.” J. Kelly, Tr. 1995. *But see* CX 3136 at 28-29 (Meyer *Infineon* Trial Tr. 110-11) (*in camera*) (stating his understanding that disclosure of plans to modify applications was not required, but explaining that he drew this conclusion only

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e. The Behavior of JEDEC Participants

The expectation that members would disclose their patents and patent applications was supported by their actions. Although JEDEC's members were not expected to disclose if they did not plan to enforce their patents against JEDEC-compliant standards,³⁰⁶ there were numerous examples of JEDEC members disclosing patents and applications relevant to the standards under consideration. For example, in February 1992, during Rambus's first JEDEC meeting as a member, Fujitsu disclosed a patent application, as described by initial Rambus JEDEC representative Garrett in a memorandum to Rambus staff.³⁰⁷

from an absence of discussion of the issue and that he could not state whether or not this was JEDEC's policy).

³⁰⁶ For example, Micron's Terry Lee testified that Micron had failed to disclose patent activity in or around 2000 when it had "no intent on enforcing the patent against the standard." Lee explained, "My understanding was that if they failed to disclose the patent that may relate to the work of the committee and if it was adopted into the standard, that they would forego their right to enforce the patent against the standard." Lee, Tr. 6599. Micron also disclosed three burst EDO patent applications in April 1996, after the standard already had been issued. See Williams, Tr. 937-40. A Micron representative testified that Micron never intended to enforce patents on burst EDO against firms that might practice JEDEC's burst EDO standard. *Id.* at 960-62. *But cf.* CX 364 (Micron letter disclosing the patents to JEDEC and affirming that "[i]n accordance with EIA/JEDEC patent policy" if a patent issued, Micron would license under RAND terms). Burst EDO died, and the standard never became a factor in the market. Williams, Tr. 961-62. Another example was Hitachi's failure to disclose a patent that was never enforced. Sussman, NEC/Sanyo's JEDEC representative, testified that, ". . . Hitachi has never tried to apply the patent, so some engineer has a few extra dollars, and basically a [sic] don't care." Sussman, Tr. 1337-38.

³⁰⁷ CX 672 at 1; see also JX 22 at 14-16 (patent tracking list showing disclosure of both issued patents and applications); CX 42 at 16-17 (same); JX 28 at 6 (minutes describing MOSAID's December 1995 disclosure of "a patent pending on DLL"); CX 711 at 169 (Crisp's description of Fujitsu's disclosure of an application in September 1992); RX 1559 at 2 (Micron's January 2000 disclosure of an application);

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JEDEC and its members reacted negatively when members sought enforcement after failing to disclose that a patent was issued or pending, and without providing the necessary RAND assurances. The record reveals three such instances – all of which were known to Crisp and thus to Rambus.³⁰⁸

The first instance occurred in the late 1980s and early 1990s involving then-JEDEC member Wang Laboratories. Wang held a patent application relating to memory modules³⁰⁹. During its membership, Wang helped JEDEC set a standard relating to memory modules, but failed to disclose its intellectual property³¹⁰. After the standard was adopted, Wang sought to enforce its patents against the industry³¹¹. Considerable litigation ensued, and the incident generated concern and discussion among JEDEC participants about the need to prevent the problem from recurring.³¹²

The second instance involved a proposal by a company called SEEQ, which sought adoption of a standard regarding silicon signature³¹³. SEEQ had two patents or applications relating to the

[REDACTED]

³⁰⁸ See CX 711 at 188 (Crisp e-mail discussing incidents involving Wang and SEEQ); CX 346 (JEDEC minutes reporting on JEDEC members' reaction to Texas Instruments's conduct).

³⁰⁹ IDF 689. See J. Kelly, Tr. 1931-32.

³¹⁰ IDF 690.

³¹¹ Williams, Tr. 787; Sussman, Tr. 1338; Landgraf, Tr. 1697-98.

³¹² J. Kelly, Tr. 1932; Grossmeier, Tr. 10954.

³¹³ Sussman, Tr. 1338.

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technology, but disclosed, and provided licensing assurances for, only one.³¹⁴ JEDEC learned of the second item when it was recommending standardization of the SEEQ technology, and it sought RAND assurances, which SEEQ apparently refused³¹⁵. Ultimately, JEDEC chose an alternative technology³¹⁶. Although the events traced to 1989, they left “a negative taste in our mouth” that was still “almost current” in 2003.³¹⁷

The third occurrence involved an attempt by Texas Instruments (TI) to enforce an undisclosed patent on Quad CAS technology. After JEDEC learned of the patent in 1993, the JC 42.3 subcommittee placed a ballot covering the technology on hold,³¹⁸ and voted to withdraw a preexisting standard³¹⁹. It took the ballot off hold and dropped the withdrawal of the standard only after TI had provided satisfactory assurances of compliance with JEDEC’s licensing policies³²⁰. A witness from Micron testified that TI’s actions led to “a great uproar” and that TI’s representative was “pummeled in th[e] meeting for his failure to disclose.”³²¹ Crisp reported to his superiors that TI was “chastised” for not reporting the patent and that discussion was

³¹⁴ *Id.* at 1338-39.

³¹⁵ CX 3 at 4; CX 711 at 188.

³¹⁶ *See* Sussman, Tr. 1338-39.

³¹⁷ *See* Sussman, Tr. 1339 (“[W]e were making nasty comments about SEEQ for years . . .”).

³¹⁸ JX 17 at 6-7.

³¹⁹ JX 18 at 7-9.

³²⁰ JX 25 at 5.

³²¹ Williams, Tr. 776-77.

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“nasty.”³²² In the course of the dispute, IBM’s Gordon Kelley, chairman of JC 42.3’s DRAM Task Group, addressed TI in the strongest of terms:

I am and have been concerned that this issue can destroy the work of JEDEC. If we have companies leading us into their patent collection plates, then we will no longer have companies willing to join the work of creating standards If we allow JC-42 standards to be used for patent collection purposes, then we do a great disservice to the very industry that feeds us.³²³

JEDEC’s responses to the SEEQ, Wang, and TI incidents evidence that JEDEC members believed that these firms had acted in ways contrary to JEDEC’s policies and members’ expectations.

f. Knowledge of JEDEC Participants

The ALJ concluded³²⁴ that since 1989 the DRAM industry has been aware of Rambus’s inventions in the relevant markets and its plans to seek patent protection. Rambus points to presentations regarding its technologies made to several JEDEC members before and during its membership³²⁵. Rambus also cites, and the

³²² Crisp, Tr. 2969, CX 710 at 1. *See also* CX 346.

³²³ CX 2384 (G. Kelley letter to TI of January 14, 1994).

³²⁴ ID at 305-09.

³²⁵ *See, e.g.*, RX 273 (Rambus presentation to IBM in April 1992). These presentations were covered by nondisclosure agreements, required by Rambus from each company that was exposed to RDRAM technology. *See* Parties’ First Set of Stipulations, Items 3-7 (noting nondisclosure agreements with NEC, Sony, Toshiba, HP, and Samsung); Kellogg, Tr. 5053 (stating that Rambus met with International Business Machines (IBM) and required “a nondisclosure agreement of sorts”); Bechtelsheim, Tr. 5816-19 (noting that Rambus met with Sun Microsystems (Sun) and required nondisclosure

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ALJ highlighted, Rambus's publication in the early 1990s of technical descriptions of its inventions, as well as Rambus's 1992 distribution of marketing brochures describing its technology in conjunction with the public announcement of its business plan³²⁶. Rambus further argues that statements during its campaign to convince various industry players to adopt and license RDRAM placed the industry on notice regarding Rambus's intellectual property.³²⁷

The only information that Rambus made available, however, was that it was claiming patent rights with regard to technologies in *RDRAM* – not with respect to SDRAM, DDR SDRAM, or any JEDEC-based successors. The prevailing view in the industry was that RDRAM, with its narrow-bus architecture and its multiplexing and packetization, was quite different from the SDRAM and DDR SDRAM standards that were being developed by JEDEC³²⁸. JEDEC representatives who viewed an RDRAM

agreements); CX 535 at 1 (stating Rambus's intention to secure nondisclosure agreements from "all parties exposed to the [Rambus] technology"). These nondisclosure agreements barred those hearing the presentations from sharing Rambus information with other firms.

³²⁶ RB at 37; IDF 109-21, 130-34, 144-58; ID at 306.

³²⁷ See RB at 36-37.

³²⁸ See, e.g., Rhoden, Tr. 402-03; (RDRAM was multiplexed and packetized); Sussman, Tr. 1431-33 (same); Lee, Tr. 6602-03 (RDRAM used narrow bus and was multiplexed); Farmwald, Tr. 8275 (RDRAM packetized); Horowitz, Tr. 8617-18 and 8620 (RDRAM multiplexed), 8621 (RDRAM packetized); CX 1451 at 9, 43 ('898 application describing a "narrow, multiplexed (time-shared) bus"); RX 81 at 7 (1992 Rambus Corporate Backgrounder describing Rambus technology as "a narrow, high-speed bus"). (Although the initial idea behind RDRAM was to use a narrow bus, Horowitz, Tr. 8619-20, as time went by RDRAM's bus widened. See Farmwald, Tr. 8143-44.)

In contrast, SDRAM and DDR SDRAM had a wider bus, little or no multiplexing, and were not packetized in the same sense as RDRAMs. See,

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presentation emerged with the view that RDRAM bore little or no resemblance to JEDEC-compliant SDRAM³²⁹. For example, IBM's Gordon Kelley testified that after Rambus presented its technology to IBM in April 1992, he believed that "the Rambus DRAM [RDRAM] was so different from the synchronous DRAM being discussed at JEDEC that [he] just did not believe that anything that Rambus had on the RDRAM might apply to the SDRAM or to JEDEC."³³⁰ Indeed, Rambus's own Joel Karp highlighted the extent to which the industry perceived fundamental differences between RDRAM and SDRAM/DDR SDRAM when, in May 1999, he stated, "They probably think they avoid our IP if they don't go 'packet based.'"³³¹ Under these circumstances, an awareness that Rambus held or likely would seek patents covering RDRAM did not equate to any contemplation that Rambus could or would obtain patents on SDRAM or DDR SDRAM.

The ALJ and Rambus also rely on the publication in October 1991 of Rambus's international patent application, known as the PCT application, to show that the industry had notice that Rambus

e.g., Rhoden, Tr. 400-01 (SDRAM had a wider bus than RDRAM); Sussman, Tr. 1439 (same); G. Kelley, Tr. 2573-74 (JEDEC DRAMS were not packetized); Kellogg, Tr. 5298 (JEDEC did not consider narrow bus, packetized architecture); Jacob, Tr. 5462-64 and 5470-71 (JEDEC-based DRAMs used wider buses), 5464-67 (SDRAMs used separate buses for data, control, and address information and were not packetized in same way as RDRAMs); Bechtelsheim, Tr. 5841 (RDRAM used a packet transaction format, and SDRAM did not); Tabrizi, Tr. 9119 (JEDEC DRAMS were not multiplexed).

³²⁹ See G. Kelley, Tr. 2538; Sussman, Tr. 1439-40; Kellogg, Tr. 5053; Lee, Tr. 6602-03.

³³⁰ G. Kelley, Tr. 2537-38.

³³¹ CX 1069.

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might acquire patents covering SDRAM and DDR SDRAM³³². Rambus similarly relies on its September 1993 disclosure to JEDEC of the '703 patent, which had substantially the same written description as the PCT and '898 applications.³³³

We find that these materials did not provide notice that Rambus might seek to enforce patent rights covering the standards under consideration by JEDEC. None of the original 150 claims in the '898 patent application – which were reproduced in the PCT application – covered SDRAM or DDR SDRAM;³³⁴ nor did any claims in the '703 patent.³³⁵ Although notice might come from the written descriptions as well as from the claims, those descriptions, like Rambus's RDRAM marketing efforts, suggested that claims would be confined to the RDRAM architecture – with a narrow bus, multiplexing, and packetization. Several JEDEC members reviewed Rambus's PCT application or '703 patent and concluded that they had no relevance to JEDEC's standards. Thus, when Infineon's Meyer read the PCT application and the '703 patent, he understood them to relate to RDRAM, including, specifically, its multiplexing³³⁶. And when Micron's Terry Lee reviewed Rambus's patent abstracts and the '703 patent in 1995, he concluded that the patents "seemed to apply kind of specifically to

³³² See RB at 39-41, 117; ID at 298, 307. This application, filed pursuant to the Patent Cooperation Treaty ("PCT"), CX 1454 at 1; IDF 826, was virtually identical to the '898 application, the parent application for the patents that Rambus has asserted against SDRAM and DDR SDRAM manufacturers. See IDF 826; Fliesler, Tr. 8811; CX 1451; CX 1454; Parties' First Set of Stipulations, Item 22.

³³³ IDF 181; Jacob, Tr. 5500-01.

³³⁴ Nusbaum, Tr. 1526; Jacob, Tr. 5494; Parties' First Set of Stipulations, Item 9 (discussing SDRAM).

³³⁵ Parties' First Set of Stipulations, Item 10; see also Crisp, Tr. 3173-74; Jacob, Tr. 5498-99.

³³⁶ See CX 2089 at 147-48 (Meyer Infineon Trial Tr.) (*in camera*).

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this bus architecture, to this RDRAM product. . . . the narrow bus with the command/address/data multiplexed with this Rambus architecture and Rambus signaling scheme.”³³⁷ Even Rambus’s own JEDEC representative, Crisp, initially read the ‘898 application as limited to multiplexed, packetized architectures, *i.e.*, to RDRAM.³³⁸

Rambus attempts to transform its argument into a matter of law by presenting the following syllogism: (1) the PTO may only approve patents when their written description covers their claims; and (2) the PTO issued the patents that Rambus has sued upon; so that (3) the written description in the ‘898/PCT

³³⁷ Lee, Tr. 6610-11; *see also* Sussman, Tr. 1445, 1449-54 (stating that he found no connection between the PCT application and JEDEC’s work). *But cf.* Sussman, Tr. 1467-68 (concluding that a portion of the PCT application highlighted by Rambus counsel did relate to dual-edge clocking).

Rambus argues that because Mr. Lee in 1997 informed JEDEC that a Rambus patent might relate to JEDEC’s work, he could not have believed that the Rambus architecture mattered. RB at 41. The technology that Mr. Lee identified to JEDEC was a loop-back clocking scheme, Lee, Tr. 6956-64, one of only two aspects of the ‘898 application that *did not* contain the multiplexed bus limitation that distinguished Rambus’s architecture from JEDEC’s work. Nusbaum, Tr. 1520, 1528. Rambus also points to an incomplete translation of Mitsubishi’s analysis of the PCT application; the translation shows awareness that the application covered relevant technologies, and found “similar[ity] to SDRAM’s latency control,” but it also includes several references to “packets” or “packetize[d] bus” and does not indicate whether claims could extend beyond the RDRAM architecture. *See* RX 379a and RX 2213a. Mitsubishi subsequently recommended concentrating on “a wide-bus approach” because “Narrow-bus is Rambus look alike,” suggesting that Mitsubishi still believed that avoiding RDRAM architecture mattered. RX 852 at 1.

³³⁸ Crisp, Tr. 2926-27. Crisp added that over time his view of the scope of Rambus’s application changed. *Id.* at 2927-28. Rambus’s expert witnesses asserted that the written descriptions would have given notice of the potential reach of Rambus’s claims, *see, e.g.*, Fliesler, Tr. 8788-89, 8810; Geilhufe, Tr. 9556-59, but Complaint Counsel’s experts stated the opposite. *See* Nusbaum, Tr. 1642-43; Jacob, Tr. 5460-67; 54576-85, 5490, 5493, 5498-501.

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applications and the '703 patent necessarily must have given adequate notice to the world of every claim that eventually issued³³⁹. This miscasts an inquiry designed for application with hindsight as a test for the reasonable bounds of foresight. The ability, after the fact, to determine from a written description that at the time of filing an applicant “*was in possession*” of a particular invention “*now claimed*”³⁴⁰ is not the same thing as the ability to predict, prior to their publication, the potential scope of future claims³⁴¹. Rambus’s own patent expert regarded the unrevealed claims of a published application as “the family jewels.”³⁴² Rambus avoided displaying those jewels to JEDEC members, and we find that, without knowledge of Rambus’s eventual claims, JEDEC members were unable to foresee the implications of the pending applications.

Finally, the ALJ and Rambus point to two incidents – one involving IBM and Siemens in 1992, the other involving Rambus licensing negotiations in 1995 – to demonstrate the industry’s awareness of Rambus’s relevant patents and patent applications. The IBM/Siemens incident involved a conference call on April 29, 1992, recorded as follows in Siemens’s notes: “RAMBUS has

³³⁹ RB at 39-40.

³⁴⁰ *See Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991) (describing patent law’s written description requirement) (emphasis added).

³⁴¹ Rambus acknowledges this distinction, averring that “[a] patent application continues to hold valuable trade secrets even after the written description becomes public Disclosure of the written description does not reveal the *claims* in the pending application.” RB at 87 (emphasis original).

³⁴² Fliesler, Tr. 8896. Fliesler agreed that “[a]n engineer or a patent lawyer could not have known for certain what Rambus would claim from reading the ’898 specification,” *id.* at 8902, although he nonetheless insisted that the ’898 application “indicat[ed]” that Rambus had invented the four relevant technologies as used in SDRAM and DDR SDRAM. *Id.* at 8904-05.

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announced a claim against Samsung for USD 10 million due to the similarity of the SDRAM with the RAMBUS storage device architecture.”³⁴³ The only concern, however, was that Rambus might have a patent on a technology outside any of the alleged relevant product markets in this case³⁴⁴. Ultimately, IBM and Siemens both concluded that Rambus posed no patent problems for SDRAM.³⁴⁵

The other incident involved Rambus meetings with LG Semiconductor, Samsung, NEC, and Oki in 1995, at which Rambus CEO Tate claimed he announced that Rambus was seeking patents on DDR SDRAM³⁴⁶. In his testimony, Tate did not indicate the specific information that he purportedly conveyed. While his testimony names on-chip PLL and dual-edge clocking as the likely technologies at issue, nowhere does he state that he identified those technologies to the outside firms.

³⁴³ RX 286a at 2. The record does not provide details regarding this claim which, had it existed, would have antedated Rambus’s first issued patent by more than a year. Parties’ First Set of Stipulations, Item 11; CX 1460 at 1.

³⁴⁴ See RX 297 at 5 (showing that a few days later, in the course of discussing two-bank designs at JEDEC’s May 4-8, 1992 meetings, Siemens and Philips indicated that they were “concerned about [the] patent situation” with regard to Rambus and Motorola); see also RX 303 (June 1992 presentation by Gordon Kelley to IBM and Siemens engineers listing “cons” for SDRAMs to include “Patent Problems? (*Motorola/Rambus*)”) (emphasis added); CX 2089 at 41-44 (Meyer *Infineon* Trial Tr.) (the concern in May 1992 for Meyer was the possibility that Rambus might obtain patents covering two-bank synchronous DRAM design); RX 289 at 1 (Siemens document prepared by Meyer on May 6, 1992, stating concern that “2-BANK SYNC MAY FALL UNDER RAMBUS PATENTS”). Although the ALJ also cites an IBM “Rambus Assessment” as revealing IBM’s concern that Rambus might have patents over SDRAM, IDF 791-95, ID at 307, the document says nothing about such patents. RX 279.

³⁴⁵ G. Kelley, Tr. 2537-38, 2545-46; CX 2089 at 151-52 (Meyer *Infineon* Trial Tr.) (*in camera*).

³⁴⁶ CX 2111 at 313-21 (Tate FTC Dep.) (*in camera*).

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Other evidence suggests that any information conveyed by Rambus would have been opaque. Indeed, a 1997 Tate e-mail indicates that LG continued to believe that DDR SDRAM was a “royalty-free alternative[]” to RDRAM³⁴⁷. Moreover, Rambus President Mooring admitted that, to the best of his knowledge, Rambus did not inform any DRAM manufacturer that [Rambus intellectual property covered SDRAM and did not tell anyone that on-chip PLL might infringe a Rambus patent until late 1999³⁴⁸. Similarly, Rambus’s Senior Vice President Gary Harmon testified that any discussion relating to the [scope of Rambus’s patents in the course of 1993-96 licensing negotiations, including those with all four firms identified by Tate, would have been “just a passing reference” and that, even in the case of the one firm with which discussions were more extensive, “I don’t believe we ever specifically stated that we had intellectual property that applied to – outside of the Rambus-compatible area].”³⁴⁹

³⁴⁷ CX 957 at 1. Tate did not correct LG’s misimpression, despite having an incentive to do so if he already had chosen to inform LG of Rambus’s patent position on DDR SDRAM.

³⁴⁸ CX 2112 at 172-73, 179-80 (deposition transcript at 171-72, 178-79) (Mooring FTC Dep.) (*in camera*). Rambus apparently did tell Intel in late 1997 or early 1998 that Rambus might have patent applications related to DDR, but Rambus provided “no specifics” and gave “nothing concrete” as to what the applications covered. MacWilliams, Tr. 4905.

³⁴⁹ CX 2070 at 42-47 (Harmon *Micron* Dep.) (*in camera*). In addition, a 1997 e-mail from the Chairman of Rambus’s Board of Directors, William Davidow, stated that “[o]ne of the things we have avoided discussing with our partners is [the] intellectual property problem,” which he identified as the fact that “SLDRAM and SDRAM-DDR infringe our patents.” CX 938.

Even assuming *arguendo* that certain JEDEC representatives who observed Rambus’s presentations were aware of the extent of Rambus’s patent portfolio, each representative’s company was prohibited by non-disclosure agreements from discussing the content of Rambus’s license presentations. *See, e.g.*, RX 24 at 2-3 (nondisclosure agreement between Rambus and IBM); RX 570 (nondisclosure agreement between Rambus and NEC); Rhoden, Tr.

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JEDEC members repeatedly testified that they were unaware of Rambus's patent position when they adopted the standards. NEC/Sanyo's Sussman testified that prior to 1999 Rambus never suggested or did anything that put him on notice that its patents might relate to either SDRAM or DDR SDRAM³⁵⁰. HP's Landgraf stated that while he was at JEDEC (from 1994 through 1998), he "did not know of patents or patent applications with regard to dual edge clock or PLL on chip" and believed that the DDR SDRAM standard was free of undisclosed patents³⁵¹. Cisco's Bechtelsheim termed Rambus's infringement suits "a complete surprise"; when asked whether before 2000 he had ever heard any rumor or suggestion that Rambus might have patents that would extend to SDRAM or DDR SDRAM, Bechtelsheim answered, "I did not."³⁵² Similarly, IBM's Gordon Kelley testified that when he voted to include programmable CAS latency and burst length in SDRAM, he had no understanding that Rambus might have relevant patents.³⁵³

521 (HP); Kellogg, Tr. 5052-53 (IBM); Bechtelsheim, Tr. 5818-19 (Sun); CX 673 (Crisp, interpreting NEC's nondisclosure agreement to bar circulation of a published international patent application). JEDEC members would not have been able to discuss the implications of Rambus's patents, absent disclosure by Rambus itself. *See, e.g.*, CX 993 (Tate 1998 e-mail stating, "[O]ur partners employee's [sic] working on competitive products, e.g., DDR, might have access to our confidential information. [T]hey might even go to committees like jedec to discuss DDR. BUT they are obligated as employees of our partners' [sic] to keep our confidential information secret . . .").

³⁵⁰ Sussman, Tr. 1455-56.

³⁵¹ Landgraf, Tr. 1711-12.

³⁵² Bechtelsheim, Tr. 5880-81.

³⁵³ G. Kelley, Tr. 2561-62.

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Contemporaneous views support this testimony. In October 1993, when Willibald Meyer prepared documentation for Siemens of the status of work regarding SDRAM, he concluded that “we had managed to define a public domain version” of the next generation DRAM, free of intellectual property³⁵⁴. Hyundai’s July 1997 “DRAM Product Roadmap” described DDR SDRAM as the most “cost effective” next generation DRAM with an “open architecture without royalties or fees.”³⁵⁵ A 1998 Siemens presentation compares RDRAM’s “Proprietary solution (Royalties, License fees)” unfavorably with SDRAM II’s “Open standard.”³⁵⁶

In addition, it makes little sense that JEDEC members – which had, for example, “chastised” TI during a “nasty” discussion when it attempted to enforce an undisclosed patent³⁵⁷ and which cared deeply about cost³⁵⁸ – would, if they had known about Rambus’s patents and patent applications, simply have ignored them and, knowingly and without discussion or hesitation, adopted a standard incorporating Rambus’s technology. At a minimum, we

³⁵⁴ CX 2089 at 151-52 (Meyer *Infineon* Trial Tr.) (*in camera*).

³⁵⁵ CX 2294 at 15. Similarly, Hyundai’s 1998 cost comparison between DDR SDRAM and Direct RDRAM listed “Direct Rambus Royalty” as a “Cost Adder.” CX 2303 at 16. And Hyundai’s April 1999 presentation to the PC Platform APAC Technology Forum contrasts the benefits of DDR SDRAM’s open standard with the negative impact of RDRAM’s royalty cost. CX 2334 at 25, 27.

³⁵⁶ CX 2442 at 36. Although Rambus cites a 1997 internal Micron e-mail as evidence that an Intel employee had told Micron’s Intel account representative that Rambus might claim patent coverage over DDR SDRAM, Micron regarded the rumor as “typical” of “misinformation” and “overstatements” that were circulating in advance of Rambus’s initial public offering and did not credit it. *See* Lee, Tr. 6700-10, discussing RX 920 at 1-2.

³⁵⁷ *See supra* note 322 and accompanying text.

³⁵⁸ *See infra* notes 404-408 and accompanying text.

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would expect the members to have confronted Rambus and demanded RAND terms (even if, as Rambus argues, its technology was so superior that JEDEC had no choice but to adopt it).³⁵⁹

Rambus's own documents evince the belief that it had kept secret its patent position relative to JEDEC's standards. In August 1997, Rambus CEO Tate remarked, "[W]e already have the 327 patent but few people are aware of what it means," continuing, "[O]ur policy so far has been NOT to publicize our patents and i think we should continue with this."³⁶⁰ In May 1999, Rambus Intellectual Property Vice President Karp surmised, "They probably think they avoid our IP if they don't go 'packet based.'"³⁶¹ In November 1999, Rambus named its IP initiative "Lexington 'The Shot Heard Around the World,'"³⁶² which Karp thought fitting because, "We fully anticipated at that point that once people became aware that we had IP covering sync DRAM, DDR, that it was going to make some noise."³⁶³ Even in December 1999 Tate was still directing that, if asked whether DDR SDRAM infringes Rambus IP, "it's important NOT to indicate/hint/wink/etc what we expect the results of our [infringement] analysis to be!!!"³⁶⁴

³⁵⁹ See *infra* Section IV.C.3.b. (concluding that Rambus has not demonstrated its claims of superior technology).

³⁶⁰ CX 942; see also CX 919; CX 987 at 4.

³⁶¹ CX 1069 (commenting on an article entitled "Industry group will push DDR DRAMs").

³⁶² CX 5002 (designated R401047).

³⁶³ CX 5069 at 54 (deposition transcript at 563) (Karp 2004 *Infineon* Dep.).

³⁶⁴ CX 1089.

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We find nothing in the record to suggest that, in the cooperative environment prevailing at JEDEC, the incidents to which the ALJ and Rambus have pointed were sufficient to put JEDEC members on notice that Rambus would pursue a deceptive course of conduct to obtain patents covering JEDEC's standards, then engage in patent hold-up to extract royalties on terms of Rambus's choosing.

4. Rambus's Conduct Was Deceptive

JEDEC's policies (fairly read) and practices, as well as the actions of JEDEC participants, provide a basis for the expectation that JEDEC's standard-setting activity would be conducted cooperatively and that members would not try to distort the process by acting deceptively with respect to the patents they possessed or expected to possess. Those policies rested on an express duty of good faith, as well as an objective of avoiding creation of unnecessary competitive advantages. The policies also included rules to ensure that members periodically were reminded to disclose patents and patent applications, and that patented technologies would be included in standards only after receipt of RAND assurances. JEDEC thus presented the type of consensus-oriented environment in which deception is most likely to contribute to competitive harm.

JEDEC's members expected disclosure of both patents and patent applications that might be applicable to the work JEDEC was undertaking, if the patents ever were going to be enforced against JEDEC-compliant products. These expectations were fostered by JEDEC's policies and were reflected by the behavior and understandings of JEDEC participants. Rambus's own descriptions of its understanding of the SSO's objectives and requirements reinforce that conclusion.

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Rambus's course of conduct played on these expectations. Rambus sat silently when other members discussed and adopted technologies that became subject to Rambus's evolving patent claims. Rambus voted and commented on inclusion of programmable CAS latency and burst length without revealing that it was seeking patent coverage of those technologies, despite language on the ballot that called for disclosure of relevant patents. Rambus twice evaded direct questions about its patent portfolio, coupling a nonresponsive answer with a reminder that it previously had disclosed a patent (which lacked any claims then relevant to JEDEC's work). Rambus even provided JEDEC with a list of its patents that omitted the one patent Rambus believed covered JEDEC's work.

At the same time that Rambus was avoiding disclosure of its patent activity, Rambus was engaged in a program of amending its applications to develop a patent portfolio that would cover JEDEC's standards. Rambus made full use of information gleaned from its JEDEC participation to accomplish this objective. Rambus's JEDEC representative was charged with overseeing development of patent claims that would provide better coverage of products compliant with JEDEC's SDRAM standards, and Rambus's CEO asked for progress reports on claims that would cover the JEDEC standards.

Rambus argues that amending patent applications based on competitive information is a legitimate business practice condoned by the patent laws³⁶⁵. Rambus cites *Kingsdown Medical Consultants, Ltd. v. Hollister, Inc.*³⁶⁶ and its progeny as establishing that there is nothing improper in amending claims to cover a competitor's product that the applicant learns about during the patent prosecution process. The cases relied upon by Rambus

³⁶⁵ RB at 89-91.

³⁶⁶ 863 F.2d 867 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1067 (1989).

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find no impediment, from a *patent law* perspective, to prosecuting or enforcing a claim developed under those circumstances³⁶⁷. These cases do not, however, involve either facts or law relevant here. None considers how the applicant learned of the competing product, or whether the applicant used that information in ways inconsistent with the understandings of other participants in a cooperative standard-setting environment. None of those cases examines the competitive consequences of the conduct.

In contrast, our concern in this proceeding is harm to competition, not to the patent system. Here, Rambus used information gained through participation in cooperative JEDEC processes by tailoring its patent claims to facilitate hold-up, while deceiving other JEDEC members regarding its patent position. The abuse of industrywide standard-setting efforts, and the competitive harms that may ensue, were not at issue in the cases cited by Rambus – but these factors are central to determining whether Rambus’s actions constituted exclusionary conduct.

We find that Rambus’s course of conduct constituted deception under Section 5 of the FTC Act. Rambus’s conduct was calculated to mislead JEDEC members by fostering the belief that Rambus neither had, nor was seeking, relevant patents that would be enforced against JEDEC-compliant products. Rambus’s silence, in the face of members’ expectations of disclosure, created a misimpression that Rambus would not obtain and/or enforce such patents. When suspicions arose, Rambus allayed them with the reminder that it had made a prior disclosure. The message that Rambus reasonably conveyed – in a context in which it had been asked about its patent position, and in which

³⁶⁷ See, e.g., *Kingsdown*, 863 F.2d at 869, 872, 874 (considering a patent applicant’s actions in terms of the “deceitful intent” element of purported “inequitable conduct before the [PTO]”); *Emerson Electric Co. v. Spartan Tool, LLC*, 223 F.Supp. 2d 856 (N.D. Ohio 2002) (refusing to infer that an applicant had deceived the patent examiner by amending a claim without highlighting all ramifications of the change).

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other members expected disclosure of patents and applications – was that Rambus would have disclosed if it had had anything relevant to reveal. Even Rambus’s withdrawal letter misleadingly conveyed the impression that it was listing its issued patents, while failing to disclose the one patent that might have mattered to the other JEDEC members. Under the circumstances, JEDEC members acted reasonably when they relied on Rambus’s actions and omissions and adopted the SDRAM and DDR SDRAM standards.

Rambus withheld information that would have been highly material to the standard-setting process within JEDEC. JEDEC expressly sought information about patents to enable its members to make informed decisions about which technologies to adopt, and JEDEC members viewed early knowledge of potential patent consequences as vital for avoiding patent hold-up. Rambus understood that knowledge of its evolving patent position would be material to JEDEC’s choices, and avoided disclosure for that very reason³⁶⁸. We thus find that Rambus engaged in representations, omissions, and practices that were likely to mislead JEDEC members acting reasonably under the circumstances, to their substantial detriment, and we conclude that Rambus intentionally and willfully engaged in deceptive conduct.

As discussed in detail in Sections IV.B. and IV.C. below, Rambus’s course of deceptive conduct contributed significantly to Rambus’s acquisition of monopoly power by distorting JEDEC’s technology choices and undermining JEDEC members’ ability to protect themselves against patent hold-up. This conduct caused harm to competition. In sum, the record establishes a *prima facie* case that Rambus engaged in exclusionary conduct.

³⁶⁸ Rambus now argues that disclosure would not have changed JEDEC’s decision because of the superiority of Rambus’s technologies. We address that argument *infra* in Section IV.C.3.b.

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5. Rambus's Procompetitive Justification for its Conduct

Our finding that Complaint Counsel established a *prima facie* case of exclusionary conduct shifts the burden to Rambus to establish a nonpretextual, procompetitive justification for its conduct³⁶⁹. Rambus must prove “that its conduct is indeed a form of competition on the merits because it involves, for example, greater efficiency or enhanced consumer appeal.”³⁷⁰

Deceptive conduct is extraordinarily difficult to justify³⁷¹. Rambus tries to avoid this challenge by characterizing its conduct as a refusal to deal with its competitors or a failure to “share its trade secrets with others.”³⁷² Rambus then defends its conduct on the grounds that it preserved the secrecy of Rambus's patent applications, which contained confidential information about Rambus's inventions³⁷³. Rambus's characterization ignores much of its deceptive course of conduct, as well as the context in which that conduct occurred.

³⁶⁹ A respondent may rebut a *prima facie* case of exclusionary conduct by introducing evidence of a procompetitive justification for its actions. *See United States v. Microsoft Corp.*, 253 F.3d 34, 59 (D.C. Cir.), *cert. denied*, 534 U.S. 952 (2001).

³⁷⁰ *See id.* For example, the D.C. Circuit found that Microsoft had “valid technical reasons” to cause its Windows operating system to ignore user-chosen browser defaults in certain circumstances. The court then found that the plaintiffs had failed either to rebut that justification or to demonstrate that the anticompetitive effect of the challenged action outweighed it. *Id.* at 67.

³⁷¹ *Id.* at 77 (“[u]nsurprisingly, Microsoft offers no procompetitive explanation for its campaign to deceive developers.”)

³⁷² RB at 113.

³⁷³ *See* RB at 86-88, 114-15.

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As discussed above, Rambus engaged in a deliberate course of deceptive conduct that included selective omissions and outright misrepresentations relating to its intellectual property³⁷⁴. Indeed, Rambus used information obtained via its participation in JEDEC to help shape and refine the very patent applications it now claims it was seeking to protect³⁷⁵. Rambus's supposed desire to maintain the secrecy of its intellectual property does not justify the totality of its deceptive conduct in the standard-setting context.

We weigh Rambus's justification in the context of its conduct. In the competitive marketplace, companies generally are justified in choosing not to disclose or share their unpublished patent applications and trade secrets³⁷⁶. The ALJ (and Rambus), citing Rambus's patent law expert, found three reasons why, in a competitive context, the non-disclosure of this information serves legitimate and procompetitive purposes³⁷⁷. However valid these justifications might be in the abstract – or when applied within a competitive marketplace – they do not fit the record facts or the context that existed here. Further, if protecting trade secrets was critical to Rambus, it had the option to refrain from participating in JEDEC.

First, Rambus argued that withholding of information was justified because disclosure of that information “shows which inventions the applicant is seeking to protect, and thus reveals both technical information and the applicant's business strategies.” Preserving trade secrets by preventing access by

³⁷⁴ See *supra* Section IV.A.

³⁷⁵ *Id.*

³⁷⁶ The PTO held patent applications in confidence during the period that Rambus belonged to JEDEC. In 1999, the law changed to require publication of most patent applications 18 months after filing. 35 U.S.C. § 122.

³⁷⁷ ID at 288-89; RB at 87.

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rivals in a competitive marketplace often may be procompetitive, particularly when that information is not otherwise protected from free-riding by those rivals. However, the technical information comprising Rambus's inventions (as opposed to its intentions to claim that those inventions covered technologies in JEDEC's DRAM standards – which, as discussed above,³⁷⁸ could not be divined until the ultimate claims became public) already had been disclosed with publication of the written descriptions of the inventions in the PCT application and the '703 patent. Moreover, Rambus has claimed in its numerous infringement actions that the patent laws provide full protection against unlicensed use of its technical inventions, at least for periods after Rambus's patents issued.

It is true that if Rambus had disclosed its relevant patent applications to JEDEC members, the disclosure might have exposed Rambus's business strategy to obtain patents covering JEDEC's DRAM standards – but Rambus does not explain how keeping that strategy secret would be procompetitive given the cooperative atmosphere of the SSO. To the contrary, disclosure would have enabled other participants in the standard-setting process to make their decisions based on knowledge that Rambus's business strategy was to enforce its patents and demand royalties if they were incorporated in standards adopted by JEDEC. As one treatise summarizes, withholding information as to the existence of patent applications in such a setting “would be most valuable as a tool for deception.”³⁷⁹

Second, Rambus argued that disclosure “could jeopardize the applicant's ability to obtain foreign patents” by “enabl[ing] a competitor to win the ‘race’” to foreign patent offices, most of

³⁷⁸ See *supra* notes 328-338 and accompanying text.

³⁷⁹ II HOVENKAMP ET AL., IP AND ANTITRUST § 35.5 at 35-40 n. 17.11 (2006 Supp.).

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which have “a ‘first to file’ rule.”³⁸⁰ But under typical first-to-file rules, patents go to the first *inventor* to file³⁸¹. If a competitor merely read or heard Rambus’s disclosure, copied its application, and filed first in a foreign jurisdiction, the competitor would not have invented the technology and would not be entitled to a patent³⁸². Rambus failed to identify any foreign jurisdiction in which its ability to obtain patent protection would have been threatened by disclosures within JEDEC. Under these circumstances, and on this record, the only effect of Rambus’s behavior was to prevent JEDEC participants – who expected Rambus to conduct itself cooperatively and without deception – from making their standard-setting decisions with knowledge of the consequences. That is not procompetitive.

Third, we are not persuaded that Rambus’s non-disclosure of its patent applications was justified because disclosure “may enable a competitor to slow down or interfere with the patent application process,” such as by “enabl[ing] a competitor to provoke an ‘interference’ at the Patent Office by claiming the

³⁸⁰ RB at 87_88.

³⁸¹ See Gerald J. Mossinghoff, *The First-To-Invent Rule in the U.S. Patent System has Provided No Advantage to Small Entities*, 87 J. PAT. & TRADEMARK OFF. SOC’Y 514 (2005) (“As between two true inventors claiming the same invention – as contrasted to copiers – every nation in the world, except the United States, grants the patent to the inventor who first undertakes to use the patent system In shorthand, this is called a first-to-file system of priority, but it is more appropriately called a first-inventor-to-file system.”) (emphasis original); MARTIN J. ADELMAN *et al.*, CASES AND MATERIALS ON PATENT LAW 160 (2003) (under a first-to-file system, “the *inventor* who first files a patent application obtains the patent, even if another actually invented the technology first”) (emphasis added); Fliesler, Tr. 8839 (explaining the first-to-file race in terms of “*inventor* A and *inventor* B who are conceiving and reducing to practice and working independently, but simultaneously on the same invention”) (emphasis added).

³⁸² See Fliesler, Tr. 8839 (the first one to file “that is otherwise entitled to a patent” prevails).

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same invention in one of the competitor's applications."³⁸³ This, too, is a hypothetical justification. There is no evidence in this record that Rambus's patent position in the United States or elsewhere would have been jeopardized in that fashion.

Finally, Rambus cites Crisp's trial testimony and an e-mail he sent to Rambus executives to support its claim regarding the protection of trade secrets³⁸⁴. Crisp testified that Rambus's outside patent counsel advised him that patent applications should be confidential; however, Crisp did not state that counsel's advice was tied to Rambus's course of conduct in the JEDEC standard-setting context³⁸⁵. Moreover, although Crisp's e-mail mentioned the desirability "of not disclosing our trade secrets any earlier than we are forced to," the context suggested that this comment reflected Rambus's desire for leverage over its customers³⁸⁶. There is abundant additional evidence in the record that Rambus's conduct was motivated by a desire to anticompetitively bias the standard-setting process³⁸⁷. In short, there is nothing to support Rambus's claim except the claim itself.

³⁸³ RB at 87.

³⁸⁴ *See id.* at 49-50, 98-99.

³⁸⁵ Crisp, Tr. 3473, 3495-96. Other, more specific advice from Rambus counsel (Diepenbrock as well as Vincent) identified the equitable estoppel risks associated with Rambus's JEDEC membership. *See* CX 837 at 1; CX 1942; CX 3125 at 320-21 (Vincent *Infineon* Dep.) (*in camera*).

³⁸⁶ Crisp's same e-mail also referenced the need "to get the necessary amendments completed [and] the new claims added," and "make damn sure the ship is watertight," before making disclosures. *See* CX 837 at 2.

³⁸⁷ *See, e.g.*, CX 711 at 73 ("it makes no sense to alert them to a potential problem they can easily work around."); CX 919 ("do *NOT* tell customers/partners that we feel DDR may infringe – our leverage is better to wait."); CX 1277a at 2 ("do not tell them :-").

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We find that Rambus did not carry its burden of establishing that its conduct served procompetitive purposes. The record establishes that the purpose and effect of Rambus's deceptive conduct was to manipulate the standard-setting process at JEDEC and gain market power. Furthermore, even if we were to credit Rambus's proffered justification, we find that it would not outweigh the anticompetitive effects of Rambus's exclusionary conduct, particularly in light of the potential to distort industrywide standard setting.

B. Possession of Monopoly Power

Monopoly power may be established either by direct evidence of such power – *i.e.*, the power to raise price above competitive levels or to exclude competition – or by indirect evidence, such as a high market share in a properly defined relevant market with high barriers to entry³⁸⁸. In order to support a Section 2 violation, such monopoly power must be durable. When barriers to entry are low, any attempt to exercise monopoly power (even by a firm with 100 percent market share) quickly would be countered by competition from new entrants.³⁸⁹

³⁸⁸ See, e.g., *United States v. Dentsply Int'l, Inc.*, 399 F.3d 181, 187 (3d Cir. 2005) (“monopoly power may be inferred from a predominant share of the market”); *United States v. Microsoft Corp.*, 253 F.3d 34, 51 (D.C. Cir.), *cert. denied*, 534 U.S. 952 (2001) (“monopoly power may be inferred from a firm’s possession of a dominant share of a relevant market that is protected by entry barriers”).

³⁸⁹ See, e.g., *Tops Markets, Inc. v. Quality Markets, Inc.*, 142 F.3d 90, 99 (2d Cir. 1998) (“We cannot be blinded by market share figures and ignore market place realities, such as the relative ease of competitive entry”); *United States v. Syufy Enters.*, 903 F.2d 659, 665-66 (9th Cir. 1990) (“In evaluating monopoly power, it is not market share that counts, but the ability to *maintain* market share.”).

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As discussed above,³⁹⁰ the alleged relevant product markets involve technologies that are incorporated in DRAM for use in current and recent-generation electronic memory devices³⁹¹. The four alleged relevant technology markets are: (1) the latency technology market; (2) the burst length technology market; (3) the data acceleration technology market; and (4) the clock synchronization technology market. With respect to each of these four technology markets, the product market comprises alternative technologies available to address a given technical issue arising in the course of DRAM design³⁹². The alleged relevant geographic market for each of these four technologies is the world³⁹³. Rambus accepts these market definitions.³⁹⁴

Rambus held over 90 percent of the market share in the relevant markets³⁹⁵. JEDEC's standards have been ubiquitous in

³⁹⁰ See *supra* Section II.A.

³⁹¹ IDF 1010-15.

³⁹² The Initial Decision also identifies a "cluster market" for synchronous DRAM technologies, which contains these four product markets. IDF 1014. In view of our findings regarding the four separate product markets, we need not separately consider the cluster market.

³⁹³ IDF 1016-17. See IDF 1017 ("The relevant geographic market for each relevant product market is the world because: buyers of technology typically do not care about the geographic source of technology; technologies tend to be licensed worldwide; technologies tend to flow across national borders; downstream products are produced and used worldwide; and transportation costs of both technology and DRAMs are negligible.").

³⁹⁴ See IDF 1013, 1015 ("Respondent does not challenge Complaint Counsel's product market definitions. Respondent's economic expert . . . testified the 'relevant market is not crucial to understanding competition and market power in this setting.'").

³⁹⁵ See IDF 1020-21; CX 1386 at 4 ("We are on the cusp of achieving our original BHAG [Big Hairy Audacious Goal] • SDRAM + DDR + RDRAM > > 90% of the DRAM market"); CX 2112 at 310-11 (deposition transcript at 309-10) (Mooring FTC Dep.); McAfee, Tr. 7430 (testifying that the percentage

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the computer industry: from 1998 on, the decided majority of DRAMs sold have complied with the JEDEC SDRAM and DDR SDRAM standards³⁹⁶. Rambus claims that its patents are necessary to make, use, or sell DRAMs that comply with the JEDEC standards³⁹⁷. Courts typically find such a high market share sufficient to infer the existence of monopoly power³⁹⁸. The ALJ determined that Rambus possessed monopoly power in the four key technology markets alleged, and Rambus does not dispute his findings in this respect³⁹⁹. We reach the same

of worldwide commercial DRAM production exposed to Rambus's patent claims was "in the upper nineties").

³⁹⁶ See CX 35 at 14-15 ("This JEDEC standardization process creates the structure from which all DRAM designs begin . . . JEDEC is the fulcrum for DRAM standards in Asia, the Americas and Europe").

³⁹⁷ CX 2067 at 171 (Davidow *Infineon* Dep.) (*in camera*) ("Q. So am I right, then that it's Rambus's position [] that any SDRAM or RDRAM being used in main memory PCs today [January 31, 2001] are covered by their patents? . . . [A.] I would say that it is highly likely that is true."); McAfee, Tr. 7427-28 ("JEDEC standards have dominated the DRAM industry"), 7432-33; Rapp, Tr. 10248-49 (presenting market share statistics).

³⁹⁸ See *Eastman Kodak Co. v. Image Technical Servs.* 504 U.S. 451, 481 (1992) (80% market share, with no readily available substitutes, sufficient to survive summary judgment on the possession of monopoly power); *United States v. Grinnell Corp.*, 384 U.S. 563, 571 (1966) (87% of the relevant market left no doubt that defendants had monopoly power); *United States v. E.I. du Pont de Nemours & Co.*, 351 U.S. 377, 379, 391 (1956) (control of 75% of a relevant market would constitute monopoly power); *American Tobacco Co. v. United States*, 328 U.S. 781, 797 (1946) (control of over two-thirds of the market is a monopoly).

³⁹⁹ "Complaint Counsel have demonstrated that Respondent has monopoly power in the relevant markets." IDF at 252; see also IDF 1010-15. Rambus's economic expert, Rapp, testified that Rambus possessed market power. Rapp, Tr. 10046 ("[I]t is the case isn't it, that, in your view, Rambus today possesses market power in each of the relevant markets defined by [Complaint Counsel's expert] Professor McAfee? A. Yes.").

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conclusion, and find that Rambus did acquire a monopoly position.

Rambus argues, however, that its monopoly power was not durable because the industry could have switched to alternative technologies relatively easily without incurring significant additional costs. We must therefore determine whether Rambus's deceptive and exclusionary conduct in the standard-setting context enabled Rambus to acquire durable monopoly power. We address that question below, as part of our broader analysis of causation issues.⁴⁰⁰

C. Causation

Having concluded that Rambus engaged in a deceptive course of conduct that constituted exclusionary conduct, and having found that Rambus acquired a monopoly position in the relevant markets, we turn to the critical issue of causation – *i.e.*, whether Rambus's exclusionary conduct was linked to its monopoly position.

We find that the same evidence establishing that Rambus engaged in exclusionary conduct and that it acquired monopoly power respecting the four key technologies incorporated into JEDEC's SDRAM standards contributes to a *prima facie* showing of a causal link between Rambus's conduct and its power. More specifically, we conclude that the evidence (1) links Rambus's conduct to JEDEC's adoption of SDRAM standards incorporating Rambus's patents and (2) links JEDEC's adoption of those standards to Rambus's acquisition of monopoly power.

1. Link between Rambus's Conduct and JEDEC's Standard-Setting Decisions

⁴⁰⁰ See especially *infra* Section IV.C.3.d. (discussion of lock-in).

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Rambus's strategy was to cause JEDEC to adopt SDRAM and DDR SDRAM standards incorporating its patents, and then to charge those practicing the standards royalties of its choosing. Although purpose is not a substitute for effect in a monopolization case, it is well-settled that "[e]vidence of the intent behind the conduct of a monopolist is relevant . . . to the extent it helps us understand the likely effect of the monopolist's conduct."⁴⁰¹ As the Supreme Court explained, "[K]nowledge of intent may help the court to interpret facts and to predict consequences."⁴⁰² Thus, we initially infer from the evidence respecting Rambus's purpose that, but for Rambus's deceptive course of conduct, JEDEC either would have excluded Rambus's patented technologies from the JEDEC DRAM standards, or would have demanded RAND assurances, with an opportunity for *ex ante* licensing negotiations. Indeed, the one time that JEDEC members had advance knowledge that a Rambus patent was likely to cover a standard under consideration, the members took deliberate steps to avoid standardizing the Rambus technology.⁴⁰³

JEDEC members – DRAM manufacturers and customers – were highly sensitive to costs, and that keeping costs down was a

⁴⁰¹ United States v. Microsoft Corp., 253 F.3d 34, 59 (D.C. Cir.), *cert. denied*, 534 U.S. 952 (2001).

⁴⁰² Chicago Board of Trade v. United States, 246 U.S. 213, 238 (1918). *See also* United States Football League v. NFL, 842 F.2d 1335, 1359 (2d Cir. 1988) ("Evidence of intent *and* effect helps the trier of fact to evaluate the actual effect of challenged business practices in light of the intent of those who resort to such practices.") (emphasis original).

⁴⁰³ In March 1997, when NEC proposed a "loop-back" clock system, some members expressed concern that it might be covered by Rambus's '703 patent, the one patent that Rambus had disclosed while it was a member of JEDEC. JX 36 at 7. The JEDEC committee immediately dropped the proposal and turned to consideration of technologies that it believed avoided Rambus's patent. *See* Rhoden, Tr. 527-28; Lee, Tr. 6695-96; CX 368 at 2.

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major concern within JEDEC⁴⁰⁴. As a report by Rambus's Crisp put it, "Compaq (Dave Wooten) like the others, stressed that price was the major concern for all of their systems. They didn't particularly seem to care if the SDRAMs had 1 or two banks so long as they didn't cost any more than conventional DRAMs . . . Sun echoed the concerns about low cost. They really hammered on that point."⁴⁰⁵ More succinctly, Crisp explained, "[T]hey want cheap, cheap, cheap."⁴⁰⁶

JEDEC members considered the potential cost of patents in weighing different alternatives. Witnesses, including representatives from DRAM manufacturers and their major customers, testified that knowledge of patents was an important factor in their decisions as JEDEC members⁴⁰⁷. For example, after

⁴⁰⁴ See, e.g., G. Kelley, Tr. 2562 ("The overriding factor on all of my votes on DRAM was low cost"); Bechtelsheim, Tr. 5814 (JEDEC's "overarching goal" was "a cost-effective solution" for memory interfaces); CX 2107 at 136-37 (Oh FTC Dep.) (*in camera*) (avoiding costs, including royalties or fees, was important to Hyundai); CX 34 at 31 (IBM: "LOW COST!!! (<5% more than [previous generation] DRAM)"); CX 711 at 1 (Crisp e-mail reporting, "Desi [Rhoden of Advanced Memory International (AMI-2)] added that if the SDRAM doesn't cost less than 5% more than [previous generation] DRAM they will not be used"); CX 2383 (Sun letter to JEDEC members stating, "[S]ince we are very cost conscious we are willing to drop features that add too much cost or complexity"); CX 2777 (Micron: "[T]he age old rule for DRAMs still appl[ies]. Customers will take as much performance as we can give them for absolutely no added cost over the previous technology. They will not pay extra for increased DRAM performance."). An October 1994 internal Rambus e-mail summarized, "Our industry is very cost sensitive." CX 5109 at 4.

⁴⁰⁵ CX 1708 at 2.

⁴⁰⁶ CX 711 at 34 (explaining that "customers are willing to leave performance on the table in exchange for having lower cost systems").

⁴⁰⁷ See, e.g., Sussman, Tr. 1417 (Sanyo's JEDEC representative testifying, "If I understood that there was IP on the programmable, I would have voted – changed my direction and voted to take the fixed one."); Landgraf, Tr. 1714 (HP's JEDEC representative testifying that if Rambus had

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testifying that the potential for royalty-bearing patents would have been relevant in analyzing programmable CAS latency and programmable burst length as compared to alternatives, Andreas Bechtelsheim added, “I personally and Sun [Microsystems] as a company would have strongly opposed the use of royalty-bearing elements in an interface patent – in an interface specification.”⁴⁰⁸ The total cost of payments for Rambus’s undisclosed patents could amount to several billion dollars,⁴⁰⁹ with some individual

disclosed its patent applications, “If we knew in advance that they were not going to comply with the JEDEC patent policy, we would have voted against it.”); G. Kelley, Tr. 2576 (IBM’s JEDEC representative noting that “[p]atent issues are a concern on every JEDEC proposal” and that when a technology was considered for the first time “it was especially valuable to have the consideration of patents so that we could possibly avoid them”); Lee, Tr. 6686, 6717 (knowledge of Rambus’s patent applications would have caused Micron to oppose on-chip PLL/DLL and dual-edge clocking); *see also* JX 5 at 4 (JEDEC minutes stating, “The important thing is disclosure. If it is known that a company has a patent on a proposal then the Committee will be reluctant to approve it as a standard.”).

⁴⁰⁸ Bechtelsheim, Tr., 5813-14. JEDEC members’ response to Rambus’s proprietary RDRAM technology reflected similar cost sensitivity. *See, e.g.*, JX 36 at 7 (“Some Committee members did not feel that the Rambus patent license fee fit the JEDEC requirement of being reasonable.”); CX 961 at 1 (September 1997 Intel e-mail to Rambus CEO Tate stating the concern that, for at least the low end of the market, “absolute cost is the critical factor” and alternatives “need not be equivalent performance” and warning that, upon analyzing the royalty obligations attached to RDRAM, the industry would develop alternatives); RX 1482 at 12.

⁴⁰⁹ *See* McAfee, Tr. 7653-54 (*in camera*) (estimating royalty payments to Rambus of \$600 million per year); CX 527 at 1 (*in camera*) (projecting annual Rambus royalty revenue on SDRAM and DDR SDRAM of \$2.1 billion dollars by 2005); CX 1391 at 32 (*in camera*) (suggesting that Rambus DRAM royalties could total more than \$8 billion over the six years between 2000 and 2005); CX 1401 at 10 (*in camera*) (Rambus business plan projecting that DDR SDRAM royalties in 2005 would range from several hundred million dollars up to as much as \$2.5 billion).

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DRAM manufacturers each paying hundreds of millions of dollars⁴¹⁰. Numbers of this magnitude are not easily overlooked.

Alternative technologies were available when JEDEC chose the Rambus technologies, and could have been substituted for the Rambus technologies had Rambus disclosed its patent position⁴¹¹. Some of the major firms in the industry found these alternatives viable, and even preferable⁴¹². JEDEC members – the principal buyers of the relevant technologies – gave these alternatives serious, searching consideration; in fact, the technologies as to

⁴¹⁰ See Appleton, Tr. 6390-92 (Rambus's requested royalty would cost Micron hundreds of millions of dollars; Rambus royalties would be the equivalent of 25-50% of Micron's R&D expenditures).

⁴¹¹ See, e.g., G. Kelley, Tr. 2548-49 and Jacob, Tr. 5370-93 (alternatives to programmable CAS latency); Kellogg, Tr. 5110-11, 5131-32 and Jacob, Tr. 5397-5412 (alternatives to programmable burst length); Jacob, Tr. 5416-38 (alternatives to dual-edge clocking); Jacob, Tr. 5443-58 and Lee, Tr. 6655, 6664-67, 6676-78 (alternatives to on-chip PLL/DLL). See generally Bechtelsheim, Tr. 5786 ("in typical design activity one can make any number of choices, including choosing an interface that was not encumbered by a patent or royalty").

⁴¹² For example, Samsung advocated the use of fixed, rather than programmable, CAS latency, JX 10 at 71; Rhoden, Tr. 425-27; Kellogg, Tr. 5099-100, and Cray proposed the use of fuses to set latency, CX 34 at 149, Kellogg, Tr. 5104. For setting burst length, Cray proposed using fuses, CX 34 at 149; Sussman, Tr. 1388-89; Kellogg, Tr. 5103-05, and Mitsubishi proposed using pins. Rhoden, Tr. 430-34; Kellogg, Tr. 5102; JX 10 at 5, 74. Samsung proposed fixed, rather than programmable, burst length. Rhoden, Tr. 425-27; JX 10 at 71. With regard to data acceleration, TI proposed doubling the frequency of a single-edge clock in place of dual-edge clocking. Lee, Tr. 6711-14; CX 371 at 3. As alternatives to on-chip PLL/DLL, Samsung proposed placing a single PLL on the memory controller, Rhoden, Tr. 513-14; Lee, Tr. 6691; JX 31 at 71; IBM proposed using vernier circuits, Kellogg, Tr. 5155; and Micron proposed using what it termed an "echo clock," Lee, Tr. 6655-56; 6664-67; JX 29 at 4, 17-22. Both Micron and Silicon Graphics also presented proposals for using data strobes in place of on-chip DLLs. CX 368 at 1-2, 4; CX 370 at 2-3; Lee, Tr. 6666-67, 6682-83.

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which Rambus subsequently revealed patent claims sometimes were chosen only after prolonged debate.⁴¹³

The ALJ rejected this evidence regarding JEDEC's cost sensitivity and technology debates because, in his opinion, it was based on "the subjective perceptions of JEDEC members at the time," reasoning that while it "may speak to whether JEDEC would have selected a [substitute] technology, it does not go to whether an alternative is equal or superior in objective terms."⁴¹⁴

⁴¹³ As to CAS latency and burst length, NEC/Sanyo's Sussman testified, "I had a lot of arguing to do to get the degree of programmable features into the part." Sussman, Tr. 1380. AMI-2's Rhoden explained that using fuses to set CAS latency and burst length "was one of the options that was considered for a very long time, until we finally settled on the [programmable] register." Rhoden, Tr. 429-30. Subsequently, sentiment for moving to fixed CAS latency and burst length remained strong: the SDRAM Lite task group proposals for reducing the cost of SDRAM included fixed CAS latency and burst length. *See* Rhoden, Tr., 475-76; Lee, Tr. 6626. Indeed, results of the SDRAM Lite survey ballot announced in January 1996 showed consensus support for fixed CAS latency of three and for fixed burst length of four, but no consensus for an additional latency or burst length. *See* Lee, Tr. 6627-32; JX 29 at 13-15.

Dual-edged clocking held only "mixed support" within JEDEC. JX28 at 35 (results of 1995 survey ballot). (This confirms a 1991 report from NEC's Sussman, finding a split between those who preferred high-speed, single-edge clocking and those who preferred dual-edge clocking at lower speeds. *See* Sussman, Tr. 1368-72; CX 20 at 1.) Debate over on-chip PLL/DLL reflected "differing viewpoints," with some JEDEC members preferring to use a data strobe and finding on-chip PLL/DLL unnecessary, but others wanting the latter feature; the result was "a compromise . . . to do both but provide the ability to turn off the DLL." *See* Lee, Tr. 6682-83; Sussman, Tr. 1404 (summarizing the on-chip PLL/DLL debate, "Ten engineers; 12 opinions."). *See also* CX 2713 at 2 and Lee, Tr. 6654 (1997 Micron e-mail arguing to JC 42.3 members that on-chip DLL has "more disadvantages than advantages" and should be eliminated); MacWilliams, Tr. 4918-20 (Intel study found on-chip DLL unnecessary at speeds under consideration).

⁴¹⁴ ID at 317.

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The ALJ's analysis misses the point of the causation inquiry. Evidence that a properly-informed JEDEC may have selected a substitute technology suggests a causal link between Rambus's deceptive course of conduct and JEDEC's decision-making process. This evidence – combined with the evidence of Rambus's strategy, JEDEC members' overriding concern with costs, and the magnitude of the potential royalties in the absence of RAND assurances or the opportunity to negotiate *ex ante* – is enough to show that JEDEC's adoption of the SDRAM and DDR SDRAM standards was linked to Rambus's exclusionary conduct.

2. Link Between JEDEC's Standards and Rambus's Monopoly Power

JEDEC's adoption of standards incorporating Rambus's patented technologies is linked to Rambus's monopoly power. More specifically, as previously stated, the record shows: (1) that Rambus claims that its patents are necessary to make, use, or sell DRAMs that comply with the JEDEC standards; (2) that most DRAMs sold complied with the JEDEC SDRAM and DDR

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SDRAM standards;⁴¹⁵ and (3) that Rambus acquired 90 percent market shares in all four of the relevant markets.⁴¹⁶

These market results were a natural consequence of DRAM industry attributes. In part, the results reflected the nature and composition of JEDEC, a broad-based organization that included essentially all the DRAM manufacturers and their largest customers⁴¹⁷. Once JEDEC reached a consensus as to which technologies to standardize, it is hardly surprising that those same manufacturers produced, and those same customers bought, products conforming to the standard they had adopted⁴¹⁸.

The market results also reflected the nature of the DRAM product itself, which drove standardization in the DRAM

⁴¹⁵ In each year from 1994 through 2002, products compliant with JEDEC standards captured between 87-97% of DRAM revenues. *See* Rapp, Tr. 10099-100, 10248-49; Prince, Tr. 9020-21; CX 2112 at 310-11 (deposition transcript at 309-10) (Mooring FTC Dep.) (*in camera*). Rambus argues that multiple DRAM standards may and do exist at any given time, but almost without exception, the “multiple standards” in the market have been succeeding generations of JEDEC standards. *See* Rapp, Tr. 10248-49. Only with RDRAM in 2001-02 did any non-JEDEC-compliant DRAMs capture more than 3% of revenues. *Id.* Indeed, customers expressed reluctance to purchase anything other than JEDEC-compliant DRAMs for commodity applications. Rambus President Mooring, for example, testified that HP, Apple, and Sun all told him in 1991 that “we only use memories approved by JEDEC.” CX 2054 at 47-48 (Mooring *Infineon* Dep.) (*in camera*). “[I]n the DRAM business, the only standard is JEDEC.” CX 2079 at 118 (Mooring *Micron* Dep.) (*in camera*). *See also* Becker, Tr. 1152-53 (Infineon makes only JEDEC-compliant DRAMS because “that’s all our customers are willing to buy”).

⁴¹⁶ *See supra* Section IV.B.

⁴¹⁷ *See* Rhoden, Tr. 293-94; Peisl, Tr. 4453; JX 18 at 1-3.

⁴¹⁸ *See* Rhoden, Tr. 297-98 (“working with the customer inside an area like JEDEC . . . when everyone agrees, then they have essentially an automatic market . . . basically a presold customer base just by complying and working with the standard”); Macri, Tr. 4596.

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industry. DRAMs must interoperate with complementary components, which provided a compelling incentive to develop DRAM specifications that ensured compatibility⁴¹⁹. JEDEC provided the necessary mechanism for coordinating the evolution of DRAMs and their complements⁴²⁰. Moreover, customers desired a commodity DRAM market whereby multiple DRAM suppliers could supply interchangeable DRAMs; standardization made this possible.⁴²¹

These considerations strongly suggest that the market was likely to coalesce around a standardized choice⁴²². Joined with the

⁴¹⁹ See, e.g., Williams, Tr. 763 (Micron’s customers “require that they are able to buy products from multiple sources and that these products interoperate, and JEDEC is the body that sets those standards by which there [is] interoperability”); Calvin, Tr. 994; G. Kelley, Tr. 2387-88; Polzin, Tr. 3943-44 (“It was crucial that we had a common standard that would allow interoperability”), 3972; Peisl, Tr. 4382 (standards “enable [] essentially the whole industry to develop products that work together in more or less a predefined manner”), 4386, 4408-10; McAfee, Tr. 7189-90, 11218.

⁴²⁰ See, e.g., Calvin, Tr. 994; Polzin, Tr. 3946-47 (“JEDEC was the natural forum and process for resolving the numerous differences.”); Peisl, Tr. 4410 (“You have to make sure that your part is fully compliant with all the specifications of the other chips. This is why everybody is working towards the JEDEC specification. That’s the common denominator.”); McAfee, Tr. 11301-02.

⁴²¹ See, e.g., Rhoden, Tr. 298-99; Williams, Tr. 763; Becker, Tr. 1152-53 (“[customers like Dell, IBM, and Compaq] want to be able to buy my parts or Samsung’s parts or Micron’s parts and use them interchangeably, and through the standards process, they get that benefit”); Sussman, Tr. 1328; Landgraf, Tr. 1692-93; G. Kelley, Tr. 2387-88; Heye, Tr. 3641 (“Apple thought it was very, very important to have multiple suppliers”); Polzin, Tr. 3973; Peisl, Tr. 4408-10; Goodman, Tr. 6013; McAfee, Tr. 7225-26; Farmwald, Tr. 8296; CX 1354 at 5 (1999 Tate presentation stating, “Customers want multiple sourced, compatible DRAMs”).

⁴²² See McAfee, Tr. 11228-29. Indeed, outside the litigation context, Rambus recognized this very point. See CX 533 at 9 (1989 RamBus Business Plan noting “[t]he DRAM industry’s penchant for standardization”); CX 1284

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historical record of the predominant market position of DRAMs compliant with the JEDEC standards, these industry attributes support our finding that JEDEC's choice of standards significantly contributed to Rambus's monopoly power.

3. Rambus's Claims That The Chain of Causation Was Broken

Rambus claims that its course of conduct and its acquisition of monopoly power cannot be linked for four principal reasons.

a. Rambus's Intel Claim

First, Rambus argues (and the ALJ agreed) that Intel's technology choices,⁴²³ not any conduct in which Rambus engaged, caused the monopoly position Rambus enjoyed with respect to SDRAM technologies⁴²⁴. If we were to accept this conclusion, implicitly we would be assigning to Complaint Counsel the burden of proving that Rambus's conduct was the *sole* cause of Rambus's monopoly position. This is error as a matter of law.

at 28 (1989 RamBus Technology Overview stating, "There is real value in having a world DRAM standard").

⁴²³ In late 1996, Intel announced that its future chipsets – the "gatekeeper" or "traffic cop" components that link CPUs with main memory – would support RDRAM exclusively. *See* IDF 1058; Crisp, Tr. 3432-33; Tabrizi, Tr. 9134-35; RX 1532 at 2. By March 1999, however, Intel determined that "a strategy that puts our chipset and value processor line dependent, solely on Rambus is no longer viable." CX 2527 at 2. In June 1999, Intel announced it might discontinue its exclusive support of RDRAM, and two months later, Intel confirmed that it would also support main memory compliant with JEDEC's SDRAM standard. Tabrizi, Tr. 9201-03; CX 1077; CX 2338 at 57 (*in camera*). By October 1999, Intel informed Rambus that it had "been forced to re-architect its chipset roadmap to accommodate additional SDRAM products." CX 2541 at 2; *see* CX 2540 at 1.

⁴²⁴ RFF 1538-47; ID at 303-04. Rambus did not raise this argument in its appeal or rebuttal briefs to the Commission.

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Exclusionary conduct need not be the exclusive cause of the monopoly position. In an equitable enforcement action, it is sufficient that the exclusionary conduct “reasonably appear[s] capable of making a significant contribution to creating or maintaining monopoly power.”⁴²⁵ As Professors Areeda and Hovenkamp explain:

[B]ecause monopoly will almost certainly be grounded in part in factors other than a particular exclusionary act, no government seriously concerned about the evil of monopoly would condition its intervention solely on a clear and genuine chain of causation from an exclusionary act to the presence of monopoly⁴²⁶.

Further, as the U.S. Court of Appeals for the District of Columbia Circuit reasoned in *Microsoft*, requiring Section 2 plaintiffs “to reconstruct the hypothetical marketplace absent a defendant’s anticompetitive conduct would only encourage monopolists to take more and earlier anticompetitive action.”⁴²⁷

Moreover, the record does not support Rambus’s claim as a matter of fact. Intel first announced and then withdrew exclusive

⁴²⁵ United States v. Microsoft Corp., 253 F.3d 34, 79 (D.C. Cir.), *cert. denied*, 534 U.S. 952 (2001), citing language currently appearing at III AREEDA & HOVENKAMP, ANTITRUST LAW, ¶ 651f at 83-84; *see also* Einer Elhauge, *Defining Better Monopolization Standards*, 56 STAN. L. REV. 253, 331-32 (2003).

⁴²⁶ III AREEDA & HOVENKAMP, ANTITRUST LAW, ¶ 651f at 83. *See also Microsoft*, 253 F.3d at 79 (finding no case standing for the proposition that “as to § 2 liability in an equitable enforcement action, plaintiffs must present direct proof that a defendant’s continued monopoly power is precisely attributable to its anticompetitive conduct”) (emphasis original).

⁴²⁷ *Microsoft*, 253 F.3d at 79.

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support for RDRAM, and RDRAM never became a major factor in the DRAM market⁴²⁸. Intel, acting alone, did *not* successfully impart monopoly power on its temporarily anointed choice; nor was the withdrawal of its support the sole reason for the proliferation of SDRAM technologies. Rather, the record shows that JEDEC's standards captured the market. JEDEC adopted standards that included programmable CAS latency and burst length, dual-edged clocking, and on-chip DLL/PLL, and these technologies succeeded. JEDEC did not adopt other aspects of RDRAM, and they became insignificant. Thus, the record shows that JEDEC's adoption made the difference, and significantly contributed to Rambus's acquisition of monopoly power.

b. Rambus's Inevitability/Superiority Claim

Second, Rambus argues (and the ALJ agreed) that any monopoly power it obtained from the incorporation of its technologies into the JEDEC DRAM standards resulted from the superiority of Rambus's technology, not from its conduct. We also reject this claim. To begin with, Rambus and the ALJ assumed that Complaint Counsel had the burden of proof on this claim. That is error. As noted by Professors Areeda and Hovenkamp:

In addition to proving [monopoly] power, the plaintiff generally has the burden of pleading, introducing evidence, and presumably proving by a preponderance of the evidence that anticompetitive behavior has contributed significantly to the achievement or maintenance of the monopoly. *The defendant may, of course, introduce its own proof*

⁴²⁸ During the period of Intel's exclusive support, RDRAM accounted for .5% (in 1996), 1.3% (in 1997), 1.6% (in 1998), 1.1% (in 1999), and 3% (in 2000) of DRAM revenues. Rapp, Tr. 10248-49. Its share was 12.5% in 2001, *id.* at 10249, and then fell below 10% by 2002. CX 2112 at 309-10 (Mooring FTC Dep.) (*in camera*).

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*of inevitability, superior skill, or business justification....*⁴²⁹

The court in *Microsoft* essentially reached the same conclusion. There the plaintiff met its threshold burden by showing that Microsoft unlawfully had maintained its monopoly position by “engag[ing] in anticompetitive conduct that reasonably appear[s] capable of making a significant contribution to . . . maintaining monopoly power.”⁴³⁰ The court then inferred causation – ruling, in essence, that the plaintiff had met its burden without a particularized reconstruction of what would have occurred in the but-for world. Rather than requiring the plaintiff “to reconstruct the hypothetical marketplace absent a defendant’s anticompetitive conduct,” the court explained, “To some degree the defendant is made to suffer the uncertain consequences of its own undesirable conduct.”⁴³¹

⁴²⁹ III AREEDA & HOVENKAMP, ANTITRUST LAW, ¶ 650c at 69 (emphasis added).

⁴³⁰ *Microsoft*, 253 F.3d at 79 (citation to Areeda & Hovenkamp treatise omitted).

⁴³¹ *Id.* See also *Morgan v. Ponder*, 892 F.2d 1355, 1363 (8th Cir. 1989) (“[w]e need not determine the exact cause of [plaintiffs’s firm’s] demise. Nor must plaintiffs systematically eliminate all possible non-predatory causes.”) (*dictum*). Cf. *Hecht v. Pro-Football, Inc.*, 570 F.2d 982, 991 (D.C. Cir. 1977) (holding that *defendants* bear the burden of proof when they seek to avoid charges of monopolization by asserting that their monopoly power results from natural monopoly).

Rambus argues that in a standard-setting case, the plaintiff “must establish that the standard-setting organization adopted the standard in question, and *would not have done so but for* the misrepresentation or omission.” RB at 121, citing II HOVENKAMP ET AL., IP AND ANTITRUST, § 35.5b at 35-40 (emphasis added by Rambus). The treatise, however, only states that such analysis should apply when the SSO has (1) “no policy with respect to intellectual property ownership in the standards they promulgate” or (2) “a history of promulgating standards even when they are aware that the proposer owns intellectual property rights in the standard.” *Id.* at 35-40 to 35-41. Neither of those factors is relevant to the question of product superiority. Indeed, when the treatise

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Rambus argues that, even in light of full disclosure, JEDEC still would have standardized Rambus's technologies, because they were superior to all alternatives on a cost/performance basis. We find that the evidence does not establish that Rambus's technologies were superior to all alternatives on a cost/performance basis⁴³². Although Complaint Counsel argue that at least six alternative technologies were available in each of the relevant product markets, we focus, with one exception,⁴³³ on the technologies that Rambus's economic expert, Richard Rapp, analyzed. Because Rambus has failed to prove that its patented technologies were superior to all of these technologies, we need not examine additional alternatives.⁴³⁴

does discuss what Rambus portrays as the fact pattern – when “a standard would have become dominant anyway in a *de facto* standards competition” and the patent “confers an economic monopoly because of the absence of feasible noninfringing alternatives” – the treatise is silent as to the burden of proof. *Id* at 35-41 to 35-42.

⁴³² Unless stated otherwise, all subsequent references in this section to the superiority of a given technology reflect an overall assessment based on a mix of cost and performance characteristics.

⁴³³ Rapp did not analyze the cost information about toggle mode (a possible alternative to Rambus's dual-edge clocking) because he concluded that this technology's performance suffered above certain clock speeds. Rapp, Tr. 9856-57. We examine toggle mode because Rapp failed to explain why, as an economic expert, he made a judgment based on engineering attributes of this technology, but did not evaluate the performance implications of other technologies.

⁴³⁴ Rapp excluded two categories of alternatives from consideration on dubious grounds. First, he did not consider any alternative that Donald Soderman, one of Rambus's engineering experts, identified as potentially subject to a Rambus patent. Rapp, Tr. 9831, 10215, 10217. The mere identification of possible patent infringement by Rambus's own expert witness – an engineer who lacked legal training – is an insufficient reason to exclude an alternative technology.

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Latency Technology. As discussed above,⁴³⁵ latency technologies control the length of time between the memory's receipt of a data request and its release of responsive data⁴³⁶. The JEDEC DRAM standards incorporated programmable CAS latency technology, which Rambus now claims is covered by its patents. Alternatives available in the early 1990s included fixed CAS latency, blowing a fuse on a DRAM, and dedicated pins.

Rambus compares the variable cost of programmable CAS latency with the variable cost of each of these three alternative technologies. Based on this comparison, Rambus concludes that the alternatives were more costly even when Rambus's royalties were taken into consideration⁴³⁷. However, Rambus's cost estimates are unreliable for at least two reasons. First, Rambus assumes, without demonstrating, that alternatives to programmable CAS latency would have provided support for three latency values⁴³⁸. Considerable evidence indicates that

Second, Rapp excluded alternatives that Complaint Counsel's economic expert, McAfee, failed to find commercially viable. Rapp, Tr. 9810, 9841. In only one instance, however, did McAfee actually determine that an alternative was not commercially viable. In other instances, he merely concluded that he lacked sufficient information to reach a judgment one way or the other, or else stated that he was "agnostic" as to an alternative's commercial viability. *See* McAfee, Tr. 7362-63, 7372, 7385, 11354-56. Given that Rambus bears the burden of proving product superiority, McAfee's statements did not justify Rapp's decision to omit such alternatives from his comparison.

⁴³⁵ *See supra* Section II.A.3.a.

⁴³⁶ McAfee, Tr. 7348; Horowitz, Tr. 8529-30.

⁴³⁷ *See* Rapp, Tr. 9813-18, 9831-33.

⁴³⁸ *See* Geilhufe, Tr. 9578. Rambus's other engineering expert presented general testimony that different latencies provided optimal performance with different bus speeds and that users benefitted from the flexibility afforded by programmable CAS latency. Soderman, Tr. 9347, 9350-51.

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JEDEC would have required only one or two latency values if it had standardized one of the alternatives⁴³⁹. Second, Rambus fails to take account of ways in which the alternative technologies may have reduced costs⁴⁴⁰.

Fixed CAS Latency: A fixed CAS latency part sets a single latency value⁴⁴¹. Rambus did not present any evidence that this technology had any performance issues. Nevertheless, Rambus argues that fixed CAS latency was not a viable alternative, estimating that it would have increased per-unit costs by three cents for reduced yields and two cents for inventory (while simultaneously reducing per-unit costs by one cent for improved testing)⁴⁴². Rambus potentially overstates the inventory costs because it assumes that three latencies would have been supported – a premise that, as discussed above, is not established by the evidence⁴⁴³. Rambus also fails to consider any factors that might

⁴³⁹ See McAfee, Tr. 11245-48. The record establishes that SDRAMs primarily used only two CAS latency values in main memory. See Rhoden, Tr. 394; Lee, Tr. 11004-05, 11063-67, 11097 (testifying that while Micron did produce a part that used a third CAS latency value, this was a small-volume part targeted to the graphics industry). JEDEC standards frequently have required only two latency values. IDF at 1140. In 1991, Samsung advocated a fixed CAS latency of two. JX 10 at 71; Rhoden, Tr. 425-27; Kellogg, Tr. 5099-5101. In 1995, discussion of SDRAM Lite within JEDEC focused on supporting one or two values. Lee, Tr. 6629-32, 11007-08.

⁴⁴⁰ Complaint Counsel's engineering expert, Professor Bruce Jacob, testified that shifting to alternatives for programmable CAS latency would have enabled partial elimination of the mode register. See Jacob, Tr. 5376-77, 5384, 5388, 5593-95. One of Rambus's engineering experts acknowledged that this simplification could have reduced costs. See Soderman, Tr. 9419, 9515.

⁴⁴¹ Jacob, Tr. 5371.

⁴⁴² IDF at 1161-62.

⁴⁴³ Using two latencies, instead of three, would have reduced inventory cost by one cent, which means that the total variable cost increase for this technology would have been three cents. Moreover, according to Complaint

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have improved yield,⁴⁴⁴ even though its expert's testimony indicated that yield problems tended to be solved "very quickly."⁴⁴⁵

Blowing a Fuse on DRAM: Latency parts can include two CAS latency circuits, each of which can set a different latency value and has a fuse attached⁴⁴⁶. DRAM manufacturers can apply electric or laser technology to blow one of the fuses and prevent the use of the associated latency circuit⁴⁴⁷. Once blown, the DRAM manufacturer would have a fixed latency part with the desired latency value⁴⁴⁸. Rambus's engineering experts testified that electrically-blown fuses were less reliable than laser-blown fuses⁴⁴⁹. However, witnesses from Micron, IBM, and Infineon all

Counsel's engineering expert, some manufacturers used inventory systems that would have supported the use of fixed CAS latency without any cost increase. Jacob, Tr. 5592-93 (some manufacturers already assigned different part numbers to different latencies).

⁴⁴⁴ See Geilhufe, Tr. 9577-78.

⁴⁴⁵ While explaining how the cost of a DRAM could fall approximately 90% in 12 to 15 months, Geilhufe stated that engineers "solve yield problems very quickly. You know, hundreds of engineers work on what is causing yield problems. So we get down the learning curve very, very quickly." *Id.* at 9586-87. See also Lee, Tr. 11013 (testimony by Micron's director of advanced technology and strategic marketing that fixed CAS latency parts were less complex than programmable CAS latency and therefore would have improved yields).

⁴⁴⁶ Jacob, Tr. 5378-80.

⁴⁴⁷ *Id.*

⁴⁴⁸ Soderman, Tr. 9354; Geilhufe, Tr. 9585-86.

⁴⁴⁹ Soderman, Tr. 9356-57; Geilhufe, Tr. 9581-82 (Intel discontinued using electric fuses on certain products for reliability reasons).

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testified that their companies used electric fuse-blowing technology.⁴⁵⁰

Rambus argues that programmable CAS latency was superior, in terms of both cost and performance, to setting CAS latency by blowing fuses⁴⁵¹. As discussed above, Rambus has failed to establish the need to support three latency values or to demonstrate its predicted yield cost increase. Rambus also failed to rebut the testimony of Complaint Counsel's engineering expert, Professor Bruce Jacob, that computer system OEMs themselves could blow the electric fuses, enabling the DRAM manufacturers to sell a single part,⁴⁵² thereby holding down inventory costs.

Dedicated Pins: Dedicated pins can determine latency during DRAM operation⁴⁵³. A single dedicated pin can store two CAS latency values, setting one CAS latency under a high voltage and the other latency under a low voltage.⁴⁵⁴

Rambus argues that programmable CAS latency enjoyed cost and performance advantages over dedicated pins. The record does

⁴⁵⁰ See Lee, Tr. 11022, 11170 (*in camera*) (Micron had been using such fuses since 1989 and included a substantial number in its SDRAM products); Kellogg, Tr. 5130; Soderman, Tr. 9525-26 (*in camera*); see also Jacob, Tr. 5595-96.

⁴⁵¹ Geilhufe testified that this alternative to programmable CAS latency would have increased per-unit costs by three cents for reduced yield, two cents for inventory (covering three latency values), and one cent for certain testing. Geilhufe, Tr. 9584-86, 9589. See also Soderman, Tr. 9354.

⁴⁵² See Jacob, Tr. 5379-81.

⁴⁵³ Jacob, Tr. 5386-87; Soderman, Tr. 9463.

⁴⁵⁴ See Jacob, Tr. 5386-87; Polzin, Tr. 3991-92. Rambus's engineering expert agreed that two latencies can be supported with a single pin. Soderman, Tr. 9463.

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not establish this argument. First, Rambus again fails to show that any alternative to programmable CAS latency would have had to support three latency values⁴⁵⁵. As discussed above, numerous witnesses disagreed with Rambus on this point. Rambus also fails to rebut testimony that, under most circumstances, the implementation of dedicated pins might have been considerably more cost-effective than Geilhufe's predictions.⁴⁵⁶

In terms of performance, Rambus's engineering expert testified that implementing dedicated pins would have required additional wiring and "quite possibl[y]" could have created a "noise glitch."⁴⁵⁷ However, IBM's engineer, Mark Kellogg, testified that such wiring would not have been necessary;⁴⁵⁸ and the chief platform architect of Advanced Micro Devices (AMD), Steve Polzin, testified that pin-based solutions "probably could

⁴⁵⁵ Geilhufe testified that the use of dedicated pins would have increased per-unit costs by four cents, reflecting the fact that four dedicated pins would have been required to replace the range of latency values available with programmable CAS latency. Geilhufe, Tr. 9590. An alternative that supported two latency values would have required the addition of at most two pins (given that pins must be added in pairs). *See generally* Polzin, Tr. 3991-92 (use of pins to set latency would "[c]ertainly" be "no more costly" than programmable CAS latency).

⁴⁵⁶ According to both Jacob and Lee, many JEDEC-compliant configurations included pins that served no existing function and could be used to set latency. Jacob, Tr. 5387, 11106 ("[n]early all" JEDEC pin-out diagrams had two extra pins available" and "most" had two or more); Lee, Tr. 11030, 11037 (extra pins "almost always" provided); CX 234 at 80-142. If JEDEC had used these extra pins to set latency, there would have been no cost increase for this alternative to programmable CAS latency. Geilhufe's counter-testimony was limited; he argued only that extra pins were unavailable "in the highest density cases." Geilhufe, Tr. 9722-23.

⁴⁵⁷ Soderman, Tr. 9361-62.

⁴⁵⁸ Kellogg, Tr. 5126-27.

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have been made to work just fine.”⁴⁵⁹ Rambus does not demonstrate that its contrary assertions deserve greater weight.

Burst Length Technology. As discussed above,⁴⁶⁰ burst length technology controls the amount of data transferred between the CPU and memory in each transmission. The JEDEC DRAM standards adopted programmable burst length technology, which Rambus now claims is covered by its patents.

Rambus’s economic expert, Rapp, analyzed the costs associated with two alternatives to programmable burst length: fixed burst length and burst terminate commands. Rambus claims that programmable burst length was superior to any alternative because it allowed DRAM users to use one part for different types of machines that required different burst lengths, providing important flexibility⁴⁶¹. However, Rambus assumes that JEDEC would have required more than two burst length values if it had adopted an alternative. The record does not establish that point⁴⁶².

⁴⁵⁹ Polzin, Tr. 3991-92.

⁴⁶⁰ *See supra* Section II.A.3.b.

⁴⁶¹ *See* Soderman, Tr. 9368-70; G. Kelley, Tr. 2550-51 (“The programmable [burst length] feature allowing you to make that selection when the PC or computer powered up was a nice feature because it allowed you to use devices that were common from multiple suppliers, put them into many different types of machines. . . . One part number fits many applications.”).

⁴⁶² For example, Intel only used a burst length of four. Polzin, Tr. 3994. AMD, another microprocessor manufacturer, designed its microprocessors based on a single burst length of eight. *Id.*; *see also* Lee, Tr. 11048-54, 11095. JEDEC’s preliminary specification for DDR2 SDRAM required only a burst length value of four, Macri, Tr. 4673-74, but subsequently was amended to include a burst length of eight to accommodate AMD. *See* Polzin, Tr. 3994; Lee, Tr. 11048-54, 11095.

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Rambus has not shown that additional burst length flexibility was critical to DRAM technology.⁴⁶³

Fixed Burst Length: A fixed burst length part sets a single burst length⁴⁶⁴. Rambus argues that fixed burst length technology was not a cost-effective alternative to programmable burst length. According to Rambus, the use of fixed burst length would have increased inventory costs by three cents per unit, while decreasing certain test costs by one cent⁴⁶⁵. However, Geilhufe's inventory cost estimate assumed that four burst length values would have been provided⁴⁶⁶. If, instead, he had assumed that only two burst lengths would have been supported, his entire projected cost increase would have disappeared. Geilhufe also failed to consider cost savings that would have resulted from partial elimination of the mode register.⁴⁶⁷

Burst Terminate Commands: Burst terminate command technology uses long, fixed burst lengths that can be terminated by the memory controller if a shorter burst length is desired⁴⁶⁸. Rambus argues that this technology was not a viable alternative

⁴⁶³ JEDEC required burst lengths of four and eight when it first published the SDRAM standard in 1993. *See* JX 56 at 114; Williams, Tr. 801-03; Lee, Tr. 11013-14. Ten years later, the proposed specification for DDR2 SDRAM required the same two burst length values. *See* RX 2099-14 at 21; RX 2099-39 at 20; Soderman, Tr. 9369; Rhoden, Tr. 411-12.

⁴⁶⁴ Jacob, Tr. 5398-99.

⁴⁶⁵ Geilhufe, Tr. 9593-96.

⁴⁶⁶ *See* Geilhufe, Tr. 9595.

⁴⁶⁷ *See* Jacob, Tr. 5401-10, 5593-95 (either fixed burst length or a burst terminate command would have enabled elimination of part of the mode register and the circuitry required to initialize it).

⁴⁶⁸ Jacob, Tr. 5409-10.

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because it could support only a narrow range of burst lengths and therefore would have limited DRAM performance⁴⁶⁹. We are unconvinced. As noted above, Rambus has failed to establish that JEDEC likely would have required more than the two burst lengths supportable with burst terminate commands.

Rambus also argues that the burst terminate command technology causes system inefficiencies⁴⁷⁰. However, several witnesses questioned the significance of these inefficiencies⁴⁷¹. Furthermore, those witnesses explained that the problems would have been minimized, or avoided, by supporting just two burst length values – such as four and eight⁴⁷². On this record, Rambus has failed to demonstrate serious performance issues with burst terminate command technology.⁴⁷³

⁴⁶⁹ Soderman, Tr. 9377 (implementation of burst terminate in DDR2 SDRAM was limited because it could support only burst length values of four and eight); Geilhufe, Tr. 9598 (questioning whether a burst terminate command could support a burst length value of one).

⁴⁷⁰ See Soderman, Tr. 9374-76 (a burst terminate command causes inefficiencies when a read burst interrupts a write burst or vice versa); Polzin, Tr. 4038-40; CX 392 at 5; CX 415 at 10 (“an internal device timing nightmare”).

⁴⁷¹ See Jacob, Tr. 5411 (problem not very significant), 5604-06 (might affect bus efficiency by up to 10-15% in a “hypothetical worst case situation[.]”), 11109-10 (type of inefficiency at issue is common and inherent in the DDR protocol).

⁴⁷² See Jacob, Tr. 11142-46; Macri, Tr. 4774-76 (*in camera*) (limiting interruptions to a precise place and under precise conditions makes burst terminate commands “much easier”; “there’s a slight burden to the designer, but, you know, in the big scheme of things, this is a trivial thing”); RX 2099-39 at 20, 63. Even Rambus’s engineering expert acknowledged that limiting burst terminate commands to specific conditions avoids timing problems. Soderman, Tr. 9377.

⁴⁷³ Rambus acknowledges that use of burst terminate commands would not have increased costs. See Rapp, Tr. 9826.

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Data Acceleration Technology. As discussed above,⁴⁷⁴ data acceleration technology determines the speed at which data are transmitted between the CPU and memory. JEDEC's DDR SDRAM and DDR2 SDRAM standards adopted dual-edge clocking technology – a technology Rambus now claims is covered by its patents.

Interleaving ranks on the module, double clock frequency, and toggle mode were some of the alternatives to dual-edge clocking considered by JEDEC. Rambus argues that all three of these alternatives had significant cost and performance limitations. We agree that interleaving ranks on the module had such limitations. However, Rambus has not adequately supported its conclusions regarding double clock frequency and toggle mode.

Interleaving Ranks on the Module: DRAM chips on the memory module can be partitioned into two separate groups that operate on independent system clock signals⁴⁷⁵. This approach – known as interleaving ranks on the module – can double the rate at which data are transmitted between the CPU and memory⁴⁷⁶.

Rambus argues that dual-edge clocking enjoyed performance and cost advantages over this alternative. Rambus cites evidence that both Intel and AMD found signal integrity problems during preliminary evaluations of the interleaving-ranks technology⁴⁷⁷. Complaint Counsel do not rebut this evidence. Rambus's engineering expert testified that this alternative offered less flexible memory increments and was not appropriate for every

⁴⁷⁴ See *supra* Section II.A.3.c.

⁴⁷⁵ Jacob, Tr. 5426-27.

⁴⁷⁶ *Id.*

⁴⁷⁷ See RX 1976 at 49 (*in camera*); Polzin, Tr. 4035-36.

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application⁴⁷⁸. Complaint Counsel offer only a partial rebuttal. The record also shows that interleaving ranks would have resulted in increased costs because it would have required additional technology and hardware⁴⁷⁹. Complaint Counsel again fail to rebut the evidence. Finally, Kentron in 1999 informed JEDEC that it had a patent pending on this technology⁴⁸⁰. Complaint Counsel's economic expert, McAfee, acknowledged that this technology might require royalty payments.⁴⁸¹

Based on the totality of the evidence, we find that Rambus has established the superiority of dual-edge clocking over this particular technology.⁴⁸²

Double Clock Frequency: Double clock frequency involves operating a single-edge clock at twice the frequency of a dual-edge clock⁴⁸³. Rambus has failed to demonstrate that this technology was an unacceptable alternative to dual-edge clocking.

⁴⁷⁸ Soderman, Tr. 9389-91.

⁴⁷⁹ Soderman, Tr. 9389-91; Goodman, Tr. 6082. Geilhufe testified that the necessary hardware would have increased costs by 25 cents per DRAM. Geilhufe, Tr. 9605-06; *see also* Goodman, Tr. 6046-47, 6083 (each module would have required eight switches at \$1 per switch).

⁴⁸⁰ *See* CX 150 at 110.

⁴⁸¹ *See* McAfee, Tr. 7404-05.

⁴⁸² Because we conclude that Rambus has not established the superiority of dual-edge clocking over double clock frequency and toggle mode, however, a showing of superiority over interleaving ranks matters little. Absent a sufficient showing regarding the remaining alternatives, Rambus has not demonstrated that its monopoly power resulted from the superiority of its technology, rather than from its failure to disclose its patent position.

⁴⁸³ Jacob, Tr. 5433-34.

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Rambus argues that double clock frequency raises clock distribution problems,⁴⁸⁴ requires that the internal circuitry operate at twice the speed of a dual-edge clock,⁴⁸⁵ and presents electromagnetic interference concerns⁴⁸⁶. However, these performance concerns were rebutted by Micron's Lee, IBM's Kellogg, and Complaint Counsel's expert witness, Jacob⁴⁸⁷. Other testimony portrayed double clock frequency as a technologically satisfactory alternative to dual-edge clocking⁴⁸⁸. TI clearly found double clock frequency desirable: in 1997 it proposed that JEDEC adopt double clock frequency for its standards.⁴⁸⁹

Rambus's expert testified that double clock frequency would increase per-unit costs by 28 cents,⁴⁹⁰ including 24 cents for a clock on the dual in-line memory module (DIMM), which he believed would be necessary⁴⁹¹. However, the record does not support Rambus's assertion that an on-DIMM clock would be

⁴⁸⁴ Soderman, Tr. 9393-94.

⁴⁸⁵ Soderman, Tr. 9394-95.

⁴⁸⁶ Soderman, Tr. 9395; 9500-01 (asserting that this interference might breach Federal Communications Commission guidelines).

⁴⁸⁷ See Jacob, Tr. 5433-34, 11115, 11128-29 (slightly reducing voltage mitigates the interference problem); Lee, Tr. 11039-40; Kellogg, Tr. 5182-83 (engineers reduce electromagnetic interference over time).

⁴⁸⁸ See Kellogg, Tr. 5182, 5184-85; Macri, Tr. 4779-80 (*in camera*) (identifying a "huge" benefit from single-edge clocking).

⁴⁸⁹ See Lee, Tr. 6711-14; CX 371 at 3.

⁴⁹⁰ Geilhufe, Tr. 9610.

⁴⁹¹ Geilhufe, Tr. 9609-10 (speaking in terms of "on-DIMM clock circuitry, possibly on-DIMM PLL/DLL"), 9715 (speaking in terms of an "[o]n-DIMM PLL or DLL circuit, maybe more than a PLL/DLL").

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needed⁴⁹². Moreover, considerable evidence suggests that Rambus's estimates for the cost of an on-DIMM clock are unreliable⁴⁹³. Finally, Rambus fails to consider design, construction, and testing cost savings that would have resulted from substituting a single-edge clock for Rambus's dual-edge clock.⁴⁹⁴

⁴⁹² Geilhufe neither spoke to anyone to confirm the assumption, nor conducted his own timing analysis. Geilhufe, Tr. 9715, 9729. In contrast, a July 28, 1997 TI proposal for using a high-frequency clock made no mention of an on-DIMM PLL/DLL. *See* CX 371. According to Micron's Lee, this proposal would have required "some changes to the bus topology," but not the addition of clock circuitry or a DLL to the module, and "would not have any additional cost over what we were doing." Lee, Tr. 6713-14, 11040. Indeed, Rambus's other engineering expert, Soderman, did *not* claim that on-DIMM clock circuitry would be needed. *See* Soderman, Tr. 9393-95.

⁴⁹³ Geilhufe testified that an on-DIMM clock costs \$3.80 per module (which, allocated over 16 DRAMs, increases cost 24 cents per unit). Geilhufe, Tr. 9606, 9609-10. Geilhufe acknowledged that 16 DRAMs was "the smallest number of units" over which the cost of on-DIMM clock circuit could be allocated. Geilhufe, Tr. 9605-06. For computers with more than 16 DRAMs, this calculation would overstate the clock-circuitry cost per DRAM.

On cross-examination, Geilhufe was shown a document stating that a Kentron PLL circuit cost \$2, rather than the \$3.80 that he had assumed. Geilhufe acknowledged that he had unsuccessfully sought cost information about the Kentron PLL. *See* CX 2613 at 7; Geilhufe, Tr. 9718-19. Kentron's CEO, Robert Goodman, stated that a standard PLL costs around \$1, Goodman, Tr. 6049. Lee testified that Micron pays only 90 cents for PLLs used on register memory modules. Lee, Tr. 11179 (*in camera*); *see also id.* at 11180-81 (*in camera*) (mounting would add further cost but would be "much less" than the cost of the PLL itself). Geilhufe testified that he "did not review specifically the costs for register [memory modules]," but he did not explain why he had not done so. Geilhufe, Tr. 9719. Rambus seeks to dismiss the PLL cost data by suggesting that the Micron PLLs might not operate at the appropriate frequency, but fails to demonstrate that this was so.

⁴⁹⁴ *See* Jacob, Tr. 5420-25, 5433-34.

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Toggle Mode: Toggle mode was designed by IBM and uses synchronous technology for outputs but asynchronous technology for inputs⁴⁹⁵. JEDEC considered toggle mode in 1990 and 1991⁴⁹⁶. Rambus's contention that IBM's asynchronous design could not achieve the same performance as synchronous technology⁴⁹⁷ was contradicted by other evidence⁴⁹⁸. Rambus's engineering expert also testified that the toggle mode alternative would increase per-unit costs by ten cents due to reduced yields and by two cents for design costs and an additional pin⁴⁹⁹. As mentioned above, Rambus's same expert testified that engineers "solve yield problems very quickly,"⁵⁰⁰ which casts doubt on this predicted yield cost increase.

⁴⁹⁵ See G. Kelley, Tr. 2514; Jacob, Tr. 5608; CX 34 at 32. With asynchronous technology, the internal clock on each DRAM is not coordinated with the computer system clock. See IDF 284; Rhoden, Tr. 368. In contrast, operations in DRAMs that use synchronous technology are coordinated with the system clock, which facilitates rapid communication between the CPU and memory. See *supra* note 14.

⁴⁹⁶ See CX 251 at 1; CX 314 at 1; CX 315 at 1-3; CX 318 at 1.

⁴⁹⁷ See Soderman, Tr. 9398-99.

⁴⁹⁸ See Jacob, Tr. 5417. Rambus introduced evidence that an IBM researcher had described toggle mode as "very big, very hot, and very nonstandard," which are "disastrous" attributes "in the commodity market." See RX 2099-7 at 16; Soderman, Tr. 9399-9400. Rambus omits that the researcher also found toggle mode "very fast" and, for some purposes, desirable. See RX 2099-7 at 16. All of the researcher's conclusions were confined to the "cumulative effect" of combining toggle mode with a specific "low multibit piecepart architecture" and did not extend to toggle mode more generally. See *id.*

⁴⁹⁹ Geilhufe, Tr. 9562-64, 9610-12.

⁵⁰⁰ Geilhufe, Tr. 9587.

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Clock Synchronization Technology. As discussed above,⁵⁰¹ clock synchronization technology coordinates the timing of a computer system clock with the internal clock in each DRAM. JEDEC's DDR SDRAM and DDR2 SDRAM standards adopted technology that uses on-chip PLL/DLL circuits to align more closely the timing of the two clocks. Rambus now claims that its patents cover on-chip PLL/DLL as implemented in JEDEC-compliant products.

Rapp analyzed four alternatives to on-chip PLL/DLL technology: placing DLL circuits on the memory controller; placing DLL circuits on the memory module; using vernier circuits instead of on-chip PLL/DLL circuits; and relying on the DQS strobe rather than the system clock to align timing⁵⁰². Rambus presents scant evidence on the cost or performance limitations of placing DLL circuits on the memory controller or the module, and therefore fails to meet its burden of demonstrating the superiority of its on-chip PLL/DLL technology. Rambus presents slightly more evidence regarding the performance limitations of vernier circuits, but not enough to sustain its burden of proof. The record as to possible performance limitations of the DQS strobe is mixed.

DLL on the Memory Controller: One alternative to on-chip PLL/DLL involves placing a single DLL circuit on the memory controller to synchronize the DRAM's internal clock with the system clock⁵⁰³. Rambus presented no cost evidence relating to this alternative, but it did present expert engineering testimony as

⁵⁰¹ See *supra* Section II.A.3.d.

⁵⁰² See Rapp, Tr. 9841-42.

⁵⁰³ See Jacob, Tr. 5445.

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to potential performance limitations⁵⁰⁴. Complaint Counsel's expert provided equally plausible rebuttal testimony as to performance, and also identified cost advantages from placing the DLL on the memory controller⁵⁰⁵. Other evidence reflected contemporaneous beliefs that this alternative was workable and desirable. For example, in March 1996, Samsung presented a proposal to JEDEC that involved removing the PLL circuit from the DRAM chip and placing it on the memory controller⁵⁰⁶. In light of the evidence as a whole, Rambus has not carried its burden with respect to this alternative.

DLL on the Module: Another alternative to on-chip PLL/DLLs involves placing one or more DLL circuits on the memory module to synchronize the internal clock on each DRAM with the system clock. Rambus argues that DLLs on the module fail to address timing differences among individual DRAMs,⁵⁰⁷ but Jacob countered that DLLs would account for internal delay⁵⁰⁸.

⁵⁰⁴ Soderman testified that DLL circuits on the memory controller fail to address timing differences among individual DRAMs and therefore impair high-speed performance. *See* Soderman, Tr. 9405-06.

⁵⁰⁵ *See* Jacob, Tr. 5446-47 (placing the DLL on the memory controller could potentially eliminate outbound, inbound, and return delays, and thereby enable operation at higher rates of speed than on-chip DLLs; placing the DLL on the memory controller also would lower testing and manufacturing costs and reduce the power consumption of DDR SDRAMs).

⁵⁰⁶ *See* JX 31 at 71; Rhoden, Tr. 513-514; Lee, Tr. 6691.

⁵⁰⁷ Soderman, Tr. 9406-10.

⁵⁰⁸ Jacob, Tr. 5449.

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Rambus estimates that an on-DIMM DLL would cost \$3.80⁵⁰⁹. We find that Rambus has failed to adequately support this estimate for the same reasons described above with respect to its estimate of the cost of double clock frequency⁵¹⁰. Rambus's own economic expert assigned no cost to this alternative to on-chip PLL/DLL because he found a "paucity . . . of information."⁵¹¹ Although Rambus's expert was certain there would be some additional costs, he determined that "it seemed sensible . . . to simply assume there would be no cost penalty" for purposes of his calculations.⁵¹²

Vernier Circuits: Verniers are a type of circuit that – similarly to PLLs and DLLs – can be placed on a DRAM⁵¹³. Vernier circuits introduce a fixed-amount delay into the DRAM's internal clock to synchronize that clock with the system clock⁵¹⁴. Rambus claims that vernier circuits do not perform well enough to be viable alternatives to on-chip PLL/DLL⁵¹⁵. However, several witnesses testified as to the advantages of vernier circuits.⁵¹⁶

⁵⁰⁹ See Geilhufe, Tr. 9613. Both Jacob and Geilhufe testified that on-module DLLs would reduce other costs. See Jacob, Tr. 5450 (on-module DLLs reduce DRAM power consumption, costs, and design time); Geilhufe, Tr. 9612-13.

⁵¹⁰ See *supra* note 493.

⁵¹¹ See Rapp, Tr. 9848.

⁵¹² *Id.* at 9878, 10228 (it "seemed fairer in some sense to assume zero").

⁵¹³ See Jacob, Tr. 5450-51.

⁵¹⁴ *Id.*

⁵¹⁵ See RFF 1103-11.

⁵¹⁶ Complaint Counsel's expert stated that verniers potentially could eliminate outbound, internal, and return delays, Jacob, Tr. 5451, and that periodic recalibrations could compensate for fluctuations in temperature and voltage. *Id.* at 5450-53. IBM viewed verniers as the optimal solution for data

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Rambus notes that the SyncLink consortium considered designing the SDRAM chip using verniers, without PLLs or DLLs on the DRAM, but ultimately included both verniers *and* DLLs on the DRAM⁵¹⁷. Rambus argues that this example demonstrates that verniers were not viable alternatives to on-chip DLL/PLL, but the record offers competing explanations for why SyncLink included DLLs in SDRAM.⁵¹⁸

Rambus further asserts that Micron and SDRAM hold patents that cover the use of verniers,⁵¹⁹ but provides no element-by-element analysis – indeed, no evidence beyond the bare text of the patents – to support this contention⁵²⁰. Rambus makes no argument about the implications of these patents for the viability of vernier circuits as an alternative to on-chip DLL/PLL.

DQS Strobe: A DQS strobe, also referred to as a data strobe, signals to the memory controller the timing of data capture⁵²¹. In doing so, the DQS strobe purportedly makes it unnecessary to

capture purposes; IBM implemented verniers on a memory card and promoted the use of verniers at JEDEC meetings. *See* Kellogg, Tr. 5168, 5157, 5153-54. Micron’s advanced technology director testified that he had considered verniers to be an acceptable alternative to on-chip DLLs in the 1996-97 time frame. Lee, Tr. 6676-78. A March 1997 VLSI presentation to JEDEC included the use of verniers. JX 36 at 7, 58, 64.

⁵¹⁷ *See* RX 2099-43 at 158; Soderman, Tr. 9412-14.

⁵¹⁸ *Compare* Soderman, Tr. 9414-15 (DLLs were included “to provide a stable reference for input sampling d[el]ay lines” (describing RX 2099-11 at 5)) *with* Jacob, Tr. 5620-21 *and* Lee, Tr. 11044-46 (DLLs were included to provide tight timing on the bus, not to assist in data capture), 11092.

⁵¹⁹ *See* RFF 1105, 1111.

⁵²⁰ *See* RFF 1111 (citing RX 1701; RX 1479).

⁵²¹ Jacob, Tr. 5456-57; Kellogg, Tr. 5158-59.

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align the internal clock with the system clock⁵²². Rambus presented no cost evidence relating to this alternative technology, but claims that DQS strobes are insufficient for high speed performance⁵²³. The record contains conflicting evidence, however, suggesting that most JEDEC members believed this technology offered adequate performance⁵²⁴. Indeed, DQS strobes are part of the DDR SDRAM standard and were included in proposed specifications for DDR2 SDRAM.⁵²⁵

* * * * *

We conclude that Rambus has failed to meet its burden of demonstrating that JEDEC would have standardized Rambus's technologies even if Rambus had disclosed its patent position. With regard to performance attributes, the testimony of Rambus's experts was offset by conflicting testimony from Complaint Counsel's experts, which called into question the significance of Rambus's performance concerns. In many instances, testimony from JEDEC members and evidence of their prior actions in

⁵²² See Jacob, Tr. 5456-57; Lee, Tr. 6681-83.

⁵²³ See, e.g., Soderman, Tr. 9415-17; RX 1040 (e-mail prepared by HP JEDEC representative Hans Wiggers explaining his preference for using DLLs at high speeds, in response to a message entitled, "Death to DLLs"); RX 1086 at 1 (*in camera*).

⁵²⁴ See Lee, Tr. 6682-83; Kellogg, Tr. 5158-59; CX 368 (Micron proposal that JEDEC standardize DQS strobes in DDR SDRAM without DLLs); CX 370 (Silicon Graphics proposal that JEDEC standardize data strobes without DLLs); RX 911 at 3 (SyncLink's design included a data strobe); CX 711 at 72 (noting Hyundai's belief that strobes eliminate need for PLLs/DLLs); *cf.* Jacob, Tr. 5456-57 (presenting DQS strobe alternative).

⁵²⁵ JX 57 at 5; RX 2099-14 at 3; RX 2099-39 at 5. On-chip DLLs can be disabled in DDR SDRAM but are needed for normal DDR operation. See Lee, Tr. 6680-81, 6683; CX 234 at 176; JX 57 at 5, 16.

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sponsoring the alternative technologies substantially buttressed Complaint Counsel's case.

With regard to costs, Rambus failed to demonstrate that alternatives would have been more expensive. Rambus's economics expert, Rapp, compared the added variable costs associated with the alternatives, based on Geilhufe's cost estimates, to the costs of paying royalties for Rambus's patented technologies. Rapp testified that the least costly alternatives would add .82 percent to the selling price of SDRAM and 5.65 percent to the selling price of DDR SDRAM⁵²⁶. He concluded that these costs exceeded Rambus royalties of .75 percent of selling price for SDRAM and 3.5 percent for DDR SDRAM.

Rapp's calculations are fraught with uncertainty and potential for error. They are based on Geilhufe's admittedly imprecise cost estimates. Geilhufe acknowledged that his cost estimates were approximations and he assigned them a sizeable 25 percent margin of error⁵²⁷. Yet a 25 percent reduction of Rapp's estimate of the least-costly alternative to SDRAM would bring that estimate well below the level of SDRAM royalties⁵²⁸. Moreover, Geilhufe drew many of his estimates from personal experience, without verification by actual cost data or substantiation by

⁵²⁶ Rapp, Tr. 9831-32, 9850-54. To compare the dollar figures calculated for cost increases with the percentage figures used in stating Rambus's royalties, Rapp projected an average selling price over the expected lifetimes of the products, calculating an average selling price of \$4.87 for SDRAM and \$5.13 for DDR SDRAM. *Id.* at 9816-17, 9845. Rapp then translated the increased variable costs of the alternatives into a percentage of average selling price. *Id.* at 9816-17, 9845.

⁵²⁷ *See* Geilhufe, Tr. 9665.

⁵²⁸ A 25% margin of error for SDRAM equates approximately to .21% of selling price.

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supporting record evidence.⁵²⁹ As to DDR SDRAM, Rapp had to premise his comparisons on projections of future DRAM selling prices and sales volumes.⁵³⁰

Rapp's cost estimates drop considerably when revised to reflect different assumptions. For example, recalculating Rapp's estimate of a least-cost alternative to Rambus technologies in SDRAM based on support of two, rather than three, latencies⁵³¹ yields total increased cost of .62 percent of selling price, which is less than the .75 percent SDRAM royalty paid to Rambus⁵³². Similarly, applying Rapp's methodology to alternatives to Rambus technologies in DDR SDRAM yields costs well below Rambus royalty levels⁵³³. Moreover, Rapp's calculations, like

⁵²⁹ See Geilhufe, Tr. 9665-67. Geilhufe acknowledged that he did not seek actual cost data from DRAM manufacturers to verify his cost estimates. *Id.* at 9666-67.

⁵³⁰ Rapp had to estimate future DRAM prices over the expected life of DDR SDRAM, then weight those prices by estimating sales volumes for each of the future years. *Id.* at 9816-17. Rapp acknowledged that for DDR SDRAM, with limited historical data, the numbers were "mostly estimate." *Id.* at 9845.

⁵³¹ See *supra* note 439 and accompanying text.

⁵³² See *supra* notes 443 and 473 (showing a total cost increase of only \$.03 per unit for a combination of fixed CAS latency and burst terminate commands).

⁵³³ If, as the record suggests, no clock-circuitry was needed for double clock frequency, see *supra* note 492, total increased cost for a combination of fixed CAS latency, burst terminate commands, double clock frequency, and a clock synchronization technology would have been seven cents, or 1.36% of DDR SDRAM selling price, which is far below Rambus's 3.5% royalty. (Like Rapp, we assign no added cost for alternative clock synchronization technology.) If clock-circuitry was necessary, the record shows that PLLs sold for between 90 cents and \$2. See *supra* note 493. Even based on the *highest* price, the increased cost for the combination of alternatives to Rambus's four patented technologies would have exceeded Rambus's royalty by less than Geilhufe's admitted margin of error.

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Geilhufe's estimates, wholly ignore several possibilities for cost reductions from adoption of the alternative technologies.⁵³⁴

In sum, Rambus has not shown that all alternatives would have been more costly than its royalties and has not carried the burden of establishing its inevitability/superiority defense.⁵³⁵

c. Rambus's Claim that the Link between its Conduct and the Standards Did Not Matter

Rambus backstops its inevitability/superiority claim by asserting that even if its conduct distorted the decisionmaking process at JEDEC, that did not have the effect of harming competition because the interests of JEDEC and its members were not necessarily aligned with the interests of the public as a whole⁵³⁶. We reject that argument. As discussed above, JEDEC comprises a broad range of industry participants – including, most importantly, the principal purchasers of both DRAM technologies and DRAMs. The technology choices made by the JEDEC members during the standard-setting process reflect the opinions

⁵³⁴ See *supra* notes 440, 445, 452, 456, 467, and 494 and accompanying text.

⁵³⁵ Rambus also argues that the decision of three JEDEC members, with knowledge of Rambus's patents, to develop and manufacture a DRAM chip known as RLD RAM, using programmable CAS latency and burst length and dual-edge clocking, was evidence of the superiority of Rambus's technologies. RB at 59-60. RLD RAM, however, was a high-price, niche product used for specialty applications such as high-speed routers. See Bechtelsheim, Tr. 5867, 5870-71 (RLD RAM is priced "several times higher than commodity DRAM"); McAfee, Tr. 7428-31 (showing that RLD RAM sales were very small); Prince, Tr. 9021-22 (omitting mention of RLD RAM when asked to name "any DRAM" that had not been standardized by JEDEC or IEEE). Given RLD RAM's niche nature, a willingness to absorb Rambus royalties for RLD RAM tells little about JEDEC members's preferences for high-volume, low-cost, main memory purposes.

⁵³⁶ RB at 126-28.

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of virtually the entire spectrum of economic actors who are directly impacted by JEDEC's standard-setting decisions. Courts and commentators long have recognized that a fair, honest, and consensus-based standard-setting process can be beneficial to consumers, while substantial competitive concerns may arise when the standard-setting choices of the SSO's participants are distorted⁵³⁷. Rambus offers no logical explanation, and cites no supporting precedent, for why the interests of JEDEC and its members would be inconsistent with a procompetitive result, or why we should overlook conduct that distorted the decisions of JEDEC.

Rambus also argues that because standard setting is a "winner-take-all" process, a "but for world" in which Rambus had disclosed its patent position would have been no better than the real world in which JEDEC adopted standards incorporating Rambus's patented technologies⁵³⁸. We reject this claim, too. Payment of royalties on memory interfaces has been very much the exception, rather than the rule, in the computer industry⁵³⁹. JEDEC could have turned to unpatented alternative technologies in each of the relevant product markets⁵⁴⁰. But even assuming,

⁵³⁷ See, e.g., *Allied Tube & Conduit Corp. v. Indian Head, Inc.*, 486 U.S. 492, 500-01, 510 (1988); II *HOVENKAMP ET AL., IP AND ANTITRUST*, §§ 35.4(a)(4), 35.5.

⁵³⁸ RB at 126.

⁵³⁹ See, e.g., *Heye, Tr. 3918* (AMD has not paid royalties on memory interfaces to anyone other than Rambus).

⁵⁴⁰ See *supra* Section IV.C.3.b. For example, the record contains no suggestion that using fixed CAS latency or fixed burst length, setting CAS latency with fuses or pins, or setting burst length with fuses or burst terminate commands, would have raised patent issues. Nor does the record suggest that using double clock frequency or toggle mode, or relying on data strobes, or putting DLLs on the module or memory controller, would have involved proprietary technology.

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arguendo, that JEDEC still would have been willing to adopt Rambus's patented technologies after disclosures had been made, JEDEC and EIA policies would have prohibited the standardization of those technologies unless Rambus committed to licensing on RAND terms⁵⁴¹. If Rambus had refused to provide the requisite RAND assurances, JEDEC would have been bound by its rules to avoid Rambus's patented technologies.⁵⁴²

Alternatively, Rambus might have acceded to JEDEC's licensing policies, and JEDEC members then would have had the benefit of RAND terms. Moreover, JEDEC members at least would have had the opportunity to seek specific royalty

⁵⁴¹ See *supra* note 285 and accompanying text (citing JEDEC and EIA rules that prohibited the standardization of patented technologies without first securing "all relevant technical information" and assurances that the patent holder will license on RAND terms).

⁵⁴² Rambus highlights the decision of a different EIA unit, the Consumer Electronics Association (CEA), to refrain from requiring a RAND assurance from Echelon Corporation. CEA chose not to invoke its licensing rule – potentially permitting Echelon to block a standard by non-compliance – but only after Echelon had announced its intention to block the standard; had engaged in a pattern of efforts over time to halt the standard development effort; and had "been unable to explain or document how the [CEA] standard refer[red] to or require[d] use of any of Echelon's patented technology." RX 2299 at 2; see J. Kelly, Tr. 2155-70 (EIA never received a response from Echelon as to how its patent related to the standard under development; CEA "could see no relevance whatsoever between the patent" and its standard-setting work); RX 2300.

Additionally, Rambus claims that JEDEC itself has adopted standards without seeking RAND assurances. Rambus cites only brief notations in JEDEC minutes, indicating that JEDEC approved ballots on which patent issues had been raised. The minutes – generally just one- or two-word notations – do not explain how the patent issues were resolved. They do not establish that the suspected patents actually existed, much less that they applied to the standards. Nor do the minutes indicate whether the patentee ever intended to enforce the patents against JEDEC-compliant products. The minutes do not even state that RAND assurances were not, in fact, offered. See JX 15 at 5-6, 8-9,14; JX 25 at 10. Rambus elicited no testimony to clarify these issues.

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commitments from Rambus through *ex ante* negotiations; it was not up to Rambus to preclude that possibility⁵⁴³. No matter what

⁵⁴³ Rambus nonetheless asserts that any incentive for the DRAM manufacturers to negotiate royalties *ex ante* would have been “very weak” because, under JEDEC’s requirement of “non-discriminatory” terms, all DRAM manufacturers would have been affected uniformly. RB at 71-72. Rambus’s sole record support is testimony from its economic expert, David Teece. *Id.* Teece, however, did not deny that DRAM manufacturers possessed incentives to negotiate *ex ante*. Rather, he characterized what he viewed as the practical difficulties of such negotiations as counter-incentives. *See* Teece, Tr. 10349, 10352-54 (stating that “firms have got incentives to do lots of things that they don’t do”), 10360 (“because of these costs and difficulties, you’re incented not to incur those costs and difficulties [associated with *ex ante* negotiation]”); Elsewhere, Teece has given credence to the incentive to seek *ex ante* negotiations. *See* David Teece & Edward Sherry, *The Interface Between Intellectual Property Law and Antitrust Law: Standards Setting and Antitrust*, 87 MINN. L. REV. 1913, 1993-94 (2003) (“one would expect that, at least when the royalty rates are negotiated *ex ante* (prior to the adoption of the standard), the patent holder would moderate its royalty demands”).

Rambus further contends that an opportunity to negotiate would have been meaningless because it is “all but impossible” to negotiate licenses for patent applications, which are shrouded in uncertainty. RB at 72. If so, then the record demonstrates that Rambus itself achieved the unattainable. Rambus had entered into RDRAM license agreements with three firms by 1992 – despite having only patent applications at that time. *See* RX 538 at 9, 13, 42 (1991 Rambus license to NEC); CX 543a at 11 (1992 Rambus business plan referencing RDRAM licenses with Toshiba, Fujitsu, and NEC); Parties’ First Set of Stipulations, Item 11 (Rambus’s first issued patent was the ’703 patent); CX 1460 at 1 (the ’703 patent issued in 1993). Rambus also granted numerous RDRAM, SDRAM, and DDR SDRAM licenses that included patent applications. *See* CX 1600 at 3-4, 6-7 (Hyundai license covering all DRAMs using all or part of Rambus’s interface technology); CX 1609 at 3, 6 (Mitsubishi RDRAM license); CX 1617 at 4, 7 (Siemens RDRAM license); CX 1646 at 3, 6 (Micron RDRAM license); CX 1680 at 12, 19, 24 (*in camera*) (Toshiba SDRAM/DDR SDRAM license); CX 1681 at 2-3, 10 (*in camera*) (Hitachi SDRAM/DDR SDRAM license); CX 1683 at 2, 7, 10 (*in camera*) (OKI SDRAM/DDR SDRAM license); CX 1685 at 2, 8, 12 (*in camera*) (NEC SDRAM/DDR SDRAM license); CX 1686 at 2, 7, 11 (*in camera*) (Elpida SDRAM/DDR SDRAM license); CX 1687 at 2, 8, 11-12 (*in camera*) (Samsung SDRAM/DDR SDRAM license); CX 1689 at 2, 7-8, 13-14 (*in camera*) (Mitsubishi SDRAM/DDR SDRAM license).

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the specific outcome might have been, the consequences of incorporating Rambus's patented technologies into the standards would have been identified and weighed *before* the standards were adopted, *when Rambus's technologies were competing with the alternatives*. That "but for world" would have been more competitive than the current DRAM marketplace, in which Rambus has monopoly power and can charge whatever royalties it chooses.

d. Rambus's "No Lock-In" Claim

Rambus claims that, even if it did acquire any monopoly power by virtue of the incorporation of the four key patented Rambus technologies into the JEDEC standards, this monopoly power was not enduring because industry participants who practiced the standards were not "locked in." In effect, Rambus claims that there were no barriers to entry to rivals wishing to challenge its monopoly position⁵⁴⁴. The ALJ agreed with this argument, concluding that Complaint Counsel had failed to establish that the DRAM industry had become locked into the JEDEC standards.⁵⁴⁵

Our analysis necessarily is anchored by timing. Lock-in must be assessed as of the time that JEDEC members gained sufficient information to know that Rambus had relevant patents and could

⁵⁴⁴ In contrast, internal Rambus documents described the DRAM industry as susceptible to lock-in. *See, e.g.*, CX 533 at 15 ("Once a DRAM or vend[or] [has] committed to an architecture [it is] unlikely to change"). Rambus's principal engineer, Ware, similarly observed that once a DRAM controller manufacturer begins using a technology – even if not essential to the part – "it becomes more difficult [for that company] to not use it once you have put it in your design"). CX 2115 at 135 (deposition transcript at 134) (Ware FTC Dep.) (*in camera*). *See also* CX 5011 (designated R401155) (1998 Rambus Strategy Update stating, "We should not assert patents against Direct partners until ramp reaches a point of no return (TBD)").

⁵⁴⁵ ID at 326-29.

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have taken responsive action. JEDEC members lacked knowledge of Rambus's patent position until Rambus filed its first infringement suit against a producer of JEDEC-compliant DRAMs in early 2000. After that, it took some time for the information to be disseminated and evaluated. Each JEDEC member individually needed to explore alternatives – such as licensing and possible design changes – and to determine how it preferred to proceed. At that point, the JEDEC members could begin in earnest to try to agree on a revised standard.⁵⁴⁶

If the DRAM industry had become locked into Rambus's technology by the time that industry participants were apprised of, and able to take action in response to, Rambus's enforcement efforts, Rambus would have achieved durable monopoly power. If, however, the industry still had the practical ability to avoid Rambus's patents by switching to alternative technologies, Rambus would not have obtained durable monopoly power.⁵⁴⁷

⁵⁴⁶ See, e.g., CX 1855 (January 2000 Rambus complaint alleging that Hitachi's SDRAM and DDR SDRAM products infringed four Rambus patents but not identifying the specific claims or technologies at issue). Rambus revealed the nature of its claims to additional JEDEC members during the second quarter of 2000. CX 1109 at 1; CX 1127; CX 1129; CX 1371; CX 2559 at 3; Crisp, Tr. 3435-36. Some JEDEC members quickly recognized the implications of Rambus's patent enforcement efforts. See, e.g., Rhoden, Tr. 532-33; CX 2459 at 1 (indicating that initial work-around proposals regarding programmable CAS latency were presented in March 2000). Other JEDEC members needed additional time before they gained a detailed understanding of Rambus's claims. See Krashinsky, Tr. 2782 (stating that he learned that Rambus claimed a patent on programmable CAS latency "midyear or so" in 2000); Polzin, Tr. 3987 (stating that he learned that Rambus claimed patents on technologies used by AMD in "late summer 2000" and that he conducted an analysis of the Rambus patents at that time). Discussions of possible ways to avoid Rambus's patents on dual-edge clocking for purposes of DDR2 SDRAM began in a JEDEC task group in late October 2000 and reached the JC 42.3 Committee in December 2000. Krashinsky, Tr. 2827-28; Lee, Tr. 6800-02; CX 426; JX 52 at 45-50.

⁵⁴⁷ This issue also is one of causation. We could find that Rambus's deceptive course of conduct caused the ensuing anticompetitive effects because JEDEC members had become locked in before they could take effective countermeasures, and thus were unable to avoid Rambus's royalties. If, on the

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We find that the DRAM industry was locked into the SDRAM and DDR SDRAM standards by 2000, by which time the JEDEC members were, in theory, in a position to take actions to avoid Rambus's patents. The record does not, however, establish a sufficient causal link between Rambus's exclusionary conduct and JEDEC's adoption of DDR2 SDRAM.

SDRAM. The SDRAM standard was first published by JEDEC in 1993. Rambus claims patent protection over technology from the latency and burst length product markets that was incorporated into the standard.

Complaint Counsel's economic expert, McAfee, described lock-in as "something that grows over time. It's certainly been accomplished by the time that ramp-up starts."⁵⁴⁸ McAfee reasoned that before the time DRAM production ramps up, most of the sunk investments in complementary goods must have been made, because "in order to deploy the standardized [DRAM] product in volume, it requires those complementary goods."⁵⁴⁹ The progressive accumulation of switching costs gradually contributes to lock-in,⁵⁵⁰ and most of the switching costs for both

other hand, JEDEC members had obtained the necessary knowledge of Rambus's patent position at a time when they still were economically capable of switching technologies – but deliberately chose not to switch – the chain of causation would have been broken, and Rambus's monopoly power would not be attributable to its deceptive course of conduct.

⁵⁴⁸ McAfee, Tr. 7444-45. McAfee defined ramp-up as the time "when the volume [of DRAM production] starts to dramatically increase." *Id.* at 7445.

⁵⁴⁹ McAfee, Tr. 7445-46 ("they're not going to produce the DRAM for inventory in any large volumes and just sit on them hoping that the complementary goods would be provided in the future").

⁵⁵⁰ Switching costs accumulate for manufacturers of DRAMs and of compatible, complementary components as they move from the standard-setting process, to designing chips and products that conform to the standard;

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DRAM manufacturers and producers of complements accrue by the time DRAM production ramps up.⁵⁵¹

Manufacturers ramped up SDRAM production around 1996⁵⁵². SDRAM represented 78.4 percent of DRAM revenues by 2000⁵⁵³. DRAM manufacturers, component manufacturers, and systems OEMs testified that changing SDRAM to work around Rambus's patents in 2000 would have presented significant financial and technical difficulties⁵⁵⁴. For example, a witness from

testing and verifying those designs; building, testing, and qualifying prototypes; and ramping up production on a commercial scale. At each stage the manufacturers make sunk investments that have to be repeated in order to switch to an alternate design. *See* McAfee, Tr. 7444, 7453-54; Shirley, Tr. 4152-54.

⁵⁵¹ *See* Peisl, Tr. 4452-53 (a change to SDRAM that would have been "relatively easy" in 1992 would have been "near impossible" in 2000).

⁵⁵² McAfee, Tr. 7442 (ramp-up for SDRAM was "roughly 1995 or 1996"); *id.* at 7446 ("[T]he volume production start[ed] in the 1996-1997 time frame. And so that corresponds to the ramp-up."). SDRAM accounted for less than 2.9% of DRAM revenue in 1995, 4.3% in 1996, and 33.5% in 1997. Rapp, Tr. 10248. Revenues, of course, lag behind production. *See also* Rambus Inc.'s Response to Complaint Counsel's Proposed Findings of Fact, No. 577 (Oct. 1, 2003) ("Although SDRAM represented a relatively small percentage of the DRAM market in 1996, it was certainly 'volume' production.").

⁵⁵³ Rapp, Tr. 10100-01.

⁵⁵⁴ Witnesses from Infineon and Micron, respectively, stated that by 2000 the level of SDRAM development and implementation made substantial changes "very costly and . . . near impossible," Peisl, Tr. 4443-44, and "virtually impossible," Appleton, Tr. 6399. CPU manufacturer AMD stated that changing SDRAM to work around Rambus patents in 2000 would have introduced "a whole host of problems" and would have been "a major, major concern for AMD." Heye, Tr. 3731-34. Cisco Systems explained that changes to memory in 2000 would have imposed "tremendous cost to Cisco to redesign the existing boards and systems Cisco was shipping." Bechtelsheim, Tr. 5881-82. Graphics processor/chipset designer nVIDIA stated that changing SDRAM

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HP testified that by the time he learned of Rambus's patent claims in 2000, changing SDRAM to avoid Rambus's patent enforcement efforts would have been "[w]ay too expensive" for HP, whose SDRAM-based server

was already out, qualified and you know, we sold to customers and you cannot change something like this after it was designed and already shipped, and if you do change it, you're talking about millions and millions of dollars in expenses. It wasn't even going to be considered.⁵⁵⁵

Similarly, an IBM e-mail from April 2000 states, "we have gone way too far with SDR [SDRAM] to even consider talking about"

in 2000 would have put it through a "painful process" of changing its development plan and redesigning its products. Wagner, Tr. 3862-63.

⁵⁵⁵ Krashinsky, Tr. 2782-83. According to the HP witness, providing multiple latencies without using programmable CAS latency would have required changes to the memory module, the motherboard, and the memory controller. *Id.* at 2784-87. He characterized changing programmable CAS latency "a major change," *id.* at 2788, although he indicated that significantly less change would have been required if a fixed CAS latency would have sufficed. *Id.* at 2804-05. Joe Macri of ATI Technologies (ATI) stated that graphics system designer ATI would have incurred "a huge burden" if JEDEC had changed to fixed latency. Macri, Tr. 4764-65 (*in camera*). *See also* Jacob, Tr. 5377-78, 5569 (use of multiple fixed latencies would have caused compatibility problems absent either greater user understanding as to which latency value was needed or development of a more sophisticated memory controller).

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switching to fixed latency⁵⁵⁶. Redesigning programmable burst length at that time would have presented similar difficulties⁵⁵⁷.

The issue of timing was particularly critical in the DRAM market: the time it would take to redesign SDRAMs and their complements to avoid Rambus's claimed patents would have been prohibitive. Rambus's engineering expert, Geilhufe, indicated that the changes could have been implemented in six to eighteen months⁵⁵⁸. Most of the previous design projects cited in the record indicate that at least a year likely would have been needed⁵⁵⁹.

⁵⁵⁶ RX 1626 at 3. When the possibility of changing the SDRAM standard regarding programmable CAS latency was discussed within JEDEC in March 2000, it was "very poorly received" because of lock-in concerns. *See* Rhoden, Tr. 533; Kellogg, Tr. 5196-200; RX 1626 at 2.

⁵⁵⁷ *See* Peisl, Tr. 4450-53 (removing programmable burst length in 2000 would have been "nearly impossible," with a "huge impact" on DRAM customers). Using a burst terminate command to set burst length would have required "an enormous amount of redesign"; it may have required "almost a full redesign of the graphics pipeline" and at a minimum would have meant design modifications and a "big disruption of [ATI's] engineering plans." Macri, Tr. 4776-77 (*in camera*). *See also* Jacob, Tr. 5572-73 (switching to fixed burst length would introduce incompatibilities in some systems and would have design implications similar to those for switching to fixed CAS latency).

⁵⁵⁸ *See* Geilhufe, Tr. 9615. *See also id.* at 9675 (stating that the changes could be accomplished in a six to twelve month time frame).

⁵⁵⁹ *See* Bechtelsheim, Tr. 5884 (Cisco would need at least a year to redesign its products to accommodate new memory standards); Reczek, Tr. 4341-45, summarized in DX 45 (estimating "24 months plus" to design, assemble, test and qualify a new DRAM); Peisl, Tr. 4375-77 (Infineon's reworking of a flawed SDRAM design took approximately one year to repeat various steps); Heye, Tr. 3673-74, 3677-78, 3767-69 (it typically takes AMD between 15 months and two years to design and implement a new chipset and other complementary infrastructure for its microprocessors); Polzin, Tr. 4016-18 (AMD developed a chipset in 9 months and ushered a new motherboard to mass production in 18 months). Rambus cites testimony that Hyundai made the initial transition from SDRAM to DDR in nine months, *see* CX 2108 at 45 (deposition transcript at 237) (Oh FTC Dep.) (*in camera*), but Complaint

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However, these estimates do not account for additional delays inherent in the standard-setting process itself. Even assuming perfect knowledge of Rambus's patent claims, manufacturers could not have begun immediately to design and implement responsive changes. The industry would have had to agree on how the standard would be changed⁵⁶⁰. This could have added a year or more to whatever time would have been required to make the changes⁵⁶¹. Such delays would have meant missed opportunities, which firms in the industry found unacceptable.⁵⁶²

Counsel cite documentary evidence indicating that it actually took 15 months, *see* CX 2334 at 20.

⁵⁶⁰ *See* Krashinsky, Tr. 2792 (“It has to be defined as a standard and be accepted by the industry as a standard before HP would adopt it and we’ll start spending money on doing it.”), 2817 (designing can begin once specifications are well enough settled that further changes will not affect the design). No individual DRAM or component manufacturer likely would have been able to adopt non-compliant technology. *See, e.g.*, Macri, Tr. 4768 (*in camera*) (explaining that if graphics system producer ATI changed its controller to conform to an alternative to programmable CAS latency, “we would essentially have a nice paperweight” absent “a device to talk to”).

⁵⁶¹ *See* Krashinsky, Tr. 2792 (passing a revised SDRAM standard likely would take “a year or longer even”); Heye, Tr. 3736 (“it’s hard to get a consensus of change . . . all of that takes time”); Peisl, Tr. 4453 (“JEDEC is traditionally a very slowly moving consortium . . . because there’s so many companies involved . . . so to try to reach consensus at JEDEC, based on my experience, [would] have been incredibly hard and tough.”). *See generally* Geilhufe, Tr. 9675 (stating that his time estimate included no allowance for JEDEC consideration).

⁵⁶² *See, e.g.*, Wagner, Tr. 3862-63 (explaining that eliminating programmable CAS latency and programmable burst length would have delayed introduction of its graphics products that were “aligned to the timelines” of new computer games: “If we can’t release the chip because we have to go redesign for some new technology, then, you know we miss the opportunity to align with this new game”); Heye, Tr. 3736 (“all of that takes time, and time is something that you don’t have in this market”); Shirley, Tr. 4208-09 (*in camera*); Macri, Tr. 4600 (“Time to market is extremely critical in this world”); Kellogg, Tr. 5199; Lee, Tr. 6635, 6684; McAfee, Tr. 7457 (“delay is in itself inherently costly”).

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We are unpersuaded by Rambus's argument that switching costs were insufficient to establish lock-in. Rambus attempted to quantify the switching costs for DRAM manufacturers to design around its patents on SDRAMs. Rambus's experts testified that a DRAM manufacturer would incur switching costs of \$4.3 million to convert from programmable CAS latency and programmable burst length to fixed CAS latency and fixed burst length⁵⁶³. Rambus's economic expert, Rapp, argued that \$4.3 million is small in relation to the royalties that are being charged by Rambus⁵⁶⁴. The ALJ accepted both Rambus's switching cost estimate and Rapp's conclusions about the economic impact of these costs.⁵⁶⁵

Rambus's \$4.3 million figure substantially understates switching costs for three principal reasons. First, Rambus understates or omits certain individual switching cost elements,

⁵⁶³ According to Geilhufe, each fixed latency or burst length part would require \$100,000 in design costs, \$50,000 for photo tools (masks), and \$250,000 for qualification. Geilhufe, Tr. 9575-79, 9594-95. Rapp calculated that matching the three latencies and four burst lengths found in JEDEC's SDRAM specifications would require seven new designs, twelve sets of tools, and twelve qualifications, for a total \$4.3 million. Rapp, Tr. 9885-86. A lower estimate would flow from Rapp's methodology if the alternative supported fewer latencies or fewer burst lengths than SDRAM. Although we have suggested that two latencies and two burst lengths may have been a reasonable alternative at the time the SDRAM standard was adopted, *see supra* Section IV.C.3.b., subsequent commitments to particular latency or burst length values would have to have been considered in 2000. The Initial Decision, for example, identifies three latency values and three burst lengths in use for main memory or graphics purposes. *See* IDF 1146, 1220, 1223. *See also* RX 1626 at 3.

⁵⁶⁴ Rapp, Tr. 9887 ("a small price to pay").

⁵⁶⁵ IDF 1652-55.

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including mask costs,⁵⁶⁶ inventory costs,⁵⁶⁷ and opportunity costs⁵⁶⁸. Second, Rambus's figure covers only the switching costs of a single manufacturer at a single plant for a single product. It overlooks – as Rapp acknowledged – that each DRAM manufacturer typically offers components with as many as three densities,⁵⁶⁹ and would incur switching costs separately for each

⁵⁶⁶ In contrast to Geilhufe's estimate of \$50,000 to switch masks, Micron's Brian Shirley testified that the mask set for a specific DDR SDRAM revision design in 2001 cost \$334,000, Shirley, Tr. 4205 (*in camera*); that the cost of Micron's mask sets in 2002 ranged from \$162,000 to \$950,000, *id.* at 4231-32 (*in camera*); that the \$162,000 figure would have been the same in 1998-99, *id.* at 4279 (*in camera*); and that multiple mask sets typically were required to maintain full production. *Id.* at 4154 (high-volume products require 25-45 mask sets to run in production), 4234-35 (*in camera*). This last consideration may be very significant in a setting where production already has ramped up; the switching costs necessary to reach the same stage with an alternative technology would have to take production needs into account.

⁵⁶⁷ Rambus's experts failed to consider any costs for inventory left unsold at the time of a transition. Such inventories could be substantial: Micron, for example, typically held three weeks of finished goods inventory, Shirley, Tr. 4238 (*in camera*), as well as significant quantities of stock in production. *See* Shirley, Tr. 4153 (estimating that it typically took 45-55 days to move from wafer start to completion). Although a phased transition to a new technology might reduce the loss of inventory, the failure to consider any inventory costs whatsoever appears to be a significant omission.

⁵⁶⁸ To undertake a product redesign, DRAM or component manufacturers may need to divert resources, such as engineers, from other projects, potentially delaying the introduction of new products. *See, e.g.,* Heye, Tr. 3745; Macri, Tr. 4769 (*in camera*); Appleton, Tr. 6402-03. Rambus takes no account of opportunity costs beyond the salaries of the affected engineers. *See* Rapp, Tr. 10156-58. This fails to consider that engineers' specialized knowledge or team arrangements could make their diversion to a different design project particularly disruptive and could give rise to opportunity costs in excess of their salaries. *See* Shirley, Tr. 4207-09 (*in camera*); McAfee, Tr. 11292-95. Even Rapp acknowledged the possibility that his analysis could miss some surplus value earned by the employer over an engineer's salary. *See* Rapp, Tr. 10158.

⁵⁶⁹ *See* Rapp, Tr. 10144.

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density⁵⁷⁰. The figure also ignores – as Rapp conceded – that manufacturers with multiple plants might incur some of these costs at each facility⁵⁷¹. Moreover, Rapp agreed that each affected DRAM manufacturer separately would bear these switching costs and that, as of 1995, there were five to ten major DRAM manufacturers⁵⁷². Multiplying Rambus’s \$4.3 million estimate – by the number of manufacturers, then by the average number of densities, and then by a figure reflective of the costs that would have to be duplicated in multiple plants – suggests that total costs to DRAM manufacturers could have reached hundreds of millions of dollars. Adjusting for understatements of cost elements would increase that total even more.

Most significantly, Rambus’s \$4.3 million figure focuses solely on DRAM manufacturers. If JEDEC changed SDRAM, OEMs and manufacturers of complementary components would face substantial switching costs in redesigning their own products⁵⁷³. Rambus’s estimate omits these costs, although even

⁵⁷⁰ See Rapp, Tr. 10143-46 (“whatever the switching costs were . . . would be multiplied by the number of parts that they were starting off with”).

⁵⁷¹ See Rapp, Tr. 10123. Many DRAM manufacturers own multiple manufacturing facilities. See, e.g., Appleton, Tr. 6267-69 (Micron operates five fabrication facilities); CX 2466 at 2 (Infineon operates three manufacturing facilities).

⁵⁷² See Rapp, Tr. 10124 (“You could multiply this as needed by the number of manufacturers”), 10146. See also CX 2747 at 7 (Micron DRAM Update presenting market shares of 18 DRAM manufacturers in early 1999), 15 (showing 16 DRAM manufacturers remaining in September 1999); Gross, Tr. 2309 (8-10 was a “generous” estimate of DRAM manufacturers in 2003); Appleton, Tr. 6259, 6276-6277 (the DRAM industry had consolidated from approximately 20-25 DRAM manufacturers in the early 1980s to 5-6 major DRAM manufacturers and 2-3 smaller manufacturers as of 2003).

⁵⁷³ Complementary components – such as memory controllers, memory modules, and motherboards – must be compatible with industry-standard DRAM. See, e.g., Peisl, Tr. 4382, 4410, 4402-03; Macri, Tr. 4589 (“A DRAM alone doesn’t really do anything. It needs to talk to other things”); Heye,

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Rapp conceded that the switching costs of component manufacturers could exceed those of DRAM manufacturers⁵⁷⁴. As a consequence, Rambus's estimate wholly disregards a major source of lock-in. For all of the foregoing reasons, we find Rambus's switching cost estimates to be flawed.

Rambus also argues that the DRAM industry was not susceptible to lock-in because DRAM manufacturers "routinely redesign their products" and the entire industry "quickly and seamlessly" switches between sub-standards⁵⁷⁵. These sorts of changes, however, were not comparable to the revisions that would have been required to avoid patented Rambus technologies. The "redesigns" referenced by Rambus generally involved shrinking the dimensions or changing the density of DRAM chips⁵⁷⁶. The sub-standards were merely addenda to JEDEC standards⁵⁷⁷. The changes for most redesigns and for switches

Tr. 3655-65, 3715; Polzin, Tr. 3954; CX 1075 at 1. For example, changing programmable CAS latency in SDRAM would require HP to redesign and generate "a whole new chip" for its proprietary memory controller. Krashinsky, Tr. 2786. Designing around Rambus's patents may have required changes to the memory controller, the motherboard, the memory module, and the BIOS (basic input/output system, *i.e.*, the built-in software that provides some computer functions without accessing programs from a disk). Heye, Tr. 3733-34, 3742-43; CA A-4.

⁵⁷⁴ Rapp, Tr. 10130-31 (adding, however, that component manufacturers' switching costs were likely of the same order of magnitude as those of DRAM manufacturers).

⁵⁷⁵ RB at 76-79. *See also* ID at 326-28.

⁵⁷⁶ For example, Rambus cites its Proposed Finding 1292, which counts Infineon's various die shrinks and density changes. RB at 76 n. 36; *see also* IDF 1608 (relying on the same evidence). *See* Becker, Tr. 1141 (explaining that density refers to the capacity of a memory chip, the number of pieces or bits of memory it can hold), 1153-54, 1156-57; Reczek, Tr. 4304.

⁵⁷⁷ Addenda were add-ons that filled some of the gaps that JEDEC had not specified. Peisl, Tr. 4411-12. They evolved in response to changes in

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between sub-standards were more easily accomplished than changes in the DRAM technologies upon which the JEDEC standards were based⁵⁷⁸. More importantly, the types of changes

speed of operation. *See* Becker, Tr. 1142; Heye, Tr. 3676-77. Large DRAM customers such as Intel sponsored addenda for varied reasons, such as preventing industry participants from developing incompatible parts, *see* MacWilliams, Tr. 4908-09 (explaining that different manufacturers had introduced “very subtle” differences because they had needed to draw upon a series of JEDEC ballots rather than a comprehensive specification) or to add details relevant to their design needs. *See* Shirley, Tr. 4138-40 (describing Intel’s PC100 specification as adding “a low level of detail”); Peisl, Tr. 4411.

⁵⁷⁸ *See, e.g.*, CX 2108 at 65-66 (deposition transcript at 257-58) (Oh FTC Dep.) (*in camera*) (describing additional design work required for changing circuitry as opposed to conducting a shrink); CX 2334 at 3 (April 1999 Hyundai presentation stating, “PC100 to PC133 – The Same Die as PC100”). An Infineon witness explained that changes in DRAM type took longer than shrinks and, with consideration of the need to make revisions and to repeat steps, often took longer than changes of density. Reczek, Tr. 4304, 4309, 4336-38, 4341-45, 4350-51 (noting that Infineon needed three major revisions to produce a satisfactory DDR SDRAM device). Although the difference in effort required for individual changes was not large, *id.* at 4341-45, a change to the JEDEC-standardized technologies would have required *multiple* revision projects – for example, revising each distinct density of SDRAM and DDR SDRAM – and the total cost would have been some multiple of the cost for an individual change. *See* Rapp, Tr. 10143-44 (agreeing that DRAM manufacturers would “need to make changes to each of the densities of SDRAM or DDR”).

Rambus claims that Complaint Counsel’s economics expert “admitted that switching cost to avoid Rambus’s technologies would be no greater than those routinely absorbed by the industry.” RB at 79. McAfee testified that transitions between sub-standards involved the same “categor[ies] of costs” as transitions between JEDEC standards but that “the size of those costs are substantially less” with the former. McAfee, Tr. 7715. He also testified that the cost of changing interface technologies exceeded the cost of die shrinks. *Id.* at 7718-19. Rambus also relies on a 1996 Micron e-mail, RX 836 at 2-3, which does not establish that routine changes in chip size, density, and speed involved the same level of cost and difficulty as changes in JEDEC-standardized technologies.

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cited by Rambus raised fewer compatibility issues and, therefore, fewer lock-in implications.⁵⁷⁹

Rambus further contends that a switch to alternatives for its technologies “could be “piggyback[ed]” on a redesign, and the ALJ agreed. *See* RB at 76; IDF 1656. The only support comes from Rambus’s own expert witnesses. *See* Soderman, Tr. 9418; Geilhufe, Tr. 9615, 9675. Witnesses representing DRAM manufacturers, however, consistently testified that they would not normally combine interface technology changes with redesigns. Infineon’s Henry Becker, for example, explained, “Typically when you do a shrink, you like to do it on a product that you’re already producing so that you don’t create – you don’t change too many things at once.” Becker, Tr. 1157-58. *See also* Reczek, Tr. 4304-05 (testifying that shrinks, density revisions, and changes to the type of DRAM generally were not combined “because if you mix up two different steps, you might run into severe problems, not finding out what the reason for not functioning in the chip is”); CX 2108 at 65 (deposition transcript at 257) (Oh FTC Dep.) (*in camera*) (stating that Hyundai normally did not change internal circuitry at the time of a shrink).

⁵⁷⁹ Redesigns and transitions between sub-standards typically affected the dimensions, amount, and speed of main memory, but were less likely to affect compatibility between main memory and other computer components. The JEDEC interface standards, in contrast, were essential to compatibility. They governed, for example, the timing of release of data, the amount of data, and the speed and alignment of transmissions of data transferred between main memory and other computer components. *Compare* IDF 41; CX 1388 at 8; Peisl, Tr. 4382; Heye, Tr. 3769-71; Bechtelsheim, Tr. 5958; McAfee, Tr. 7718-19 (all highlighting the role of Rambus’s technologies as part of an interface and describing the resulting compatibility requirements) *with* Becker, Tr. 1157 (from the customer perspective shrinks don’t matter – different sizes “all function the same, he gets the same reliability, same performance”); MacWilliams, Tr. 4887 (“we [Intel] made sure [PC100] was backwards compatible with the 66 megahertz”); Polzin, Tr. CX 2334 at 3 (April 1999 Hyundai presentation stating, “PC100 to PC133 . . . – Using Existing Infrastructure of PC100”); CX 2728 at 2 (December 1998 Micron comments to Dell, stating, “PC133 are backwards compatible with PC100” but for DDR, companies are either “in progress with” or “looking to start” DDR chipset designs). *But cf.* Gross, Tr. 2351-53 (stating variously that she was “not sure,” “d[id] not recall,” and “believe[d] . . . probably” that PC100 was not backward compatible with PC66).

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We find that high direct switching costs, combined with significant delays from revising standards and reworking products, rendered infeasible a change in SDRAM to avoid Rambus's patented technologies in 2000 and conferred durable monopoly power with respect to SDRAM.

DDR SDRAM. JEDEC first published the DDR SDRAM standard in 1999. Rambus claims patent protection over technology incorporated into the standard relating to dual-edge clocking and on-chip PLL/DLL, in addition to the programmable CAS latency and burst length technologies that carried over from SDRAM.

The DRAM industry was significantly locked in to DDR SDRAM by 2000. DRAM manufacturers had begun production of DDR SDRAMs by that time,⁵⁸⁰ and their representatives

⁵⁸⁰ Hyundai began mass production of its first DDR chip by March 1999. See CX 2108 at 45 (deposition transcript at 237) (Oh FTC Dep.) (*in camera*); CX 2334 at 20. Infineon completed design of its 256-megabit DDR SDRAM at the end of 1999. Peisl, Tr. 4377-79 (explaining that enough was known about DDR SDRAM specifications to begin designing even before the standard was finalized, deferring some aspects until JEDEC made the last of its choices), 4454. Infineon was ramping production of its first DDR product by 2000. *Id.* at 4455. See also Crisp, Tr. 3432 (DDR SDRAM was in production in 1998); CX 2726 at 3 (64 Mb DDR SDRAM was available as early as 1998); RX 885A at 1 (Samsung planned to begin mass production of 64 Mb DDR in 1998, and Fujitsu was on a similar schedule). See generally CX 2158 at 2 ("Micron Demonstrated DDR in a PC in Fall 99"); CX 2387 (January 1998 IBM e-mail stating that engineering hardware would be available for IBM DDR SDRAMs by the second quarter of 1998, with qualification expected by the end of 1998); G. Kelley, Tr. 2589-91 (IBM began design of DDR SDRAM features selected by JEDEC in late 1996 or the first half of 1997); CX 957 at 2 (LG Semiconductor was working on DDR SDRAM by 1997 – it had assigned its SDRAM team to DDR tasks). DDR SDRAM revenues rose rapidly from .4% of DRAM revenue in 2000 to 5.3% in 2001. Rapp, Tr. 10248-49. Because revenues lag behind production, the market share data are consistent with a significant production ramp in 2000.

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consistently testified that changes no longer were feasible⁵⁸¹. Furthermore, the necessary complementary components had to be in place before substantial sales were possible⁵⁸². AMD, for example, launched a DDR-based system in October 2000; the general manager of its microprocessor unit, Richard Heye, testified that product development had gone too far to change DDR SDRAM by the time that a response to Rambus's patents could have been considered:

We were planning a launch in the fall of 2000, October. By that time frame, the chipset was for all intents and purposes complete, we were in the validation testing, the DDR, the DIMMs, the memory was done, the DIMMs were being manufactured, the memory folks were actually starting production and waiting for it to start . . .

⁵⁸³

Similarly, HP's Krashinsky testified that DDR SDRAM already had been installed in HP server prototypes by about the third

⁵⁸¹ See, e.g., Peisl, Tr. 4443-44; Appleton, Tr. 6386-87, 6399-401.

⁵⁸² See CX 2747 at 58-60 (September 1999 Micron DRAM Update stating that DDR controllers for graphics purposes were already available and that multiple chipset vendors were "developing support"); Peisl, Tr. 4455-57 (by 1999-2000 the "customers had progressed in their designing of platforms and have SDR and DDR quite a bit already. There were DDR chipsets available."); McAfee, Tr. 7445.

⁵⁸³ Heye, Tr. 3737. See also *id.* at 3738 (stating that AMD by 2000 was in the midst of testing DDR memory from all the vendors to ensure that all combinations were going to work with its chipset); CX 2158 at 2 (June 2000 AMD e-mail stating, "AMD powered on the first K7 DDR chipset (IGD4) in Dec 99"). *But cf.* Heye, Tr. 3750 (noting that the infrastructure of DDR-based complements was still developing in 2000 and had not yet been established in the marketplace).

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quarter of 2000⁵⁸⁴. Cisco's Bechtelsheim stated that a change in DRAM design in response to Rambus's assertion of patents in 2000 would have imposed "a tremendous cost to Cisco to redesign the existing boards and systems Cisco was shipping to accommodate this new type of memory."⁵⁸⁵

The adoption of programmable CAS latency and burst length in the DDR SDRAM standard raises the same issues as in SDRAM. The cost and delay associated with changing these technologies in SDRAM were equally applicable to DDR SDRAM⁵⁸⁶. Indeed, JEDEC rejected a March 2000 proposal to move to fixed latency in DDR SDRAM, and lock-in concerns were a significant factor.⁵⁸⁷

The DDR SDRAM standard adopted two additional technologies that Rambus now claims to have patented: dual-edge clocking and on-chip PLL/DLL. As to dual-edge clocking, Complaint Counsel's engineering expert testified that redesigning DDR SDRAM to avoid Rambus's patents would have required

⁵⁸⁴ Krashinsky, Tr. 2793. Krashinsky added that if HP had needed to change the chipset that was designed for use with DDR in this server, it would have had to change all of the other products that also used that chipset. *Id.* at 2797.

⁵⁸⁵ Bechtelsheim, Tr. 5881. Bechtelsheim estimated that redesigning and requalifying its products in order to accommodate changes in DRAM technology would cost between \$500,000 and \$1 million for each distinct PC board assembly, so that total cost to Cisco "could approach or exceed \$1 billion." *Id.* at 5882.

⁵⁸⁶ See, e.g., Wagner, Tr. 3862-63; Peisl, Tr. 4450-53; Macri, Tr. 4764-65 (*in camera*), 4775-77 (*in camera*); Kellogg, Tr. 5196-200. See generally Polzin, Tr. 3992-94 ("The problem was, we'd have to change everything in the middle of this production ramp.").

⁵⁸⁷ See Rhoden, Tr. 532-33 (stating that his proposal to change to fixed latency "was very poorly received within the committee, because there were products shipping in pretty high volume at that time").

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changes to the clock chip and the memory controller⁵⁸⁸. Producers of complements and OEMs voiced lock-in concerns. For example, AMD's Polzin testified that, by the summer of 2000, the firm was in the middle of a production ramp for DDR-based controllers and motherboards, and "[i]t would have been impossible for us to stop and change" the dual-edge clocking mechanism⁵⁸⁹. Likewise, Krashinsky explained that HP did not seek a change in JEDEC's DDR SDRAM standard, even after learning of Rambus's patent claims on dual-edge clocking, because HP already had developed a server prototype dependent on DDR SDRAM, HP was "counting on" that standard, and "HP does not want to support changes that will cause a lot of expenses to HP."⁵⁹⁰

The record also establishes that on-chip PLL/DLL was similarly locked-in at this time. AMI-2's Rhoden testified that a proposal in 2000 to change DDR SDRAM to replace on-chip DLL would have been a waste of time in view of "wide industry use and high volume production."⁵⁹¹ Joe Macri of ATI Technologies (ATI), speaking in terms of the subsequent DDR2 SDRAM standard, described removal of on-chip DLL as "not something you can change in a trivial manner," adding, "You really need a gun to your head."⁵⁹²

⁵⁸⁸ Jacob Tr. 5413, 5433, 5575-76.

⁵⁸⁹ Polzin, Tr. 3980, 3989, 3995-96. *See also* Macri, Tr. 4649-51 (removing dual-edge clocking in 2000 would mean "you're shaking the foundations . . . of the standard and not changing a minor piece").

⁵⁹⁰ Krashinsky, Tr. 2793-94.

⁵⁹¹ Rhoden, Tr. 533.

⁵⁹² Macri, Tr. 4649. *See also* Jacob, Tr. 5577-78 (compatibility dependent on system design), 5617-18 (compatibility dependent on data arriving at the controller in the appropriate timing window).

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Consideration of DDR SDRAM also introduces concerns regarding backward compatibility, especially with reference to dual-edge clocking. Backward compatibility requires that it be economically feasible to produce complementary components capable of supporting both an old and a new generation of DRAM. As witnesses explained, it would have been difficult to design a memory controller that would be compatible both with existing DDR SDRAMs and with any revised version that avoided dual-edge clocking. Micron's Lee termed this "a very difficult design to accommodate,"⁵⁹³ and ATI's Macri stated that switching to single-edge clocking would have had "a big impact" from "a design point of view."⁵⁹⁴ Macri cited the need to retain backward compatibility as a reason why avoidance of Rambus's patents was not feasible.⁵⁹⁵

Rambus argues that, despite this evidence, the industry was not locked into DDR SDRAM in 2000. Rambus provides no estimates of the switching costs for changing dual-edge clocking and on-chip PLL/DLL. Rather, Rambus argues, and the ALJ agreed, that the fact that JEDEC actively considered alternatives for the Rambus technologies in 2000 shows that JEDEC could not have been locked in⁵⁹⁶. We disagree. JEDEC ultimately *rejected* all of the alternatives. In view of the record as a whole, the fact

⁵⁹³ See Lee, Tr. 6805-06.

⁵⁹⁴ Macri, Tr. 4780-81 (*in camera*).

⁵⁹⁵ Macri, Tr. 4765, 4767-68, 4773, 4780-81 (all *in camera*). See generally Krashinsky, Tr. 2829 (members deemed switching to a single-edge clock "too dramatic" a change).

⁵⁹⁶ IDF 1585; RB at 75. The ALJ's finding of fact cited only Complaint Counsel's economic expert. McAfee, however, actually offered much more limited testimony – though he would not "take it as proof," he would not expect JEDEC members to "spend a lot of time discussing technologies in 2000" unless "at least some significant number of members" thought those technologies were commercially viable. McAfee, Tr. 7571.

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that the industry was aware of alternatives, but did not switch to them after the adoption of the standard, supports our finding that JEDEC members decided that expenses and delays rendered switching infeasible.

Rambus asserts that switching from DDR SDRAM in 2000 would have been easy. In addition to arguments based on the relative ease of developing new DRAM sizes, densities, and speed grades,⁵⁹⁷ Rambus cites an April 2000 Hitachi e-mail stating that “it’s not too late for minor, carefully considered changes” to the DDR SDRAM standard⁵⁹⁸. We find that this single e-mail, which addressed only programmable CAS latency,⁵⁹⁹ does not accurately reflect the costs and delays described by other industry participants.

In summary, we conclude that lock-in was significant by 2000 with regard to DDR SDRAM and gave rise to Rambus’s durable monopoly power.

DDR2 SDRAM. The record does not support a finding that lock-in conferred durable monopoly power over DDR2 SDRAM by 2000. There is evidence that work on DDR2 SDRAM was

⁵⁹⁷ See *supra* notes 575 through 579 and accompanying text.

⁵⁹⁸ RX 1626 at 4 (e-mail dated April 10, 2000 by Hitachi employee Bob Fusco stating “For DDR-1, it’s not too late for minor, carefully considered changes, so I’m open to either proposal [for eliminating programmable CAS latency]”). At the time this e-mail was written, Rambus recently had commenced suit against Hitachi for willful infringement. CX 1855 at 6, 8-9, 11. It is possible that any post-complaint Hitachi documents memorializing an openness to explore non-infringing alternatives may have been influenced by Hitachi’s litigation posture.

⁵⁹⁹ The e-mail states nothing about changes to programmable burst length, dual-edge clocking, or on-chip PLL/DLL. RX 1626 at 4. Of course, programmable CAS latency was only one of multiple technologies included in the JEDEC standards and later subject to Rambus’s patent claims.

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underway by spring 1998⁶⁰⁰. Macri, the JEDEC representative from ATI and chairman of the task group responsible for developing a successor to DDR SDRAM, testified that in April 1998 the group began to engage in the “initial set of discussions on the DDR2 standard” and “things came in, things came out, but by June 2000, we, you know, we had hit a – kind of a stable point.”⁶⁰¹ He added that the technical details for the proposed standard were fleshed out between June 2000 and June 2001⁶⁰². JEDEC published the DDR2 SDRAM standard to its members in 2002, but final revisions still were being completed in June 2003.⁶⁰³

DDR2-based product design and development was in its early stages by 2000. For example, Micron started design work on DDR2 SDRAMs in late 1999,⁶⁰⁴ and its first DDR2 design was “taped out” (*i.e.*, ready for initial transfer to masks) in January 2002⁶⁰⁵. The head of JEDEC’s Future DRAM Task Group characterized JEDEC deliberations as fluid until first reaching a “stable point” in June 2000⁶⁰⁶. An April 2000 e-mail by Hitachi’s

⁶⁰⁰ Macri, Tr. 4582; CX 376a (March 1998 e-mail announcing “Future dram task group kickoff”); CX 379a (April 1998 Future DRAM Task Group meeting notes).

⁶⁰¹ Macri, Tr. 4598.

⁶⁰² *See* Macri, Tr. 4598-99 (“during June of 2000 to June of 2001, we were adding the meat, you know, the real description that an engineer would need to truly understand these – these concepts”).

⁶⁰³ *See* Rhoden, Tr. 411-12; Polzin, Tr. 4046.

⁶⁰⁴ Shirley, Tr. 4211 (*in camera*). IBM’s Gordon Kelley explained that design work may begin on aspects of the DRAM that are not covered by JEDEC standards. G. Kelley, Tr. 2590.

⁶⁰⁵ Shirley, Tr. 4228 (*in camera*).

⁶⁰⁶ Macri, Tr. 4598.

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Bob Fusco stated, “For DDR-2, we have no legacy to live with, so I like the Micron proposal [to avoid programmable CAS latency].”⁶⁰⁷ Complaint Counsel point out that some firms had begun work on DDR2-based products by 2000⁶⁰⁸. However, the scope and extent of DDR2-related efforts is unclear, particularly when one contrasts the unambiguous statements that work had progressed too far to permit change to the SDRAM and DDR SDRAM standards. The evidence suggests that there would have been DDR2 switching costs by 2000, but provides little sense of their magnitude.

Some component manufacturers had started work on DDR2-based complements by 2000. For example, initial JEDEC-level work on the attributes of DDR2-based memory modules began as early as February 1999⁶⁰⁹. However, IBM’s Bill Hovis wrote in April 2000 e-mail that, as to DDR2 SDRAM, “[o]bviously here, the situation with the system is that I am not currently locked in . . .”⁶¹⁰ nVIDIA started work on the first product that it thought might prove DDR2-compatible in late 2000 or early 2001⁶¹¹. AMD’s Polzin stated that, as of the time of his June 2003

⁶⁰⁷ RX 1626 at 4.

⁶⁰⁸ *See, e.g.*, Macri, Tr. 4648 (by September 2000 “there were already companies in design on both the DRAM and the systems side”), 4649 (changes at this time would have affected “earliest adopters”), 4650-51; Kellogg, Tr. 5201 (in September 2000 IBM was “moving down the path” of designing its first DDR2-based memory controllers), 5204 (eliminating dual-edge clocking likely would mean “measurable schedule delay” for IBM’s memory controller project).

⁶⁰⁹ *See* Kellogg, Tr. 5194-95; CX 393.

⁶¹⁰ RX 1626 at 3. The e-mail addressed only issues regarding CAS latency. *Id.* at 3-4.

⁶¹¹ Wagner, Tr. 3866-67.

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testimony, AMD still had not started to develop an infrastructure for DDR2 SDRAM.⁶¹²

Complaint Counsel stress the industry's desire to maintain backward compatibility. Several industry witnesses expressed concerns that changing DDR2 SDRAM to avoid Rambus's patents would have disrupted backward compatibility⁶¹³. One witness testified that an effort to maintain backward compatibility after eliminating dual-edge clocking would have had "a big impact" from the perspective of design and that a desire to maintain backward compatibility was the reason that a sub-unit of JEDEC's task group in October 2000 chose to maintain dual-edge clocking⁶¹⁴. Contemporaneous documents confirm that backward compatibility was a general goal, but do not conclusively establish that the decisions to retain Rambus's patented technology resulted from that factor⁶¹⁵. One such example is the minutes of an

⁶¹² Polzin, Tr. 4043-44.

⁶¹³ See, e.g., Macri, Tr. 4678 (changing to fixed latency would have been a disruptive departure from DDR SDRAM base), 4624 (on-chip DLL retained "to keep the backwards compatibility"), 4647-48 (similar), 4649 (Macri did not propose eliminating dual-edge clocking because of backward compatibility concerns), 4678-79 (JEDEC task group thought eliminating dual-edge clocking would have been "disruptive"); Kellogg, Tr. 5192-93 (describing consensus desire in 1998 to achieve an "evolutionary solution" that would sustain backward compatibility); Lee, Tr. 6805-06 (very difficult to design a controller that would be compatible with both dual-edge and single-edge clocking).

⁶¹⁴ See Macri, Tr. 4640-42, 4780-81 (*in camera*); cf. Krashinsky, Tr. 2829 (JEDEC task group rejected alternative to dual-edged clocking because of "the cost that it would be to implement one versus the other" and because the change in clocking rate would have been too "revolutionary").

⁶¹⁵ These documents show that the Future DRAM Task Group decided early on that the next generation of DRAM should "stay backward compatible if at all possible with DDR," CX 392 at 3, and reflect the desire to provide a "migration path" for producers of controllers, CX 379a at 9. The references, however, are too general to reveal how much those considerations shaped the group's specific technology choices. See also CX 132 at 4, CX 379a at 9, and

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October 2000 conference call among members of a sub-unit of JEDEC's Future DRAM Task Group, in which elimination of dual-edge clocking was discussed. The minutes conclude, "Single data rate clock is preferred provided that we can make it work."⁶¹⁶ Although "mak[ing] it work" might have encompassed considerations of backward compatibility, the minutes do not expressly state this. Follow-on testimony from the proponent of the change indicated that ultimately "there was not a lot of support," but did not explain the underlying reasons why dual-edge clocking was retained⁶¹⁷. Based on the existing record, it is difficult to assess how substantially backward compatibility concerns contributed to lock-in in 2000.

In summary, there certainly is evidence that eliminating Rambus's patented technologies from the DDR2 SDRAM standard would have entailed some switching costs for some stakeholders, including, but not limited to, switching costs associated with the desire to preserve backward compatibility⁶¹⁸.

CX 2745 at 7 (all indicating that DDR2 SDRAM should be based on DDR SDRAM); CX 2717 at 8, 13 (March 1998 Transmeta Corporation paper urging that change be "evolutionary" and that backward compatibility with DDR SDRAM be maintained).

⁶¹⁶ CX 426 at 4. Macri subsequently interpreted this to mean that "if we were to go and do . . . large-scale change" – which, presumably, would have sacrificed backward compatibility – the preference was for eliminating dual-edge clocking. Macri, Tr. 4690-91 (emphasis added).

⁶¹⁷ See Lee, Tr. 6802; JX 52 at 45-50.

⁶¹⁸ These considerations rebut the claim that JEDEC's inclusion of Rambus technologies in DDR2 SDRAM demonstrates that those technologies were superior to all alternatives. See RB at 52-59; ID at 322-23. Even Rambus recognizes that revealed preference arguments of this nature require that "all other things be[] equal." RB at 60 n.29. Yet in the case of DDR2 SDRAM, other things were *not* equal. Switching costs were present, and JEDEC's choice, at most, revealed a preference for Rambus technologies over alternatives handicapped by those switching costs. Moreover, uncertainties over the breadth and enforceability of Rambus's patents further blurred the

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However, the record shows that JEDEC published the DDR2 SDRAM standard in 2002. The causal link between Rambus' course of conduct and the incorporation of its patented technology in the DDR2 SDRAM standard in 2002 is not as well-defined as it is for the SDRAM and DDR SDRAM standards for several reasons.

First, the record as to the magnitude of DDR2 switching costs is not clear; evidence is imprecise and mixed. On the whole, the record fails to establish that most stakeholders had invested heavily in the DDR2 standard by 2000, when Rambus's intentions and patents were disclosed. Second, the circumstances when JEDEC published the DDR2 standard in 2002 were materially different from what they were when the SDRAM and DDR SDRAM standards were adopted. To begin with, Rambus had disclosed both its patents and its intent to enforce them in 2000, at least two years before the DDR2 standard was published. By 2002, Rambus had largely lost the *Infineon* litigation in the trial court⁶¹⁹. Consequently, the prospect of substantial royalty costs did not loom as the threat it likely would have posed in earlier years (or the threat that it later posed after the Federal Circuit reversed the *Infineon* district court in January 2003)⁶²⁰. Thus, it seems likely that the DDR2 decisions of JEDEC members would have been impacted by a then-current perception that incorporation of Rambus's allegedly patented technology in JEDEC's DDR2 standard would be relatively costless.

comparisons on which Rambus relies. See *infra* notes 619-620 and accompanying text.

⁶¹⁹ The trial court granted Infineon judgment as a matter of law on May 2, 2001. See *Rambus, Inc. v. Infineon Techs. AG*, 318 F.3d 1081, 1086 (Fed. Cir. 2003).

⁶²⁰ Even then, patent enforceability remained uncertain.

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We conclude that the record does not establish a causal link between Rambus's exclusionary conduct and JEDEC's adoption of DDR2 SDRAM.⁶²¹

4. Rambus' Claim that its Acquisition of Monopoly Power Did Not Matter

Finally, Rambus claims that even if its course of conduct enabled it to acquire monopoly power, it cannot be held liable because Complaint Counsel failed to prove competitive harm in the form of supracompetitive (or "unreasonable") prices for consumers. Rambus argues that the royalties paid by DRAM manufacturers are mere wealth transfers, suggesting that the royalties impose only private costs that are irrelevant to overall social welfare. We reject this argument. It fails to acknowledge any decline in DRAM output that might result from higher DRAM prices. Reduced output would constitute a deadweight loss that decreases overall social welfare and raises competitive concerns – as even Teece, Rambus' economic expert, has acknowledged elsewhere.⁶²²

⁶²¹ Although we do not, on this record, find durable monopoly power as to DDR2 SDRAM, neither do we rule it out. It is possible that Rambus did, in fact, obtain durable monopoly power over DDR2 SDRAM. We might have found lock-in with respect to DDR2 SDRAM if the record had demonstrated, for example, that backward compatibility concerns were a substantial determinative factor in JEDEC's DDR2 SDRAM standard-setting decisions.

⁶²² See Teece & Sherry, *supra* note 543, at 1931 n.74 (deadweight loss must be weighed against any real-resource cost savings from use of a patented technology).

The ALJ carried that error one step farther. The Initial Decision relies on a purported admission by Complaint Counsel's economic expert, McAfee, that Rambus's conduct "has had no impact on DRAM prices, no effect on consumers, and no effect on the PC market as of the time of trial" IDF 1053; ID at 323-24. This misses the point of McAfee's testimony. McAfee actually testified that, although he did not believe there had been an impact on DRAM prices "as of today," (1) Rambus's conduct had substantially increased price in the relevant technology markets and (2) "in the long run . . . those

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Rambus also argues that its conduct had no anticompetitive effect because its royalty rates have been reasonable⁶²³. Substantial record evidence shows that Rambus's royalty rates are *not* reasonable⁶²⁴. Ultimately, however, we need not rest on this

royalty costs would be passed on to consumers" with "the effect of lowering output in the downstream DRAM market" and "the effect of increasing the price." McAfee, Tr. 7175-76, 7565-66. McAfee reasoned that, in the short run, DRAM manufacturers face such high fixed costs that they will maximize the output of their facilities irrespective of royalty levels, but in the long run, higher royalty costs will lead to less DRAM production capacity and higher DRAM prices. *Id.* at 7175-76, 7208, 7749-50; *see also* CX 839 at 2 (1995 Crisp e-mail indicating that Hyundai, a DRAM manufacturer, stated "that they pass on license fees and royalties to their customers"); CX 2107 at 140-41 (Oh FTC Dep.) (*in camera*) (Hyundai's DRAM prices to customers were a function of production costs). Neither the ALJ nor Rambus cite any authority for the proposition that a showing of long-run DRAM output reductions and price increases is insufficient to demonstrate competitive harm. Thus, we find no basis in McAfee's testimony for rejecting Complaint Counsel's showing of competitive harm.

⁶²³ RB at 72-74.

⁶²⁴ A comparison of Rambus royalty rates for DDR SDRAM and RDRAM strongly suggests that Rambus's DDR royalties have not been reasonable. Rambus has charged at least a 3.5% royalty on DDR SDRAM, *see, e.g.*, Rapp, Tr. 9853; CX 1680 at 4 (*in camera*), but generally has negotiated royalties between 1.0% and 2.0% for RDRAM. *See, e.g.*, CX 1592 at 21-23 (Samsung RDRAM License); CX 1646 at 10-11 (Micron RDRAM License); RX 538 at 20-22 (NEC RDRAM License); CX 1612 at 4-5 (Hyundai RDRAM License); CX 547 at 12; CX 1057. (RDRAM royalties cover all four of the technologies at issue in this proceeding, as well as additional proprietary technologies. *See, e.g.*, Horowitz, Tr. 8547-48; RX 2183; RX 81 at 8.) Thus, Rambus's 3.5% royalty for DDR SDRAM far exceeds the royalties that were negotiated for RDRAM in a setting in which licensees were aware of Rambus's patent position from the start and, consequently, were sheltered from hold-up.

Rambus attempts to establish the reasonableness of its royalties by comparing them to royalty rates charged for *other* technologies. *See* RB at 73; Teece, Tr. 10422-51. Rambus CEO Tate, however, testified that comparing royalty rates for different technology licenses mixes "apples and oranges" because "[t]he royalty rate for one patent and the royalty rate for another

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evidence. Deceptive conduct that confers durable market power by its very essence harms competition, and claims that the offender has not yet behaved like a monopolist provide no shelter⁶²⁵. We therefore reject this argument as a matter of law.

patent, even in the [semiconductor] industry, can vary tremendously based on the value of the patent and the applications involved.” CX 2060 at 158 (Tate *Infineon* Dep.) (*in camera*). Rambus fails to provide a basis for treating the referenced licensing arrangements as comparable to licenses for the technologies at issue in the present case. *See* Teece, Tr. 10465-66 (unable to identify any comparative data that involved royalties on DRAM interface technologies), 10644-46, 10659-60 (acknowledging “a lot of heterogeneity” in royalty rates).

Both Rambus and the ALJ highlight a comparison to IBM’s patent licensing policy. They state that IBM charged royalties of 1-5% and that Rambus’s rates fit well within this range. RB at 73-74; IDF 1548-53; ID at 324-25. The record contains no evidence, however, that IBM’s rates reflected royalties for DRAM technologies, or even that the rates stated in IBM’s policy ever actually applied. *See* Teece, Tr. 10638-40 (acknowledging that IBM usually cross-licensed without a cash rate). Indeed, even the IBM policy cited by Rambus gave licensees a potentially much less costly option: licensees could choose an 8% royalty based solely on the portion of the selling price attributable to the patented portions of the licensee’s product. JX 9 at 24. For a DRAM, in which the four relevant interface technologies are only a small part, the IBM policy might result in only a minimal royalty.

⁶²⁵ *See* United States v. Microsoft Corp., 253 F.3d 34, 56-58, 76-77 (D.C. Cir.), *cert. denied*, 534 U.S. 952 (2001), quoting *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.2d 263, 274 (2d Cir. 1979), *cert. denied*, 444 U.S. 1093 (1980) (“[I]f monopoly power has been acquired or maintained through improper means, the fact that the power has not been used to extract [a monopoly price] provides no succor to the monopolist.”); *American Tobacco Co. v. United States*, 328 U.S. 781, 809, 811 (1946); *see also* III AREEDA & HOVENKAMP, ANTITRUST LAW, ¶ 651d1 at 80 (“Properly defined monopolizing conduct harms consumers by creating monopoly, increasing its amount, or extending its duration. Thus, an expectation of consumer harm must always be at the logical end of any determination that a particular act ‘monopolizes,’ and thus satisfies § 2’s conduct requirement.”).

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V. SPOILIATION

Allegations that Rambus engaged in the spoliation of evidence have permeated these proceedings, as well as several private actions relating to Rambus's patent enforcement efforts⁶²⁶. Many of the basic facts are not in dispute⁶²⁷. Rambus began formulating its document retention policy in early 1998 with the assistance of outside counsel,⁶²⁸ and adopted a document retention policy in July 1998⁶²⁹. Rambus then conducted company-wide "shred days" in September 1998 and August 1999 that involved the destruction of significant quantities of documents⁶³⁰. Rambus destroyed a similarly large volume of documents in December 2000 when it moved to a new office building⁶³¹. As part of its document destruction efforts, Rambus deleted e-mails,⁶³² erased computer

⁶²⁶ See *supra* Section II.B. (discussing the relevant procedural history).

⁶²⁷ Our discussion draws upon evidence developed in the *Infineon* litigation, pertaining to the nature and extent of Rambus's document destruction effort. This evidence was admitted in this proceeding by a reopening of the record. See CX 5000-85; DX 500-07; RX 2500-53; see also *supra* Section II.B.1.d.

⁶²⁸ See CX 5005 at 3; CX 5006 (designated R401111); CX 5007; CX 5069 at 11 (deposition transcript at 376) (Karp 2004 *Infineon* Dep.); CX 5068 at 4-5 (deposition transcript at 26-33) (Savage 2004 *Infineon* Dep.); RX 2502 (March 1998 Rambus memorandum regarding "Document Retention Policy Guidance"; RX 2521 at 11-12 (Johnson *Infineon* Dep.).

⁶²⁹ See RX 2503; CX 2102 at 362 (Karp *Micron* Dep.).

⁶³⁰ Rambus destroyed 185 burlap bags and 60 boxes full of documents on September 3, 1998. CX 5023 (designated R401307); CX 5050 (designated R400812). Rambus destroyed approximately 150 burlap bags of documents on August 26, 1999. CX 5052 (designated R400819).

⁶³¹ See CX 5053 (designated R400787) (Rambus destroyed 410 burlap bags).

⁶³² See CX 1264 at 1 ("EMAIL – THROW IT AWAY"); Diepenbrock, Tr. 6230-32.

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backup tapes,⁶³³ and instructed its outside patent counsel, Lester Vincent, to clean out his law firm's patent prosecution files so that they mirrored the PTO's file.⁶³⁴

The record shows that key Rambus executives and lawyers – including Richard Crisp,⁶³⁵ Joel Karp,⁶³⁶ Billy Garrett,⁶³⁷ Anthony Diepenbrock,⁶³⁸ and Lester Vincent⁶³⁹ – destroyed documents. The record also shows that some of these documents related to subject matter pertinent to this proceeding, such as documents regarding Rambus's participation in JEDEC,⁶⁴⁰ and Rambus's patent prosecution files⁶⁴¹. Indeed, Rambus's document destruction efforts were so thorough and effective that neither

⁶³³ See, e.g., CX 5018.

⁶³⁴ See CX 5033; CX 5036; CX 5037 (designated BSTZ 41); CX 5069 at 49 (deposition transcript at 540-41) (Karp 2004 *Infineon* Dep.). (BSTZ refers to Bates stamp numbers that appear on this and other exhibits admitted into this record from the *Infineon* litigation.)

⁶³⁵ See Crisp, Tr. 3425, 3427-30; CX 2082 at 157-59 (deposition transcript at 841-43) (Crisp *Infineon* Dep.) (*in camera*) (“anything that I had on paper, I basically threw away”); CX 5059 (designated GCWF 3456). (GCWF refers to Bates stamp numbers that appear on this and other exhibits admitted into this record from the *Infineon* litigation.)

⁶³⁶ See CX 2059 at 62 (Karp *Infineon* Dep.) (*in camera*); CX 2102 at 115 (deposition transcript at 378) (Karp *Micron* Dep.).

⁶³⁷ See CX 5062 (designated GCWF 3422).

⁶³⁸ See CX 5064 (designated GCWF 3439); Diepenbrock, Tr. 6235-36.

⁶³⁹ See CX 5033; CX 5036; CX 5037 (designated BSTZ 41).

⁶⁴⁰ See CX 5062 (designated GCWF 3416); CX 5078 at 14 (trial transcript at 124), 20 (trial transcript at 146).

⁶⁴¹ See CX 5033; CX 5036; CX 5037 (designated BSTZ 41); CX 5069 at 49 (deposition transcript at 540-41) (Karp 2004 *Infineon* Dep.).

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Crisp nor Rambus's attorneys were able to find certain JEDEC-related documents when they subsequently searched for them.⁶⁴²

In order to establish pre-litigation spoliation, Complaint Counsel must show that Rambus destroyed potentially relevant documents at a time when litigation was reasonably foreseeable⁶⁴³. The destruction must have occurred with a culpable state of mind⁶⁴⁴. The appropriate remedy in any particular case typically will vary, depending on the spoliating party's degree of fault as well as the extent to which the other party is prejudiced.⁶⁴⁵

In the present case, we need not resolve whether Rambus engaged in spoliation because the record shows, by a preponderance of the evidence, that Rambus engaged in exclusionary conduct. Our findings stand firmly on the evidence that has survived. No remedy for the alleged spoliation is

⁶⁴² See CX 1079 at 1 (Crisp October 1999 email: "I'm looking for a copy (paper or electronic) of one of the original DDR datasheets from the 1996/1997 timeframe. Hopefully someone here has one that hasn't fallen victim to the document retention policy :-"); CX 5078 at 20 (trial transcript at 146).

⁶⁴³ See *Silvestri v. General Motors Corp.*, 271 F.3d 583, 590 (4th Cir. 2001); *Byrnie v. Town of Cromwell*, 243 F.3d 93, 107-112 (2nd Cir. 2001). See also MARGARET M. KOESEL ET AL., *SPOILIATION OF EVIDENCE: SANCTIONS AND REMEDIES FOR DESTRUCTION OF EVIDENCE IN CIVIL LITIGATION* 4-5 (Am. Bar Ass'n 2000).

⁶⁴⁴ Courts have articulated this requirement in varying terms. See, e.g., *Silvestri*, 271 F.3d at 590 ("some degree of fault"), 593 ("deliberate or negligent"); *Byrnie*, 243 F.3d at 108 ("intentional[]," "in bad faith," or "based on gross negligence"), 109 ("knowingly . . . or negligently").

⁶⁴⁵ See *Residential Funding Corp. v. DeGeorge Financial Corp.*, 306 F.3d 99, 107 (2d Cir. 2002); *Schmid v. Milwaukee Electric Tool Corp.*, 13 F.3d 76 (3d Cir. 1994).

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necessary, and we therefore do not undertake the inquiry required to resolve the spoliation issue.⁶⁴⁶

We stress, however, that Rambus's extensive document destruction campaign had the potential to deny the Commission an opportunity to examine thoroughly Rambus's conduct. In some instances, the Commission has relied on evidence that was preserved only fortuitously⁶⁴⁷. If the record in this case had been marginal, while simultaneously containing evidence that Rambus had destroyed potentially relevant documents, we would have pursued the spoliation inquiry to its conclusion and, if appropriate, imposed a remedy. The Commission has a broad range of remedies available to address spoliation, ranging from drawing adverse inferences to ordering that a proceeding be decided against the spoliating party. If spoliation were proven in a future case, the Commission would not hesitate to impose warranted sanctions, in keeping with its fundamental interest in preserving the integrity of its administrative proceedings.

⁶⁴⁶ Accordingly, Complaint Counsel's pending motion for sanctions is denied. Complaint Counsel's Motion for Sanctions Due to Rambus's Spoliation of Documents (Aug. 10, 2005), available at <http://www.ftc.gov/os/adjpro/d9302/050810ccmosanctions.pdf>.

⁶⁴⁷ For example, the only sources of Crisp's JEDEC-related e-mails were a hard drive found in Crisp's attic, see CX 5075 at 3-5 (deposition transcript at 296-302) (Crisp 2004 *Infineon* Dep.), and an old Rambus server that Crisp had used to transfer e-mails between his Macintosh and PC office computers. See Crisp, Tr. 3572-76, 3588-92; CX 5078 at 14 (trial transcript at 124). Likewise, although Rambus's outside patent counsel, Vincent, destroyed most of his Rambus-related files, he retained certain relevant correspondence in his personal files. See CX 5066 (designated GCWF 3448). In addition, records that Rambus failed to produce in the normal course of discovery were retrieved from corrupted back-up files in the subsequent *Hynix* litigation, and the Commission was able to add this evidence to this proceeding's record on appeal. See CX 5100-16; see also *supra* Section II.B.

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VI. CONCLUSION

We find that Rambus engaged in exclusionary conduct that significantly contributed to its acquisition of monopoly power in four related markets. By hiding the potential that Rambus would be able to impose royalty obligations of its own choosing, and by silently using JEDEC to assemble a patent portfolio to cover the SDRAM and DDR SDRAM standards, Rambus's conduct significantly contributed to JEDEC's choice of Rambus's technologies for incorporation in the JEDEC DRAM standards and to JEDEC's failure to secure assurances regarding future royalty rates – which, in turn, significantly contributed to Rambus's acquisition of monopoly power.

Rambus claims that the superiority of its patented technologies was responsible for their inclusion in JEDEC's DRAM standards. These claims are not established by the record. Nor does the record support Rambus's argument that, even after two JEDEC standards were adopted and substantial switching costs had accrued, JEDEC and its participants were not locked into the standards. Rambus now claims that we can and should blind ourselves to the link between its conduct and JEDEC's adoption of the SDRAM and DDR SDRAM standards, as well as to the link between JEDEC's standard-setting process and Rambus's acquisition of monopoly power. These claims fail, both as a matter of fact and as a matter of law. To hold otherwise would be to allow Rambus to exercise monopoly power gained through exclusionary conduct. We cannot abide that result, given the substantial competitive harm that Rambus's course of deceptive conduct has inflicted.

VII. REMEDY

Complaint Counsel seek an order preventing Rambus from enforcing, against JEDEC-compliant products, (1) any patents that claim priority based on applications filed before Rambus withdrew from JEDEC and (2) any existing licensing

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agreements⁶⁴⁸. Rambus argues that the Commission lacks authority to impose such a remedy and that the royalty rates set by its existing licenses already satisfy all remedial concerns.⁶⁴⁹

Both parties' arguments regarding remedy have been scant and, for the most part, reflective of opposing extremes⁶⁵⁰. Now that the Commission has found, and determined the scope of, liability, the Commission believes it would exercise its broad remedial powers most responsibly after additional briefing and, if necessary, oral argument devoted specifically to remedial issues.

The accompanying order establishes a briefing schedule. The parties' written presentations directed by the accompanying order will be confined to remedy; re-argument of issues of liability will not be permitted in those presentations. The Commission is most interested in the parties' views regarding possibilities for establishing reasonable royalty rates for JEDEC-compliant products affected by Rambus's exclusionary conduct. The parties should address, without limitation: (1) means for the Commission to determine, based on the existing record, reasonable royalty rates for licensing all technologies applicable to JEDEC-compliant products and covered by relevant Rambus patents; (2)

⁶⁴⁸ CCAB at Attachment 2; CCRB at 95-100.

⁶⁴⁹ RB at 128-33.

⁶⁵⁰ *See generally* United States v. National Lead Co., 332 U.S. 319 (1947) (rejecting the imposition of compulsory, royalty-free licenses when they were not "necessary in order to enforce effectively the Anti-Trust Act," and finding that "licenses at uniform, reasonable royalties" would be sufficient to accomplish the discontinuance and prevention of the illegal restraints). For discussion of Rambus's existing royalty rates, *see supra* Section IV.C.4.

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alternative mechanisms and procedures for determining reasonable royalty rates, such as an independent arbitrator, a special master, or an ALJ; (3) qualitative characteristics descriptive of appropriate relief, against which specific royalty proposals might be evaluated; and (4) appropriate injunctive and other provisions that should be incorporated in the Final Order in this proceeding.

**CONCURRING OPINION OF
COMMISSIONER JON LEIBOWITZ****I. INTRODUCTION**

Rambus's deception of JEDEC and its members injured competition and consumers alike. The company exploited the DRAM standard-setting process for its own anticompetitive ends. JEDEC's members – including Rambus – understood that this information was to be gathered and shared to benefit the industry and its consumers as a whole, yet Rambus effectively transmogrified JEDEC's procompetitive efforts into a tool for monopolization. As detailed in the Commission's Opinion, such conduct meets all the requisite elements of a Section 2 violation.

It would be equally apt, though, to characterize Rambus's conduct as an "unfair method of competition" in violation of Section 5 of the FTC Act. Section 5 was intended from its inception to reach conduct that violates not only the antitrust laws¹ themselves, but also the policies that those laws were

¹ 15 U.S.C. § 12 (a) (2006). The antitrust laws include the Sherman Act and the Clayton Act (as modified by the Robinson-Patman Act). The FTC Act is not an antitrust law.

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intended to promote. At least three of these policies are at issue here. From the FTC's earliest days, deceitful conduct has fallen within Section 5's province for its effects on competition, as well as on consumers.² Innovation – clearly at issue in this case – is indisputably a matter of critical antitrust interest.³ In addition, joint standard-setting by rivals has long been an “object[] of antitrust scrutiny” for its anticompetitive uses, notwithstanding its great potential also to yield efficiencies.⁴ In this case, Rambus's

² *Cal. Dental Ass'n v. F.T.C.*, 526 U.S. 756, 772 n.9 (1999) (“That false or misleading advertising has an anticompetitive effect, as that term is customarily used, has been long established”). *Cf. F.T.C. v. Algoma Lumber Co.*, 291 U.S. 67, 79-80 (1934) (finding a false advertisement to be unfair competition); *F.T.C. v. Winsted Hosiery*, 258 U.S. 483 (1922) (per Brandeis, J.) (holding that false labeling that misled consumers constituted unfair competition against competitors). *See also F.T.C. v. Gratz*, 253 U.S. 421, 427 (1920) (holding that “unfair methods of competition” do not apply to practices that were “never heretofore regarded as opposed to good morals because characterized by deception, bad faith, fraud, or oppression, or as against public policy because of their dangerous tendency unduly to hinder competition or create monopoly”). Notably, the *Gratz* view of Section 5's scope was later abandoned as *too narrow*. *F.T.C. v. R.F. Keppel & Bros., Inc.*, 291 U.S. 304 (1934).

³ *See generally* FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (Oct. 2003), *available at* <http://www.ftc.gov/os/2003/10/innovationsrpt.pdf>.

⁴ *See, e.g., Allied Tube & Conduit Corp. v. Indian Head, Inc.*, 486 U.S. 492, 500-01 (1988) (holding that “private standard-setting associations have traditionally been objects of antitrust scrutiny” because of their potential use as a means for anticompetitive horizontal agreements, but that the associations’ “potential for procompetitive benefits” has influenced “most lower courts to apply rule-of-reason analysis to product standard-setting by private associations”). *See also* TIMOTHY J. MURIS, BUREAU OF CONSUMER PROT., FED. TRADE COMM'N, STAFF REPORT ON THE STANDARDS AND CERTIFICATION RULE 9 (1983) (“Standard setting can be misused to exclude competitors unreasonably, injuring consumers. The Commission can pursue anticompetitive restraints as unfair methods of competition, using a rule of reason approach, or as unfair acts or practices under the Commission's

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deceptive conduct distorted joint standard-setting decisions and innovation investments in ways that seriously injured the operations of the competitive market to the detriment of consumers; it thereby transgressed the policies and spirit of the antitrust laws in all three respects. While respondent's behavior before JEDEC might well have been challenged solely as a pure Section 5 violation, Complaint Counsel did not litigate this theory before the administrative law judge. Thus, I write separately to discuss and reemphasize the broad reach and unique role of Section 5.

I also address the scope of Section 5 because some commentators have misperceived the Commission's authority to challenge "unfair methods of competition," incorrectly viewing it as limited, with perhaps a few exceptions, to violations of the Sherman and Clayton Acts.⁵ Others are unclear just how far Section 5 can reach beyond the antitrust laws.⁶ Regardless of the reasons for these cramped or confused views, a review of Section 5's legislative history, statutory language, and Supreme Court interpretations reveals a Congressional purpose that is unambiguous and an Agency mandate that is broader than many realize.

unfairness protocol, in each case weighing the benefits and costs of the challenged activity.").

⁵ See, e.g., Richard A. Posner, *The Federal Trade Commission: A Retrospective*, 72 ANTITRUST L.J. 761, 765-66 (2005) ("It used to be thought that 'unfair methods of competition' swept further than the practices forbidden by the Sherman and Clayton Acts, and you find this point repeated occasionally even today . . .").

⁶ Antitrust Law Special Comm., Am. Bar Ass'n, REPORT ON THE ROLE OF THE FEDERAL TRADE COMMISSION, 58 ANTITRUST L.J. 53, 63-64 n.11 (1989) (observing that "[a]lthough it is well established that Section 5's ban on 'unfair methods of competition' permits the FTC to proscribe conduct not reached by prevailing interpretations of the Sherman and Clayton Acts, there is a debate about how far Section 5 reaches beyond those Acts.").

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The Commission, in my view, should place greater emphasis on developing the full range of its jurisdiction and making it more clear to the bar, the public, the business community, and potential antitrust malefactors what Section 5 embraces and what it does not. Although the Commission has not left fallow its Section 5 jurisdiction to challenge conduct outside the antitrust laws, neither has the Agency fully exercised or explained it. In discussing Section 5 in the context of Rambus, I hope to encourage the Commission (and its staff) to develop further and employ more fully this critical and unique aspect of our statutory mandate. If we do, benefit will accrue both to consumers and to competition.

II. THE MANDATE UNDERLYING SECTION 5

A *Legislative History*

Debates regarding the need for, and nature of, a “federal trade commission” roiled for more than a decade prior to its creation in 1914.⁷ These debates involved four of the most brilliant minds of the time – Roosevelt, Taft, Wilson, and Brandeis – and coalesced into a significant issue in the election of 1912.⁸ One of the flashpoint events that led Congress to act was the *Standard Oil* case, in which the Supreme Court in 1911 adopted “rule of reason” analysis for the Sherman Act’s prohibition on “restraints

⁷ The FTC’s predecessor, the Bureau of Corporations, was created in 1903.

⁸ Marc Winerman, *The Origins of the FTC: Concentration, Cooperation, Control, and Competition*, 71 ANTITRUST L.J. 1 (2003) (providing the most thorough examination of the FTC’s creation and the competing forces and philosophies that gave the agency its ultimate form and powers). See also Robert Lande, *Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged*, 34 HASTINGS L.J. 65 (1982); Neil Averitt, *The Meaning of ‘Unfair Methods of Competition’ in Section 5 of the Federal Trade Commission Act*, 21 B.C. L. REV. 229 (1980).

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of trade.”⁹ Many within and outside of Congress viewed the Supreme Court’s reasonableness test as judicial invention – what some more recently would term “legislat[ing] from the bench”¹⁰ – that threatened both to undermine Congress’s aim in passing the Sherman Act and to yield inconsistent applications from court to court.¹¹

Congress’s bipartisan reaction was to create an administrative agency with antitrust expertise, an enforcement mandate *more expansive than that of the antitrust laws*, and the structure and flexibility to identify, analyze, and challenge new forms of “unfair methods of competition” as they developed.¹² Legislators in the Congressional debates repeatedly expressed these goals. Senator Robinson, for example, indicated that “unfair methods of competition” encompassed practices that constituted “unjust, inequitable, or dishonest competition.”¹³ Senator Pomerene and Senator Thomas both stated that the proposed Act would authorize the Commission to determine whether certain forms of business conduct constituted unfair methods of competition, regardless of whether that conduct involved a restraint of trade.¹⁴

⁹ *Standard Oil Co. v. U.S.*, 221 U.S. 1 (1911).

¹⁰ *See, e.g.*, 140 CONG. REC. 10,109 (1994) (statement of Sen. Thurmond during Senate hearing on nomination of Justice Breyer).

¹¹ *See, e.g.*, 47 CONG. REC. 1,225 (1911) (statement of Sen. Newlands).

¹² Another, related Congressional response, also in 1914, was passage of the Clayton Act, 15 U.S.C. § 12, which, *inter alia*, contained specific provisions regarding discriminatory pricing, tying, stock acquisitions, and interlocking directorates.

¹³ 51 CONG. REC. 12,153 (1914) (statement of Sen. Robinson).

¹⁴ 51 CONG. REC. 12,161 (1914) (statement of Sen. Pomerene); 51 CONG. REC. 12,197 (1914) (statement of Sen. Thomas). In Senator Cummins’s view, the discretion and judgment of the Commission should not even be subject to judicial review. 51 CONG. REC. 12,151 (1914) (statement of Sen. Cummins).

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Senator Newlands, the Chairman of the Senate Commerce Committee, responded to concerns about this process by explaining that “[y]ou can not [sic] take a body of five men, intelligent men, composed as this body will be of lawyers, economists, publicists, men engaged in industry, who will not be able to determine justly whether the practice is contrary to good morals or not.”¹⁵

Section 5 was not enacted merely to mirror the antitrust laws. Senator Cummins, one of the bill’s main proponents, squarely addressed this issue on the Senate floor when he responded to the question, “why, if unfair competition is in restraint of trade, [are we] attempting to add statute to statute and give a further remedy for the violation of the [Sherman Act]?” Senator Cummins replied that the concept of “unfair competition” seeks:

to go further [than “restraints of trade”] and make some things offenses that are not now condemned by the antitrust law. That is the only purpose of Section 5 – to make some things punishable, to prevent some things, that can not [sic] be punished or prevented under the antitrust law.¹⁶

Echoing this point, he later described Section 5 as new substantive law that would involve the Commission in activities beyond the simple enforcement of antitrust law.¹⁷ Many other

¹⁵ 51 CONG. REC. 12,154 (1914) (statement of Sen. Newlands). Had he made his comment in more recent times, Senator Newlands doubtlessly would have phrased it to apply to a body of five men and women.

¹⁶ 51 CONG. REC. 12,454 (1914) (statement of Sen. Cummins). Senator Cummins, an “insurgent” Republican, was a member both of the Commerce Committee, which prepared the Commission bill, and the Judiciary Committee, which prepared the bill that became the Clayton Act. He authored the “Cummins Report,” which provided critical support for the Commission bill and helped influence its ultimate content.

¹⁷ 51 CONG. REC. 12,613 (1914) (statement of Sen. Cummins).

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legislators similarly expressed their intent and understanding that Section 5 would extend beyond the Sherman Act.¹⁸

While the Act's legislative history makes its "sweep and flexibility . . . crystal clear,"¹⁹ the plain language of the statute further bolsters this conclusion. If Congress had wanted Section 5's reach to be merely coterminous with that of the Sherman Act, it easily could have written the statute accordingly. There would have been no logic in doing so, of course, since the Sherman Act already existed.

In drafting Section 5, Congress did not mimic the Sherman Act or try to enumerate a list of unfair practices. Rather, the Senate Report explains, Congress left it to the Commission "to determine what practices were unfair" because "there were too many unfair practices to define, and after writing 20 of them into law it would be quite possible to invent others."²⁰ To ensure there would be no misunderstanding, Congress carefully crafted the

¹⁸ See, e.g., 51 CONG. REC. 14,333 (1914) (statement of Sen. Kenyon, remarking that the proposed federal trade commission "can take hold of matters that not in themselves are sufficient to amount to a monopoly or to amount to restrain [sic] of trade"); 51 CONG. REC. 14,329 (1914) (statement of Sen. Nelson, stating that the FTC Act "can be used in a lot of cases where there is no trust or monopoly"); 51 CONG. REC. 12,135 (1914) (statement of Sen. Newlands, observing that although "[a]ll agree that while the Sherman law is the foundation stone of our policy on [appropriate business conduct], additional legislation is necessary").

¹⁹ *F.T.C. v. Sperry & Hutchinson Co.*, 405 U.S. 233, 241 (1972). See also *F.T.C. v. Cement Inst.*, 333 U.S. 683, 693 (1948) ("All of the committee reports and the statements of those in charge of the Trade Commission Act reveal an abiding purpose to vest both the Commission and the courts with adequate powers to hit at every trade practice, then existing or thereafter contrived, which restrained competition or might lead to such restraint if not stopped in its incipient stages."); *Id.* at 693 n.6 (offering many citations to the Congressional Record).

²⁰ S. Rep. No. 63-597, at 13 (1914) (internal quote omitted).

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term “unfair methods of competition” to distinguish it from the narrower common-law concept of “unfair competition.”²¹ Thus, Congress made clear its intent, both to those who would later enforce Section 5 and those who would be subject to its strictures, that this provision was not confined to the collection of violations then-recognized in antitrust or common law, but rather conferred a broader and more adaptable authority on the Commission.²² Now, as more fully developed by the courts and Commission, Section 5 permits the FTC to challenge conduct outside the bounds of the antitrust law that (a) violates the policies that underlie the antitrust laws or (b) constitutes incipient violations of those laws.

B Supreme Court Interpretations

The FTC’s statutory mandate comes not just from the legislature of almost a century ago. For more than 70 years, an unbroken line of Supreme Court opinions has interpreted Section 5 as encompassing a broader array of behavior than the antitrust laws.²³

²¹ H.R. Rep. No. 63-1142, at 19 (1914) (Conf. Rep.) (“There is no limit to human inventiveness in this field. . . . If Congress were to adopt the method of definition, it would undertake an endless task.”); *Keppel*, 291 U.S. at 310-12, n.2 (stating that the Conference Committee substituted the phrase “unfair methods of competition” for “unfair competition” to ensure that the scope of the FTC Act would not be “restricted to those forms of unfair competition condemned by the common law.”).

²² *See Keppel*, 291 U.S. at 310 (“It would not have been a difficult feat of draftsmanship to have restricted the operation of the Trade Commission Act to those methods of competition in interstate commerce which are forbidden at common law or which are likely to grow into violations of the Sherman Act, if that had been the purpose of the legislation.”).

²³ *See Sperry & Hutchinson*, 405 U.S. at 244 (commenting that, after *Keppel*, “unfair competitive practices were not limited to those likely to have anticompetitive consequences after the manner of the antitrust laws; nor were unfair practices in commerce confined to purely competitive behavior.”). Prior to the 1934 *Keppel* case, Supreme Court opinions tended to articulate a

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Most recently, the Court in *Indiana Federation of Dentists* (“*IFD*”) observed that the standard for “unfairness” under the FTC Act is, “by necessity, an elusive one, encompassing not only practices that violate the Sherman Act and the other antitrust laws, but also practices that the Commission determines are against public policy for other reasons.”²⁴

The Court in *IFD* relied on *Sperry & Hutchinson*, the Court’s most recent, substantive analysis of Section 5’s history and breadth. In *Sperry*, the Court answered two critical questions:

First, does § 5 empower the Commission to define and proscribe an unfair competitive practice, even though the practice does not infringe either the letter or the spirit of the antitrust laws? Second, does § 5 empower the Commission to proscribe practices as unfair or deceptive in their effect upon consumers regardless of their nature or quality as competitive practices or their effect on competition? We think the statute, its legislative history, and prior cases compel an affirmative answer to both questions.²⁵

Drawing on its review of Section 5’s legislative history and other authority, the Court concluded that the Commission:

narrower view of Section 5’s range. *See, e.g., F.T.C. v. Raladam Co.*, 283 U.S. 643 (1931); *Gratz*, 253 U.S. 421. Notably, however, even *Gratz*, which was authored only six years after the FTC’s creation, emphasized Section 5’s use to redress conduct such as that at issue in the present case, namely, “deception, bad faith, fraud, or oppression, or [practices that are] against public policy because of their dangerous tendency unduly to hinder competition or create monopoly.” *Id.* at 427.

²⁴ *F.T.C. v. Ind. Fed’n of Dentists*, 476 U.S. 447, 454 (1986) (citations omitted).

²⁵ *Sperry & Hutchinson*, 405 U.S. at 239.

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does not arrogate excessive power to itself if, in measuring a practice against the elusive, but congressionally mandated standard of fairness, it, like a court of equity, *considers public values beyond simply those enshrined in the letter or encompassed in the spirit of the antitrust laws.*²⁶

Supreme Court opinions prior to *IFD* expressed similar views. In *F.T.C. v. Brown Shoe Company*, the Court stated:

[t]his broad power of the Commission is particularly *well established with regard to trade practices which conflict with the basic policies of the Sherman and Clayton Acts* even though such practices may not actually violate these laws. . . .²⁷

and further quoted *F.T.C. v. Motion Picture Advertising Service Company* for the proposition:

[i]t is . . . clear that the Federal Trade Commission Act was designed to supplement and bolster the Sherman Act and the Clayton Act . . . *to stop in their incipiency acts and practices which, when full blown, would violate those Acts* . . . as well as to condemn as “unfair methods of competition” existing violations of them.²⁸

²⁶ *Id.* at 244 (emphasis added).

²⁷ *F.T.C. v. Brown Shoe Co.*, 384 U.S. 316, 321 (1966) (emphasis added).

²⁸ *Id.* at 322 (quoting *F.T.C. v. Motion Picture Adv. Serv. Co.*, 344 U.S. 392, 394-95 (1953) (emphasis added)). See also *F.T.C. v. Texaco*, 393 U.S. 223, 225-26 (1968).

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I know of no Supreme Court case in the past 70 years that disagrees with these goals, contracts this scope, or disputes the flexibility and elasticity inherent in Section 5.²⁹

C Important Appellate Cases

In the early 1980s, courts of appeals rebuffed FTC efforts to apply Section 5 in three frequently-cited cases: *Official Airline Guides*, *Boise Cascade*, and *Ethyl*.³⁰ Each of these cases was decided before *IFD*, with its reliance on *Sperry & Hutchinson's* reiteration of Section 5's breadth. These appellate opinions support the propositions that Section 5 does not condemn pure conscious parallelism (*i.e.*, unaccompanied by any "plus factors") or conduct justified by an independent, legitimate business purpose. The decision in each, however, turns primarily on an evidentiary failure to demonstrate that the challenged conduct

²⁹ See, e.g., *Atl. Ref. Co. v. F.T.C.*, 381 U.S. 357, 369 (1965) ("As our cases hold, all that is necessary in § 5 proceedings to find a violation is to discover conduct that 'runs counter to the public policy declared in the' Act."); *Cement Inst.*, 333 at 694 ("[A]lthough all conduct violative of the Sherman Act may likewise come within the unfair trade practice prohibitions of the Trade Commission Act, the converse is not necessarily true. It has long been recognized that there are many unfair methods of competition that do not assume the proportions of Sherman Act violations."); *Fashion Originators' Guild of Am. v. F.T.C.*, 312 U.S. 457, 466 (1941) ("Nor is it determinative in considering the policy of the Sherman Act that petitioners may not yet have achieved a complete monopoly. For 'it is sufficient if it really tends to that end and to deprive the public of the advantages which flow from free competition.' . . . [I]t was the object of the Federal Trade Commission Act to reach not merely in their fruition but also in their incipiency combinations which could lead to these and other trade restraints and practices deemed undesirable."); *Keppel*, 291 U.S. at 312 n.2 (concluding from a detailed review of the legislative history that Congress wanted "unfair methods of competition" to confer a broad, flexible mandate that would exceed the "forms of unfair competition condemned by the common law").

³⁰ *Official Airline Guides, Inc. v. F.T.C.*, 630 F.2d 920 (2d Cir. 1980); *Boise Cascade Corp. v. F.T.C.*, 637 F.2d 573 (9th Cir. 1980); and *E.I. du Pont de Nemours & Co. v. F.T.C.*, 729 F.2d 128 (2d Cir. 1984) [hereinafter *Ethyl*].

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constituted an effort to acquire market power, tacitly collude, or manipulate price for anticompetitive purposes. *None* of these cases significantly constrains the FTC's authority to apply Section 5 to violations of the policies that underlie the antitrust statutes or that cause actual or incipient antitrust injury.

In *Official Airline Guides* ("OAG"), the FTC challenged the refusal by a monopolist/publisher of airline schedules to include in its compendium schedules of commuter airlines. This refusal to deal was discriminatory, unjustified, and injurious to commuter airlines in their competition with certificated airlines. The monopolist, however, did not act coercively, did not compete in the commuter airlines' market, where the antitrust injury occurred, and did not seek or have any prospect of gaining power in that market. Although the court acknowledged that FTC determinations as to what practices constitute an "unfair method of competition" deserve great weight,³¹ it declined to uphold the Commission's order. Rather, it opted to characterize the respondent's action as a unilateral refusal to deal protected by *United States v. Colgate & Company*.³² In explaining its decision, the court expressed concern that declaring such conduct unlawful would give the Commission too much latitude to substitute its own judgment for a respondent's independent business decisions that were taken without any anticompetitive purpose or prospect. In essence, although the challenged conduct was discriminatory and harmful, it did not violate the policies underlying the antitrust laws. The opinion does not discuss Section 5's jurisdictional breadth, and the facts of the case are so unusual that the case has little import for that legal issue.³³

³¹ *Official Airline Guides*, 630 F.3d at 927 (citing *Cement Inst.*, 333 U.S. at 692-93, and *Atl. Ref.*, 381 U.S. at 367-68).

³² *U.S. v. Colgate & Co.*, 250 U.S. 300 (1919).

³³ In *In re General Motors*, 99 F.T.C. 464, 580 n.45 (1982), the Commission declared its position that the Second Circuit's decision was incorrect and that "unless it is repudiated by the Supreme Court we hold to our

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Boise Cascade involved the use of an industry-wide delivered pricing system. Industry members effected this system by including an artificial freight factor in the price charged to customers. The Commission contended that this practice tended to stabilize prices and therefore violated the Sherman and FTC Acts. The Ninth Circuit disagreed, however, concluding that the use of delivered pricing in this instance was a natural and independent, albeit consciously parallel, response to customer preferences. The court found no need to opine whether consciously parallel conduct, without more, could ever violate Section 5; it declined, however, to hold such behavior illegal *per se* where, as here, persuasive evidence of an anticompetitive effect was lacking. Although the court acknowledged “the unique features of the FTCA,”³⁴ it held that delivered pricing warranted the same legal assessment under both the FTC and Sherman Acts, since the relevant case law had been well-developed in both court and Commission litigation, as well as through prior Commission statements and practices on the issue. The court concluded that this history had resulted in a requirement that “the Commission must find either collusion or actual effect on competition to make out a § 5 violation for use of delivered pricing.”³⁵ The court was

interpretation of the case law on arbitrary refusals to deal by monopolists. . . .” Nonetheless, a 2003 Commission letter observed that “the Commission has not issued a decision [since *OAG*] holding that a monopolist violated the FTC Act by using unfair methods of competition that affected customers in an adjacent market in which the monopolist did not operate.” Letter from Fed. Trade Comm’n, to the U.S. Dep’t of Transp. (Jun. 6, 2003) (on file with FTC Office of General Counsel).

³⁴ *Boise Cascade*, 637 F.2d at 581.

³⁵ *Id.* at 582. Much of this history is based on a series of delivered and base-point pricing cases that reached their doctrinal limits in *Cement Institute*, 333 U.S. at 721 n.19 (holding that “[w]hile we hold that the Commission’s findings of combination were supported by evidence, that does not mean that the existence of a ‘combination’ is an indispensable ingredient of an ‘unfair method of competition’ under the Trade Commission Act.”). See also *Triangle Conduit & Cable Co. v. F.T.C.*, 168 F.2d 175 (7th Cir. 1948). Shortly thereafter, the Commission declared that the use of base point pricing could

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clear, however, to confine this requirement to situations involving delivered pricing; consequently, it does not materially affect the well-recognized scope of Section 5.

In *Ethyl* – perhaps the most misunderstood and frequently mis-cited case regarding the scope of Section 5 – the Commission challenged four producers of gasoline anti-knock compounds for their use of delivered pricing, most-favored nation clauses, 30-day advance notice to customers of price changes, and announcement of price increases in the press. The producers did not act collusively in adopting and employing these practices; rather, they followed industry tradition and responded to customer demand. The FTC concluded that the practices nonetheless violated Section 5 because they constituted interdependent conduct that substantially reduced competition in the market. The appellate court disagreed, however, because it did not find substantial evidence that the challenged practices led to an adverse competitive impact.³⁶ Thus, this case, like *Boise Cascade*, was not

violate Section 5, even when not adopted or implemented as part of a combination or conspiracy. INTERIM REPORT ON STUDY OF FEDERAL TRADE COMMISSION PRICING POLICIES, S. Doc. No. 27, 81st Cong., 1st Sess. 41 (1949) [hereinafter “Interim Report”]. In Congress, however, legislation was introduced to reverse this position, and FTC Commissioners were subjected to “demanding” questioning in Senate Committee hearings. The legislation was abandoned only “after a majority of the commissioners recanted and testified that Section 5 prohibits only conspiracies to adopt base point pricing.” Mary Azcuenaga, FTC Comm’r, *Shimmers in the Penumbra of Section 5 and Other News*, Address Before the 13th Annual Antitrust and Trade Regulation Seminar XX (Jul. 9, 1992) at 9-11 (on file with FTC Office of General Counsel); S. Doc. No. 27 at 59-63.

³⁶ *Ethyl*, 729 F.2d at 140-41. The court noted that the FTC’s majority opinion observed that non-collusive facilitating practices violate Section 5 only where the evidence demonstrates that they substantially lessen competition and reveal a “clear nexus” between the practices and the competitive harm. The court found such evidence lacking in this case. *Id.*

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decided on grounds of statutory interpretation but evidentiary sufficiency.³⁷

Despite the outcome, the court engaged in a significant analysis of Section 5 and reconfirmed that it extends to conduct that does not fall within the antitrust laws. In particular, the court noted that “Congress’ aim was to protect society against oppressive anticompetitive conduct and thus assure that the conduct prohibited by the Sherman and Clayton Acts would be supplemented as necessary and any interstices filled.”³⁸ Subsequently the court elaborated that:

[a]lthough the Commission may under § 5 enforce the antitrust laws, including the Sherman and Clayton Acts, it is not confined to their letter. It may bar incipient violations of those statutes, and conduct which, although not a violation of the letter of the antitrust laws, is close to a violation or is contrary to their spirit. In prosecuting violations of the spirit of the antitrust laws, the Commission has, with one or two exceptions, confined itself to attacking collusive, predatory, restrictive or deceitful conduct that substantially lessens competition.³⁹

³⁷ For a detailed discussion of the Commission analysis in *Ethyl* regarding facilitating practices, see Donald S. Clark, *Price-Fixing Without Collusion: An Antitrust Analysis of Facilitating Practices After Ethyl Corp.*, 1983 WISC. L. REV. 887 (1983).

³⁸ *Ethyl*, 729 F.2d at 136 (quoting Report of the Conference Committee, H.R.Rep. No. 1142, 63d Cong., 2d Sess. 19 (1914)).

³⁹ *Id.* at 136-37 (citations and footnote omitted). See also *F.T.C. v. Abbott Lab.*, 853 F. Supp. 526 (D.D.C. 1994) (relying on *Ethyl* and *Sperry & Hutchinson*).

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Section 5's intentionally unparticularized phrase, "unfair methods of competition" is not, therefore, an all-encompassing, unfocused warrant as some would claim. Rather, it is a flexible and powerful Congressional mandate to protect competition from unreasonable restraints, whether long-since recognized or newly discovered, that violate the antitrust laws, constitute incipient violations of those laws, or contravene those laws' fundamental policies.⁴⁰

III. LIMITING ATTRIBUTES OF SECTION 5

Congress had good reasons for leaving Section 5's metes and bounds unspecified. Any effort in the name of "guidance" to provide a detailed plat defining its coverage would undermine Congress's clear intent to create a statute with sufficient scope,

⁴⁰ This same period, 1980-1984, also yielded significant FTC efforts to rein in the use of Section 5. The most important of these is *In re General Foods Co.*, 103 F.T.C. 204, 364-66 (1984). In this case the Commission rejected application of Section 5 to an alleged attempt to monopolize where the evidence did not reveal a dangerous probability of success, an element that had long been required under Section 2 of the Sherman Act. In the Commission's view, the concept of an incipient attempt to monopolize was simply beyond parsing. Moreover:

[w]hile Section 5 may empower the Commission to pursue those activities which offend the "basic policies" of the antitrust laws, we do not believe that power should be used to reshape those policies when they have been clearly expressed and circumscribed.

Id. at 352. The Commission expressly limited its holding in this regard to the dangerous probability issue and declined to comment whether Section 5 required the same measure of intent as did Section 2 of the Sherman Act. Other significant Commission actions from this period that bear on Section 5 jurisdiction regarding competition policy enforcement include: *In re Kellogg Co.*, 99 F.T.C. 8 (1982) (summarily dismissing the appeal of an initial decision rejecting allegations that non-collusive efforts to maintain shared monopoly control of the ready-to-eat cereal market violated Section 5); and *In re Exxon Co.*, 98 F.T.C. 453 (1981) (terminating an investigation into shared monopoly in the petroleum industry).

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elasticity, and adaptability to accomplish its purpose. Thus, the influential treatise, Antitrust Law, observes, that:

[i]t is now commonly said that Federal Trade Commission § 5 is not confined by the prohibitions of the Sherman Act or the Clayton Act. Indeed, § 5 is not confined by antitrust concepts at all. It allows the Commission to condemn conduct that is “unfair” in senses “beyond simply those enshrined in the letter or encompassed in the spirit of the antitrust laws.” Or as the Supreme Court more recently put it, the “standard of ‘unfairness’ under the FTC Act is, by necessity, an elusive one, encompassing not only practices that violate the Sherman Act and the other antitrust laws but also practices that the Commission determines are against public policy for other reasons.”

We have no general quarrel with these holdings; our own concern is limited to § 5 holdings that follow “the letter or ... spirit” of the antitrust laws.⁴¹

My concerns here are also confined to matters implicating “the letter or spirit” of the antitrust laws. Section 5’s “standard of unfairness” in this regard may yet strike some as “elusive,” but it is far from unknowable or unbounded. Congress’s mandate is that Section 5 should supplement and bolster the antitrust laws by challenging conduct that not only violates the antitrust laws but that also falls within the “penumbra”⁴² of those statutes. Two

⁴¹ PHILLIP AREEDA, HERBERT HOVENKAMP & ROGER BLAIR, II *ANTITRUST LAW* ¶ 302h, p.21 (2d ed.) (Aspen Law and Business, 2000) (footnotes omitted).

⁴² *Sperry & Hutchinson*, 405 U.S. at 244 n.5 (quoting *Unfair or Deceptive Advertising and Labeling of Cigarettes in Relation to the Health Hazards of Smoking*, 29 Fed. Reg. 8324, 8355 (Jul. 2, 1964) (codified at 15

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critical attributes of Section 5 – the limited consequences of a Section 5 violation, and the inherent relationship between Section 5's reach and the scope of the antitrust laws – help ensure that respondents find enforcement efforts under this mandate to be neither punitive nor overreaching.

A. The Consequences of a Section 5 Violation Are More Limited than Those Resulting from a Violation of the Antitrust Laws

Section 5 violations involving conduct outside the antitrust statutes entail far more limited consequences than do violations of the Sherman or Clayton Acts. The FTC nearly always brings such cases as administrative litigation, and violations generally result only in cease-and-desist orders designed to prevent future violations and, on occasion, injunctive measures to help preserve or restore conditions for vigorous competition in the market.⁴³ In addition, although the Commission may seek disgorgement or restitution in competition matters, it must do so from a court. Moreover, the Agency's policy is to request equitable monetary relief in such matters only where the violation is relatively clear.⁴⁴

C.F.R. pt. 408)). *See also* *Chuck's Feed & Seed Co., Inc. v. Ralston Purina Co.*, 810 F.2d 1289, 1292-93 (4th Cir. 1987); Mary Azcuenaga, FTC Comm'r, *FTC Enforcement: An Idiosyncratic Journey*, Address Before the 15th Annual Antitrust and Trade Regulation Seminar 5 (Jul. 7, 1994) (on file with FTC Office of General Counsel); Mary Azcuenaga, *Shimmers in the Penumbra of Section 5 and Other News*, *supra* note 35; William E. Kovacic, *The Federal Trade Commission and Congressional Oversight of Antitrust Enforcement*, 17 TULSA L.J. 587, 625-627 (1982).

⁴³ *But see e.g., In re Xerox*, 86 F.T.C. 364 (1975) (consent order compelling limited royalty free licensing of patents for dry paper copier technology).

⁴⁴ FED. TRADE COMM'N, POLICY STATEMENT ON MONETARY EQUITABLE REMEDIES IN COMPETITION CASES (2003), available at <http://www.ftc.gov/ow/2003/07/disgorgementfrn.htm>. *See also* *F.T.C. v. Mylan Lab., Inc.*, 62 F. Supp. 2d 25, 36-37 (D.D.C. 1999) (mem.), *aff'd in pertinent part*, 99 F. Supp. 2d 1, 4-5 (D.D.C. 1999).

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The FTC Act contains no provisions for private enforcement. A Commission action brought under Section 5 has little value in subsequent “follow-on” treble-damage litigation,⁴⁵ and proof of Section 5 violations, standing alone, provide no basis for seeking criminal penalties under the Sherman Act or comparable state provisions.

Because of these relatively mild consequences, Section 5 can fairly extend more broadly than the antitrust laws. This characteristic makes Section 5 especially well designed to apply in circumstances where exposing the respondent to treble damage jeopardy might be unfair or inappropriate, even though the conduct itself may warrant prohibition. Such circumstances might arise in situations involving unseasoned legal or economic theories, innovative business strategies, new or complex markets, or a substantially altered regulatory context.

The FTC Act also provides a right of review in the courts of appeals. Respondents are protected from both unfairness and surprise, especially because the review becomes increasingly searching as the violation becomes more novel. As the Second Circuit declared:

As the Commission moves away from attacking conduct that is either a violation of the antitrust laws or collusive, coercive, predatory, restrictive or deceitful, and seeks to break new ground by enjoining otherwise legitimate practices, the closer must be our scrutiny upon judicial review.⁴⁶

⁴⁵ See 15 U.S.C. § 16(a) (1984). “[I]n any action or proceeding brought under the antitrust laws, collateral estoppel effect shall not be given to any finding made by the Federal Trade Commission under the antitrust laws or under section 45 [i.e., Section 5].” See also *Pool Water Prods. v. Olin Corp.*, 258 F.3d 1024, 1030 (9th Cir. 2001).

⁴⁶ *Ethyl*, 729 F.2d at 137.

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Although courts sometimes have overturned Commission determinations or remedies – typically on grounds that the evidence does not establish the offense or the order is broader than necessary – appellate courts have almost always reaffirmed the breadth of the FTC’s Section 5 jurisdiction.⁴⁷

Finally, the Agency does not enforce Section 5 in a vacuum. Congress also plays an active role, especially in oversight regarding the Commission’s authority and statutory interpretations. FTC officials frequently appear before Congressional committees or meet with Congressional staff to describe or defend its policies or practices. Put differently, there are no secrets as to what the Commission is doing or what Congress wants us to do; insufficient, excessive, or misdirected zeal commonly invites scrutiny and correction.⁴⁸

For example, Congressional reaction to the *Cement Institute* and *Triangle Conduit* decisions, as well as to the Commission’s declaration that base point pricing could violate Section 5 even when not part of a conspiracy, induced a majority of the commissioners to reverse their position on this issue.⁴⁹ It was also Congressional uncertainty regarding the scope of the Commission’s Section 5 authority to challenge “unfair acts or practices” that led the Commission to issue a “consumer unfairness statement” in 1980.⁵⁰ Then, in 1994, Congress went

⁴⁷ See, e.g., *id.* at 136-137.

⁴⁸ See Kovacic, 17 TULSA L.J. 587 (1982).

⁴⁹ See *Boise Cascade*, 637 F.2d at 582; see also *Cement Inst.*, 333 U.S. at 721 n.19; Kovacic, 17 TULSA L.J. at 625-27. See generally *Triangle Conduit*, 168 F.2d at 176; Interim Report, S. Doc. No. 27; Azcuenaga, *Shimmers in the Penumbra of Section 5 and Other News*, *supra* note 35, at 9-11.

⁵⁰ Commission Statement of Policy on the Scope of the Consumer Unfairness Jurisdiction, *included in* Letter from Chairman Pertschuk and

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further and codified this statement, in substance, as Section 5(n) of the FTC Act.⁵¹

Agency officials have regularly incorporated the lessons of appellate and Congressional review into FTC practice, as they should. The Commission has long since put to rest the issues at the center of its most controversial Section 5 matters. It has not, for example, held unlawful the unilateral adoption or use of delivered or base point pricing since the Second Circuit issued its opinion in *Ethyl* 22 years ago. Nor, since that time, has the FTC condemned consciously parallel pricing in the absence of evidence of “oppressiveness” or some “plus factor” suggesting overt or tacit collusion. The Commission also terminated its two controversial shared monopoly matters.⁵² This history gives me confidence that the FTC will be equally responsive in the future, even if we employ Section 5 more expansively, as we should.

B. Section 5’s Scope Is Hinged to That of the Antitrust Laws

As noted previously, when using Section 5 to enforce competition policy, the Commission and courts have largely

Commissioners Dixon, Clanton, Pitofsky and Bailey to the Honorable Wendell H. Ford and the Honorable John C. Danforth (Dec. 1, 1980) (available as appendix to *Int’l Harvester Co.*, 104 F.T.C. 949, 1071 (1984)). This statement was based, in significant part, on Unfair or Deceptive Advertising and Labeling of Cigarettes in Relation to the Health Hazards of Smoking, 29 Fed. Reg. 8324, 8355 (Jul. 2, 1964) (codified at 15 C.F.R. pt. 408), as quoted in *Sperry & Hutchinson*, 405 U.S. at 244 n.5. The Commission issued a companion policy statement regarding “deception” in 1983. Policy Statement on Deception, contained in Commission letter on deception to the Honorable John D. Dingell, Chairman, Subcommittee on Oversight and Investigations, Committee on Energy & Commerce, Oct. 14, 1983, appended to *In re Cliffdale Assoc.’s.*, 103 F.T.C. 110, 174 (1984).

⁵¹ 15 U.S.C. § 45(n) (2006).

⁵² *In re Kellogg Co.*, 99 F.T.C. at 269 (summarily dismissing further appeal); *In re Exxon Co.*, 98 F.T.C. at 461 (dismissing the complaint without prejudice).

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confined Section 5's reach beyond the antitrust laws to incipient violations of those laws, and violations of those laws' underlying purposes. Because each of these categories finds its touchstone in the antitrust laws themselves, the application of Section 5 is necessarily hinged to the goals, interpretations, and analysis of conduct pursuant to those laws. These sources influence both the content and constraints for "unfair methods of competition," just as they provide both sense and substance for the Sherman Act's equally non-specific phrase, "restraint of trade."

The economic principles and analysis that guide application of the antitrust laws also guides competition policy enforcement under Section 5, notwithstanding the statutory differences. As the antitrust laws expand, shift, or contract, so too does Section 5 adjust and adapt. For example, antitrust analysis has lessened its concern with firm size and market concentration in recent decades and focused more on consumer welfare, innovation, and efficiency. Section 5 jurisprudence has traveled the same path, sometimes leading and sometimes learning. In my view, despite the important differences in breadth and effects, competition policy enforcement under Section 5 appears on balance to be as wise and well-reasoned – no more and no less – as under the antitrust laws.

Section 5's connection with the antitrust laws has led the Agency to rely on antitrust jurisprudence – the cases, principles, and associated economic analysis – as its most significant source of guidance. The Supreme Court articulated the nature of this reliance more than 40 years ago in *Atlantic Refining Company*, when it observed that:

[i]t has long been recognized that there are many unfair methods of competition that do not assume the proportions of antitrust violations. *Federal Trade Comm'n v. Motion Picture Advertising Service Co.*, 344 U.S. 392, 394 (1953). When conduct does bear the [central competitive]

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characteristics of recognized antitrust violations it becomes suspect, and the Commission may properly look to cases applying those laws for guidance.⁵³

Or, as the Fourth Circuit expressed more recently:

In the area of anticompetitive practices, the FTC Act functions as a kind of penumbra around the federal antitrust statutes. An anticompetitive practice need not violate the Sherman Act or the Clayton Act in order to violate the FTC Act. However, the scope of the FTC is nonetheless linked to the antitrust laws. . . . The federal [sic] Trade Commission itself looks to antitrust principles in deciding whether § 5 of the FTC Act has been violated.⁵⁴

Section 5 does not replicate the antitrust laws; the relationship between the provisions is better described as complementary rather than as congruent. In many instances, Section's 5's unique coupling of broad scope with modest consequences may prove to be the most apt enforcement tool. The critical connection between Section 5 and antitrust law and analysis, however, helps ensure that Section 5 remains in harmony with the laws it was designed to bolster and support.

IV. THE ELEMENTS OF A SECTION 5 VIOLATION

If we are to use Section 5 to enforce competition policy in a manner consistent with the intent of its framers, I suggest that there should be two requisite elements for a violation. The first is

⁵³ *Atl. Ref.*, 381 U.S. at 369-70.

⁵⁴ *Chuck's Feed*, 810 F.2d at 1292-93 (citations omitted).

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that the respondent must have engaged in identifiable, culpable conduct. The second is evidence of actual or incipient injury to competition.

Conduct. The conduct aspect of this test ensures that the respondent recognizes – or should have recognized – in advance that its conduct was inappropriate. This requirement is met where the respondent engages in actions that are “collusive, coercive, predatory, restrictive, or deceitful,”⁵⁵ or otherwise oppressive, and does so without a justification grounded in its legitimate, independent self-interest.⁵⁶ Unlike Section 2 of the Sherman Act, which requires proof of specific intent to prove the offense of attempted monopolization,⁵⁷ stand-alone applications of Section 5 do not require that element to establish an unfair method of competition. Nonetheless, firms are almost always aware of, and intend, the anticompetitive implications of the types of conduct that would be sufficient for a Section 5 violation. Significantly, although “unfair methods of competition” is not limited to the categories of conduct noted above, Rambus’s conduct in this matter could easily have been characterized as falling within several of them.⁵⁸

⁵⁵ *Ethyl*, 729 F.2d at 137.

⁵⁶ *See generally Boise Cascade*, 637 F.2d at 573 (finding independent, legitimate reasons for *Boise Cascade’s* use of a delivered pricing system).

⁵⁷ In contrast, Section 2 does not require a showing of specific intent to prove unlawful monopolization; for this offense, proof of general intent to engage in the challenged anticompetitive conduct will suffice. *U.S. v. Grinnell Corp.*, 384 U.S. 563, 570-71 (1966); *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.3d 263 274 (2d Cir. 1979).

⁵⁸ Significant information regarding the Commission’s prosecutorial policies is available not only through the Commission’s cases, but also its consent agreements and the testimony, speeches, and public communications of FTC officials.

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Injury. Section 5 does not require proof of an actual injury to competition. Rather, established precedent holds that:

a showing of an actual anticompetitive effect is unnecessary to prove a violation of Section 5 because that section was designed to stop [in] their incipency acts and practices that could lead to violations of the Sherman or Clayton Acts.⁵⁹

For conduct within the penumbra of the antitrust laws, it is sufficient if the competitive injury is only suspected or embryonic. While conduct violating Section 5 must bear a realistic potential for causing competitive harm, more manifest injury should not be required.

Other Section 5 standards. Other formulations of Section 5's requirements are worded differently, yet they are strikingly similar in substance. For example, the Second Circuit stated in *Ethyl* that:

[i]n our view, before business conduct in an oligopolistic industry may be labeled "unfair" within the meaning of § 5 a minimum standard demands that, absent a tacit agreement, at least some indicia of oppressiveness must exist such as (1) evidence of anticompetitive intent or purpose on the part of the producer charged, or (2) the absence of an independent legitimate business reason for its conduct. If, for instance, a seller's conduct, even absent identical behavior on the part

⁵⁹ *In re Coca Cola Co.*, 117 F.T.C. 795, 970 n.25 (1994) (citing *Sperry & Hutchinson*, 405 U.S. at 244, and *In re Dean Foods Co.*, 70 F.T.C. 1146, 1289-90). The FTC also expressly "disagree[d] with respondent's legal premise" that it must demonstrate "an anticompetitive purpose or effect to find a violation of Section 5 where there is no violation of the Clayton or Sherman Acts." *Id.* at 915.

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of its competitors, is contrary to its independent self-interest, that circumstance would indicate that the business practice is “unfair” within the meaning of § 5. In short, in the absence of proof of a violation of the antitrust laws or evidence of collusive, coercive, predatory, or exclusionary conduct, business practices are not “unfair” in violation of § 5 unless those practices either have an anticompetitive purpose or cannot be supported by an independent legitimate reason.⁶⁰

In essence, the Second Circuit held that a Section 5 cause of action may be predicated on: (a) evidence of tacit agreement, or collusive, coercive, predatory, or exclusionary conduct;⁶¹ or (b) evidence of an anticompetitive intent or purpose; or (c) lack of an independent, legitimate reason for the conduct. Any of these characteristics will suffice as a predicate. Although *Ethyl* does not expressly require actual or incipient injury to competition, each of the three indicia mentioned above raises the prospect that the challenged conduct will harm competition.

⁶⁰ *Ethyl*, 729 F.2d at 139-40. See also *Abbott Lab.*, 853 F. Supp. at 536 (quoting, with apparent approval, the footnoted passage from *Ethyl*). The holding in *Boise Cascade*, 637 F.2d at 577, is not inconsistent with the quoted view. *Boise Cascade*'s holding that the FTC must demonstrate that the parallel pricing system helped to fix or rigidify market prices if proof of overt collusion is lacking merely reflects the court's view that a Section 5 challenge to non-collusive parallel pricing requires evidence suggesting that the conduct injured competition.

⁶¹ “Restrictive” and “deceitful” conduct probably also belong in this listing as well, since the court included them when noting the categories of conduct (“collusive, predatory, restrictive, and deceitful”) to which the Commission has usually confined its Section 5 efforts, and the types of conduct (“collusive, coercive, predatory, restrictive, or deceitful”) beyond which, efforts to apply Section 5 tend to be more novel and therefore to warrant more searching scrutiny on appellate review. *Ethyl*, 729 F.2d at 136-137.

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Elaborating in a footnote, the court observed that “[t]he requirement [of oppressiveness] is comparable to the principle that there must be a ‘plus factor’ before conscious parallelism may be found to be conspiratorial in violation of the Sherman Act.”⁶² As examples, the court suggested that this “plus factor” requirement could be satisfied by conduct that “is contrary to the defendants’ independent self-interest,” that reflects a “strong motive on a defendant[‘s] part to enter an alleged conspiracy,” or that may result in the “artificial standardization of products.”⁶³

The appellate court in *Ethyl* was discussing conduct in oligopolistic markets. Nonetheless, factors such as the ones mentioned – the list is not exhaustive – can help flag “unfairness” in other situations as well. Conduct contrary to a firm’s legitimate, independent self-interest has frequently been a hallmark of predatory or exclusionary conduct by a dominant firm.⁶⁴ The presence of “oppressiveness” or an “anticompetitive intent or purpose,” may help distinguish anticompetitive from vigorously competitive conduct.⁶⁵ Conduct that leads to the artificial standardization of products – often due to misuse of the

⁶² *Id.* at 140 n.10.

⁶³ *Id.* (citations omitted).

⁶⁴ *Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993) (observing that predatory pricing is unlikely, because it is contrary to a firm’s *independent* self interest except when it has the ability to recoup its investment in the strategy); James Hurwitz & William E. Kovacic, *Judicial Standards of Predation: The Emerging Trends*, 35 VAND. L.REV. 63 (1982) (examining theories of predatory pricing and circumstances when pricing below various measures of cost will be contrary to a firm’s legitimate self-interest and thus warrant legal condemnation).

⁶⁵ In *Official Airlines Guide*, the court was swayed by the appellant’s apparent lack of an anticompetitive motive or purpose for its refusal to deal, since OAG did not compete in the market where its conduct had its anticompetitive impact.

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standard-setting process – may serve to deter entry, exploit rivals, secure market power, or preserve dominance.⁶⁶

The Areeda treatise offers a comparable formulation. It recommends that:

[t]he Commission should feel free to “enjoin” any unjustified behavior that tends to impair competition and is capable of being differentiated adequately from permissible behavior.⁶⁷

I agree.

In sum, where there is no identifiable, culpable conduct, there is no violation. “Culpable” in this respect does not require specific intent or actual antitrust injury. It must, however, display sufficient anticompetitive attributes – *e.g.*, oppressiveness, lack of

⁶⁶ See, *e.g.*, *Allied Tube*, 486 U.S. at 500-01. In the present case, Rambus’s deceptive conduct *artificially* misdirected JEDEC’s standard to one that fell within the respondent’s secretly expanded patent claims, contrary to the organization’s clear goals to avoid standards that would subject members to substantial royalty payments. The FTC has also challenged misdirection of standard-setting efforts in *In re Union Oil Co. of Cal.*, 2005 WL 2003365 (2005) (consent resolving both Unocal’s proposed merger with Chevron and a separate administrative case alleging that Unocal misrepresented to the California Air Resources Board that Unocal’s research regarding low-emissions gasoline was non-proprietary) and *In re Dell Computer Corp.*, 121 F.T.C. 616 (1996) (consent regarding FTC’s allegation that Dell Computer failed to disclose its patent rights to the Video Electronics Standards Association despite the group’s “affirmative disclosure requirements.”).

⁶⁷ AREEDA, HOVENKAMP, & BLAIR, *supra* note 41, at ¶ 302h3. The treatise offers this statement in criticizing the concepts of “incipient violations” and “policy violations” of the antitrust laws, as they are presented in *Brown Shoe*, 384 U.S. 316, which expressly does not require proof of anticompetitive effects. Although I find these categories useful and well supported in Section 5’s history, I agree that the use of Section 5 to enforce competition policy should require at least the tendency to impair competition.

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an independent business justification, anticompetitive intent, predation, collusion, deceit, a tendency to impair competition – to warrant characterizing it as unfair, and be at least potentially injurious. Where such qualities are present, it is neither inappropriate nor unwise to find Section 5 liability.⁶⁸

V. RAMBUS'S CONDUCT

Such anticompetitive attributes are clearly present here and, sadly, in abundance. Indeed, Rambus's attempts to deceptively subvert JEDEC's laudable standard-setting efforts is precisely the type of behavior that Congress envisioned would fall within Section 5's mandate.

In considering the application of a "stand-alone" Section 5 cause of action to this behavior, it is not necessary to restate the Commission's findings regarding Rambus's deception since these have been detailed elsewhere in the Commission Opinion. Nonetheless, a brief review of some of the most salient facts demonstrates that finding liability under a "stand-alone" Section 5 cause of action would have been fully appropriate in this matter.

Rambus's conduct occurred in the context of a standard-setting effort involving rivals. In most situations involving direct competitors, one might expect, and even encourage, bare-knuckled competition, including strategies based on secrecy,

⁶⁸ The Commission, on occasion, has used Section 5 in recent years to address conduct beyond the scope of the antitrust laws, usually in the context of invitations to collude. *See e.g., In re Valassis Communications, Inc.* (FTC File No. 051 008) (Mar. 16, 2006), *available at* <http://www.ftc.gov/os/caselist/051008/051008.htm>. In my view, of course, Section 5 offers far greater potential and should be used more fully. While this concurrence discusses the limiting attributes of Section 5 and the predicates of a violation, it does not attempt to prescribe future generic or specific applications of the statute. That, hopefully, will be done by the Commission in future cases.

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misinformation, and misdirection.⁶⁹ But standard-setting is not a typical “everyone for himself” competitive situation. It is one in which collaboration can yield a valuable result – in this case, the establishment of a useful foundation for future, competitive and innovative efforts. But it is also a setting in which a participant’s deceptive strategies can usurp the group’s efforts – and industry-wide force supporting them – to serve its own anticompetitive ends. Participants must play by the rules if the joint goal is to be achieved. If competition policy permits easy subversion of these joint efforts, however, then there is little justification in the first place for risking the collaboration among rivals that effective standard-setting often requires. From a competition policy perspective, standard-setting efforts such as JEDEC’s are “high risk/high gain” activities. They can be particularly valuable, on balance, if procedures ensuring fairness are adopted and followed in good faith.⁷⁰

In this instance, Rambus violated any reasonable conception of good faith and fairness, and the proximate, competitive impact of its conduct is clear. Rambus misled the standard-setting body with regard to its own intellectual property interests, while simultaneously participating in JEDEC to learn about the organization’s developing standards. Based on this wolf-in-sheep’s-clothing pose, Rambus was in a position to, and did, amend its own patent claims in order to secretly convert what was intended to be an openly available industry-standard into a private source of revenues.

For example, early during its participation in JEDEC, Rambus’s JEDEC representative, Richard Crisp, learned what technologies were being considered for the SDRAM standard. Crisp related that knowledge to Rambus’s patent counsel, and

⁶⁹ *Berkey Photo*, 603 F.2d at 281 (2d Cir. 1979).

⁷⁰ *Allied Tube*, 486 U.S. at 500-01.

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together they considered how to amend Rambus's patent claims so that they would cover the emerging JEDEC standard. Rambus even assigned an engineer to provide technical assistance and ensure the amendments would do their job. Rambus continued to use the knowledge gained at JEDEC to amend its patents in this manner. As noted in a December 1992 Rambus planning document, Rambus sought to "get a copy of the SDRAM spec and check it for features we need to cover as well as features which violate our patents."⁷¹ Crisp's September 1995 statement to Rambus management further sums up Rambus's strategy. He urged that Rambus:

should redouble our efforts to get the necessary amendments completed, the new claims added and make damn sure this ship is watertight before we get too far out to sea.⁷²

Rambus's patent strategy relating to the JEDEC standard clearly had the imprimatur of its management. This strategy was known to senior executives at the company in 1992, implemented by an executive vice president, and approved by its CEO Geoff Tate.⁷³ Finally, Rambus's 1996 withdrawal letter further misled JEDEC members by omitting the only issued patent that Rambus believed covered JEDEC's DRAM standards, and including a patent that Rambus knew (or should have known) was entirely irrelevant.⁷⁴

⁷¹ See *supra*, Commission Opinion, at 36-39.

⁷² CX 837 at 2.

⁷³ See *supra*, Commission Opinion, at 37-42.

⁷⁴ CX 887 (withdrawal letter); CX 5013 at 2 (Rambus memorandum noting that the '327 patent covered dual edged clocking).

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Rambus did not merely take advantage of the knowledge it gained at JEDEC to ensure it would cover the relevant DRAM standards in its own patent applications; it also did so in direct contravention of JEDEC's broadly-acknowledged purpose: to create consensus-based standards that reflect the interests of all of its members.⁷⁵ JEDEC participants' testimony at trial consistently emphasized the wish of JEDEC members to either avoid patented technologies or to secure protections against the unrestricted exercise of patent rights.⁷⁶ Even Richard Crisp understood that "[t]he job of JEDEC is to create standards which steer clear of patents which must be used to be in compliance with the standard whenever possible."⁷⁷

While the Commission does not object to covert maneuvers and non-disclosure in typical head-to-head market competition, Rambus's end run around the standard-setting process goes too far. It undermines the policies of the antitrust laws that seek to promote useful innovation and permit joint efforts by rivals that may enhance competition and efficiency. As such, Rambus's conduct would be an unfair method of competition in violation of Section 5 of the Federal Trade Commission Act.

Indeed, Rambus's behavior epitomizes what Senator Robinson in 1914 viewed to be the essence of unfair competition, namely "oppression or advantage obtained by deception or some questionable means. . . ."⁷⁸ Or, turning to more modern expressions, Rambus's behavior contravenes "public values beyond simply those enshrined in the letter or encompassed in the

⁷⁵ See, e.g., Becker, Tr. 1152; J. Kelly, Tr. 1784-85; CX 2767 at 1.

⁷⁶ See, e.g., Sussman, Tr. 1333; Landgraf, Tr. 1693-94; G. Kelley, Tr. 2393-96; Lee, Tr. 6598.

⁷⁷ CX 903; Crisp, Tr. 2941-42.

⁷⁸ 51 CONG. REC. 12,248 (1914) (statement of Sen. Robinson).

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spirit of the antitrust laws.”⁷⁹ It likewise runs afoul of the Second Circuit’s statement in *Ethyl* that the Commission’s role under Section 5 is to “protect society against oppressive anticompetitive conduct.”⁸⁰ Indeed, that court expressly noted that one attribute of “oppressiveness” could be the “artificial standardization of products.”⁸¹ It is fair to say that, through its deceptive and exploitative conduct, Rambus effectively co-opted JEDEC’s standard-setting process and rendered the JEDEC outcome “artificial.”

VI. CONCLUSION

Rambus’s abuse of JEDEC’s standard-setting process was intentional, inappropriate, and injurious to competition and consumers alike. The Commission Opinion finds that these deceptive practices violate Section 2. Even if this conduct did not violate the Sherman Act, it would have fallen within Section 5’s broader province had this claim been argued at trial.

⁷⁹ *Sperry & Hutchinson*, 405 U.S. at 244.

⁸⁰ *Ethyl*, 729 F.2d at 136.

⁸¹ *Id.* at 139 n.10.

Final Order

As for our future enforcement efforts, the framers of the FTC Act gave the Agency a mandate – one unique to the Commission – to use Section 5 to supplement and bolster the antitrust laws by providing, in essence, a jurisdictional “penumbra” around them. The framers also gave the FTC deliberative processes for examining suspected incipient or policy violations of the antitrust laws, and provided remedial measures dedicated more to protecting and restoring competition than to punishing malfeasors. Although the Agency has not ignored its Congressional mandate entirely, we need to build on this foundation and further develop this aspect of our enforcement responsibility – and to use all the arrows in our jurisdictional quiver to ensure that competition is robust, innovative, and beneficial to consumers.

**ORDER REVERSING AND VACATING INITIAL
DECISION AND ACCOMPANYING ORDER,
SCHEDULING SUPPLEMENTAL BRIEFING ON ISSUES
OF REMEDY, AND DENYING COMPLAINT COUNSEL’S
MOTION FOR SANCTIONS**

This matter having been heard by the Commission upon the appeal of Counsel Supporting the Complaint and the cross-appeal of Respondent, and upon the respective briefs and oral arguments in support of such positions, and the Commission having determined that Respondent has violated Section 5 of the Federal Trade Commission Act – for the reasons stated in the accompanying Opinion – the Commission has therefore determined to reverse and vacate the Initial Decision, to vacate the Order accompanying the Initial Decision, and to direct supplemental briefing on issues of remedy. The Commission has also determined to deny Complaint Counsel’s Motion for

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Sanctions Due to Rambus's Spoliation of Documents (Aug. 10, 2005) ("Motion for Sanctions").

Accordingly,

IT IS ORDERED THAT the Initial Decision dismissing the Complaint in this proceeding be, and it hereby is, **REVERSED** and **VACATED**;

IT IS FURTHER ORDERED THAT all findings and conclusions in the Initial Decision, other than those expressly cited and relied upon in the Opinion accompanying this Order, be, and they hereby are, **SET ASIDE**;

IT IS FURTHER ORDERED THAT the Order accompanying the Initial Decision and dismissing the Complaint in this proceeding be, and it hereby is, **VACATED**;

IT IS FURTHER ORDERED THAT:

1. On or before September 15, 2006, Rambus and Complaint Counsel each shall file a brief, not to exceed 7,500 words – as measured pursuant to Commission Rule 3.52(b)(2) – addressing appropriate issues relating to remedy in this proceeding;¹ and

¹ These briefs shall discuss, without limitation: (1) means for the Commission to determine, based on the existing record, reasonable royalty rates for licensing all technologies applicable to JEDEC-compliant products and covered by relevant Rambus patents; (2) alternative mechanisms and procedures for determining reasonable royalty rates, such as an independent arbitrator, a special master, or an administrative law judge; (3) qualitative characteristics descriptive of appropriate relief, against which specific royalty proposals might be evaluated; and (4) appropriate injunctive and other provisions that should be incorporated in the Final Order in this proceeding.

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2. On or before September 29, 2006, each party may file a responding brief, not to exceed 5,000 words, as measured pursuant to Commission Rule 3.52(b)(2);

IT IS FURTHER ORDERED THAT additional oral argument relating to remedy will be scheduled by further order of the Commission after the receipt of the briefs directed by this Order; and

IT IS FURTHER ORDERED THAT the Motion for Sanctions be, and it hereby is, **DENIED**.

By the Commission.

Complaint

IN THE MATTER OF**HOLOGIC, INC.****CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS
OF SEC. 7 OF THE CLAYTON ACT AND SEC. 5 OF THE FEDERAL
TRADE COMMISSION ACT***Docket C-4165; File No. 051 0263**Complaint, August 9, 2006 – Decision, August 9, 2006*

This consent order addresses the acquisition by respondent Hologic, Inc., of the intellectual property and other assets of Fischer Imaging Corporation relating to its mammography and breast biopsy businesses. As a result of the acquisition, Hologic would lose its only significant competitor in the U.S. market for prone stereotactic breast biopsy systems (“prone SBBS”). The order requires Hologic to divest to Siemens AG, or another Commission-approved acquirer, all assets it acquired from Fischer relating to Fischer’s prone SBBS business, ensuring the prompt competitive viability of Siemens or another acquirer as an additional supplier of prone SBBSs in the United States. Hologic will retain a license to Fischer’s prone SBBS patents to ensure that Hologic can continue to compete in the U.S. market after the divestiture. If Hologic fails to divest within the time frames given, the Commission may appoint a trustee to divest the prone SBBS assets.

Participants

For the *Commission*: *Stephanie C. Bovee, Richard H. Cunningham, Tammy L. Imhoff, Randall A. Long, and Jeffrey H. Perry.*

For the *Respondent*: *Robert C. Jones and Phillip A. Proger, Jones Day.*

COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act and the Clayton Act, and by virtue of the authority vested in it by said Acts, the Federal Trade Commission (hereinafter “Commission”), having reason to believe that Respondent

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Hologic, Inc. (hereinafter “Hologic”) acquired the intellectual property and other assets of Fischer Imaging Corporation (hereinafter “Fischer”) in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding in respect thereof would be in the public interest, hereby issues its Complaint, stating its charges as follows:

I. DEFINITIONS

1. “Hologic” means Hologic, Inc., its directors, officers, employees, agents, representatives, successors, and assigns; and its joint ventures, subsidiaries, divisions, groups, and affiliates controlled by Hologic, Inc., and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.

2. “Fischer” means Fischer Imaging Corporation, its directors, officers, employees, agents, representatives, successors, and assigns; and its joint ventures, subsidiaries, divisions, groups and affiliates controlled by Fischer Imaging Corporation, and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.

3. “Prone Stereotactic Breast Biopsy Systems” (hereinafter “prone SBBS”) means equipment used for guiding percutaneous breast biopsy procedures for the minimally-invasive removal of suspicious tissue, which incorporates an elevating prone table for patient positioning, a stereotactic x-ray imaging system capable of acquiring images at two distinct angles necessary to plot coordinates, and a guidance mechanism for directing biopsy sampling devices to coordinates specific to regions within the breast. “Prone Stereotactic Breast Biopsy Systems” includes research and development, and clinical testing activities related to the incorporation of an ultrasound scanning mechanism on the Prone Stereotactic Breast Biopsy System and the use of the Prone

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Stereotactic Breast Biopsy System for purposes of patient positioning during brachytherapy procedures.

4. “Acquisition” means the acquisition of Fischer’s assets by Hologic, including Fischer’s intellectual property and other assets relating to its mammography and breast biopsy businesses, including the patents, trademarks, and other intellectual property relating to Fischer’s prone SBBS, MammoTest.

II. HOLOGIC

5. Respondent Hologic is a for-profit corporation organized, existing and doing business under and by the virtue of the laws of the State of Delaware, with its principal place of business located at 35 Crosby Drive, Bedford, Massachusetts, 01730.

6. Hologic specializes in the development and marketing of diagnostic and imaging medical devices in the field of women’s health. Its products include mammography equipment, breast biopsy systems, and bone densitometry equipment.

7. Hologic is, and at all times relevant herein has been, engaged in commerce as “commerce” is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. § 12, and is a corporation whose business is in or affects commerce as “commerce” is defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

III. FISCHER

8. At the time of the Acquisition, Fischer was a for-profit corporation organized, existing and doing business under and by the virtue of the laws of the State of Delaware, with its principal place of business located at 12300 North Grant Street, Denver, Colorado, 80241.

9. At the time of the Acquisition, Fischer was engaged in commerce as “commerce” is defined in Section 1 of the Clayton

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Act, as amended, 15 U.S.C. § 12, and is a corporation whose business is in or affects commerce as “commerce” is defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

10. Prior to the acquisition, Fischer was actively developing, manufacturing, and marketing equipment used in the screening and diagnosis of breast cancer. The company’s chief products were its SenoScan digital mammography machine and its MammoTest prone SBBS. In 2004, the company employed approximately 263 individuals and reported revenues of approximately \$64 million.

IV. HOLOGIC’S ACQUISITION OF FISCHER’S ASSETS

11. On June 22, 2005, Fischer entered into an Asset Purchase Agreement with Hologic whereby Hologic acquired substantially all of Fischer’s intellectual property and other assets relating to its mammography and breast biopsy businesses, including the patents, trademarks, and other intellectual property surrounding Fischer’s prone SBBS, MammoTest (“Acquisition”).

12. The Acquisition was valued at \$32 million, including \$27 million in cash and forgiveness of a \$5 million loan made to Fischer by Hologic upon entering the agreement. The parties consummated the transaction, which was not reportable under the Hart-Scott-Rodino Act, on September 29, 2005.

13. At the time of the Acquisition, Fischer was one of two significant suppliers of prone SBBSs in the United States. Hologic was the only other significant supplier of prone SBBSs in the United States. As a result of the acquisition, Fischer exited the mammography and breast biopsy businesses and is preparing to close down its remaining operations entirely within a few months.

V. RELEVANT PRODUCT MARKET

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14. For the purposes of this Complaint, the relevant product market in which to analyze the effects of the Acquisition is the production and sale of prone SBBSs. Prone SBBSs are integrated systems that allow a physician to conduct a minimally-invasive biopsy using stereotactic guidance. SBBSs are the only minimally-invasive systems consistently capable of imaging a particular type of lesion called microcalcifications. For this type of lesion, a biopsy using a SBBS is the current standard of care, and the only method short of invasive surgery to determine whether a lesion is cancerous. Although SBBSs may also be “upright,” there are significant drawbacks associated with the use of upright SBBSs, as compared to prone SBBSs. Upright SBBSs are less comfortable for patients, less precise, and carry with them a significant incidence of patient fainting. A small but significant and non-transitory price increase would not significantly reduce the demand for prone SBBSs.

VI. RELEVANT GEOGRAPHIC MARKET

15. For the purposes of this Complaint, the relevant geographic market in which to assess the effects of the Acquisition is the United States. To compete in the United States prone SBBS market, a firm must have FDA approval for its device, establish a local sales and service organization, and must not infringe any valid U.S. prone SBBS patents.

VII. MARKET STRUCTURE

16. Pursuant to the Acquisition, the only two significant suppliers of prone SBBSs in the United States merged, leaving Hologic as a virtual monopolist in the \$40 million market. Prior to the Acquisition, Hologic and Fischer had substantially equivalent shares of the market and directly competed on price, service and product innovation. The only other firm that sells a prone SBBS is Giotto USA. Giotto has had minimal sales since its product’s introduction to the U.S. market three years ago.

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Giotto's sales are unlikely to increase sufficiently to restore the lost competition, as Giotto lacks the infrastructure, track record, product acceptance, and resources to expand U.S. sales significantly. As a result, the transaction significantly increased concentration and resulted in a highly concentrated market.

VIII. EFFECTS OF THE ACQUISITION

17. As the only significant suppliers of prone SBBSs in the United States, Hologic and Fischer competed head-to-head for over ten years before the Acquisition. Hologic's Acquisition has had or will have the effect of substantially lessening competition and tending to create a monopoly in the relevant market by, among other things:

- a. eliminating Fischer as the only other significant competitor in the market for prone SBBSs;
- b. eliminating actual, direct, and substantial competition between Hologic and Fischer, which before the Acquisition, directly competed on price, service and product innovation as next-best substitutes;
- c. increasing the ability of Hologic to unilaterally raise prices of prone SBBSs in the United States; and
- d. reducing Hologic's incentive to invest in prone SBBS innovations and service improvements, thereby adversely affecting product innovation and service.

IX. ENTRY CONDITIONS

18. Entry into the market for the production and sale of prone SBBSs is unlikely and, in any event, cannot occur in a timely and sufficient manner so as to deter or counteract the anticompetitive effects likely to result from the Acquisition.

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19. Potential entrants must overcome significant intellectual property barriers to develop a prone SBBS product. The strength and scope of Hologic's patent portfolio, including the patents that Hologic acquired from Fischer as a result of the Acquisition, pose a significant barrier to entry into this market. Hologic, for example, was only able to enter the prone SBBS market by acquiring a license from Fischer in settlement of patent litigation.

20. In addition to the intellectual property barriers to entry, potential entrants must contend with the research, development, and regulatory hurdles that companies seeking to market medical devices typically face. After developing and obtaining FDA approval for a prone SBBS product, a new entrant would face the difficult task of gaining market approval without a proven product or track record, developing manufacturing capability, recruiting and training a sales force, and establishing the infrastructure necessary to provide service for the life of the product.

X. VIOLATIONS CHARGED

21. The allegations contained in paragraphs 1 through 20 are repeated and realleged as though fully set forth here.

22. The effect of the Acquisition may be substantially to lessen competition or tend to create a monopoly in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45.

IN WITNESS WHEREOF, the Federal Trade Commission has caused this complaint to be signed by its Secretary and its official seal to be hereto affixed, at Washington, D.C. this ninth day of August, 2006.

By the Commission.

Decision and Order

DECISION AND ORDER

The Federal Trade Commission (“Commission”), having initiated an investigation of the acquisition of intellectual property and other assets relating to breast biopsy systems from the Fischer Imaging Corporation by Hologic, Inc. (hereafter referred to as “Respondent” or “Hologic”), and Hologic having been furnished thereafter with a copy of a draft of Complaint that the Bureau of Competition proposed to present to the Commission for its consideration and which, if issued by the Commission, would charge Respondent with violations of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondent, its attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Order (“Consent Agreement”), containing an admission by Respondents of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondent that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waives and other provisions as required by the Commission’s Rules; and

The Commission, having thereafter considered the matter and having determined that it had reason to believe that Respondent has violated the said Acts, and that a Complaint should issue stating its charges in that respect and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby makes the following jurisdictional findings and issues the following Decision and Order (“Order”):

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1. Respondent Hologic, Inc. is a corporation organized, existing and doing business under and by virtue of the laws of Delaware, with its office and principal place of business located at 35 Crosby Street, Bedford, MA 01730.
2. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of Respondent, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that, as used in this Order, the following definitions shall apply:

- A. “Hologic” means Hologic, Inc., its directors, officers, employees, agents, representatives, successors, and assigns; and its joint ventures, subsidiaries, divisions, groups, and affiliates controlled by Hologic, Inc., and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.
- B. “Siemens” means Siemens AG, a corporation organized, existing and doing business under and by virtue of the laws of Germany, with its office and principal place of business located at Postfach 32 60 91050 Erlangen, Germany.
- C. “Commission” means the Federal Trade Commission.
- D. “Acquirer” means Siemens, or any other Person that receives the prior approval of the Commission to acquire the Fischer Breast Biopsy System Assets.
- E. “Affiliate” means any entity or acquired business which directly or indirectly is controlled by either Hologic or

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Acquirer, but only so long as such control subsists, control being the direct or indirect ownership of at least fifty percent (50%) of the stock entitled to vote upon election of directors or persons performing similar functions, or direct or indirect ownership of the maximum percentage permitted under local laws or regulations in those countries where fifty percent (50%) ownership by a foreign entity is not permitted.

- F. “Breast Biopsy System” means equipment used for guiding percutaneous breast biopsy procedures for the minimally-invasive removal of suspicious tissue, which incorporates an elevating prone table for patient positioning, a stereotactic x-ray imaging system capable of acquiring images at two distinct angles necessary to plot coordinates, and a guidance mechanism for directing biopsy sampling devices to coordinates specific to regions within the breast. Breast Biopsy System includes research and development, and clinical testing activities related to the incorporation of an ultrasound scanning mechanism on the Breast Biopsy System and the use of the Breast Biopsy System for purposes of patient positioning during brachytherapy procedures. *PROVIDED, HOWEVER*, Breast Biopsy System does not include equipment for biopsy sampling, surgery, or therapy, whether or not capable of being attached to the Breast Biopsy System, including but not limited to equipment manufactured or sold by Suros Surgical Systems, Inc.
- G. “Divestiture Agreement” means the Siemens Divestiture Agreement, or the agreement between the Divestiture Trustee and Acquirer for the divestiture of the Fischer Breast Biopsy System Assets.
- H. “Effective Date” means the date on which the divestiture required by Paragraph II or III of this Order is completed.

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- I. “Excluded Assets” means:
1. the trade name Fischer Imaging or any derivative thereof, any registered trademark containing the name Fischer Imaging or any derivative thereof, or any domain name containing the name Fischer Imaging or any derivative thereof;
 2. Licensed Intellectual Property to the extent it cannot be transferred as part of the divestiture because the licensor will not agree to such transfer;
 3. Intellectual Property and assets exclusively Related To Fischer’s SenoScan business and products;
 4. Intellectual Property, assets, and documents received by Hologic as a result of its acquisition of Suros Surgical Systems, Inc.; and
 5. the non-exclusive, limited license to continue to use the Intellectual Property Related To Mammothest granted to Fischer Imaging Corporation in order to allow Fischer Imaging Corporation to fulfill certain continuing obligations as described in the Fischer-Hologic APA, including any sublicenses granted in accordance with the provision of the Fischer-Hologic APA by Fischer, including but not limited to the license agreement by and between Fischer Imaging Corporation and Eastman Kodak Company dated January 23, 2006.
- J. “Fischer” means Fischer Imaging Corporation, a corporation organized, existing and doing business under and by virtue of the laws of Delaware, with its office and principal place of business located at 370 Interlocken Blvd., Suite 400, Broomfield, Colorado, 80021.

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K. “Fischer Breast Biopsy System Assets” means:

1. all Intellectual Property and other information and assets acquired by Hologic pursuant to the Fischer-Hologic APA Relating To Mammotest, and still in the possession of Hologic, including, but not limited to,
 - a. all United States and foreign patents, trademarks, trade names, domain names, service marks and copyrights and any applications for and registrations of such patents, trademarks, trade names, domain names, service marks and copyrights and any renewal, derivation, divisions, reissues, continuation, continuations-in part, modifications or extensions thereof including, but not limited to, Fischer’s currently pending patent applications EPO 02713506.0 and 97911697.7 or, if the patents have already been issued on the basis of said applications, the resulting patents.
 - b. all processes, formulae, algorithms, methods, schematics, trade secrets, technology, mask works, know-how, inventions and tangible or intangible proprietary information or material, including, but not limited to, all catalogs, research material, technical information, designs, drawings, formulae, processes, procedures, documentation, diagrams, flow charts, methods and schematics;
 - c. all computer software programs or applications (in all forms received, including but not limited to object code and source code form), and data contained therein;
 - d. past and present customer lists for Mammotest, including the name, address, and relevant contact person of each such customer, a detailed list of

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each prospective customer of Fischer that has previously received a sales quote for Mammothest from Fischer including the name, address and relevant contact person of each prospective Mammothest customer accompanied by all Mammothest quote reports, and all other data and information relating to said customers and Mammothest sales activities relating thereto, to the extent and in the form such information was provided to Hologic pursuant to the Fischer-Hologic APA;

- e. all vendor lists detailing the name, address, and relevant contact person for each past and present vendor supplying products or services to Fischer relating to Mammothest (“Fischer Vendors”);
- f. all existing data and information relating to any of Fischer’s approvals, clearances, licenses, registrations, permits, franchises, product registrations or authorizations issued by any federal, state, municipal, or foreign authority, or any third party test house, registrar or certification body, Relating To Mammothest including, without limitation, all clinical trial data, filings, engineering and design documentation, manufacturing and test results and procedures;
- g. if any, all licenses or sublicenses previously held by Fischer and now held by Hologic to any of the Intellectual Property described in this Paragraph; and
- h. all rights to sue for past infringements of any of the Intellectual Property Relating To Mammothest;

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2. all service and sales contracts Relating To Mammotest, if any;
3. all Intellectual Property, information, research and development, and assets, if any, developed or acquired since the consummation of the Fischer-Hologic APA based on Mammotest up to the date this Order is accepted by the Commission for public comment; and

Provided, however, Fischer Breast Biopsy System Assets shall not include the Excluded Assets.

- L. “Fischer-Hologic APA” means the June 22, 2005, Asset Purchase Agreement entered into between Fischer Imaging Corporation and Hologic, Inc.
- M. “Hologic Vendors” means the entities listed on the Hologic Vendor List.
- N. “Hologic Vendor List” means a list of the names, addresses, and contacts for vendors for Hologic’s Breast Biopsy System as of the date this Order is accepted by the Commission for public comment.
- O. “Intellectual Property” means any intellectual property, including, but not limited to, software, computer programs, patents, know-how, goodwill, technology, trade secrets, technical information, marketing information, protocols, quality control information, trademarks, trade names, service marks, logos, and the modifications or improvements to such intellectual property.
- P. “Licensed Intellectual Property” means intellectual property licensed to Fischer or Hologic from a Third Party Relating To Mammotest (to the extent Hologic had Intellectual Property licensed to it regarding Mammotest), including, but not limited to, software, computer

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programs, patents, know-how, goodwill, technology, trade secrets, technical information, marketing information, protocols, quality control information, trademarks, trade names, service marks, logos, and the modifications or improvements to such intellectual property that are licensed to Fischer or Hologic. “Licensed Intellectual Property” does not mean modifications and improvements to intellectual property that are not licensed to Fischer or Hologic.

- Q. “Mammotest” means (1) the Breast Biopsy System manufactured and sold by Fischer prior to and as of September 29, 2005, including all products and components incorporated into and included as part of the system, and (2) technology, research and development, and clinical testing activities respecting said system, including but not limited to any technology, research and development, and clinical testing activities respecting the incorporation of an ultrasound scanning mechanism on the system and the use of the system for purposes of patient positioning during brachytherapy procedures.
- R. “Patents” means all patents, patent applications, and statutory invention registrations (which shall be deemed to include provisional applications, invention disclosures, certificates of invention and applications for certificates of invention), in each case existing as of the date this Order is accepted by the Commission for public comment, and includes all reissues, divisions, continuations, continuations-in-part, extensions and reexaminations thereof, all inventions disclosed therein, all rights therein provided by international treaties and conventions, and all rights to obtain and file for patents and registrations thereto in the world, Related To any Breast Biopsy System of or owned by Hologic as of the date Hologic signs the Agreement Containing Consent Orders in this matter.

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- S. “Person” means any natural person, partnership, corporation, association, trust, joint venture, government, government agency, or other business or legal entity.
- T. “Relating To” or “Related To” means pertaining in any way to, and is not limited to that which pertains exclusively to or primarily to.
- U. “Siemens Divestiture Agreement” means the June 26, 2006, Sale and License-Back; Covenant Not to Sue Agreement between Hologic, Inc., and Siemens AG.
- V. “Third Party” means any private entity other than the following: (1) Hologic, or (2) the Acquirer.
- W. “Trust Agreement” means the agreement between Hologic and the Divestiture Trustee that transfers to the Divestiture Trustee all rights and powers necessary to permit the Divestiture Trustee to divest the Fischer Breast Biopsy System Assets pursuant to this Order.

II.**IT IS FURTHER ORDERED** that:

- A. Not later than five (5) days after the date on which this Order is accepted for public comment, Hologic shall divest the Fischer Breast Biopsy System Assets to Siemens absolutely and in good faith, pursuant to and in accordance with the Siemens Divestiture Agreement. The Siemens Divestiture Agreement is incorporated by reference into this Order and made a part hereof as Non-Public Appendix A. Any failure by Hologic to comply with the Siemens Divestiture Agreement shall constitute a failure to comply with this Order. The Siemens Divestiture Agreement shall not vary or contradict, or be construed to vary or contradict, the terms of this Order. Nothing in this Order

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shall reduce, or be construed to reduce, any rights or benefits of Siemens, or any obligations of Hologic, under the Siemens Divestiture Agreement. If any term of the Siemens Divestiture Agreement varies from the terms of this Order (“Order Term”), then to the extent that Respondent cannot fully comply with both terms, the Order Term shall determine Hologic’s obligations under this Order. Notwithstanding any paragraph, section, or other provision of the Siemens Divestiture Agreement, any failure to meet any condition precedent to closing (whether waived or not) or any modification of the Siemens Divestiture Agreement, without the prior approval of the Commission, shall constitute a failure to comply with this Order.

Provided, however, if Hologic has divested the Fischer Breast Biopsy System Assets to Siemens prior to the date this Order becomes final, and if, at the time the Commission makes this Order final, the Commission determines that Siemens is not an acceptable acquirer or that the Siemens Divestiture Agreement is not an acceptable manner of divestiture, and so notifies Hologic, then Hologic shall within three (3) business days of receiving such notification, rescind the transaction with Siemens; *provided, further, however,* if the Commission determines to issue this Order and notifies Hologic that Siemens is not an acceptable acquirer or that the Siemens Divestiture Agreement is not an acceptable manner of divestiture, Hologic shall divest the Fischer Breast Biopsy System Assets, consistent with the terms of this Order, including the right to receive a non-exclusive license as described in Paragraph IV of this Order, within six (6) months of the date this Order becomes final absolutely and in good faith, at no minimum price, to an acquirer that receives the prior approval of the Commission and in a manner that receives the prior approval of the Commission.

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- B. With regard to the Hologic Vendor List:
1. if Siemens or any proposed Acquirer requests in writing to Hologic that Hologic give a copy of the Hologic Vendor List to Siemens or the proposed Acquirer at anytime on or after the date of the divestiture pursuant to Paragraph II.A., Hologic shall within three (3) business days of such request, give, without cost, to that Acquirer the Hologic Vendor List; *Provided, however,* that if Siemens or the proposed Acquirer fails to make such a request before the date on which the Order becomes final, Hologic shall provide the Hologic Vendor List to the Acquirer within three (3) days of the date on which the Order becomes final.
 2. Hologic shall create no disincentive for Siemens or any proposed Acquirer to make such a request for the Hologic Vendor List, and shall not enter into any agreement or understanding with Siemens or any proposed Acquirer that Siemens or the proposed Acquirer not make such a request.
- C. The purpose of this Paragraph II of this Order is to ensure the continuation of the Fischer Breast Biopsy System Assets as part of an ongoing viable enterprise engaged in the same business in which such assets were engaged at the time of the announcement of the acquisition of the Intellectual Property and assets of Fischer Imaging Corporation by Hologic, to ensure that the Fischer Breast Biopsy System Assets are used independently of, and in competition with, Hologic, and to remedy the lessening of competition alleged in the Commission's Complaint.

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III.**IT IS FURTHER ORDERED** that:

- A. If Hologic has not divested, absolutely and in good faith and with the Commission's prior approval, all of the Fischer Breast Biopsy System Assets pursuant to Paragraph II of this Order, the Commission may appoint a trustee to divest the Fischer Breast Biopsy System Assets in a manner that satisfies the requirements of Paragraph II of this Order ("Divestiture Trustee"). In the event that the Commission or the Attorney General brings an action pursuant to Section 5(l) of the Federal Trade Commission Act, 15 U.S.C. § 45(l), or any other statute enforced by the Commission, Hologic shall consent to the appointment of a Divestiture Trustee in such action to divest the relevant assets in accordance with the terms of this Order. Neither the appointment of a Divestiture Trustee nor a decision not to appoint a Divestiture Trustee under this Paragraph shall preclude the Commission or the Attorney General from seeking civil penalties or any other relief available to it, including a court-appointed Divestiture Trustee, pursuant to § 5(l) of the Federal Trade Commission Act, or any other statute enforced by the Commission, for any failure by Hologic to comply with this Order.
- B. The Commission shall select the Divestiture Trustee, subject to the consent of Hologic, which consent shall not be unreasonably withheld. The Divestiture Trustee shall be a Person with experience and expertise in acquisitions and divestitures. If Hologic has not opposed, in writing, including the reasons for opposing, the selection of any proposed Divestiture Trustee within ten (10) days after receipt of notice by the staff of the Commission to Hologic of the identity of any proposed Divestiture Trustee, Hologic shall be deemed to have consented to the selection of the proposed Divestiture Trustee.

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- C. Within ten (10) days after appointment of a Divestiture Trustee, Hologic shall execute a Trust Agreement that, subject to the prior approval of the Commission, transfers to the Divestiture Trustee all rights and powers necessary to permit the Divestiture Trustee to effect the divestitures required by this Order.
- D. If a Divestiture Trustee is appointed by the Commission or a court pursuant to this Order, Hologic shall consent to the following terms and conditions regarding the Divestiture Trustee's powers, duties, authority, and responsibilities:
1. Subject to the prior approval of the Commission, the Divestiture Trustee shall have the exclusive power and authority to divest the Fischer Breast Biopsy System Assets consistent with the terms of this Order including the right of Hologic to receive a non-exclusive license as described in Paragraph IV of this Order.
 2. The Divestiture Trustee shall have twelve (12) months from the date the Commission approves the Trust Agreement described herein to accomplish the divestiture, which shall be subject to the prior approval of the Commission. If, however, at the end of the twelve (12) month period, the Divestiture Trustee has submitted a divestiture plan or believes that the divestiture can be achieved within a reasonable time, or if the Commission determines in its discretion that it is appropriate for other reasons to do so, the Commission may extend the divestiture period to achieve the purposes of this Order.
 3. Subject to any demonstrated legally recognized privilege, the Divestiture Trustee shall have full and complete access to the personnel, books, records, and

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facilities related to the relevant assets that are required to be divested by this Order, and to any other relevant information, as the Divestiture Trustee may request. Hologic shall develop such financial or other information as the Divestiture Trustee may request and shall cooperate with the Divestiture Trustee. Hologic shall take no action to interfere with or impede the Divestiture Trustee's accomplishment of the divestiture. Any delays in divestiture caused by Hologic shall extend the time for divestiture under this Paragraph III in an amount equal to the delay, as determined by the Commission or, for a court-appointed Divestiture Trustee, by the court.

4. The Divestiture Trustee shall use commercially reasonable best efforts to negotiate the most favorable price and terms available in each contract that is submitted to the Commission, subject to Hologic's absolute and unconditional obligation to divest expeditiously and at no minimum price. The divestiture shall be made in the manner and to an Acquirer as required by this Order; *provided, however*, if the Divestiture Trustee receives bona fide offers for particular assets from more than one acquiring entity, and if the Commission determines to approve more than one such acquiring entity for such assets, the Divestiture Trustee shall divest the assets to the acquiring entity selected by Hologic from among those approved by the Commission; *provided, further, however*, that Hologic shall select such entity within five (5) days of receiving notification of the Commission's approval.
5. The Divestiture Trustee shall serve, without bond or other security, at the cost and expense of Hologic, on such reasonable and customary terms and conditions as the Commission or a court may set. The Divestiture

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Trustee shall have the authority to employ, at the cost and expense of Hologic, such consultants, accountants, attorneys, investment bankers, business brokers, appraisers, and other representatives and assistants as are necessary to carry out the Divestiture Trustee's duties and responsibilities. The Divestiture Trustee shall account for all monies derived from the divestiture and all expenses incurred. After approval by the Commission and, in the case of a court-appointed Divestiture Trustee, by the court, of the account of the Divestiture Trustee, including fees for the Divestiture Trustee's services, all remaining monies shall be paid at the direction of Hologic, and the Divestiture Trustee's power shall be terminated. The compensation of the Divestiture Trustee shall be based at least in significant part on a commission arrangement contingent on the divestiture of all of the relevant assets that are required to be divested by this Order.

6. Hologic shall indemnify the Divestiture Trustee and hold the Divestiture Trustee harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Divestiture Trustee's duties, including all reasonable fees of counsel and other expenses incurred in connection with the preparation for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Divestiture Trustee.
7. The Divestiture Trustee shall have no obligation or authority to operate or maintain the relevant assets required to be divested by this Order.

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8. The Divestiture Trustee shall report in writing to Hologic and to the Commission every sixty (60) days concerning the Divestiture Trustee's efforts to accomplish the divestiture.
 9. Hologic may require the Divestiture Trustee and each of the Divestiture Trustee's consultants, accountants, attorneys, and other representatives and assistants to sign a customary confidentiality agreement; *provided, however,* such agreement shall not restrict the Divestiture Trustee from providing any information to the Commission.
- E. If the Commission determines that a Divestiture Trustee has ceased to act or failed to act diligently, the Commission may appoint a substitute Divestiture Trustee as provided in this Paragraph III.
- F. The Commission or, in the case of a court-appointed Divestiture Trustee, the court, may on its own initiative or at the request of the Divestiture Trustee issue such additional orders or directions as may be necessary or appropriate to accomplish the divestiture required by this Order.

IV.

IT IS FURTHER ORDERED that the Divestiture Agreement shall include the following provisions:

- A. Hologic shall covenant to the Acquirer that Hologic shall not join, file, prosecute or maintain any suit, in law or equity, against the Acquirer (the Acquirer's successor or Affiliate, or any Person or Persons to whom the Acquirer transfers, licenses, or authorizes to manufacture, develop or sell Breast Biopsy Systems pursuant to Intellectual Property of the Fischer Breast Biopsy System Assets) to

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the extent that such suit alleges that any Breast Biopsy System developed, designed, manufactured, licensed, or otherwise sold by or on behalf of Acquirer infringes any Patent, if such suit would have the potential to interfere with the Acquirer's freedom to practice in the research, development, manufacture, use, import, export, distribution or sale of Breast Biopsy Systems, *provided, however,* that such covenant not to sue shall not apply to any Patent issued after the date this Order is accepted by the Commission for public comment; and

- B. Hologic shall covenant to the Acquirer that: (1) any Third Party assignee, transferee or licensee of the Patents shall agree to provide a covenant not to sue the Acquirer (the Acquirer's successor, or the Person or Persons to whom the Acquirer transfers, licenses, or authorizes to manufacture, develop or sell Breast Biopsy Systems pursuant to Intellectual Property of the Fischer Breast Biopsy System Assets) at least as protective as those extended pursuant to the preceding Paragraph IV.A, as a condition of such assignment, transfer or license; and (2) with respect to any Third Party patents existing as of the date this Order is accepted by the Commission for public comment and licensed to Hologic, and as to which Hologic does not control the right of prosecution of any legal action, Hologic shall not actively induce, assist or participate in any legal action or proceeding Relating To Breast Biopsy Systems against the Acquirer (the Acquirer's successor or Affiliate, or the Person or Persons to whom the Acquirer transfers, licenses, or authorizes to manufacture, develop or sell Breast Biopsy Systems pursuant to Intellectual Property of the Fischer Breast Biopsy System Assets) unless required by Law or contract (such contract not to be solicited or entered into for the purpose of circumventing any of the requirements of this Order).

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- C. Hologic shall be allowed to receive, as part of the negotiated Divestiture Agreement, a royalty free, non-exclusive, perpetual, irrevocable, transferable, worldwide right and license to the Fischer Breast Biopsy System Assets to use such rights and licenses in any form to develop, have developed, make, have made, use, sell, have sold, offer for sale, import, export, or otherwise dispose of any products or services of any kind without restriction, and subject to the forgoing including the right to grant sublicenses to its Affiliates at any time but not the right to grant sublicenses to Third Parties.
- D. Hologic shall covenant to the Acquirer that Hologic will not interfere with, restrict, or otherwise impair the Fischer Vendors and the Hologic Vendors from dealing with the Acquirer, *provided, however*, that if Hologic has an exclusive contract arrangement, or similar arrangement with a Hologic Vendor as of the signing of the Agreement Containing Consent Order, such exclusivity arrangement will be waived as to the Acquirer only for a period of two (2) years beginning on the Effective Date; *provided, further, however*, that Hologic is permitted to alter or terminate the Hologic Vendor relationships at its sole discretion consistent with the terms of this Paragraph IV.D.
- E. The purpose of this Paragraph IV of this Order is to ensure the continuation of the Fischer Breast Biopsy Systems Assets as part of an ongoing viable enterprise engaged in the same business in which such assets were engaged at the time of the announcement of the acquisition of Intellectual Property and assets of Fischer Imaging Corporation by Hologic, to ensure that the Fischer Breast Biopsy Systems Assets are used independently of, and in competition with, Hologic, and to remedy the lessening of competition alleged in the Commission's Complaint.

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V**IT IS FURTHER ORDERED** that:

A. Hologic shall:

1. not join, file, prosecute or maintain any suit, in law or equity, against the Acquirer (the Acquirer's successor or Affiliate, or any Person or Persons to whom the Acquirer transfers, licenses, or authorizes to manufacture, develop or sell Breast Biopsy Systems pursuant to Intellectual Property of the Fischer Breast Biopsy System Assets) to the extent that such suit alleges that any Breast Biopsy System developed, designed, manufactured, licensed, or otherwise sold by or on behalf of Acquirer infringes any Patent, if such suit would have the potential to interfere with the Acquirer's freedom to practice in the research, development, manufacture, use, import, export, distribution or sale of Breast Biopsy Systems, *provided, however*, that such covenant not to sue shall not apply to any Patent issued after the date this Order is accepted by the Commission for public comment; and
2. in the event it assigns, transfers, or licenses the Patents to a Third Party, include in such assignment, transfer, or license a covenant not to sue the Acquirer (the Acquirer's successor or Affiliate, or the Person or Persons to whom the Acquirer transfers, licenses, or authorizes to manufacture, develop or sell Breast Biopsy Systems pursuant to Intellectual Property of the Fischer Breast Biopsy System Assets) at least as protective as those extended pursuant to the preceding Paragraph V.A.1, as a condition of such assignment, transfer or license;

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3. not, with respect to any Third Party patents existing as of the date this Order is accepted by the Commission for public comment and licensed to Hologic, and as to which Hologic does not control the right of prosecution of any legal action, actively induce, assist or participate in any legal action or proceeding relating to Breast Biopsy Systems against the Acquirer (the Acquirer's successor or Affiliate, or the Person or Persons to whom the Acquirer transfers, licenses, or authorizes to manufacture, develop or sell Breast Biopsy Systems pursuant to Intellectual Property of the Fischer Breast Biopsy System Assets) unless required by Law or contract (such contract not to be solicited or entered into for the purpose of circumventing any of the requirements of this Order);
 4. until the divestiture required pursuant to Paragraph II is completed, take such actions as are necessary to maintain the viability and marketability of the Fischer Breast Biopsy System Assets as they exist as of the date Hologic signs the Agreement Containing Consent Order in this matter, and to prevent the destruction, removal, wasting, deterioration, or impairment of the Fischer Breast Biopsy Systems Assets, as they exist as of the date Hologic signs the Agreement Containing Consent Order in this matter; *provided, however*, that nothing in this paragraph limits or precludes Hologic from promoting, marketing, and selling its own products and services.
- B. Hologic shall place no restrictions on the use by any Acquirer of any of the Fischer Breast Biopsy System Assets.
- C. Hologic shall not interfere with, restrict, or otherwise impair the Fischer Vendors and the Hologic Vendors from

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dealing with the Acquirer, *provided, however*, that if Hologic has an exclusive contract arrangement, or similar arrangement with a Hologic Vendor as of the signing of the Agreement Containing Consent Order, such exclusivity arrangement shall be waived as to the Acquirer only for a period of two (2) years beginning on the Effective Date; *provided, further, however*, that Hologic is permitted to alter or terminate the Hologic Vendor relationships at its sole discretion consistent with the terms of this Paragraph V.C.

- D. The purpose of this Paragraph V of this Order is to ensure the continuation of the Fischer Breast Biopsy System Assets as part of an ongoing viable enterprise engaged in the same business in which such assets were engaged at the time of the announcement of the acquisition of the Intellectual Property and assets of Fischer Imaging Corporation by Hologic, to ensure that the Fischer Breast Biopsy System Assets are used independently of, and in competition with, Hologic, and to remedy the lessening of competition alleged in the Commission's Complaint.

VI.

IT IS FURTHER ORDERED that for a period of ten (10) years from the date this Order becomes final, Hologic shall not, without providing advance written notification to the Commission in the manner described in this paragraph, directly or indirectly:

- A. acquire any assets of or financial interest in any Person who develops, manufactures, or sells Breast Biopsy Systems;
- B. Enter into any contract to participate in the management of any person who develops, manufactures, or sells Breast Biopsy Systems.

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Said advance written notification shall contain (i) either a detailed term sheet for the proposed acquisition or the proposed agreement with all attachments, and (ii) documents that would be responsive to Item 4(c) of the Premerger Notification and Report Form under the Hart-Scott-Rodino Premerger Notification Act, Section 7A of the Clayton Act, 15 U.S.C. § 18a, and Rules, 16 C.F.R. § 801-803, relating to the proposed transaction (hereinafter referred to as “the Notification), *provided, however*, (i) no filing fee will be required for the Notification, (ii) an original and one copy of the Notification shall be filed only with the Secretary of the Commission and need not be submitted to the United States Department of Justice, and (iii) the Notification is required from Hologic and not from any other party to the transaction. Hologic shall provide the Notification to the Commission at least thirty (30) days prior to consummating the transaction (hereinafter referred to as the “first waiting period”). If, within the first waiting period, representatives of the Commission make a written request for additional information or documentary material (within the meaning of 16 C.F.R. § 803.20), Hologic shall not consummate the transaction until thirty (30) days after submitting such additional information or documentary material. Early termination of the waiting periods in this paragraph may be requested and, where appropriate, granted by letter from the Bureau of Competition.

Provided, however, that prior notification shall not be required by this paragraph for a transaction for which Notification is required to be made, and has been made, pursuant to Section 7A of the Clayton Act, 15 U.S.C. § 18a.

VII.

IT IS FURTHER ORDERED that:

- A. Beginning thirty (30) days after the date this Order becomes final, and every thirty (30) days thereafter until the divestiture pursuant to Paragraphs II and III of this

Decision and Order

Order has been completed, Hologic shall submit to the Commission a verified written report setting forth in detail the manner and form in which it intends to comply, is complying, and has complied with the terms of this Order. Hologic shall submit at the same time a copy of these reports to the Divestiture Trustee, if one is appointed.

- B. Beginning twelve (12) months after the date this Order becomes final, and annually thereafter on the anniversary of the date this Order becomes final, for the next nine (9) years, shall submit to the Commission verified written reports setting forth in detail the manner and form in which it is complying and has complied with this Order, the Order to Maintain Assets, and the Divestiture Agreement. Hologic shall submit at the same time a copy of these reports to the Divestiture Trustee, if the Divestiture Trustee has been appointed and has not completed his or duties pursuant to Paragraph III.

VIII.

IT IS FURTHER ORDERED that Hologic shall notify the Commission at least thirty (30) days prior to:

- A. Any proposed dissolution of Hologic;
- B. Any proposed acquisition, merger, or consolidation of Hologic; or
- C. Any other change in Hologic that may affect compliance obligations arising out of this Order, including but, not limited to, assignment, the creation or dissolution of subsidiaries, or any other change in Hologic.

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IX.

IT IS FURTHER ORDERED that, for the purpose of determining or securing compliance with this Order, and subject to any legally recognized privilege, and upon written request with reasonable notice to Respondent, Respondent shall permit any duly authorized representative of the Commission:

- A. Access, during office hours of Respondent and in the presence of counsel, to all facilities and access to inspect and copy all books, ledgers, accounts, correspondence, memoranda, and all other records and documents in the possession or under the control of Respondent related to compliance with this Order; and
- B. Upon five (5) days' notice to Respondent and without restraint or interference from Respondent to interview officers, directors, or employees of Respondent, who may have counsel present, regarding such matters.

X.

IT IS FURTHER ORDERED that this Order shall terminate on August 9, 2016.

By the Commission.

**NONPUBLIC APPENDIX A
SIEMENS DIVESTITURE AGREEMENT**

**[Redacted From The Public Record Version But
Incorporated By Reference]**

Analysis to Aid Public Comment

ANALYSIS OF CONSENT ORDER TO AID PUBLIC COMMENT**I. Introduction**

The Federal Trade Commission (“Commission”) has accepted, subject to final approval, an Agreement Containing Consent Order (“Consent Agreement”) from Hologic, Inc. (“Hologic”). The purpose of the proposed Consent Agreement is to remedy the competitive harm resulting from Hologic’s consummated acquisition of certain assets of Fischer Imaging Corporation (“Fischer”). Under the terms of the proposed Consent Agreement, Hologic is required to divest to Siemens AG (“Siemens”) all assets it acquired from Fischer relating to Fischer’s prone stereotactic breast biopsy system (“prone SBBS”) business.

The proposed Consent Agreement has been placed on the public record for thirty days to solicit comments from interested persons. Comments received during this period will become part of the public record. After thirty days, the Commission will again review the proposed Consent Agreement and the comments received, and will decide whether it should withdraw the proposed Consent Agreement or make it final.

On September 29, 2005, Hologic paid \$32 million to acquire substantially all of Fischer’s intellectual property and certain other assets relating to its mammography and breast biopsy businesses, including the patents, trademarks, customer lists, and vendor lists relating to Fischer’s prone SBBS product, MammoTest (“Acquisition”). As a result of the Acquisition, Fischer – the only significant competitor to Hologic in the U.S. market for prone SBBSs – relinquished all rights to develop, manufacture, market, and sell prone SBBSs in the United States. The Commission’s complaint alleges that the Acquisition violated Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45, by eliminating Hologic’s only significant competitor in the U.S.

Analysis to Aid Public Comment

market for prone SBBSs. The proposed Consent Agreement would restore the competition eliminated by the Acquisition by ensuring the prompt competitive viability of Siemens as an additional supplier of prone SBBSs in the United States.

II. The Parties

Hologic is a developer, manufacturer, and marketer of diagnostic and imaging medical devices. Its chief product areas are mammography equipment, breast biopsy systems (including the MultiCare Platinum prone SBBS), and bone densitometry equipment. In 2005, Hologic reported worldwide revenues of approximately \$288 million.

Prior to the Acquisition, Fischer was actively involved in developing, manufacturing, and marketing equipment used in the screening and diagnosis of breast cancer. The company's chief products were its SenoScan digital mammography system and its MammoTest prone SBBS. In 2004, Fischer reported revenues of approximately \$64 million. For the first nine months of 2005, prior to the Acquisition, Fischer reported revenues of \$39 million.

III. Prone SBBSs

A prone SBBS is an integrated system that allows a physician to conduct a highly precise, minimally-invasive breast biopsy using x-ray guidance. During the procedure, the patient lies prone on a table with her breast suspended through an aperture in the table. With the patient's breast compressed, the physician utilizes the system's x-ray imaging to guide a needle to the precise location of the suspected lesion and extracts small tissue samples for diagnosis. The entire procedure is conducted beneath the table and is obscured from the patient's view.

There are several other methods of performing breast biopsies, including open surgical biopsies and other types of minimally-invasive systems. None of these other methods, however, are

Analysis to Aid Public Comment

viable economic substitutes for prone SBBSs. Indeed, most hospitals have the capability to perform breast biopsies using multiple methods to ensure that the most appropriate system is used for each procedure.

Surgical biopsies were once the only method of biopsying breast tissue, but these procedures have declined significantly in popularity in response to the availability of newer, minimally-invasive, biopsy systems. Minimally-invasive biopsies provide accurate diagnosis while avoiding the economic costs and patient hardship associated with surgical breast biopsies. Surgical breast biopsies are performed under general anesthesia, require a longer hospital stay, and result in noticeable scarring. For these reasons, surgical procedures are typically performed only in circumstances in which none of the minimally-invasive alternatives is appropriate or available. An ability to perform surgical breast biopsies does not provide a meaningful competitive restraint on the exercise of market power by a prone SBBS monopolist.

There are two other types of minimally-invasive breast biopsy systems: ultrasound and magnetic resonance (“MR”) systems. These systems are complementary treatment modalities, however, and are not competitive substitutes for a prone SBBS. Ultrasound-guided breast biopsies are the most prevalent type of minimally-invasive breast biopsy performed in the United States, and are typically used to biopsy suspicious masses. Ultrasound systems are not well suited for visualizing lesions called microcalcifications, however, and patients with this type of lesion are typically sent for biopsy using a prone SBBS. MR breast biopsy systems are currently considered a niche technology, and are significantly more expensive than prone SBBSs. Further, MR biopsies are cumbersome and time consuming compared to biopsies performed with a prone SBBS. Thus, MR-guided systems are used infrequently, and only in cases for which ultrasound or stereotactic systems would not be appropriate.

Analysis to Aid Public Comment

Stereotactic breast biopsies may also be performed using an “upright” system, which consists of a biopsy unit that attaches to an existing mammography system. There are significant disadvantages associated with using upright systems as compared to prone SBBS procedures, including reduced comfort and a risk of vasovagal reactions (fainting). These problems result from the fact that an upright system performs the biopsy in plain view of the patient. Also, upright systems occupy a mammography machine that could otherwise be used to conduct mammograms, thereby reducing the number of screening mammographies that can be performed in a given day. This makes upright systems a particularly unattractive option for a breast care center that has a significant patient volume. For these reasons, even though upright systems are much less expensive, they are not used commonly in the United States, and do not provide meaningful competition to prone SBBS suppliers.

The relevant geographic market in which to analyze the effects of the Acquisition is the United States. Prone SBBSs are medical devices, and thus cannot be marketed or sold in the United States without prior approval by the United States Food and Drug Administration (“FDA”). Further, a firm wishing to sell prone SBBSs in the United States must establish a local sales and service organization and must not infringe any U.S. patents.

IV. Competitive Effects and Entry Conditions

Fischer pioneered the prone SBBS market when it introduced its MammoTest product in the late 1980s. In 1992, Lorad, a company subsequently acquired by Hologic, introduced the MultiCare prone SBBS to the U.S. market as the first competitor to MammoTest. Over the next fourteen years, Hologic’s MultiCare and Fischer’s MammoTest competed head-to-head in the U.S. market, with each firm supplying approximately fifty percent of the U.S. market for prone SBBSs. This competition directly benefitted U.S. consumers in the form of lower prices, better service, and product innovations. Evidence gathered in the

Analysis to Aid Public Comment

Commission's investigation demonstrates that, prior to the acquisition, customers received lower prices and other economic benefits such as extended warranties and favorable service or payment terms as a result of the competition between Hologic and Fischer. The evidence also shows that the competition between the two companies has resulted in product improvements, including higher resolution detectors and improved software for image manipulation and storage. Since the Acquisition in September 2005, Hologic has enjoyed a virtual monopoly in the U.S. prone SBBS market.

The only other firm that sells a prone SBBS in the United States is Giotto USA. Giotto currently is not a significant competitor, however, having achieved minimal sales in the three years during which its product has been available in the United States. It is unlikely that Giotto could significantly expand its U.S. sales because it does not have access to critical prone SBBS patents, and in any event lacks the necessary infrastructure, track record, product acceptance, and resources to do so.

There is little prospect for new entry into the U.S. prone SBBS market. The strength and breadth of Hologic's patent portfolio, including the patents it acquired from Fischer, insulate the U.S. prone SBBS market from entry. In fact, no company has ever had a meaningful impact on the U.S. prone SBBS market without access to these critical patents. Hologic's MultiCare product, the only prone SBBS ever to compete effectively with Fischer's MammoTest, was able to compete in the U.S. market only by virtue of a license to the Fischer patents that Hologic acquired as part of the settlement of patent infringement litigation. In addition to the intellectual property barriers to entry, potential entrants must contend with the research, development, and regulatory hurdles that companies seeking to market medical devices typically face. Finally, a new entrant would also need to develop manufacturing capability and potentially recruit and train a local sales force in order to gain market acceptance and have an impact on price in the U.S. prone SBBS market.

Analysis to Aid Public Comment

V. The Proposed Consent Agreement

The proposed Consent Agreement effectively remedies the competitive harm that resulted from the Acquisition. Pursuant to the proposed Consent Agreement, Hologic is required to divest to Siemens all of the prone SBBS-related assets it acquired from Fischer no later than five (5) days after the Consent Agreement is accepted for public comment. Hologic will retain a license to Fischer's prone SBBS patents to ensure that Hologic can continue to compete in the U.S. prone SBBS market after the divestiture.

Siemens is particularly well-positioned to manufacture and sell prone SBBSs in the United States. Siemens is one of the world's largest public corporations, with 461,000 employees and over 600 manufacturing plants, research facilities and sales offices worldwide. Siemens Medical Solutions Group is a worldwide leader in medical imaging, with product offerings including angiography, fluoroscopy, magnetic resonance imaging, ultrasound, and mammography. As an established supplier of breast cancer related imaging products, Siemens has earned a strong reputation in the field of breast cancer screening and detection, and already has a domestic sales and service network in place to make it a vigorous prone SBBS competitor. Further, although it already has a mammography business, Siemens does not currently compete in the prone SBBS market, and thus does not present any competitive problems as an acquirer of the divested assets.

If the Commission determines that Siemens is not an acceptable purchaser, or that the manner of the divestiture is not acceptable, Hologic must unwind the sale and divest the prone SBBS assets within six (6) months of the date the Order becomes final to another Commission-approved acquirer. If Hologic fails to divest within that time frame, the Commission may appoint a trustee to divest the prone SBBS assets.

Analysis to Aid Public Comment

The purpose of this analysis is to facilitate public comment on the Consent Agreement, and it is not intended to constitute an official interpretation of the Consent Agreement or to modify its terms in any way.

Complaint

IN THE MATTER OF

**PUERTO RICO ASSOCIATION OF
ENDODONTISTS CORP.**

CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS OF
SEC. 5 OF THE FEDERAL TRADE COMMISSION ACT

Docket C-4166; File No. 051 0170
Complaint, August 24, 2006 – Decision, August 24, 2006

This consent order addresses charges that the respondent, the Puerto Rico Association of Endodontists Corp. (PRAE), orchestrated and implemented agreements among its endodontist members on price and other competitively significant terms, refused or threatened to refuse to deal with payors except on collectively agreed-upon terms, and negotiated fees and other competitively significant terms with payors in contracts for PRAE's member endodontists. The respondent has approximately 30 member endodontists, who are engaged in providing professional services to patients throughout Puerto Rico. The order prohibits PRAE from entering into or facilitating agreements among endodontists (1) to negotiate on behalf of any endodontist with any payor, (2) to deal, refuse to deal, or threaten to refuse to deal with any payor, (3) regarding any term upon which any endodontist deals, or is willing to deal, with any payor, and (4) not to deal individually with any payor or through any arrangement other than PRAE. In addition, PRAE is prohibited from exchanging or facilitating the transfer of information among endodontists concerning any endodontist's willingness to deal with a payor, or the terms or conditions, including price terms, on which the endodontist is willing to deal. PRAE is prohibited from attempting to engage in any such action and from encouraging, pressuring, or attempting to induce any person to engage in any such action. The order requires PRAE to distribute the complaint and order to its members, certain payors, and specified others. Other provisions impose various obligations on PRAE to report or provide access to information to the Commission to facilitate monitoring PRAE's compliance with the order.

Participants

For the *Commission*: *Leonard L. Gordon, Jr.* and *Theodore Zang*.

For the *Respondent*: *James E. Toro Monserrate*.

Complaint

COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act, as amended, 15 U.S.C. § 41 *et seq.*, and by virtue of the authority vested in it by said Act, the Federal Trade Commission, having reason to believe that the Puerto Rico Association of Endodontists, Corp. has violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues this Complaint stating its charges in that respect as follows:

RESPONDENT

1. Respondent Puerto Rico Association of Endodontists, Corp. is a non-profit corporation, organized, existing, and doing business under and by virtue of the laws of Puerto Rico, with its office and principal place of business at PMB #92, 400 Kalaf Street, San Juan, Puerto Rico 00918. Prior to its incorporation in September 2003, many of the endodontists that now are members of Puerto Rico Association of Endodontists, Corp., acting together as an unincorporated association, belonged to, participated in, and represented to the public that they were members of the Puerto Rico Association of Endodontists. As used herein, the term "PRAE" therefore refers to both the corporation and the predecessor unincorporated association known as the Puerto Rico Association of Endodontists.

JURISDICTION

2. According to its Certificate of Incorporation, PRAE was formed by endodontists to serve as a professional association for endodontists and to thereby provide information and education to the members of the association and to the public in general concerning dental surgery. At all times relevant to this Complaint, member endodontists of PRAE have been engaged in

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the business of providing endodontic care for a fee. Except to the extent that competition has been restrained as alleged herein, member endodontists of PRAE have been, and are now, in competition with each other for the provision of endodontic services.

3. PRAE was founded by, is controlled by, and operates for the pecuniary benefit of the endodontists who belong to PRAE. In its internal and external communications, PRAE refers to the endodontists who belong to PRAE as members of PRAE. Accordingly, the participating endodontists are “members” of PRAE, and PRAE therefore is a “corporation,” as those terms are used in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

4. The general business practices of PRAE, including the acts and practices herein alleged, are in or affecting “commerce” as defined in the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

OVERVIEW OF MARKET AND ENDODONTIST COMPETITION

5. PRAE has approximately 30 member endodontists licensed to practice endodontics in Puerto Rico, who are engaged in the business of providing professional services to patients throughout the island. The PRAE membership includes all or almost all of those professionals practicing endodontics in Puerto Rico.

6. Endodontists often contract with health insurance plans and other third party payors (“payors”) to establish the terms and conditions, including price terms, under which such endodontists will render services to the payors’ subscribers. Endodontists entering into such contracts often agree to lower compensation to obtain access to additional patients made available by the payors’ relationship with insureds. These contracts may reduce payors’

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costs, enable them to lower the price of insurance, and reduce out-of-pocket medical expenditures by subscribers to the payors' health insurance plans.

7. Similarly, endodontists entering into such contracts with payors often agree to accept, as payment in full for services rendered, an agreed upon fee from the payor and co-payment from the subscriber. Where such a term is included in the payor-endodontist contract, the endodontist agrees not to "balance bill" the patient for any balance or difference between the agreed upon payments and the endodontist's desired rate. Agreements not to balance bill reduce the cost of endodontic care to patients.

8. Absent agreements among competing endodontists on the terms, including price, on which they will provide services to subscribers or enrollees in health care plans offered or provided by payors, competing endodontists decide individually whether to enter into contracts with payors to provide services to their subscribers or enrollees, and what prices they will accept pursuant to such contracts.

RESTRAINT OF TRADE

9. PRAE's member endodontists, including its officers and the members of its Board of Directors, constitute numerous discrete economic interests. The conduct of PRAE constitutes combined or concerted action by its participating endodontists.

10. PRAE, acting as a combination of competing endodontists, and in combination with endodontists, has restrained competition among its member endodontists by, among other things:

A. facilitating, negotiating, entering into, and implementing agreements among its participating endodontists on price and other competitively significant terms;

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B. refusing or threatening to refuse to deal with payors except on collectively agreed-upon terms; and

C. negotiating fees and other competitively significant terms with payors in contracts for PRAE's member endodontists.

PRAE's ILLEGAL ACTS AND PRACTICES

11. PRAE has engaged in various acts and practices, as more fully described below, that unlawfully restrain competition among PRAE's member endodontists. PRAE has undertaken these acts and practices with the knowledge of its officers, directors, and member endodontists, and often at their explicit instruction.

12. In January 2003, PRAE formed a Pre-Payments Committee for the purpose of negotiating with payors on behalf of PRAE members so as to secure higher reimbursement rates for PRAE members.

13. Beginning as early as January 2003, PRAE, acting through its Pre-Payments Committee, began to negotiate with various payors regarding the rates that those payors paid PRAE members. By March 2003, the PRAE Pre-Payments Committee had met with representatives of two payors and had convinced those payors to increase the rates paid to PRAE members. At a March 2003 PRAE meeting, the PRAE Pre-Payments Committee reported on its successful price negotiations with certain payors and stated that it would send a letter on behalf of the PRAE to several other payors as part of an effort by PRAE to have those payors raise the rates paid to PRAE members.

14. In March 2003, PRAE sent a letter to at least four payors requesting a meeting "with the intention of revising the fees paid to Endodontists" that participate in the payor's dental plan. Thereafter, the Pre-Payments Committee contacted payors to urge the payors to raise their rates. In one such discussion, the payor

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representative informed the Committee member that the Committee's negotiation on behalf of PRAE members was illegal under the antitrust laws. In response, the PRAE representative informed the payor that other payors had been disinclined to accede to the rate increases proposed by the PRAE, and that those payors now were facing potential problems with their networks.

15. PRAE's efforts to negotiate higher rates from payors for its members succeeded. In response to the various efforts of PRAE's Pre-Payment Committee, in 2003 at least five payors raised the rates that they paid PRAE members.

16. In early 2004, PRAE's Pre-Payment Committee began a campaign to raise rates again, this time by seeking to end the payors' ban on balance billing. PRAE sought this change in contract terms to permit its members to raise the prices directly paid by patients and to avoid the cost-containment function of a ban on balance billing.

17. In furtherance of this plan, in early 2004, the PRAE Pre-Payments Committee contacted several payors to request that the payors waive their ban on balance billing. The Committee followed those discussions with a letter in June 2004, which the Committee sent to at least seven payors. The letter urges each payor to eliminate their ban on balance billing so that the insurance company did not have to absorb the price increase that the PRAE members desired. The letter states that waiver of the ban "could result in all Endodontists in Puerto Rico becoming dental participants of your Dental Plan since there would be no financial discrepancies. This could be of great usefulness in your marketing strategy." To emphasize the collective nature of the demand being made by the PRAE, and the potential risk to payors of failing to acquiesce to that demand, twenty-three members of PRAE co-signed the letter. The Pre-Payments Committee followed the letter with repeated phone calls to the payors urging an end to ban on balance billing.

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18. Thus far, the payors pressured by the PRAE to end the ban on balance billing have resisted the coordinated action of the PRAE.

LACK OF SIGNIFICANT EFFICIENCIES

19. The acts and practices described in Paragraphs 10 through 18, including PRAE's negotiation of fees and other competitively significant terms under which each endodontist is paid on a fee-for-service basis, have not been, and are not, reasonably related to any efficiency-enhancing integration of their respective practices. PRAE's member endodontists do not share substantial financial risk and are not otherwise integrated in ways that would create the potential for increased quality and reduced cost of endodontic care that the endodontists provide to patients.

ANTICOMPETITIVE EFFECTS

20. PRAE's acts and practices as described herein have had, or tend to have, the effect of restraining trade unreasonably and hindering competition in the provision of endodontic services in Puerto Rico area in the following ways, among others:

- A. price and other forms of competition among PRAE's participating endodontists were unreasonably restrained;
- B. prices for endodontist services were increased; and
- C. health plans, employers, and individual consumers were deprived of the benefits of competition among endodontists.

**VIOLATION OF THE FEDERAL TRADE COMMISSION
ACT**

21. The combination, conspiracy, acts, and practices described above constitute unfair methods of competition in violation of

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Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45. Such combination, conspiracy, acts, and practices, or the effects thereof, are continuing and will continue or recur in the absence of the relief herein requested.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this twenty-fourth day of August, 2006, issues its Complaint against Respondent PRAE.

By the Commission.

DECISION AND ORDER

The Federal Trade Commission (“Commission”), having initiated an investigation of certain acts and practices of the Puerto Rico Association of Endodontists, Corp. (“PRAE”), hereinafter sometimes referred to as “Respondent,” and PRAE having been furnished with a copy of the draft Complaint that Counsel for the Commission proposed to present to the Commission for its consideration and which, if issued, would charge Respondent with violations of Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondent, its attorney, and counsel for the Commission having thereafter executed an Agreement Containing Consent Order to Cease and Desist (“Consent Agreement”), containing an admission by Respondent of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondent that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and

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waivers and other provisions as required by the Commission's Rules; and

The Commission having thereafter considered this matter and having determined that it had reason to believe that Respondent has violated the said Act, and that a Complaint should issue stating its charges in that respect, and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby issues its Complaint, makes the following jurisdictional findings and issues the following Order: 1.

1. Respondent PRAE is a not-for-profit corporation, organized, existing, and doing business under and by virtue of the laws of the Commonwealth of Puerto Rico, with its principal address located at PMB #92, 400 Kalaf Street, San Juan, Puerto Rico 00918.
2. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the Respondent, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that, as used in this Order, the following definitions shall apply:

- A. "Respondent PRAE" means the Puerto Rico Association of Endodontists, Corp., its officers, directors, members, employees, agents, attorneys, representatives, predecessors, successors, and assigns; the subsidiaries, divisions, groups, and affiliates controlled by it, and the respective officers, directors, employees, agents, attorneys, representatives, predecessors, successors, and assigns of

Decision and Order

each of its officers, directors, members, employees, agents, attorneys, representatives, successors, and assigns; the subsidiaries, divisions, groups, and affiliates controlled by it, and the respective officers, directors, employees, agents, attorneys, representatives, successors, and assigns of each.

- B. “Participate” in an entity means (1) to be a partner, shareholder, owner, member, or employee of such entity, or (2) to provide services, agree to provide services, or offer to provide services, to a payor through such entity. This definition applies to all tenses and forms of the word “participate,” including, but not limited to, “participating,” “participated,” and “participation.”
- C. “Payor” means any person that pays, or arranges for payment, for all or any part of any endodontist services for itself or for any other person. Payor includes any person that develops, leases, or sells access to networks of endodontists.
- D. “Endodontist” means a person involved in the branch of dentistry concerned with the etiology, prevention, diagnosis, and treatment of diseases and injuries affecting the dental pulp, tooth root, and periapical tissue.
- E. “Person” means both natural persons and artificial persons, including, but not limited to, corporations, unincorporated entities, and governments.
- F. “Principal address” means either (1) primary business address, if there is a business address, or (2) primary residential address, if there is no business address.

Decision and Order

II.

IT IS FURTHER ORDERED that Respondent PRAE, directly or indirectly, or through any corporate or other device, in connection with the provision of endodontist services in or affecting commerce, as “commerce” is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44, cease and desist from:

- A. Entering into, adhering to, participating in, maintaining, organizing, implementing, enforcing, or otherwise facilitating any combination, conspiracy, agreement, or understanding between or among any endodontists with respect to their provision of endodontist services:
 - 1. to negotiate on behalf of any endodontist with any payor;
 - 2. to deal, refuse to deal, or threaten to refuse to deal with any payor;
 - 3. regarding any term, condition, or requirement upon which any endodontist deals, or is willing to deal, with any payor, including, but not limited to, price terms; or
 - 4. not to deal individually with any payor, or not to deal with any payor through any arrangement other than Respondent PRAE;
- B. Facilitating in any manner the exchange or transfer of information between or among endodontists concerning any endodontist’s willingness to deal with a payor, or the terms or conditions, including any price terms, on which the endodontist is willing to deal with a payor;
- C. Attempting to engage in any action prohibited by Paragraphs II.A or II.B above; and

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- D. Encouraging, suggesting, advising, pressuring, inducing, or attempting to induce any person to engage in any action that would be prohibited by Paragraphs II.A through II.C above.

III.

IT IS FURTHER ORDERED that Respondent PRAE shall:

- A. Within thirty (30) days after the date on which this Order becomes final, send a copy of this Order and the Complaint by:
1. first-class mail, with return receipt requested or delivery confirmation, or electronic mail, with return confirmation, to each endodontist that is a member of Respondent PRAE;
 2. first-class mail, with return receipt requested or delivery confirmation, or electronic mail, with return confirmation, to each present officer, director, manager, and employee of Respondent PRAE; and
 3. first-class mail, return receipt requested, to the chief executive officer of each payor with whom Respondent PRAE has a record of being in contact since January 1, 2001.
- B. For a period of three (3) years after the date this Order becomes final:
1. Distribute a copy of this Order and the Complaint by:
 - a. first-class mail, with return receipt requested or delivery confirmation, or electronic mail, with return confirmation, to each endodontist that joins

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Respondent PRAE, and that did not previously receive a copy of this Order and the Complaint from Respondent PRAE, within thirty (30) days of the day that such membership begins;

- b. first-class mail, with return receipt requested or delivery confirmation, or electronic mail, with return confirmation, to each person who becomes an officer, director, manager, or employee of Respondent PRAE, and who did not previously receive a copy of this Order and the Complaint from Respondent PRAE, within thirty (30) days of the day that he or she assumes such responsibility with Respondent PRAE; and
2. Annually publish a copy of this Order and the Complaint in an official annual report or newsletter sent to all members of Respondent PRAE, with such prominence as is given to regularly featured articles.
- C. File a verified written report within sixty (60) days after the date on which this Order becomes final, annually thereafter for three (3) years on the anniversary of the date this Order becomes final, and at such other times as the Commission may by written notice require. Each such report shall include:
1. A detailed description of the manner and form in which Respondent PRAE has complied and is complying with this Order;
 2. The name, address, and telephone number of each payor with which Respondent PRAE has had any contact; and
 3. Depending on the method of delivery used, copies of the delivery confirmations, electronic mail

Decision and Order

confirmations, or signed return receipts required by this Order.

IV.

IT IS FURTHER ORDERED that Respondent PRAE shall notify the Commission at least thirty (30) days prior to any proposed (1) dissolution of Respondent PRAE, (2) acquisition, merger, or consolidation of Respondent PRAE, or (3) other change in Respondent PRAE that may affect compliance obligations arising out of this Order, including but not limited to assignment, the creation or dissolution of subsidiaries, or any other change in Respondent PRAE.

V.

IT IS FURTHER ORDERED that Respondent PRAE shall notify the Commission of any change in its principal address within twenty (20) days of such change in address.

VI.

IT IS FURTHER ORDERED that, for the purpose of determining or securing compliance with this Order, Respondent PRAE shall permit any duly authorized representative of the Commission:

- A. Access, during office hours and in the presence of counsel, to inspect and copy all books, ledgers, accounts, correspondence, memoranda, calendars, and other records and documents in its possession, or under its control, relating to any matter contained in this Order; and
- B. Upon five (5) days' notice, and in the presence of counsel, and without restraint or interference from it, to interview officers, directors, or employees of the Respondent.

Decision and Order

VII.

IT IS FURTHER ORDERED that this Order shall terminate on August 24, 2026.

By the Commission.

Analysis to Aid Public Comment

ANALYSIS OF CONSENT ORDER TO AID PUBLIC COMMENT

The Federal Trade Commission has accepted, subject to final approval, an agreement containing a proposed consent order with Puerto Rico Association of Endodontists Corp. (“PRAE”). The agreement settles charges that PRAE violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, by orchestrating and implementing agreements among endodontist members of PRAE on price and other competitively significant terms; refusing or threatening to refuse to deal with payors except on collectively agreed-upon terms; and negotiating fees and other competitively significant terms with payors in contracts for PRAE’s member endodontists. Comments received during this period will become part of the public record. After 30 days, the Commission will review the agreement and the comments received, and will decide whether it should withdraw from the agreement or make the proposed order final.

The purpose of this analysis is to facilitate public comment on the proposed order. The analysis is not intended to constitute an official interpretation of the agreement and proposed order, or to modify their terms in any way. Further, the proposed consent order has been entered into for settlement purposes only and does not constitute an admission by PRAE that it violated the law or that the facts alleged in the complaint (other than jurisdictional facts) are true.

The Complaint

The allegations of the complaint are summarized below.

PRAE is a nonprofit corporation, organized, existing, and doing business under and by virtue of the laws of the Commonwealth of Puerto Rico (“Commonwealth” or “Puerto Rico”), with its office and principal place of business in San Juan, Puerto Rico.

Analysis to Aid Public Comment

PRAE has approximately 30 member endodontists, who are engaged in the business of providing professional services to patients throughout Puerto Rico. PRAE membership includes all or almost all of those professionals who are licensed practicing endodontists in the Commonwealth. Except to the extent that competition has been restrained, member endodontists of PRAE have been, and are now, in competition with each other for the provision of endodontic services.

In January 2003, PRAE formed a Pre-Payments Committee, which then began negotiating with payors on behalf of PRAE members in order to secure higher reimbursement rates for PRAE members. By March 2003, the PRAE Pre-Payments Committee had met with representatives of two payors and convinced those payors to increase the rates paid to PRAE members.

Also in March 2003, PRAE sent a letter to at least four insurance companies requesting a meeting “with the intention of revising the fees paid to Endodontists” that participate in the insurer’s dental plan. Thereafter, the Pre-Payments Committee contacted these payors to urge them to raise their rates. In one such discussion, the payor representative informed the Committee member that the Committee’s negotiation on behalf of PRAE members was illegal under the antitrust laws. In response, the PRAE representative informed the payor that other payors had been disinclined to accede to the rate increases proposed by the PRAE, and that those payors now were facing potential problems with their networks.

PRAE’s efforts to negotiate higher rates from payors for its members succeeded. In response to the various efforts of PRAE’s Pre-Payment Committee, in 2003 at least five payors raised the rates that they paid PRAE members.

In early 2004, PRAE’s Pre-Payment Committee began a campaign to raise rates again, this time by seeking to end the

Analysis to Aid Public Comment

payors' ban on balance billing¹. PRAE sought this change in contract terms to permit its members to raise the prices directly paid by patients and to avoid the cost-containment function of a ban on balance billing.

In furtherance of this plan, in early 2004, the PRAE Pre-Payments Committee contacted several payors to request that the payors waive their ban on balance billing. The Committee followed those discussions with a letter in June 2004, which the Committee sent to at least seven payors. The letter urges each payor to eliminate their ban on balance billing so that the payor did not have to absorb the price increase that the PRAE members desired. The letter states that waiver of the ban "could result in all Endodontists in Puerto Rico becoming dental participants of your Dental Plan since there would be no financial discrepancies. This could be of great usefulness in your marketing strategy." To emphasize the collective nature of the demand being made by the PRAE, and the potential risk to payors of failing to acquiesce to that demand, twenty-three members of PRAE co-signed the letter. The Pre-Payments Committee followed the letter with repeated phone calls to the payors urging an end to ban on balance billing. Thus far, the payors pressured by PRAE to end the ban on balance billing have resisted the coordinated action of PRAE.

PRAE engaged in no efficiency-enhancing integration sufficient to justify joint negotiation of fees or other terms. By the acts set forth in the Complaint, PRAE violated Section 5 of the FTC Act.

¹ Endodontists entering into contracts with payors often agree to accept, as payment in full for services rendered, an agreed upon fee from the payor and co-payment from the subscriber. Where such a term is included in the payor-endodontist contract, the endodontist agrees not to "balance bill" the patient for any balance or difference between the agreed upon payments and the endodontist's desired rate. Agreements not to balance bill reduce the cost of endodontic care to patients.

Analysis to Aid Public Comment

The Proposed Consent Order

The proposed order is designed to remedy the illegal conduct charged in the complaint and prevent its recurrence. The proposed order is similar to recent consent orders that the Commission has issued to settle charges that physician groups engaged in unlawful agreements to raise fees they receive from health plans.

The proposed order's specific provisions are as follows:

Paragraph II.A prohibits PRAE from entering into or facilitating agreements among endodontists: (1) to negotiate on behalf of any endodontist with any payor; (2) to deal, refuse to deal, or threaten to refuse to deal with any payor; (3) regarding any term upon which any endodontist deals, or is willing to deal, with any payor; and (4) not to deal individually with any payor or through any arrangement other than PRAE.

Other parts of Paragraph II reinforce these general prohibitions. Paragraph II.B prohibits PRAE from exchanging or facilitating the transfer of information among endodontists concerning any endodontist's willingness to deal with a payor, or the terms or conditions, including price terms, on which the endodontist is willing to deal. Paragraph II.C prohibits PRAE from attempting to engage in any action prohibited by Paragraphs II.A or II.B. Paragraph II.D prohibits PRAE from encouraging, pressuring or attempting to induce any person to engage in any action that would be prohibited by Paragraphs II.A through II.C.

Paragraphs III.A and B require PRAE to distribute the complaint and order to its members, payors with which it has been in contact since the beginning of 2001, and specified others.

Paragraphs IV, V, and VI of the proposed order impose various obligations on PRAE to report or provide access to

Analysis to Aid Public Comment

information to the Commission to facilitate monitoring PRAE's compliance with the order.

The proposed order will expire in 20 years.

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IN THE MATTER OF

AUSTIN BOARD OF REALTORSCONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS
OF SEC. 7 OF THE CLAYTON ACT AND SEC. 5 OF THE FEDERAL
TRADE COMMISSION ACT

Docket C-4167; File No. 051 0219
Complaint, August 29, 2006 – Decision, August 29, 2006

This consent order addresses charges that the Austin Board of Realtors engaged in a concerted refusal to deal except on specified terms with respect to a key input for the provision of real estate services. The respondent adopted a rule that prevented information on certain real estate listings provided to the Austin/Central Texas Realty Information Service (ACTRIS) from being included in Multiple Listing Service websites available to the general public. The order prohibits the respondent from treating Exclusive Agency Listings, or any other lawful listing agreements with sellers of property, in a less advantageous manner than Exclusive Right to Sell Listings, including but not limited to, adopting any policy, rule, or practice pertaining to the transmission, downloading, or displaying of information pertaining to such listings. The order prohibits the respondent from adopting or enforcing any policy to deny, restrict, or interfere with the ability of its members or ACTRIS participants to enter into Exclusive Agency Listings or other lawful listing agreements with the sellers of properties. The order contains a general proviso that preserves to the Austin Board of Realtors the ability to adopt or enforce any policy, rule, practice, or agreement that it can show is reasonably ancillary to the legitimate and beneficial objectives of the Multiple Listing Service. In addition, the order requires the Austin Board of Realtors to notify its members and ACTRIS participants of the order, to notify the Commission of changes in the Board's structure, and to file regular written reports of its compliance with the terms of the order.

Participants

For the *Commission: Joel Christie and Peggy Bayer Femenella.*

For the *Respondent: Joseph R. Knight, Baker Botts LLP.*

Complaint

COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act, and by virtue of the authority vested in it by said Act, the Federal Trade Commission, having reason to believe that the Austin Board of Realtors (“Respondent” or “ABOR”), a corporation, also trading and doing business as Austin/Central Texas Realty Information Service has violated and is violating Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues this complaint stating its charges as follows:

NATURE OF THE CASE

This case involves a local, private real estate association that operates a Multiple Listing Service, which is a joint venture among its members designed to foster real estate brokerage services. ABOR has adopted a rule that limits the publication of certain listing agreements on popular internet real estate web sites, in a manner that injures real estate brokers that use such listing agreements to offer lesser services at a lower price compared to the full service package. This rule deprives such brokers and the home sellers they represent of a significant benefit afforded by the MLS. The rule discriminates on the basis of lawful contractual terms between the listing real estate broker and the seller of the property, and lacks any justification that such a rule improves competitive efficiency. Consumers will be harmed by this rule because it denies a lower cost option to sellers and increases search costs to buyers. As such, this rule constitutes a concerted refusal to deal except on specified terms with respect to a key input for the provision of real estate services.

RESPONDENT AND ITS MEMBERS

1. Respondent Austin Board of Realtors, (“ABOR”) is a not for profit corporation organized, existing and doing business

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under and by virtue of the laws of the State of Texas. Respondent's principal place of business is at 10900 Stonelake Boulevard, Suite 100, Austin, Texas 78759. ABOR operates for the benefit of its members.

2. ABOR has more than 5,000 real estate professionals as members, and is affiliated with the National Association of Realtors ("NAR"). The majority of ABOR's members hold an active real estate license and are active in the real estate profession.

3. The large majority of residential real estate brokerage professionals in the Austin, Texas, metropolitan area are members of ABOR. These professionals compete with one another to provide residential real estate brokerage services to consumers.

4. ABOR is now and has been providing since 1952 a Multiple Listing Service ("MLS") for members doing business in the metropolitan Austin, Texas area. A MLS is a clearinghouse through which member real estate brokerage firms regularly and systematically exchange information on listings of real estate properties and share commissions with members who locate purchasers.

5. The ABOR MLS is organized through the Austin/Central Texas Realty Information Service ("ACTRIS"), which is a Texas not for profit corporation, all of whose stock is owned by ABOR. ACTRIS rules and policies, and any amendments thereto, must be approved by the ABOR Board of Directors.

6. When a property is listed on ACTRIS, it is made available to all members of the MLS for the purpose of trying to match a buyer with a seller. Information about the property, including the asking price, address and property details, are made available to members of the MLS so that a suitable buyer can be found.

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7. ACTRIS services the territory within central Texas, specifically metropolitan Austin, including Bastrop, Blanco, Burnet, Caldwell, Fayette, Gillespie, Hays, Hutto, Lee, Llano, Milam, Travis and Williamson counties in the State of Texas (“ACTRIS Service Area”).

8. ACTRIS is the only MLS that services metropolitan Austin, Texas. ACTRIS is the dominant MLS in the ACTRIS Service Area.

JURISDICTION

9. ABOR is and has been at all times relevant to this complaint a corporation organized for its own profit or for the profit of its members within the meaning of Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

10. The acts and practices of ABOR, including the acts and practices alleged herein, have been or are in or affecting commerce within the meaning of Section 4 of the Federal Trade Commission Act.

ABOR CONDUCT

11. In 2005, ACTRIS adopted and ABOR approved a rule that stated: “Listing information downloaded and/or otherwise displayed pursuant to IDX shall be limited to properties listed on an exclusive right to sell basis” (the “Web Site Policy”).

12. The Web Site Policy prevented certain lawful residential property listings provided to ACTRIS, called “Exclusive Agency Listings,” from being transmitted to real estate web sites, based on the contractual relationship between the home seller and the real estate agent the seller employs to promote the property.

13. An Exclusive Agency Listing is a listing agreement under which the listing broker acts as an exclusive agent of the property

Complaint

owner or principal in the sale of a property, but reserves to the property owner or principal a right to sell the property without assistance of a broker, in which case the listing broker is paid a reduced or no commission when the property is sold.

14. Exclusive Agency Listings are often used by members of ABOR to offer lower-cost real estate services to consumers, including lawful arrangements pursuant to which a real estate broker or agent provides that a property offered for sale shall be listed on the MLS, but the listing broker or agent will not provide some or all of the services offered by other real estate brokers or will only offer such additional services on an _ la carte basis.

15. Many brokers offering real estate brokerage services pursuant to Exclusive Agency Listings, are able to provide home sellers with exposure of their listing through the MLS for a flat fee that is very small compared to the commission prices traditionally charged. Exclusive Agency Listings often reserve to the home seller the right to sell the property without owing more to the listing broker.

16. The Web Site Policy specifically prevents Exclusive Agency Listings from being published on web sites approved by ABOR and ACTRIS, including (1) ACTRIS-member web sites; (2) the ABOR-owned “Austinhomesearch.com” web site; and (3) the NAR-operated “Realtor.com” web site (collectively, “Approved Web Sites”).

17. The Web Site Policy has the effect of discouraging members of ABOR and participants in ACTRIS from accepting Exclusive Agency Listings. In the first three months that the Web Site Policy was in effect, the number of Exclusive Agency Listings on the ACTRIS MLS in Austin dropped from 18 percent to approximately 2.5 percent of all the listings on the MLS.

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ABOR MARKET POWER

18. The provision of residential real estate brokerage services to sellers and buyers of real property in the Austin, Texas and/or the ACTRIS Service Area is a relevant service market.

19. The publication and sharing of information relating to residential real estate listings for the purpose of brokering residential real estate transactions is a key input to the provision of real estate brokerage services, and represents a relevant input market. Publication of listings through ACTRIS is generally considered by sellers, buyers and their brokers to be the fastest and most effective means of obtaining the broadest market exposure for property in the ACTRIS Service Area.

20. By virtue of industry-wide participation and control over a key input, ABOR and ACTRIS have market power in the ACTRIS Service Area.

21. Membership or participation in ACTRIS is essential to a broker providing effective residential real estate brokerage services to sellers and buyers of real property in the ACTRIS Service Area. Membership significantly increases the opportunities of brokerage firms to enter into listing agreements with residential property owners, and significantly reduces the costs of obtaining up-to-date and comprehensive information on listings and sales. The realization of these opportunities and efficiencies is important for brokers to compete effectively in the provision of residential real estate brokerage services in the ACTRIS Service Area.

APPROVED WEB SITES ARE KEY INPUTS

22. Access to the Approved Web Sites is a key input in the brokerage of residential real estate sales in the ACTRIS Service Area. Home buyers regularly use the Approved Web Sites to assist in their search for homes. The Approved Web Sites are the

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web sites most commonly used by home buyers in their home search. Many home buyers find the home that they ultimately purchase by searching on Approved Web Sites.

23. The most efficient, and at least in some cases the only, means for ABOR members to have their properties listed on the Approved Web Sites is by having ACTRIS transmit those listings.

24. Property owners and their brokers in the ACTRIS Service Area generally consider publication of listings on Approved Web Sites, in conjunction with publication of listings on the ACTRIS MLS, to be the most effective means of obtaining the broadest market exposure for residential property in the ACTRIS Service Area.

EFFECTS OF WEB SITE POLICY

25. The Web Site Policy has reduced the use of Exclusive Agency Listings in the ACTRIS Service Area. Prior to the initiation of the Web Site Policy, about 1,500 of 8,500, or 18 percent, of the listings on ACTRIS were Exclusive Agency Listings. After the Web Site Policy was implemented, the number of Exclusive Agency Listings dropped to about 250 out of 10,000, or 2.5 percent.

26. The Web Site Policy may reduce consumer choices regarding both the purchase and sale of homes and cause consumers to pay for real estate brokerage services that they would not otherwise buy.

**THE WEB SITE POLICY OFFERS NO EFFICIENCY
BENEFIT**

27. There is no cognizable and plausible efficiency justification for the Web Site Policy. The Web Site Policy is not reasonably ancillary to the legitimate and beneficial objectives of the MLS.

Decision and Order

VIOLATION

28. In adopting the policies and engaging in the Acts and Practices described herein, ABOR has been and is acting as a combination of its members, or in conspiracy with some of its members, to restrain trade in the provision of residential real estate brokerage services within metropolitan Austin, Texas and/or the ACTRIS Service Area.

29. The purposes, capacities, tendencies, or effects of the policies, acts, or practices of ABOR and its members as described herein have been and are unreasonably to restrain competition among brokers, and to injure consumers.

30. The policies, acts, practices, and combinations or conspiracies described herein constitute unfair methods of competition in or affecting interstate commerce in violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this twenty-ninth day of August, 2006, issues its Complaint against Respondent Austin Board of Realtors.

By the Commission

DECISION AND ORDER

The Federal Trade Commission (“Commission”) having initiated an investigation of certain acts and practices of the Austin Board of Realtors, hereinafter sometimes referred to as

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“Respondent” or “ABOR,” and Respondent having been furnished thereafter with a copy of the draft Complaint that the Bureau of Competition presented to the Commission for its consideration and which, if issued by the Commission, would charge Respondent with violations of Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondent, its attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Order (“Consent Agreement”), containing an admission by Respondent of all the jurisdictional facts set forth in the aforesaid draft Complaint, a statement that the signing of the Consent Agreement is for settlement purposes only and does not constitute an admission by Respondent that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waives and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondent has violated the said Act, and that a Complaint should issue stating its charges in that respect, and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34 (2004), the Commission hereby makes the following jurisdictional findings and issues the following Order:

1. Respondent Austin Board of Realtors is a corporation organized, existing and doing business under and by virtue of the laws of the State of Texas, with its office and principal place of business at 10900 Stonelake Boulevard, Suite 100, Austin, Texas 78759.

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2. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the Respondent, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that for the purposes of this Order, the following definitions shall apply:

- A. “Respondent” or “ABOR” means the Austin Board of Realtors, its predecessors, divisions and wholly or partially owned subsidiaries, affiliates, partnerships, and joint ventures; and all the directors, officers, employees, consultants, agents, and representatives of the foregoing. The terms “subsidiary,” “affiliate” and “joint venture” refer to any person in which there is partial or total ownership or control by the ABOR, and is specifically meant to include ACTRIS and Austinhomesearch.com.
- B. “ABOR Member” means any person that holds any class of membership in ABOR as defined by ABOR’s by-laws, policies and/or rules.
- C. “Multiple Listing Service” or “MLS” means a cooperative venture by which real estate brokers serving a common market area submit their listings to a central service which, in turn, distributes the information for the purpose of fostering cooperation in and facilitating real estate transactions.
- D. “ACTRIS” means the Austin/Central Texas Realty Information Service, a wholly-owned subsidiary of ABOR, which operates the MLS organized and directed by ABOR.

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- E. “ACTRIS Participant” means any person authorized by ACTRIS to use or enjoy the benefits of ACTRIS, including but not limited to Participants, Subscribers and Authorized Assistants as those terms are defined in the Austin Board of Realtors Austin/Central Texas Realty Information Service Rules and Regulations.
- F. “IDX” means the internet data exchange process that converts the MLS listing database to a database that can be integrated within any web site.
- G. “IDX Web Site” means a Web Site that is capable of integrating the MLS listing database within the Web Site.
- H. “Austinhomesearch.com” means the Web Site operated by ABOR that allows the general public to search information concerning real estate listings from ACTRIS.
- I. “Realtor.com” means the Web Site operated by the National Association of Realtors that allows the general public to search information concerning real estate listings downloaded from a variety of MLSs representing different geographic areas of the country, including but not limited to real estate listings from ACTRIS.
- J. “Approved Web Site” means a Web Site to which ABOR or ACTRIS provides information concerning listings for publication including, but not limited to, ABOR Member IDX Web Sites, Austinhomesearch.com, and Realtor.com.
- K. “Exclusive Right to Sell Listing” means a listing agreement under which the property owner or principal appoints a real estate broker as his or her exclusive agent for a designated period of time, to sell the property on the owner’s stated terms, and agrees to pay the listing broker a commission when the property is sold, regardless of whether the buyer is found by the listing broker, the owner or another broker.

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- L. “Exclusive Agency Listing” means a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but also reserves to the property owner or principal a right to sell the property without assistance from a broker, in which case the listing broker is paid a reduced commission or no commission when the property is sold.
- M. “Services of the MLS” means the benefits and services provided by the MLS to assist ABOR Members or ACTRIS Participants in selling, leasing and valuing property and/or brokering real estate transactions. With respect to real estate brokers or agents representing home sellers, Services of the MLS shall include, but are not limited to:
1. having the property included among the listings in the MLS in a manner so that information concerning the listing is easily accessible by cooperating brokers; and
 2. having the property publicized through means available to the MLS, including, but not limited to, information concerning the listing being made available on Austinhomesearch.com, Realtor.com and IDX Web Sites.

II.

IT IS FURTHER ORDERED that Respondent ABOR, its successors and assigns, and its directors, officers, committees, members, agents, representatives, and employees, directly or indirectly, or through any corporation, subsidiary, division, or other device, in connection with the operation of a Multiple Listing Service or Approved Web Sites in or affecting commerce, as “commerce” is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 45, shall forthwith cease and desist

Decision and Order

from adopting or enforcing any policy, rule, practice or agreement to deny, restrict or interfere with the ability of ABOR Members or ACTRIS Participants to enter into Exclusive Agency Listings or other lawful listing agreements with the sellers of properties, including but not limited to any policy, rule, practice or agreement to:

1. prevent ABOR Members or ACTRIS Participants from offering or accepting Exclusive Agency Listings;
2. prevent ABOR Members or ACTRIS Participants from cooperating with listing brokers or agents that offer or accept Exclusive Agency Listings;
3. prevent ABOR Members or ACTRIS Participants from publishing information concerning listings offered pursuant to Exclusive Agency Listings on Approved Web Sites;
4. deny or restrict the Services of the MLS to Exclusive Agency Listings or other lawful listings in any way that such Services of the MLS are not denied or restricted to Exclusive Right to Sell Listings; and
5. treat Exclusive Agency Listings, or any other lawful listings, in a less advantageous manner than Exclusive Right to Sell Listings, including but not limited to, any policy, rule or practice pertaining to the transmission, downloading, or displaying of information pertaining to such listings.

Provided, however, that nothing herein shall prohibit the Respondent from adopting or enforcing any policy, rule, practice or agreement regarding membership requirements, payment of dues, administrative matters, or any other policy, rule, practice or agreement, that it can show is reasonably ancillary to the legitimate and beneficial objectives of the MLS.

Decision and Order

III.

IT IS FURTHER ORDERED that Respondent shall, no later than thirty (30) days after the date this Order becomes final, amend its rules and regulations to conform to the provisions of this Order.

IV.

IT IS FURTHER ORDERED that, within ninety (90) days after the date this Order becomes final, Respondent shall (1) inform each ABOR Member and ACTRIS Participant of the amendments to its rules and regulations to conform to the provisions of this Order; and (2) provide each ABOR Member and ACTRIS Participant with a copy of this Order. Respondent shall transmit the rule change and Order by the means it uses to communicate with its members in the ordinary course of ABOR's business, which shall include, but not be limited to: (A) sending one or more emails with one or more statements that there has been a change to the rule and an Order, along with a link to the amended rule and the Order, to each ABOR Member and ACTRIS Participant; and (B) placing on the publicly accessible MLS Rules and Regulations page of the ABOR Web Site (www.ABOR.com) a statement that there has been a change to the rule and an Order, along with a link to the amended rule and the Order. Respondent shall modify its Web Site as described above no later than five (5) business days after the date the Order becomes final, and shall display such modifications for no less than ninety (90) days from the date this Order becomes final. The Order shall remain accessible through common search terms and archives on the Web Site for five (5) years from the date it becomes final.

V.

IT IS FURTHER ORDERED that Respondent shall notify the Commission at least thirty (30) days prior to any proposed

Analysis to Aid Public Comment

change in Respondent, such as dissolution, assignment or sale resulting in the emergence of a successor corporation or any other proposed changes in the corporation which may affect compliance obligations arising out of the Order.

VI.

IT IS FURTHER ORDERED that Respondent shall file a written report within six (6) months of the date this Order becomes final, and annually on the anniversary date of the original report for each of the five (5) years thereafter, and at such other times as the Commission may require by written notice to Respondent, setting forth in detail the manner and form in which it has complied with this Order.

VII.

IT IS FURTHER ORDERED that this Order shall terminate on August 29, 2016.

By the Commission.

**ANALYSIS OF CONSENT ORDER TO AID PUBLIC
COMMENT**

The Federal Trade Commission has accepted for public comment an Agreement Containing Consent Order with the Austin Board of Realtors (“ABOR” or “Respondent”), an association of real estate brokers in the Austin, Texas, metropolitan area. The Agreement settles charges that ABOR violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, by engaging in a concerted refusal to deal except on

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specified terms with respect to a key input for the provision of real estate services. The proposed consent order has been placed on the public record for 30 days to receive comments from interested persons. Comments received during this period will become part of the public record. After 30 days, the Commission will review the agreement and the comments received, and will decide whether it should withdraw from the agreement or make the proposed order final.

The purpose of this analysis is to facilitate comment on the proposed order. The analysis does not constitute an official interpretation of the agreement and proposed order, and does not modify their terms in any way. Further, the proposed consent order has been entered into for settlement purposes only, and does not constitute an admission by Respondent that it violated the law or that the facts alleged in the complaint (other than jurisdictional facts) are true.

I. Industry Background

A Multiple Listing Service, or “MLS,” is a cooperative venture by which real estate brokers serving a common local market area submit their listings to a central service, which in turn distributes the information, for the purpose of fostering cooperation among brokers and agents in real estate transactions. The MLS facilitates transactions by putting together a home seller, who contracts with a broker who is a member of the MLS, with prospective buyers, who may be working with other brokers who are also members of the MLS. Membership in the MLS is limited to member brokers who generally must possess a license to engage in real estate brokerage services and meet other criteria set by MLS rules.

Prior to the late 1990s, the listings on an MLS were typically directly accessible only to real estate brokers who were members of a local MLS. The MLS listings typically were made available through books or dedicated computer terminals, and generally

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could only be accessed by the general public by physically visiting a broker's office or by receiving a fax or hand delivery of selected listings from a broker.

Information from an MLS is now typically available to the general public not only through the offices of brokers who are MLS members, but also through three principal categories of internet web sites. First, information concerning many MLS listings is available through Realtor.com, a national web site run by the National Association of Realtors ("NAR"). Realtor.com contains listing information from many local MLS systems around the country and is the largest and most-used internet real estate web site. Second, information concerning MLS listings is often made available through a local MLS-affiliated web site, such as Austinhomesearch.com. Third, information concerning MLS listings is often made available on the internet sites of various real estate brokers, who choose to provide these web sites as a way of promoting their brokerage services. Most of these various web sites receive information from an MLS pursuant to a procedure known as Internet Data Exchange ("IDX"), which is typically governed by MLS policies. The IDX policies allow operators of approved web sites to display MLS active listing information to the public.

As a survey of home buyers and sellers conducted by the National Association of Realtors has shown, home buyers are increasingly relying upon the internet in their search for homes, and web sites of the kind affected by the Web Site Policy are the most popular internet sites for home buyers.¹ According to the NAR survey, 74 percent of home buyers nationally used the internet to assist in their home search, with 53 percent reporting frequent internet searches; 15 percent of respondents first learned

¹ PAUL C. BISHOP, THOMAS BEERS AND SHONDA D. HIGHTOWER, THE 2004 NATIONAL ASSOCIATION OF REALTORS PROFILE OF HOME BUYERS AND SELLERS ("NAR Survey") at 3-3, 3-4, 3-5, 3-6, 3-18.

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about the home they selected from the internet; 69 percent of home buyers found the internet to be a “very useful” source of information, and a total of 96 percent found the internet to be either “very useful” or “somewhat useful.”² Moreover, the NAR Survey makes clear that the overwhelming majority of web sites used nationally in searching for homes contain listing information that is provided by local MLS systems.³

A. Types of Real Estate Brokerage Professionals

A typical real estate transaction involves two real estate brokers: these are commonly known as a “Listing Broker” and a “Selling Broker.” The Listing Broker is hired by the seller of the property to locate an appropriate buyer. The seller and the Listing Broker agree upon compensation, which is determined by written agreement negotiated between the seller and the Listing Broker. In a common traditional listing agreement, the Listing Broker receives compensation in the form of a commission, which is typically a percentage of the sales price of the property, payable if and when the property is sold. In such a traditional listing agreement, the Listing Broker agrees to provide a package of real estate brokerage services, including promoting the listing through the MLS and on the internet, providing advice to the seller regarding pricing and presentation, fielding all calls and requests to show the property, supplying a lock-box so that potential buyers can see the house with their agents, running open houses to show the house to potential buyers, negotiating with buyers or their agents on offers, assisting with home inspections and other arrangements once a contract for sale is executed, and attending the closing of the transaction.

² *Id.* See *Home Buyer & Seller Survey Shows Rising Use of Internet, Reliance on Agents* (Jan. 17, 2006), available at <http://www.realtor.org/PublicAffairsWeb.nsf/Pages/HmBuyerSellerSurvey06?OpenDocument>.

³ NAR Survey at 3-18.

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The other broker involved in a typical transaction is commonly known as the Selling Broker. In a typical transaction, a prospective buyer will seek out a Selling Broker to identify properties that may be available. This Selling Broker will discuss the properties that may be of interest to the buyer, accompany the buyer to see various properties, try to arrange a transaction between buyer and seller, assist the buyer in negotiating the contract, and help in further steps necessary to close the transaction. In a traditional transaction, the Listing Broker offers the Selling Broker a fixed commission, to be paid from the Listing Broker's commission when and if the property is sold. Real estate brokers typically do not specialize as only Listing Brokers or Selling Brokers, but often function in either role depending on the particular transaction.

B. Types of Real Estate Listings

The relationship between the Listing Broker and the seller of the property is established by agreement. The two most common types of agreements governing listings are Exclusive Right to Sell Listings and Exclusive Agency Listings. An Exclusive Right to Sell Listing is the traditional listing agreement, under which the property owner appoints a real estate broker as his or her exclusive agent for a designated period of time, to sell the property on the owner's stated terms, and agrees to pay the Listing Broker a commission if and when the property is sold, whether the buyer of the property is secured by the Listing Broker, the owner or another broker.

An Exclusive Agency Listing is a listing agreement under which the Listing Broker acts as an exclusive agent of the property owner or principal in the sale of a property, but under which the property owner or principal reserves a right to sell the property without assistance of the Listing Broker, in which case the Listing Broker is paid a reduced or no commission when the property is sold.

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Some real estate brokers have attempted to offer services to home sellers on something other than the traditional full-service basis. Many of these brokers, often for a flat fee, will offer sellers access to the MLS's information-sharing function, as well as a promise that the listing will appear on the most popular real estate web sites. Under such arrangements, the Listing Broker does not offer additional real estate brokerage services as part of the flat fee package, but allows sellers to purchase additional services if sellers so desire. These non-traditional arrangements often are structured using Exclusive Agency Listing contracts.

There is a third type of real estate listing that does not involve a real estate broker, which is a "For Sale By Owner" or "FSBO" listing. With a FSBO listing, a home owner will attempt to sell a house without the involvement of any real estate broker and without paying any compensation to such a broker, by advertising the availability of the home through traditional advertising mechanisms (such as a newspaper) or FSBO-specific web sites.

There are two critical distinctions between an Exclusive Agency Listing and a FSBO for the purpose of this analysis. First, the Exclusive Agency Listing employs a Listing Broker for access to the MLS and web sites open to the public; a FSBO listing does not. Second, an Exclusive Agency Listing sets terms of compensation to be paid to a Selling Broker, while a FSBO listing often does not.

II. The Complaint

The Complaint alleges that ABOR, a Texas not-for-profit corporation operating for the benefit of its members, has violated Section 5 of the FTC Act. Specifically, the proposed Complaint alleges that ABOR has unlawfully restrained competition among real estate brokers in central Texas by adopting a policy that constitutes a concerted refusal to deal except on specified terms.

Analysis to Aid Public Comment

A. ABOR Has Market Power

ABOR has more than 5,000 real estate professionals, and the large majority of residential real estate brokerage professionals in the Austin, Texas, metropolitan area are members of ABOR. These professionals compete with one another to provide residential real estate brokerage services to consumers.

The ABOR MLS is organized through the Austin/Central Texas Realty Information Service (“ACTRIS”) and ACTRIS is the only MLS that serves metropolitan Austin, Texas. Membership in ACTRIS is critical to a broker providing residential real estate brokerage services to sellers and buyers of real property in the ACTRIS service area. ABOR, through ACTRIS, controls key inputs needed for a Listing Broker to provide effective real estate brokerage services, including: (1) a means to publicize to all brokers the residential real estate listings in central Texas; and (2) a means to distribute listing information to web sites for the general public. By virtue of industry-wide participation and control over a key input, ABOR and ACTRIS have market power in the provision of residential real estate brokerage services to sellers and buyers of real property in the Austin, Texas and/or the ACTRIS Service Area.

B. ABOR Conduct

In February 2005, ABOR adopted a rule that prevented information on Exclusive Agency Listings provided to ACTRIS from being transmitted to real estate web sites available to the general public (the “Web Site Policy”). The Web Site Policy specifically prevents any information on listings other than traditional Exclusive Right to Sell Listings from being included in the IDX-formatted information that is available from ACTRIS to be used and published by publicly-accessible web sites.⁴ The

⁴ The ABOR rule states: “Listing information downloaded and/or otherwise displayed pursuant to IDX shall be limited to properties listed on an

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effect of this rule is to prevent such information from being available to be displayed on a broad range of web sites, including the NAR-operated “Realtor.com” web site; the ABOR-owned “Austinhomesearch.com” web site; and ABOR member web sites.

Exclusive Agency Listings are often used by members of ABOR acting as Listing Brokers to offer lower-cost real estate services to consumers. ABOR’s Web Site Policy is joint action by a group of competitors to withhold distribution of listing information to publicly accessible web sites from competitors who do not contract with their brokerage service customers in a way that the group wishes. This conduct represents a new variation of a type of conduct that the Commission condemned 20 years ago. In the 1980s and 1990s, several local MLS boards banned Exclusive Agency Listings from the MLS entirely. The Commission investigated and issued complaints against these exclusionary practices, obtaining several consent orders.⁵

C. Competitive Effects of the Web Site Policy

The Web Site Policy has the effect of discouraging members of ABOR and participants in ACTRIS from accepting Exclusive Agency Listings. Thus, the Web Site Policy strongly impedes one way of providing unbundled brokerage services, and may

exclusive right to sell basis.” *ACTRIS Rules and Regulations* at 18 (February 2006).

⁵ *In the Matter of United Real Estate Brokers of Rockland, Ltd.*, Docket No. C-3461, 116 F.T.C. 972 (1993); *In the Matter of American Industrial Real Estate Association*, Docket No. C-3449, 116 F.T.C. 704 (1993); *In the Matter of Puget Sound Multiple Listing Association*, Docket No. C-3300 (F.T.C., Aug. 2, 1990); *In the Matter of Bellingham-Whatcom County Multiple Listing Bureau*, Docket No. C-3299 (F.T.C., Aug. 2, 1990); *In the Matter of Metro MLS, Inc.*, Docket No. C-3286, 115 F.T.C. 305 (1990); *In the Matter of Multiple Listing Service of the Greater Michigan City Area, Inc.*, Docket No. C-3163, 106 F.T.C. 95 (1985); *In the Matter of Orange County Board of Realtors, Inc.*, Docket No. C-3162, 106 F.T.C. 88 (1985).

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make it more difficult for home sellers to market their homes. The Web Site Policy has caused some home sellers to switch away from Exclusive Agency Listings to other forms of listing agreements. According to ACTRIS records, prior to the initiation of the Web Site Policy, about 1,500 of 8,500, or 18 percent, of the listings on ACTRIS were Exclusive Agency Listings. After the Web Site Policy was implemented, the number of Exclusive Agency Listings as shown on ACTRIS records dropped to about 250 out of 10,000, or 2.5 percent.

When home sellers switch to full service listing agreements from Exclusive Agency Listings that often offer lower-cost real estate services to consumers, the sellers may purchase services that they would not otherwise buy. This, in turn, may increase the commission costs to consumers of real estate brokerage services. By preventing Exclusive Agency Listings from being transmitted by ACTRIS to public-access real estate web sites, the Web Site Policy has adverse effects on home sellers and home buyers. In particular, the Web Site Policy denies home sellers choices for marketing their homes and denies home buyers the chance to use the internet to easily see all of the houses listed by real estate brokers in the area, making their search less efficient.

D. There is No Competitive Efficiency Associated with the Web Site Policy.

There are no cognizable and plausible efficiency justifications for the Web Site Policy. An MLS in some circumstances might be concerned with the possibility that buyers and sellers of properties under an Exclusive Agency Listing could “free-ride” on the legitimate and valuable cooperative efforts that the MLS is intended to foster, by using the services of the MLS to carry out real estate transactions but bypassing the brokerage services that were one of the principal reasons why the MLS was created. However, this concern does not provide justification for the Web Site Policy as implemented by ABOR and ACTRIS. Exclusive Agency Listings are not a credible means for home buyers or

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sellers to bypass the use of the brokerage services that ACTRIS was created to promote, because a Listing Broker is always involved in an Exclusive Agency Listing, and the ABOR rules already include protections against such misuse.

The ABOR Web Site Policy does not involve situations where brokerage services are bypassed entirely. The policy only operates where home sellers purchase services from a Listing Broker using an Exclusive Agency contract, not when home sellers are pursuing a FSBO sale and purchase no brokerage services at all. It is possible, of course, that a buyer of an Exclusive Agency Listing may make the purchase without using a Selling Broker, but this is true for traditional Exclusive Right to Sell Listings as well. Under existing ACTRIS rules that apply to any form of the listing agreement, the Listing Broker must ensure that the home seller pays compensation to the cooperating Selling Broker (if there is one), and the Listing Broker may be liable himself for a lost commission if the home seller fails to pay a Selling Broker who was the procuring cause of a completed property sale. The possibility of sellers or buyers using the MLS but bypassing brokerage services is already addressed effectively by ABOR's existing rules that do not distinguish between forms of listing contracts, and does not justify the Web Site Policy.

III. The Proposed Consent Order

The proposed order is tailored to ensure that the MLS does not misuse its market power, but also takes care to ensure that the procompetitive incentives of joint ventures such as ABOR and ACTRIS remain intact. The proposed order enjoins ABOR from treating Exclusive Agency Listings, or any other lawful listing agreements with sellers of property, in a less advantageous manner than Exclusive Right to Sell Listings.

More specifically, ABOR is enjoined from adopting or enforcing any policy to deny, restrict, or interfere with the ability of ABOR members or ACTRIS participants to enter into

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Exclusive Agency Listings or other lawful listing agreements with the sellers of properties. The proposed consent order prohibits ABOR from preventing its members or ACTRIS participants from: offering or accepting Exclusive Agency Listings or other lawful listing agreements; cooperating with Listing Brokers or agents that offer or accept Exclusive Agency Listings or other lawful listing agreements; or publishing Exclusive Agency Listings or other lawful listing agreements on web sites otherwise approved to use ACTRIS information. The proposed order also prohibits ABOR from denying or restricting the Services of the MLS⁶ to Exclusive Agency Listings or other lawful listings in any way that such Services of the MLS are not denied or restricted to Exclusive Right to Sell Listings; or treating Exclusive Agency Listings, or any other lawful listings, in a less advantageous manner than Exclusive Right to Sell Listings, including but not limited to, any policy, rule or practice pertaining to the transmission, downloading, or displaying of information pertaining to such listings.

The proposed order contains a general proviso that preserves to ABOR the ability to adopt or enforce any policy, rule, practice or agreement that it can show is reasonably ancillary to the legitimate and beneficial objectives of the MLS. This includes reasonable rules regarding membership requirements, payment of dues, administrative matters, or other policies. The proviso is intended to preserve existing or future rules or regulations of

⁶ “Services of the MLS” means the benefits and services provided by the MLS to assist ABOR members or ACTRIS Participants in selling, leasing and valuing property and/or brokering real estate transactions, including but not limited to: (1) having the property included among the listings in the MLS in a manner so that information concerning the listing is easily accessible by cooperating brokers; and (2) having the property publicized through means available to the MLS, including, but not limited to, information concerning the listing being made available on Austinhomesearch.com, Realtor.com and IDX Web Sites.

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ACTRIS that ABOR can demonstrate are reasonably related to the legitimate and pro-competitive purposes of the MLS.

In addition, the proposed order requires ABOR, within thirty days after the Order becomes final, to conform its rules to the substantive provisions of the Order. ABOR is also required to notify ABOR members and participants in ACTRIS of the Order through email communications and its website. The proposed order requires notification of changes in the structure of ABOR, and requires ABOR to file regular written reports of ABOR's compliance with the terms of the Order.

The proposed Order applies to ABOR and entities that it owns or controls, including ACTRIS and Austinhomesearch.com. The Order by its terms does not prohibit ABOR members, or other persons or entities independent of ABOR that receive listing information from ABOR for use on their websites, from making independent decisions concerning their use or display of ACTRIS listing information that are consistent with their contractual obligations to ACTRIS.

The proposed order will expire in 10 years.

Complaint

IN THE MATTER OF

LINDE, AG AND THE BOC GROUP PLCCONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS
OF SEC. 7 OF THE CLAYTON ACT AND SEC. 5 OF THE FEDERAL
TRADE COMMISSION ACT

*Docket C-4163 File No. 061 0114
Complaint, July 17, 2006 – Decision, August 29, 2006*

This consent order addresses the acquisition of The BOC Group plc by Linde, AG. Both respondents are engaged in, among other things, the production and sale of industrial gases, including liquid oxygen and liquid nitrogen and bulk refined helium. To remedy the anticompetitive effects resulting from the acquisition, the order requires Linde to divest all of its merchant liquid oxygen and nitrogen producing business in certain geographic markets to a Commission-approved buyer. Linde will divest air separation units and related assets it currently owns and operates in the following eight locations: Canton, Ohio; Dayton, Ohio; Madison, Wisconsin; Waukesha, Wisconsin; Carrollton, Georgia; Jefferson, Georgia; Rockhill, South Carolina; and Bozrah, Connecticut. The order also requires Linde to divest bulk refined helium assets, including helium source contracts, ancillary distribution assets, and customer contracts, to Taiyo Nippon Sanso Corporation or another Commission-approved buyer. If the divestitures are not accomplished satisfactorily within the time specified, the Commission may appoint a trustee to divest the assets. The order also requires the parties to file periodic reports with the Commission until the divestitures are accomplished.

Participants

For the *Commission*: *Roberta S. Baruch, John D. Carroll, Rendell A. Davis, Jr., Sean G. Dillon, Joseph Eckhaus, and Brendan J. McNamara.*

For the *Respondent*: *Leon Greenfield and William Kolasky, Wilmer, Cutler, Pickering, Hale & Dorr; and Kenneth S. Prince, Shearman & Sterling.*

Complaint

COMPLAINT

Pursuant to the Clayton Act and the Federal Trade Commission Act, and its authority thereunder, the Federal Trade Commission (“Commission”), having reason to believe that Respondent Linde AG (“Linde”), a corporation subject to the jurisdiction of the Commission, has agreed to acquire Respondent The BOC Group plc (“BOC”) (collectively “ Respondents”), a corporation subject to the jurisdiction of the Commission, in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding in respect thereof would be in the public interest, hereby issues its Complaint, stating its charges as follows:

I. RESPONDENTS

1. Respondent Linde is a corporation existing under and by virtue of the laws of Germany, with its principal executive offices located at Abraham-Lincoln-Strasse 21, 65189 Wiesbaden, Germany. Linde operates in the United States through its wholly-owned subsidiary Linde Gas LLC, with its headquarters at 6055 Rockside Woods Boulevard, Independence, Ohio, 44131.

2. Respondent BOC is a corporation organized, existing, and doing business under and by virtue of the laws of England whose registered principal office is located at Chertsey Road Windlesham, Surrey GU206HJ, England.

3. Respondents are engaged in, among other things, the production and sale of industrial gases, including, but not limited to, liquid oxygen and liquid nitrogen and bulk refined helium.

4. Respondents are, and at all times relevant herein have been, engaged in commerce, as “commerce” is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. §12, and are corporations whose business is in or affects commerce, as

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“commerce” is defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

II. THE ACQUIRED COMPANY

5. BOC is a corporation organized, existing, and doing business under and by virtue of the laws of England whose registered principal office is located at Chertsey Road Windlesham, Surrey GU206HJ, England. BOC operates in the United States through its wholly-owned indirect subsidiaries, including The BOC Group Inc. and BOC Global Helium Inc., which exist under and by the virtue of the laws of the United States. The respective principal executive offices of The BOC Group Inc. and BOC Global Helium Inc. are located at 575 Mountain Avenue, Murray Hill, New Jersey, 07974.

III. THE PROPOSED ACQUISITION

6. Pursuant to a tender offer and agreement dated March 6, 2006, Linde announced its intention to acquire the entire share capital of BOC for an aggregate purchase price of approximately \$14.4 billion.

IV. THE RELEVANT MARKET

7. For the purposes of this Complaint, the relevant lines of commerce in which to analyze the effects of the acquisition are the manufacture and sale of:

- a. Liquid oxygen;
- b. Liquid nitrogen; and
- c. Bulk refined helium.

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8. For the purposes of this complaint, the relevant geographic areas in which to analyze the effects of the acquisition on the liquid oxygen and liquid nitrogen markets are:

- a. The Northeast;
- b. the Chicago-Milwaukee Metropolitan Area;
- c. the Eastern Midwest; and
- d. the Southeast.

9. For the purposes of this complaint, the relevant geographic area in which to analyze the effects of the acquisition on the bulk refined helium market is the world.

V. THE STRUCTURE OF THE MARKET

10. The relevant markets are highly concentrated whether measured by Herfindahl-Hirschman (“HHI”) or two-firm and four-firm concentration ratios.

11. Respondents are actual competitors in the relevant markets.

VI. ENTRY CONDITIONS

12. New entry into the relevant markets would not occur in a timely manner sufficient to deter or counteract the likely adverse competitive effects of the acquisition because it would take over two years for an entrant to accomplish the steps required for entry and achieve a significant market impact.

13. Entry into the liquid oxygen and liquid nitrogen markets is costly, difficult, and unlikely because of, among other things, the time and cost required to construct the air separation units that produce liquid oxygen and liquid nitrogen. Constructing one air

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separation unit large enough to be viable in the market would cost at least \$30 to \$40 million, most of which are sunk costs. Moreover, it is not economically justifiable to build an air separation unit unless a sufficient amount of the plant's capacity has been pre-sold prior to construction, either to an on-site customer or to liquid customers with commitments under contract. Such pre-sale opportunities occur infrequently and unpredictably.

14. Entry into the bulk refined helium market is also costly, difficult, and unlikely, because of, among other things, the time and cost required to gain access to a source of crude helium, build a refinery, and acquire helium distribution assets. There are no sources of refined helium available that are not committed in long term contracts. A new entrant would need to locate a new source of crude helium and build a refinery. Constructing a helium refinery large enough to be viable in the market would cost between \$25 to \$100 million dollars, most of which are sunk costs. In addition, tens of millions of dollars would be needed to acquire the necessary infrastructure and distribution assets, including transfill facilities, cryogenic storage trailers, high-pressure tube trailers and liquid dewars, capable of transporting helium from the refinery to customers.

VII. EFFECTS OF THE ACQUISITION

15. The effects of the Acquisition, if consummated, may be to substantially lessen competition and to tend to create a monopoly in the relevant markets in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45, in the following ways, among others:

- a. By eliminating actual, direct, and substantial competition between Respondents;
- b. By increasing the likelihood that Respondents would unilaterally exercise market power in the Northeast, Chicago-

Order to Maintain Assets

Milwaukee, Eastern Midwest, and Southeast liquid oxygen and liquid nitrogen markets;

c. By enhancing the likelihood of collusion or coordinated interaction between or among the remaining firms in the Northeast, Chicago-Milwaukee, Eastern Midwest, and Southeast liquid oxygen and liquid nitrogen markets;

d. By enhancing the likelihood of collusion or coordinated interaction between or among the remaining firms in the bulk refined helium market; and

e. By increasing the likelihood that consumers would be forced to pay higher prices for liquid oxygen, liquid nitrogen, and bulk refined helium in the relevant geographic areas.

VIII. VIOLATIONS CHARGED

16. The Acquisition described in Paragraph 6 constitutes a violation of Section 5 of the FTC Act, as amended, 15 U.S.C. § 45.

17. The Acquisition described in Paragraph 6, if consummated, would constitute a violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this seventeenth day of July 2006, issues its Complaint against said Respondents.

By the Commission.

Order to Maintain Assets

ORDER TO HOLD SEPARATE AND MAINTAIN ASSETS

The Federal Trade Commission (“Commission”) having initiated an investigation of the proposed acquisition by Respondent Linde AG (“Linde”) of Respondent The BOC Group plc (“BOC”) hereinafter referred to as “Respondents,” and Respondents having been furnished thereafter with a draft of Complaint that the Bureau of Competition proposed to present to the Commission for its consideration and which, if issued by the Commission, would charge Respondents with violations of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondents, its attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Orders (“Consent Agreement”), containing an admission by Respondents of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondents that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondents have violated the said Acts, and that a Complaint should issue stating its charges in that respect, and having determined to accept the executed Agreement Containing Consent Orders and to place such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby issues its Complaint, makes the following jurisdictional findings and issues this Order to Hold Separate and Maintain Assets (“Hold Separate”):

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1. Respondent Linde AG is a corporation organized, existing and doing business under and by virtue of the laws of Germany, with its office and principal place of business located at Abraham-Lincoln-Straße 21, 65030 Wiesbaden, Germany.

2. Respondent BOC is a corporation organized, existing, and doing business under and by virtue of the laws of England whose registered principal office is located at Chertsey Road Windlesham, Surrey GU206HJ, England.

3. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of Respondent, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that, as used in this Hold Separate, the following definitions shall apply:

- A. “Linde” means Linde AG, its directors, officers, employees, agents and representatives, predecessors, successors, and assigns; its controlled joint ventures, subsidiaries, divisions, groups and affiliates controlled by Linde AG (including BOC, after Linde’s acquisition of BOC is consummated), and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.
- B. “BOC” means The BOC Group plc, its directors, officers, employees, agents, representatives, successors, and assigns; and the joint ventures, subsidiaries, divisions, groups and affiliates controlled by The BOC Group plc, and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.

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- C. “Acquisition” means the acquisition by Linde of the entire share capital of BOC, as described in Linde’s tender offer dated March 6, 2006.
- D. “Atmospheric Gases” means oxygen, nitrogen, and argon.
- E. “Atmospheric Gases Acquirer” means the entity or entities who acquires the Atmospheric Gases Assets To Be Divested pursuant to Paragraphs II. or III. of this Order.
- F. “Atmospheric Gases Assets To Be Divested” means the Atmospheric Gases Plants To Be Divested, and includes all of Linde’s interests in all tangible and intangible assets, business and goodwill used at or necessary for the production, refinement, distribution, marketing or sale of Atmospheric Gases at the Atmospheric Gases Plants To Be Divested including, but not limited to:
 - 1. all real property interests, including rights, title and interests in and to owned or leased property, together with all buildings, improvements, appurtenances, licenses and permits;
 - 2. all inventory; supplies; machinery; equipment; fixtures; furniture; tools and other tangible personal property, including vehicles and other distribution equipment (including trucks, tractors, and trailers); dispatch facilities and equipment; storage tanks, vessels and cylinders; and equipment located at the facilities of customers whose supply agreements are divested to the Atmospheric Gases Acquirer, including but not limited to storage tanks, vessels and cylinders necessary for the operation of the Atmospheric Gases Assets To Be Divested;
 - 3. all spare parts located at the Atmospheric Gases Plants

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To Be Divested; and, at the option of the Atmospheric Gases Acquirer, any shared critical spare parts for any of the Atmospheric Gases Plants To Be Divested that are stored at any other location;

4. all customer lists and customer databases; *provided, however,* that Linde may redact such customer lists and customer databases to retain information regarding customer supply arrangements not divested to the Atmospheric Gases Acquirer;
5. on a non-exclusive basis, all vendor lists, catalogs, sales promotion literature and advertising materials;
6. non-exclusive rights and licenses to, and copies, of all research materials, inventions, technology and intellectual property, including but not limited to, patents, trade secrets and know-how, necessary to service customers as currently served or operate the Atmospheric Gases Assets To Be Divested at no less than the rate of operation (including, but not limited to, rates of production and sales) as of the Effective Date of Divestiture;
7. at the option of the Atmospheric Gases Acquirer, and to the extent transferable or assignable, non-exclusive rights to all of Linde's management information systems software, supply chain management software, dispatch, logistics and production software and any other software or proprietary information (including, but not limited to, LCS and any modifications and customizations to any software system) necessary to service customers as currently served or operate the Atmospheric Gases Assets To Be Divested at no less than the rate of operation (including, but not limited to, rates of production and sales) as of the Effective Date of Divestiture;

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8. non-exclusive rights to and copies of all technical information, specifications, designs, drawings, processes and quality control data;
9. rights to or in any or all existing Atmospheric Gases customer supply agreements for which the customer has been ordinarily supplied by the Atmospheric Gases Plants To Be Divested from July 31, 2005 to the Effective Date of Divestiture; to the extent such customer supply agreements also provide for the supply of bulk carbon dioxide, bulk helium or bulk hydrogen, at the option of the Atmospheric Gases Acquirer, the transfer or assignment shall also include the right to supply bulk carbon dioxide, bulk helium or bulk hydrogen; *provided, however*, that, at the option of the Atmospheric Gases Acquirer and with the prior approval of the Commission, the Atmospheric Gases Acquirer may substitute an alternative package of customer supply agreements;
10. rights to or in the Product Exchange Agreement dated June 2, 2006, entered into by and between Linde Gas LLC and Praxair, Inc. (“Praxair Exchange Agreement”);
11. to the extent transferable or assignable, and, in the case of company-wide contracts, divisible, rights to and in all contracts and agreements, other than customer supply agreements, related to the production, refinement, distribution, marketing or sale of Atmospheric Gases at the Atmospheric Gases Plants To Be Divested including but not limited to dealer, distributor, supply, power and utility contracts;
12. to the extent transferable or assignable, all customer and governmental approvals, consents, licenses,

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permits, waivers or other authorizations held by Linde for the production, refinement, distribution, marketing or sale of Atmospheric Gases at the Atmospheric Gases Plants To Be Divested To Be Divested;

13. all rights under warranties and guarantees, express or implied;
14. all books, records and files; *provided, however*, that if such books, records and files also contain information relating to the production, refinement, distribution, marketing or sale of products at plants other than the Atmospheric Gases Plants To Be Divested, then only those portions of the books, records and files relating to the Atmospheric Gases Plants To Be Divested shall be included; and, *provided further*, that Linde may retain a copy of any books and records that it is required by law to retain; and
15. all items of prepaid expense.

Provided, however, “Atmospheric Gases Assets To Be Divested” does not include:

- i. Linde’s proprietary trade name and trademarks and any other rights to distribute or sell any items containing Linde’s name or logo;
- ii. any Atmospheric Gases Plant or production facility other than the Atmospheric Gases Plants To Be Divested;
- iii. any computers, servers, or telecommunications equipment shared through local and/or wide area telecommunications systems that are not physically located at the facilities associated with the Atmospheric Gases Assets To Be Divested;

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- iv. Linde Gas LLC's headquarters located in Independence, Ohio;
 - v. contractual rights to supply products other than those products produced at the Atmospheric Gases Plants To Be Divested, except as provided in paragraph [I.F.9];
 - vi. plants, facilities, and laboratory or testing apparatus unrelated to the production or sale of Atmospheric Gases; and
 - vii. any other Linde assets unrelated to the Atmospheric Gases Assets to be Divested.
- G. "Atmospheric Gases Plant" means a facility that produces Atmospheric Gases.
- H. "Candidate Atmospheric Gases Employees" means those Employees identified in Confidential Appendix A attached hereto.
- I. "Commission" means the Federal Trade Commission.
- J. "Decision and Order" means:
- 1. until the issuance and service of a final Decision and Order by the Commission, the proposed Decision and Order contained in the Consent Agreement in this matter; and
 - 2. following the issuance and service of a final Decision and Order by the Commission, the final Decision and Order issued by the Commission.
- K. "Effective Date of Divestiture" means the date on which

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the mandated divestiture of the Atmospheric Gases Assets To Be Divested occurs.

- L. “Held Separate Business” means the Atmospheric Gases Assets To Be Divested and all Held Separate Business Employees of the Atmospheric Gases Assets To Be Divested.
- M. “Held Separate Business Employees” means all full-time, part-time, or contract employees whose duties take place at, or primarily relate to, the Held Separate Business or have taken place at, or primarily related to, the Held Separate Business at any time during the period commencing twelve months prior to the Effective Date of Divestiture.
- N. “Hold Separate Period” means the time period during which the Hold Separate is in effect, which shall begin on the date the Hold Separate becomes final and terminate pursuant to Paragraph V. hereof.
- O. “Hold Separate Trustee” means the individual appointed to act as the Hold Separate Trustee pursuant to Paragraph II.D. hereof.
- P. “Key Atmospheric Gases Employees” means those Employees identified in Confidential Appendix B attached hereto.
- Q. “Material Confidential Information” means competitively sensitive or proprietary information including, but not limited to, all customer lists, price lists, and marketing methods; *provided, however*, Material Confidential Information does not include information in the public domain or independently known to a Person.
- R. “Person” means any individual, partnership, firm, trust,

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association, corporation, joint venture, unincorporated organization, or other business or governmental entity.

- S. “Bozrah Plant” means Linde’s Atmospheric Gases Plant located in Bozrah, Connecticut.
- T. “Canton Plant” means Linde’s Atmospheric Gases Plant located in Canton, Ohio.
- U. “Carrollton Plant” means Linde’s Atmospheric Gases Plant located in Carrollton, Georgia.
- V. “Dayton Plant” means Linde’s Atmospheric Gases Plant located in Dayton, Ohio.
- W. “Jefferson Plant” means Linde’s Atmospheric Gases Plant located in Jefferson, Georgia.
- X. “Madison Plant” means Linde’s Atmospheric Gases Plant located in Madison, Wisconsin.
- Y. “Rock Hill Plant” means Linde’s Atmospheric Gases Plant located in Rock Hill, South Carolina.
- Z. “Waukesha Plant” means Linde’s Atmospheric Gases Plant located in Waukesha, Wisconsin.

II.

IT IS FURTHER ORDERED that:

- A. During the Hold Separate Period, Linde shall hold the Held Separate Business separate, apart, and independent as required by this Hold Separate and shall vest the Held Separate Business with all rights, powers, and authority necessary to conduct its business; Linde shall not exercise direction or control over, or influence directly or indirectly, the Held Separate Business or any of its

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operations, or the Hold Separate Trustee, except to the extent that Linde must exercise direction and control over the Held Separate Business as is necessary to assure compliance with this Hold Separate, the Decision and Order, and all applicable laws.

B. Linde shall:

1. During the Hold Separate Period, take such actions as are necessary to maintain the viability, marketability, and competitiveness of the Held Separate Business to prevent the destruction, removal, wasting, deterioration, or impairment of any of the assets, except for ordinary wear and tear; and
2. From the date Linde executes the Agreement containing Consent Orders until the Hold Separate Period begins, take such actions as are necessary to assure that Linde maintains the viability, marketability, and competitiveness of the Held Separate Business to prevent the destruction, removal, wasting, deterioration, or impairment of any of the assets, except for ordinary wear and tear.

C. The purpose of this Hold Separate is to: (1) preserve the Held Separate Business as a viable, competitive, and ongoing business independent of Linde until the divestitures required by the Decision and Order are achieved; (2) assure that no Material Confidential Information is exchanged between Linde and the Held Separate Business, except in accordance with the provisions of this Hold Separate; and (3) prevent interim harm to competition pending the relevant divestitures and other relief.

D. Linde shall hold the Held Separate Business separate, apart, and independent on the following terms and

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conditions:

1. Richard M. Klein shall serve as Hold Separate Trustee, pursuant to the agreement executed by the Hold Separate Trustee and Linde and attached as Confidential Appendix C to this Hold Separate (“Trustee Agreement”).
 - a. The Trustee Agreement shall require that, no later than five (5) days after this Hold Separate becomes final, Linde shall transfer to the Hold Separate Trustee all rights, powers, and authorities necessary to permit the Hold Separate Trustee to perform his/her duties and responsibilities, pursuant to this Hold Separate and consistent with the purposes of the Decision and Order;
 - b. No later than five (5) days after this Hold Separate becomes final, Linde shall, pursuant to the Trustee Agreement, transfer to the Hold Separate Trustee all rights, powers, and authorities necessary to permit the Hold Separate Trustee to perform his/her duties and responsibilities, pursuant to this Hold Separate and consistent with the purposes of the Decision and Order;
 - c. The Hold Separate Trustee shall have the responsibility, consistent with the terms of this Hold Separate and the Decision and Order, for monitoring the organization of the Held Separate Business; for managing the Held Separate Business through the Manager; for maintaining the independence of the Held Separate Business; and for monitoring Linde’s compliance with its obligations pursuant to this Hold Separate and the Decision and Order;

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- d. Subject to all applicable laws and regulations, the Hold Separate Trustee shall have full and complete access to all personnel, books, records, documents and facilities of the Held Separate Business and to any other relevant information as the Hold Separate Trustee may reasonably request, including, but not limited to, all documents and records kept by Linde in the ordinary course of business that relate to the Held Separate Business. Linde shall develop such financial or other information as the Hold Separate Trustee may reasonably request and shall cooperate with the Hold Separate Trustee. Linde shall take no action to interfere with or impede the Hold Separate Trustee's ability to monitor Linde's compliance with this Hold Separate and the Decision and Order or otherwise to perform his/her duties and responsibilities consistent with the terms of this Hold Separate;
- e. The Hold Separate Trustee shall have the authority to employ, at the cost and expense of Linde, such consultants, accountants, attorneys, and other representatives and assistants as are reasonably necessary to carry out the Hold Separate Trustee's duties and responsibilities;
- f. The Commission may require the Hold Separate Trustee to sign an appropriate confidentiality agreement relating to materials and information received from the Commission in connection with performance of the Hold Separate Trustee's duties;
- g. Linde may require the Hold Separate Trustee to sign an appropriate confidentiality agreement prohibiting the disclosure of any Material Confidential Information gained as a result of

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his/her role as Hold Separate Trustee to anyone other than the Commission;

- h. Thirty (30) days after the Hold Separate becomes final, and every thirty (30) days thereafter until the Hold Separate terminates, the Hold Separate Trustee shall report in writing to the Commission concerning the efforts to accomplish the purposes of this Hold Separate. Included within that report shall be the Hold Separate Trustee's assessment of the extent to which the Held Separate Business is meeting (or exceeding) its projected goals as are reflected in operating plans, budgets, projections or any other regularly prepared financial statements; and
 - i. If the Hold Separate Trustee ceases to act or fails to act diligently and consistent with the purposes of this Hold Separate, the Commission may appoint a substitute Hold Separate Trustee consistent with the terms of this paragraph, subject to the consent of Linde, which consent shall not be unreasonably withheld. If Linde has not opposed, in writing, including the reasons for opposing, the selection of the substitute Hold Separate Trustee within five (5) business days after notice by the staff of the Commission to Linde of the identity of any substitute Hold Separate Trustee, Linde shall be deemed to have consented to the selection of the proposed substitute trustee. Linde and the substitute Hold Separate Trustee shall execute a Trustee Agreement, subject to the approval of the Commission, consistent with this paragraph.
2. No later than one (1) day after the Acquisition is consummated, Linde shall enter into a management agreement with, and transfer all rights, powers, and authorities necessary to manage and maintain the Held

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Separate Business to Kevin McBride (“Manager”).

- a. In the event that Kevin McBride ceases to act as Manager, then Linde shall select a substitute Manager, subject to the approval of the Commission, and transfer to the substitute Manager all rights, powers and authorities necessary to permit the substitute Manager to perform his/her duties and responsibilities, pursuant to this Hold Separate.
- b. The Manager shall report directly and exclusively to the Hold Separate Trustee and shall manage the Held Separate Business independently of the management of Linde. The Manager shall not be involved, in any way, in the operations of the other businesses of Linde during the term of this Hold Separate.
- c. The Manager shall have no financial interests affected by Linde’s revenues, profits or profit margins, except that the Manager’s compensation for managing the Held Separate Business may include economic incentives dependent on the financial performance of the Held Separate Business if there are also sufficient incentives for the Manager to operate the Held Separate Business at no less than current rates of operation (including, but not limited to, current rates of production and sales) and to achieve the objectives of this Hold Separate.
- d. The Manager shall make no material changes in the present operation of the Held Separate Business except with the approval of the Hold Separate Trustee, in consultation with the Commission.

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- e. The Manager shall have the authority, with the approval of the Hold Separate Trustee, to remove employees of the Held Separate Business and replace them with others of similar experience or skills. If any Person ceases to act or fails to act diligently and consistent with the purposes of this Hold Separate, the Manager, in consultation with the Hold Separate Trustee, may request Linde to, and Linde shall, appoint a substitute Person, which Person the Manager shall have the right to approve.
 - f. In addition to the Held Separate Business Employees employed as of the date the Consent Agreement is signed by Linde, the Manager may employ such Persons as are reasonably necessary to assist the Manager in managing the Held Separate Business with the consent of the Hold Separate Trustee.
 - g. The Hold Separate Trustee shall be permitted, in consultation with the Commission staff, to remove the Manager for cause. Within fifteen (15) days after such removal of the Manager, Linde shall appoint a replacement Manager, subject to the approval of the Commission, on the same terms and conditions as provided in Paragraph II.D.2. of this Hold Separate.
3. The Held Separate Business shall be staffed with sufficient employees to maintain the viability, marketability, and competitiveness of the Held Separate Business. To the extent that any employees of the Held Separate Business leave or have left the Held Separate Business prior to the Effective Date of Divestiture, the Manager, with the approval of the Hold Separate Trustee, may replace departing or departed employees with Persons who have similar

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experience and expertise or determine not to replace such departing or departed employees.

4. In connection with support services not included within the Held Separate Business that are being provided by Linde, or which Linde has contracted to provide to the Held Separate Business by third parties, Linde shall continue to provide, or offer to provide, the same support services to the Held Separate Business as are being provided to the Held Separate Business by Linde or third parties as of the date the Consent Agreement is signed by Linde. For services that Linde previously provided to the Held Separate Business, Linde may charge the same fees, if any, charged by Linde for such support services as of the date the Consent Agreement is signed by Linde. For any other services or products that Linde may provide the Held Separate Business, Linde may charge no more than the same price it charges others for the same services or products. Linde's personnel providing such services or products must retain and maintain all Material Confidential Information of the Held Separate Business on a confidential basis, and, except as is permitted by this Hold Separate, such Persons shall be prohibited from providing, discussing, exchanging, circulating, or otherwise furnishing any such information to or with any Person whose employment relates to any of Linde's businesses, other than the Held Separate Business. Such personnel who have or may have access to Material Confidential Information shall also execute confidentiality agreements prohibiting the disclosure of any Material Confidential Information of the Held Separate Business.
 - a. Linde shall offer to the Held Separate Business any services that Linde provides to its other businesses directly or through third party contracts, or that

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Linde has provided directly or through third party contracts to the Atmospheric Gases Assets To Be Divested and Businesses at any time since July 31, 2005. The Held Separate Business may, at the option of the Manager with the approval of the Hold Separate Trustee, obtain such services and products from Linde. The services that Linde shall offer the Held Separate Business shall include, but shall not be limited to, the following:

- (1) federal and state regulatory policy development and compliance;
- (2) human resources administrative services, including but not limited to procurement and administration of employee benefits;
- (3) environmental health and safety services, including, but not limited to, services to develop corporate policies and insure compliance with federal and state regulations and corporate policies;
- (4) financial accounting services;
- (5) preparation of tax returns;
- (6) audit services;
- (7) technical support and engineering services;
- (8) information technology support services;
- (9) processing of accounts payable and accounts receivable;
- (10) billing and collection services;

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- (11) payroll processing;
 - (12) maintenance and repair of facilities;
 - (13) procurement of goods and services used in the ordinary course of business;
 - (14) procurement of insurance, including, but not limited to, general and product liability insurance; and
 - (15) legal services.
- b. The Held Separate Business shall have, at the option of the Manager with the approval of the Hold Separate Trustee, the ability to acquire services and products, including, but not limited to, those listed in Paragraph II.D.4.a. above, from third parties unaffiliated with Linde.
5. Linde shall cause the Hold Separate Trustee, the Manager, and each employee of the Held Separate Business having access to Material Confidential Information to submit to the Commission a signed statement that the individual will maintain the confidentiality required by the terms and conditions of this Hold Separate. These individuals must retain and maintain all Material Confidential Information relating to the Held Separate Business on a confidential basis and, except as is permitted by this Hold Separate, such individuals shall be prohibited from providing, discussing, exchanging, circulating, or otherwise furnishing, directly or indirectly, any such information to or with any other Person whose employment relates to any of Linde's businesses other than the Held Separate Business. These individuals shall not be

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involved in any way in Linde's businesses that compete with the Held Separate Business.

6. No later than ten (10) days after the date this Hold Separate becomes final, Linde shall establish written procedures, subject to the approval of the Hold Separate Trustee, covering the management, maintenance, and independence of the Held Separate Business consistent with the provisions of this Hold Separate.
7. No later than five (5) days after the date this Hold Separate becomes final, Linde shall circulate to employees of the Held Separate Business and to Linde's employees who are responsible for or engaged in financial, management, production, distribution, sales or marketing functions relating to products or services that compete with product or services offered by the Held Separate Business, a notice of this Hold Separate and the Consent Agreement, in the form attached hereto as Attachment A.
8. The Hold Separate Trustee and the Manager shall serve, without bond or other security, at the cost and expense of Linde, on reasonable and customary terms commensurate with the person's experience and responsibilities.
9. Linde shall indemnify the Hold Separate Trustee and Manager and hold each harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Hold Separate Trustee's or the Manager's duties, including all reasonable fees of counsel and other expenses incurred in connection with the preparation for, or defense of any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from

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misfeasance, gross negligence, willful or wanton acts or omissions, or bad faith by the Hold Separate Trustee or the Manager, or their respective agents.

10. Linde shall provide the Held Separate Business with sufficient financial resources:

- a. as are appropriate in the judgment of the Hold Separate Trustee to operate the Held Separate Business at no less than current rates of operation and at no less than historical the rates of operation;
- b. to perform all reasonable maintenance to, and replacements of, the assets of the Held Separate Business;
- c. to carry on all existing and planned capital projects and business plans for the Held Separate Business;
- d. to carry on existing and planned bid and proposal plans for the Held Separate Business; and
- e. to maintain the viability, marketability, and competitiveness of the Held Separate Business.
- f. Such financial resources to be provided to the Held Separate Business shall include, but shall not be limited to, (i) general funds, (ii) capital, (iii) working capital; and (iv) reimbursement for any operating losses, capital losses, or other losses; *provided, however,* that, consistent with the purposes of the Decision and Order, the Manager may substitute any capital or research and development project for another of the same cost with the consent of the Hold Separate Trustee.

11. Linde shall:

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- a. not later than forty-five (45) days before the Effective Date of Divestiture, (a) provide to the Atmospheric Gases Acquirer a list of all Held Separate Business Employees and Candidate Atmospheric Gases Employees; (b) allow the Atmospheric Gases Acquirer to interview any Held Separate Business Employees and Candidate Atmospheric Gases Employees; and (c) in compliance with all laws, allow the Atmospheric Gases Acquirer to inspect the personnel files and other documentation relating to such Held Separate Business Employees and Candidate Atmospheric Gases Employees;
- b. not later than thirty (30) days before the Effective Date of Divestiture, Linde shall provide an opportunity for the Atmospheric Gases Acquirer to (a) meet personally, and outside the presence or hearing of any employee or agent of Linde, with any one or more of the Held Separate Business Employees and Candidate Atmospheric Gases Employees; and (b) make offers of employment to any one or more of the Held Separate Business Employees and Candidate Atmospheric Gases Employees;
- c. Linde shall not directly or indirectly interfere with the Atmospheric Gases Acquirer's offer of employment to any one or more of the Held Separate Business Employees and Candidate Atmospheric Gases Employees, not directly or indirectly attempt to persuade any one or more of the Held Separate Business Employees and Candidate Atmospheric Gases Employees to decline any offer of employment from the Atmospheric Gases Acquirer, and not offer any

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incentive to any of the Held Separate Business Employees and Candidate Atmospheric Gases Employees to decline employment with the Atmospheric Gases Acquirer;

- d. Linde shall irrevocably waive any legal or equitable right to deter any Held Separate Business Employee or Candidate Atmospheric Gases Employees from accepting employment with Atmospheric Gases Acquirer, including, but not limited to, waiving any non-compete or confidentiality provisions of employment or other contracts with Linde that relate to Atmospheric Gases;
- e. Linde shall not interfere with the employment by the Atmospheric Gases Acquirer of any Held Separate Business Employee or Candidate Atmospheric Gases Employees;
- f. Linde shall continue employee benefits to Held Separate Business Employees and Candidate Atmospheric Gases Employees until the Effective Date of Divestiture, and the employee benefits provided to other similarly situated Linde employees that become employees of Linde after the Effective Date of Divestiture, including regularly scheduled or merit raises and bonuses, regularly scheduled vesting of all pension benefits, and reimbursement of relocation expenses; and
- g. Linde shall provide a retention incentive bonus to Key Atmospheric Gases Employees who accept employment with the Atmospheric Gases Acquirer, equal to ten (10) percent of such employees' annual salary to be paid upon the employees' completion of one (1) year of continuous

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employment with the Atmospheric Gases Acquirer after the Effective Date of Divestiture.

12. Linde, subject to the provisions of Paragraph II.D.13. below, for a period of one (1) year from the Effective Date of Divestiture, shall not, directly or indirectly, solicit, induce, or attempt to solicit or induce any Held Separate Business Employees and Candidate Atmospheric Gases Employees who have accepted offers of employment with the Atmospheric Gases Acquirer to terminate their employment with the Atmospheric Gases Acquirer; *provided, however*, a violation of this provision will not occur if: (1) the individual's employment has been terminated by the Atmospheric Gases Acquirer; (2) Linde advertises for employees in newspapers, trade publications, or other media not targeted specifically at the employees; or (3) Linde hires employees who apply for employment with Linde, as long as such employees were not solicited by Linde in violation of this paragraph.
13. Notwithstanding the provisions of Paragraph II.D.12. above, for a period of six (6) months from the Effective Date of Divestiture, Linde shall not employ or make offers of employment to any Held Separate Business Employees or Candidate Atmospheric Gases Employees who have accepted offers of employment with the Atmospheric Gases Acquirer unless any such individual's employment with the Atmospheric Gases Acquirer has been terminated by the Atmospheric Gases Acquirer.
14. Except for the Manager, employees of the Held Separate Business, and support services employees involved in providing services to the Held Separate Business pursuant to Paragraph II.D.4., and except to the extent provided in Paragraph II.A., Linde shall not

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permit any other of its employees, officers, or directors to be involved in the operations of the Held Separate Business.

15. Linde's employees (excluding support services employees involved in providing support to the Held Separate Business pursuant to Paragraph II.D.4.) shall not receive, have access to, or use or continue to use any Material Confidential Information of the Held Separate Business except:
 - a. as required by law; and
 - b. to the extent that necessary information is exchanged:
 - (1) in the course of consummating the Acquisition;
 - (2) in negotiating agreements to divest assets pursuant to the Consent Agreement and engaging in related due diligence;
 - (3) in complying with the Hold Separate or the Consent Agreement;
 - (4) in overseeing compliance with policies and standards concerning the safety, health and environmental aspects of the operations of the Held Separate Business and the integrity of the financial controls of the Held Separate Business;
 - (5) in defending legal claims, investigations or enforcement actions threatened or brought against or related to the Held Separate Business; or

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(6) in obtaining legal advice.

Nor shall the Manager or employees of the Held Separate Business receive, have access to, or use or continue to use, any Material Confidential Information about Linde and relating to Linde's businesses, except such information as is necessary to maintain and operate the Held Separate Business. Linde may receive aggregate financial and operational information relating to the Held Separate Business only to the extent necessary to allow Linde to prepare consolidated financial reports, tax returns, reports required by securities laws, and personnel reports. Any such information that is obtained pursuant to this paragraph shall be used only for the purposes set forth in this paragraph.

16. Linde and the Held Separate Business shall jointly implement, and at all times during the Hold Separate Period maintain in operation, a system, as approved by the Hold Separate Trustee, of access and data controls to prevent unauthorized access to or dissemination of Material Confidential Information of the Held Separate Business, including, but not limited to, the opportunity by the Hold Separate Trustee, on terms and conditions agreed to with Linde, to audit Linde's networks and systems to verify compliance with this Hold Separate.

III.

IT IS FURTHER ORDERED that Linde shall notify the Commission at least thirty (30) days prior to: (1) any proposed dissolution of Linde; (2) any proposed acquisition, merger, or consolidation of Linde; or (3) any other change in Linde that may affect compliance obligations arising out of this Order, including but, not limited to, assignment, the creation or dissolution of subsidiaries, or any other change in Linde.

Order to Maintain Assets

IV.

IT IS FURTHER ORDERED that for the purpose of determining or securing compliance with this Hold Separate Order, and subject to any legally recognized privilege, and upon written request with reasonable notice to Linde, Linde shall permit any duly authorized representative of the Commission:

- A. Access, during office hours of Linde and in the presence of counsel, to all facilities, and access to inspect and copy all books, ledgers, accounts, correspondence, memoranda and all other records and documents in the possession or under the control of Linde relating to any matters contained in this Hold Separate Order; and
- B. Upon five (5) days' notice to Linde and without restraint or interference from it, to interview officers, directors, or employees of Linde, who may have counsel present, regarding any such matters.

V.

IT IS FURTHER ORDERED that this Hold Separate shall terminate at the earlier of:

- A. three (3) business days after the Commission withdraws its acceptance of the Consent Agreement pursuant to the provisions of Commission Rule 2.34, 16 C.F.R. § 2.34; or

Order to Maintain Assets

- B. the day after the last of the divestitures required by the Decision and Order is completed; provided, however, that when an asset that is included within the Held Separate Business is divested pursuant to the Consent Agreement, that asset shall cease to be held by the Held Separate Business.

By the Commission.

ATTACHMENT A**NOTICE OF DIVESTITURE AND
REQUIREMENT FOR CONFIDENTIALITY**

Linde AG, hereinafter referred to as “Linde,” has entered into an Agreement Containing Consent Orders (“Consent Agreement”) with the Federal Trade Commission relating to the divestiture of certain assets and other relief in connection with Linde’s acquisition of The BOC Group plc.

As used herein, the term “Held Separate Business” means the Atmospheric Gases Assets To Be Divested and personnel as defined in Paragraphs I.L. and I.O. of the Order to Hold Separate and Maintain Assets (the “Hold Separate”) contained in the Consent Agreement. Under the terms of the Decision and Order (the “Order”) contained in the Consent Agreement, Linde must divest certain assets, which are included within the Held Separate Business, within six (6) months from the date the Order becomes final.

Order to Maintain Assets

During the Hold Separate Period (which begins after the Hold Separate becomes final and ends after Linde has completed the required divestiture), the Held Separate Business shall be held separate, apart, and independent of Linde's businesses. The Held Separate Business must be managed and maintained as a separate, ongoing business, independent of all other businesses of Linde, until Linde has completed the required divestiture. All competitive information relating to the Held Separate Business must be retained and maintained by the persons involved in the operation of the Held Separate Business on a confidential basis, and such persons shall be prohibited from providing, discussing, exchanging, circulating, or otherwise furnishing any such information to or with any other person whose employment involves any other of Linde's businesses, except as otherwise provided in the Hold Separate. These persons involved in the operation of the Held Separate Business shall not be involved in any way in the management, production, distribution, sales, marketing, or financial operations of Linde relating to competing products. Similarly, persons involved in similar activities in Linde's businesses shall be prohibited from providing, discussing, exchanging, circulating, or otherwise furnishing any similar information to or with any other person whose employment involves the Held Separate Business, except as otherwise provided in the Hold Separate.

Until the Held Separate Business is divested, Linde must take such actions as are necessary to maintain the viability, marketability, and competitiveness of the Held Separate Business, and to prevent the destruction, removal, wasting, deterioration, or impairment of any of the assets, except for ordinary wear and tear.

Any violation of the Consent Agreement may subject Linde to civil penalties and other relief as provided by law.

Order to Maintain Assets

**NON-PUBLIC
APPENDIX A
TO THE ORDER TO HOLD SEPARATE AND MAINTAIN
ASSETS**

**CANDIDATE ATMOSPHERIC GASES EMPLOYEES
[Redacted From the Public Record
But Incorporated By Reference]**

**NON-PUBLIC
APPENDIX B
TO THE ORDER TO HOLD SEPARATE AND MAINTAIN
ASSETS**

**KEY ATMOSPHERIC GASES EMPLOYEES
[Redacted From the Public Record
But Incorporated By Reference]**

**NON-PUBLIC
APPENDIX C
TO THE ORDER TO HOLD SEPARATE AND MAINTAIN
ASSETS**

**HOLD SEPARATE TRUSTEE AGREEMENT
[Redacted From the Public Record
But Incorporated By Reference]**

Decision and Order

DECISION AND ORDER

The Federal Trade Commission (“Commission”) having initiated an investigation of the proposed acquisition by Respondent Linde AG (“Linde”) of Respondent The BOC Group plc (“BOC”) hereinafter referred to as “Respondents,” and Respondents having been furnished thereafter with a draft of Complaint that the Bureau of Competition proposed to present to the Commission for its consideration and which, if issued by the Commission, would charge Respondents with violations of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondents, their attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Orders (“Consent Agreement”), containing an admission by Respondents of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondents that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission, having thereafter considered the matter and having determined that it had reason to believe that Respondents have violated the said Acts, and that a Complaint should issue stating its charges in that respect, and having thereupon issued its Complaint, its Order to Maintain Assets, and its Order to Hold Separate and Maintain Assets (“Hold Separate and Maintain Assets”) and accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, and having duly considered the comments received from interested persons pursuant to section 2.34 of its Rules, now

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in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby makes the following jurisdictional findings and issues the following Decision and Order (“Order”):

1. Respondent Linde AG is a corporation organized, existing and doing business under and by virtue of the laws of Germany, with its office and principal place of business located at Abraham-Lincoln-Straße 21, 65030 Wiesbaden, Germany.
2. Respondent BOC is a corporation organized, existing, and doing business under and by virtue of the laws of England whose registered principal office is located at Chertsey Road Windlesham, Surrey GU206HJ, England.
3. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of Respondents, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that, as used in this Order, the following definitions shall apply:

- A. “Linde” means Linde AG, its directors, officers, employees, agents, representatives, successors, and assigns; and the joint ventures, subsidiaries, divisions, groups and affiliates controlled by Linde AG (including BOC, after Linde’s acquisition of BOC is consummated), and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.
- B. “BOC” means The BOC Group plc, its directors, officers, employees, agents, representatives, successors, and assigns; and the joint ventures, subsidiaries, divisions,

Decision and Order

groups and affiliates controlled by The BOC Group plc, and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.

- C. “Respondents” means Linde and BOC, individually and collectively.
- D. “Commission” means the Federal Trade Commission.
- E. “Acquirer(s)” means each of the entities that acquire any of the Assets To Be Divested pursuant to Paragraphs II., III., or V. of this Order.
- F. “Acquisition Agreement” means the agreement or agreements pursuant to which Linde acquires BOC.
- G. “Allocation Percentage” means the minimum percentage of the normal helium requirements of the Helium Acquirer^s and Linde’s customers that those customers will receive while the supply of helium under the ExxonMobil Helium Contract is curtailed.
- H. “Assets To Be Divested” means
 - 1. Atmospheric Gases Assets To Be Divested,
 - 2. the Helium Assets To Be Divested, and
 - 3. the Escrow Transfills.
- I. “Atmospheric Gases” means oxygen, nitrogen, and argon.
- J. “Atmospheric Gases Acquirer” means the entity that acquires the Atmospheric Gases Assets To Be Divested pursuant to Paragraphs II. or V. of this Order.

Decision and Order

- K. “Atmospheric Gases Assets To Be Divested” means the Atmospheric Gases Plants To Be Divested, and includes all of Linde’s interests in all tangible and intangible assets, business and goodwill used at or necessary for the production, refinement, distribution, marketing or sale of Atmospheric Gases at the Atmospheric Gases Plants To Be Divested including, but not limited to:
1. all real property interests, including rights, title and interests in and to owned or leased property, together with all buildings, improvements, appurtenances, licenses and permits;
 2. all inventory; supplies; machinery; equipment; fixtures; furniture; tools and other tangible personal property, including vehicles and other distribution equipment (including trucks, tractors, trailers, and rail cars); dispatch facilities and equipment; storage tanks, vessels and cylinders; and equipment located at the facilities of customers whose supply agreements are divested to the Atmospheric Gases Acquirer(s), including but not limited to storage tanks, vessels and cylinders necessary for the operation of the Atmospheric Gases Assets To Be Divested;
 3. all spare parts located at the Atmospheric Gases Plants To Be Divested; and, at the option of the Atmospheric Gases Acquirer(s), any shared critical spare parts for any of the Atmospheric Gases Plants To Be Divested that are stored at any other location;
 4. all customer lists and customer databases; *provided, however,* that Linde may redact such customer lists and customer databases to retain information regarding customer supply arrangements not divested to the Atmospheric Gases Acquirer(s);

Decision and Order

5. on a non-exclusive basis, all vendor lists, catalogs, sales promotion literature and advertising materials;
6. non-exclusive rights and licenses to, and copies of, all research materials, inventions, technology and intellectual property, including but not limited to, patents, trade secrets and know-how, reasonably necessary to service customers as currently served or operate the Atmospheric Gases Assets To Be Divested at no less than the rate of operation (including, but not limited to, rates of production and sales) as of the Effective Date of Atmospheric Gas Assets Divestiture;
7. at the option of the Atmospheric Gases Acquirer(s), non-exclusive rights to all management information systems software, supply chain management software, dispatch, logistics and production software and any other software or proprietary information (including, but not limited to, LCS and any modifications and customizations to any software system) necessary to service customers as currently served or operate the Atmospheric Gases Assets To Be Divested at no less than the rate of operation (including, but not limited to, rates of production and sales) as of the Effective Date of Atmospheric Gas Assets Divestiture;
8. non-exclusive rights to and copies of all technical information, specifications, designs, drawings, processes and quality control data;
9. rights to or in any or all existing Atmospheric Gases customer supply agreements for which the customer has been ordinarily supplied by one or more of the Atmospheric Gases Plants To Be Divested from July 31, 2005, to the Effective Date of Atmospheric Gas Assets Divestiture; to the extent such customer supply agreements also provide for the supply of bulk carbon

Decision and Order

dioxide, bulk helium or bulk hydrogen, at the option of the Atmospheric Gases Acquirer, the transfer or assignment shall also include the right to supply bulk carbon dioxide, bulk helium or bulk hydrogen; *provided, however,* that at the option of the Atmospheric Gases Acquirer and with the prior approval of the Commission, the Atmospheric Gases Acquirer may substitute an alternative package of customer supply agreements;

10. rights to the Product Exchange Agreement dated June 2, 2006, entered into by and between Linde Gas LLC and Praxair, Inc.;
11. to the extent transferable or assignable, and, in the case of company-wide contracts, divisible, rights to and in all contracts and agreements, other than customer supply agreements, related to the production, refinement, distribution, marketing or sale of Atmospheric Gases at the Atmospheric Gases Plants To Be Divested including but not limited to dealer, distributor, supply, power and utility contracts;
12. to the extent transferable or assignable, all customer and governmental approvals, consents, licenses, permits, waivers or other authorizations held by Linde for the production, refinement, distribution, marketing or sale of Atmospheric Gases at the Atmospheric Gases Plants To Be Divested;
13. all rights under warranties and guarantees, express or implied;
14. all books, records and files; *provided, however,* that if such books, records and files also contain information relating to the production, refinement, distribution, marketing or sale of products at plants other than the

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Atmospheric Gases Plants To Be Divested, then only those portions of the books, records and files relating to the Atmospheric Gases Plants To Be Divested shall be included; and, provided further, that Linde may retain a copy of any books and records that it is required by law to retain; and

15. all items of prepaid expense.

Provided, however, “Atmospheric Gases Assets To Be Divested” does not include:

- i. Linde’s proprietary trade name and trademarks and any other rights to distribute or sell any items containing Linde’s name or logo;
- ii. any Atmospheric Gases Plant or production facility other than the Atmospheric Gases Plants To Be Divested;
- iii. any computers, servers, or telecommunications equipment shared through local and/or wide area telecommunications systems that are not physically located at the facilities associated with the Atmospheric Gases Assets To Be Divested;
- iv. Linde Gas LLC’s headquarters located in Independence, Ohio; and
- v. contractual rights to supply products other than those products produced at the Atmospheric Gases Plants To Be Divested, except as provided in Paragraph I.G.9.

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- L. “Atmospheric Assets Divestiture Agreement” means any agreement pursuant to which Linde divests the Atmospheric Gases Assets To Be Divested pursuant to this Order and with the prior approval of the Commission.
- M. “Atmospheric Gases Plant” means a facility that produces Atmospheric Gases.
- N. “Atmospheric Gases Plants To Be Divested” means the Bozrah Plant, Canton Plant, Carrollton Plant, Dayton Plant, Jefferson Plant, Madison Plant, Rock Hill Plant, and Waukesha Plant.
- O. “Bessemer Helium Transfill” means BOC’s Helium Transfill located in Bessemer, Alabama, and all other BOC assets on the property, but not including any Helium ISO Containers, Helium Tube Trailers, or Helium Dewars that are not Helium Containers To Be Divested or any assets related exclusively to BOC’s carbon dioxide or other non-helium businesses.

Provided, however, if assets used in the operation of BOC’s Bessemer Helium Transfill are also used by BOC or Linde for other purposes, then the “Bessemer Helium Transfill” shall include BOC and Linde’s right to use those assets in exchange for a one-time paid-up fee, but shall not include the assets themselves. This would include, for example, roads and parking areas used not only by persons or vehicles participating in the operation of the Bessemer Helium Transfill, but also by persons or vehicles employed by Respondents for other purposes.

- P. “Bozrah Plant” means Linde’s Atmospheric Gases Plant located in Bozrah, Connecticut.

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- Q. “Candidate Atmospheric Gases Employees” means those Employees identified in Confidential Appendix A attached to this Order.
- R. “Canton Plant” means Linde’s Atmospheric Gases Plant located in Canton, Ohio.
- S. “Carrollton Plant” means Linde’s Atmospheric Gases Plant located in Carrollton, Georgia.
- T. “Dayton Plant” means Linde’s Atmospheric Gases Plant located in Dayton, Ohio.
- U. “Direct Cost” means actual cost of labor, including employee benefits plus actual input costs, such as materials and fuel, plus the actual cost of any third-party charges.
- V. “Divestiture Agreements” means the Atmospheric Assets Divestiture Agreement and the Helium Divestiture Agreement.
- W. “Effective Date of Acquisition” means the date on which Linde acquires BOC.
- X. “Effective Date of Atmospheric Gas Assets Divestiture” means the date on which the mandated divestiture of the Atmospheric Gases Assets To Be Divested occurs.
- Y. “Effective Date of the Helium Acquirer’s New Transfills” means the date on which the Commission determines the Helium Acquirer has constructed a helium transfill that is a Standard Industry Helium Transfill or the date on which the Escrow Transfills are divested to the Helium Acquirer.

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Z. “Effective Date of Helium Assets Divestiture” means the date on which the mandated divestiture of the Helium Assets To Be Divested is completed.

AA. “Escrow Transfills” means:

1. if TNSC is the Helium Acquirer:

a. BOC’s Helium Transfill in City of Industry, California; and

b. BOC’s Helium Transfill in Richmond, California;

including all assets used in the operation of those Helium Transfills, regardless of whether the assets are used exclusively for that purpose, and any easements necessary to obtain efficient access to those transfills.

2. if TNSC is not the Helium Acquirer:

a. BOC’s Helium Transfill in City of Industry, California; and

b. BOC’s Helium Transfill in Middlesex, New Jersey;

including all assets used in the operation of those Helium Transfills, regardless of whether the assets are used exclusively for that purpose, and any easements necessary to obtain efficient access to those transfills.

Provided, however, the “Escrow Transfills” shall not include any right to ownership of real property, but shall include, in exchange for a one-time paid-up fee, a fifty (50) year lease to the real property on which those Helium Transfills, and the assets used in the operation of those Helium Transfills, are located.

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Provided, further, however, if assets used in the operation of those Helium Transfills are also used by BOC for other purposes, then the “Escrow Transfills” shall include the Helium Acquirer’s right to use those assets in exchange for a one-time paid-up fee, but shall not include the assets themselves. This would include for example, roads and parking areas used not only by persons or vehicles participating in the operation of those Helium Transfills, but also by persons or vehicles employed by BOC for other purposes.

- BB. “Expected Worldwide Helium Demand” means an estimate of worldwide helium demand based on actual demand during the three calendar months immediately preceding the interruption of supply pursuant to the ExxonMobil Helium Contract.
- CC. “ExxonMobil” means ExxonMobil Gas & Power Marketing Company.
- DD. “ExxonMobil Helium Contract” means the contract between BOC Inc. and ExxonMobil that became effective on February 24, 2003, and that provides for the purchase of 337 million cubic feet of helium per annum by BOC.
- EE. “Held Separate Business” means the Atmospheric Gases Assets To Be Divested and all Held Separate Business Employees of the Atmospheric Gases Assets To Be Divested.
- FF. “Held Separate Business Employees” means all full-time, part-time, or contract employees whose duties take place at, or primarily relate to, the Held Separate Business or have taken place at, or primarily related to, the Held Separate Business at any time during the period commencing twelve months prior to the Effective Date of Acquisition.

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- GG. “Helium Acquirer’s Expected Worldwide Helium Supply” means an estimate of the Helium Acquirer’s then available worldwide helium supply based on contractual supply obligations as reflected by recent helium deliveries from third-party sources.
- HH. “Helium Assets To Be Divested” means the Helium Containers To Be Divested, the Helium Delivery Assets To Be Divested, the Helium Supply Rights To Be Divested, the Helium Transfill Facilities To Be Divested, and the Helium Customer Contracts To Be Divested.
- II. “Helium Acquirer” means the Person that acquires the Helium Assets To Be Divested pursuant to Paragraph III. or V. of this Order
- JJ. “Helium Containers To Be Divested” means sufficient Helium ISO Containers, Helium Tube Trailers, and Helium Dewars, when combined with containers owned or leased by the Helium Acquirer prior to the Effective Date of Helium Assets Divestiture, for the Helium Acquirer to deliver economically and efficiently to its customers, its joint ventures, its subsidiaries, and itself the helium it purchases pursuant to the Helium Supply Rights To Be Divested, where all such containers are in good condition, where the average age of such Helium ISO Containers is not greater than the average age of all of BOC’s Helium ISO Containers, where the average age of such Helium Tube Trailers is not greater than the average age of all of BOC’s Helium Tube Trailers, and where the average age of such Helium Dewars is not greater than the average age of all of BOC’s Helium Dewars.

Provided, however, if TNSC is the Helium Acquirer, then the number of Helium Containers To Be Divested shall not

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be less than the quantities designated in Confidential Appendix B.

Provided, further, however, if TNSC is not the Helium Acquirer, then “Helium Containers To Be Divested” shall not be less than the quantities designated in Confidential Appendix C.

KK. “Helium Customer Contracts To Be Divested” means:

1. BOC’s rights to and in all contracts for the sale of helium by BOC to the Helium Acquirer or to any subsidiaries or joint ventures of the Helium Acquirer;
2. BOC’s rights to and in all contracts for the sale of helium by BOC existing as of June 11, 2006, where any helium delivered pursuant to any such contract was delivered from a Helium Transfill Point, except for contracts identified in Confidential Appendix D,

Provided, however, that if after Linde uses it commercially reasonable efforts, the consent to the assignment of, or renewal, modification, or waiver of any conflict in, any customer supply contract is not obtained (“Excluded Customer Contracts”), then Linde shall remove such Excluded Customer Contracts from the Helium Customer Contracts to be Divested, and replace such Excluded Customer Contracts with alternative contracts (“Alternative Customer Contracts”), selected by the Helium Acquirer, provided that the selected Alternative Customers contracts do not cause the overall gas to liquid ratio to decline to less than 1.5:1 at the Helium Transfill Point from which the customer is currently served, until the total annual helium volume requirements of these Alternative Customer Contracts equals the Excluded Customer Contracts; provided that in each case such customer shall not be (i) a national account customer that

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takes a material amount of its supply at any location outside the Helium Transfill Points or (ii) a customer of Linde's magnetic resonance imaging Business that is part of a national account customer.

3. Linde's or BOC's rights to and in the contracts for the sale of helium by Linde or BOC to customers located in Europe or Turkey that are identified in Confidential Appendix E; and
4. All of Linde's rights and interests in supplying up to 90 million cubic feet per annum of helium with a term to Linde Gas UK Ltd. pursuant to the Linde AG/TNSC Supply Agreement.

Provided, however, if TNSC is not the Helium Acquirer, then "Helium Customer Contracts To Be Divested" means

- i. BOC's rights to and in any contracts for the sale of helium up to an aggregate volume of 240 mmscf by BOC to the Helium Acquirer or to any subsidiaries or joint ventures of the Helium Acquirer,
- ii. BOC's rights to and in all contracts for the sale of helium by BOC where any helium delivered pursuant to any such contract was delivered from a Helium Transfill Point except for contracts identified in Confidential Appendix F, provided that the contracts divested shall not cause the overall gas to liquid ratio to decline to less than 1.5:1 at the Helium Transfill Point from which the customer is currently served.,

Provided, however, that if the annual volume of such contracts does not total at least 61 million cubic feet of helium, then Linde shall provide

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supplemental contracts for the sale of helium delivered from one or more Helium Transfills (excluding contracts identified in Confidential Appendix F.) (“Supplemental Contracts”) until the total annual volume of the divested contracts for sale of helium delivered from Helium Transfill Points plus the Supplemental Contracts equals at least 61 million cubic feet of helium. These Supplemental Contracts shall be acceptable to the Helium Acquirer and the weighted average gross profit after distribution expense of such Supplemental Contracts shall not be less than the weighted average gross profit after distribution expense of the divested contracts for sale of helium delivered from Helium Transfill Points, provided that the Supplemental Contracts divested shall not cause the overall gas to liquid ratio to decline to less than 1.5:1 at the Helium Transfill from which the customer is currently served.

Provided, further, however, the total annual volume requirements of distributor customers will not exceed 20% of the total volume of the Helium Customer Contracts To Be Divested pursuant to Paragraph I.KK.ii. of this Order.

- iii. Linde’s or BOC’s rights to and in the contracts for the sale of helium by Linde or BOC to customers located in Europe or Turkey that are listed in Confidential Appendix G, and
- iv. All of Linde’s rights and interests in supplying up to 90 million cubic feet per annum of helium with a term of at least four (4) years to Linde Gas UK Ltd. pursuant to the Linde AG/TNSC Supply Agreement.

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LL. “Helium Delivery Assets To Be Divested” means sufficient Dewar Trailers, Dewar Trucks, and Tractors, when combined with delivery assets owned or leased by the Helium Acquirer prior to the Effective Date of Helium Assets Divestiture, for the Helium Acquirer to deliver economically and efficiently to its customers, its joint ventures, its subsidiaries, and itself the helium it purchases pursuant to the Helium Supply Rights To Be Divested, where all such delivery assets are in good condition, where the average age of such Dewar Trailers is not greater than the average age of all of BOC’s Dewar Trailers, where the average age of such Dewar Trucks is not greater than the average age of all of BOC’s Dewar Trucks, and where the average age of such Tractors is not greater than the average age of all of BOC’s Tractors.

Provided, however, if TNSC is the Helium Acquirer, then the number of Helium Delivery Assets To Be Divested shall not be less the amount designated in Confidential Appendix H.

Provided, further, however, if TNSC is not the Helium Acquirer, then “Helium Delivery Assets To Be Divested” shall not be less than an amount designated in Confidential Appendix I.

MM. “Helium Dewar” means a container that is designed to hold 1,000 liters or less of liquid helium.

NN. “Helium Divestiture Agreement” means any agreement pursuant to which Linde divests, pursuant to this Order and with the prior approval of the Commission, any of the Helium Assets To Be Divested or any of the Escrow Transfills.

OO. “Helium Employees” means all employees of Respondents who devote a majority of their working time to matters

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relating to helium, as well as all employees listed in Confidential Appendix J attached to this Order, as well as BOC's tube trailer logistics employees at Bethlehem, PA., with the exception of employees who work at Helium Transfills.

- PP. "Helium ISO Container" means a container that has a nominal capacity of 11,000 gallons of liquid helium, that conforms to relevant manufacturing standards of the International Organization for Standardization, and that is insulated, in part, by liquid nitrogen shielding.
- QQ. "Helium Supply Rights To Be Divested" means, collectively and in full, BOC's rights to and in the ExxonMobil Helium Contract, the Russian Helium Contract, and the Polish Helium Contract.
- RR. "Helium Transfill" means a facility where helium is transferred from Helium ISO Containers to smaller containers.
- SS. "Helium Transfill Employees" means all full-time, part-time or contract employees, including, but not limited to drivers, whose duties primarily relate to the Helium Transfills to Be Divested or the Escrow Transfills.
- TT. "Helium Transfill Points" means the locations in the United States of the Helium Transfills To Be Divested and the Escrow Transfills.

Provided, however, if TNSC is not the Helium Acquirer, then "Helium Acquirer's Transfill Points" means the locations of the Helium Transfills To Be Divested, the Escrow Transfills, and any Helium Transfills owned by the Helium Acquirer prior to the Effective Date of Helium Assets Divestiture.

Decision and Order

UU. “Helium Transfills to Be Divested” means the Houston Helium Transfill and the Orlando Helium Transfill.

Provided, however, if TNSC is not the Helium Acquirer, then “Helium Transfills To Be Divested” means the Bessemer Helium Transfill and Montgomery Helium Transfill.

VV. “Helium Transfill Tolling Services” means the following services: (i) transfilling the bulk liquid helium from Helium ISO Containers into Helium Tube Trailers and Helium Dewars at the Escrow Transfills for pickup by the Helium Acquirer; (ii) arranging shipment of Helium ISO Containers to Asia or Europe via ocean carriers; (iii) taking necessary steps to top off the Helium ISO Container’s liquid nitrogen shield and removing helium gas, when necessary, to reduce the pressure in the Helium ISO Containers; (iv) delivering the Helium ISO Container to the port for shipment; (v) picking-up empty Helium ISO Containers from the port upon their return from Asia or Europe, as applicable; and (vi) performing minor container repairs and delivering the empty Helium ISO Containers to Shute Creek for filling; and (vii) keeping record of shipments by customer for monthly/annual reconciliation.

WW. “Helium Tube Trailer” means a wheeled container that holds between 45,000 and 180,000 cubic feet of compressed gaseous helium and that is designed to be pulled by a semi tractor.

XX. “Houston Helium Transfill” means BOC’s Helium Transfill located in Houston, Texas, on the property of Matheson Tri-Gas, Inc. and all other BOC assets on the property, but not including any Helium ISO Containers, Helium Tube Trailers or Helium Dewars that are not Helium Containers To Be Divested.

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- YY. “Jefferson Plant” means Linde’s Atmospheric Gases Plant located in Jefferson, Georgia.
- ZZ. “Key Atmospheric Gases Employees” means those Employees identified in Confidential Appendix K attached to this Order.
- AAA. “Key Helium Employees” means those Employees identified in Confidential Appendix L attached to this Order.
- BBB. “Key Helium Transfill Employees” means those Employees identified in Confidential Appendix M attached to this Order.
- CCC. “Linde’s Expected Worldwide Helium Supply” means an estimate of Linde’s then available worldwide helium supply based on contractual supply obligations as reflected by recent helium deliveries from third-party sources and the assumption that Linde’s helium refinery at Otis, Kansas runs at full capacity, unless there is an operational problem preventing the Otis plant from running at full capacity.
- DDD. “Linde AG/TNSC Supply Agreement” means the Liquid Helium Supply Agreement by and among Linde AG and Taiyo Nippon Sanso Corporation providing for the supply of up to 90 million cubic feet per annum of helium with a term of at least four (4) years, as appended to the TNSC Divestiture Agreement.
- EEE. “Madison Plant” means Linde’s Atmospheric Gases Plant located in Madison, Wisconsin.
- FFF. “Monitor Agreement” means the Monitor Agreement dated June 29, 2006, between Respondents and Richard

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M. Klein. (The Monitor Agreement is attached as Confidential Appendix N).

GGG. “Montgomery Helium Transfill” means BOC’s Helium Transfill located in Montgomery, Illinois, and all other BOC assets on the property, but not including any Helium ISO Containers, Helium Tube Trailers, or Helium Dewars that are not Helium Containers To Be Divested or any assets related exclusively to BOC’s carbon dioxide or other non-helium businesses.

Provided, however, if assets used in the operation of BOC’s Montgomery Helium Transfill are also used by BOC or Linde for other purposes, then the “Montgomery Helium Transfill” shall include BOC and Linde’s right to use those assets in exchange for a one-time paid-up fee, but shall not include the assets themselves. This would include, for example, roads and parking areas used not only by persons or vehicles participating in the operation of the Montgomery Helium Transfill, but also by persons or vehicles employed by Respondents for other purposes.

HHH. “Orlando Helium Transfill” means BOC’s Helium Transfill located in Orlando, Florida and all other BOC assets on the property, but not including any Helium ISO Containers, Helium Tube Trailers or Helium Dewars that are not Helium Containers To Be Divested or any assets related exclusively to BOC’s carbon dioxide or other non-helium businesses.

Provided, however, if assets used in the operation of the BOC’s Orlando Helium Transfill are also used by BOC or Linde for other purposes, then the “Orlando Helium Transfill” shall include BOC and Linde’s right to use those assets in exchange for a one-time paid-up fee, but shall not include the assets themselves. This would include, for example, roads and parking areas used not only by persons

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or vehicles participating in the operation of the Orlando Helium Transfill, but also by persons or vehicles employed by Respondents for other purposes.

III. “Person” means any natural person, partnership, corporation, company, association, trust, joint venture or other business or legal entity, including any governmental agency.

JJJ. “Polish Helium Contract” means the contract between BOC Helex Ltd. and the Polish Oil and Gas Company Division Odolanow that specifies a “Commencement Date” of January 1, 2004, and that provides for the purchase of approximately 90 million cubic feet of helium per annum by BOC.

KKK. “Rock Hill Plant” means Linde’s Atmospheric Gases Plant located in Rock Hill, South Carolina.

LLL. “Russian Helium Contract” means the contract among BOC Helex Ltd., JSC Cryor, and JSC Orenburggazprom that was dated March 31, 2002, and that provides for the purchase of approximately 60 million cubic feet of helium per annum by BOC.

MMM. “Shute Creek” means ExxonMobil’s refining facility in Shute Creek, Wyoming.

NNN. “Standard Industry Helium Transfill” means a facility capable of transfilling helium from Helium ISO Containers into gaseous Helium Tube Trailers and Helium Dewars and which includes at least the following types of equipment: one (1) helium compressor capable of filling to 3,000 psig; one (1) ambient air vaporizer; two (2) Helium Tube Trailer filling manifolds; two (2) Helium Dewar filling scale; one (1) vacuum pump; one (1) bulk nitrogen storage tank; one (1) helium dewar recovery manifold;

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analytical equipment (oxygen analyzer, moisture analyzer, total hydrocarbon analyzer, and gas chromatograph); compressor oil traps; trailer scale; surge tank; flash gas recovery system; vacuum insulated hoses and piping from the liquid container to liquid fill manifolds; and other associated piping instruments and controls.

OOO. "TNSC" means Taiyo Nippon Sanso Corporation.

PPP. "TNSC Divestiture Agreement" means the Asset Purchase Agreement, Transition Services Agreement, the Transportation and Tolling Agreement dated June 11, 2006, by and among Linde AG, The BOC Group plc, and Taiyo Nippon Sanso Corporation, and the Linde AG/TNSC Supply Agreement dated June 11, 2006, and the annexes thereto, as amended and restated July 7, 2006.

QQQ. "Waukesha Plant" means Linde's Atmospheric Gases Plant located in Waukesha, Wisconsin.

II.**IT IS FURTHER ORDERED** that:

- A. Linde shall divest, within six (6) months from the date this Order becomes final, the Atmospheric Gases Assets To Be Divested to a single Atmospheric Gases Acquirer that receives the prior approval of the Commission and only in a manner that receives the prior approval of the Commission, absolutely and in good faith and at no minimum price.
- B. Linde shall divest the Atmospheric Gases Assets To Be Divested on the terms set forth in this Paragraph II.B., in addition to other terms that may be required by this Order and by the Atmospheric Assets Divestiture Agreements; and Linde shall agree with the Atmospheric Gases

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Acquirer of the Atmospheric Gases Assets To Be Divested, as part of the Atmospheric Assets Divestiture Agreements, to comply with the terms set forth in this Paragraph II.B.:

1. Not later than forty-five (45) days before the Effective Date of Atmospheric Gas Assets Divestiture, Linde shall (a) provide to the Atmospheric Gases Acquirer a list of all Held Separate Business Employees and Candidate Atmospheric Gases Employees; (b) allow the Atmospheric Gases Acquirer to interview any Held Separate Business Employees and Candidate Atmospheric Gases Employees; and (c) subject to compliance with all laws, allow the Atmospheric Gases Acquirer to inspect the personnel files and other documentation relating to such Held Separate Business Employees and Candidate Atmospheric Gases Employees;
2. Not later than thirty (30) days before the Effective Date of Atmospheric Gas Assets Divestiture, Linde shall provide an opportunity for the Atmospheric Gases Acquirer to (a) meet personally, and outside the presence or hearing of any employee or agent of Linde, with any one or more of the Held Separate Business Employees and Candidate Atmospheric Gases Employees; and (b) make offers of employment to any one or more of the Held Separate Business Employees and Candidate Atmospheric Gases Employees;
3. Linde shall not directly or indirectly interfere with the Atmospheric Gases Acquirer's offer of employment to any one or more of the Held Separate Business Employees and Candidate Atmospheric Gases Employees, not directly or indirectly attempt to persuade any one or more of the Held Separate

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Business Employees and Candidate Atmospheric Gases Employees to decline any offer of employment from the Atmospheric Gases Acquirer, and not offer any incentive to any of the Held Separate Business Employees and Candidate Atmospheric Gases Employees to decline employment with the Atmospheric Gases Acquirer;

4. Linde shall irrevocably waive any legal or equitable right to deter any Held Separate Business Employee or Candidate Atmospheric Gases Employee from accepting employment with Atmospheric Gases Acquirer, including, but not limited to, waiving any non-compete or confidentiality provisions of employment or other contracts with Linde that relate to Atmospheric Gases;
5. Linde shall not interfere with the employment by the Atmospheric Gases Acquirer of any Held Separate Business Employee or Candidate Atmospheric Gases Employee;
6. Linde shall continue employee benefits to Held Separate Business Employees and Candidate Atmospheric Gases Employees until the Effective Date of Atmospheric Gas Assets Divestiture consistent with the requirements of the Acquisition Agreement and the employee benefits provided to other similarly situated Linde employees that become employees of Linde after the Effective Date of Atmospheric Gas Assets Divestiture, including regularly scheduled or merit raises and bonuses, regularly scheduled vesting of all pension benefits, and reimbursement of relocation expenses;
7. Linde shall provide a retention incentive bonus to Key Atmospheric Gases Employees who accept

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employment with the Atmospheric Gases Acquirer, equal to ten (10) percent of such employees' annual salary to be paid upon the employees' completion of one (1) year of continuous employment with the Atmospheric Gases Acquirer after the Effective Date of Atmospheric Gas Assets Divestiture;

8. Linde, subject to the provisions of Paragraph II.B.9. below, for a period of one (1) year from the Effective Date of Atmospheric Gas Assets Divestiture, shall not, directly or indirectly, solicit, induce, or attempt to solicit or induce any Held Separate Business Employees and Candidate Atmospheric Gases Employees who have accepted offers of employment with the Atmospheric Gases Acquirer(s) to terminate their employment with the Atmospheric Gases Acquirer; *provided, however*, a violation of this provision will not occur if: (1) the individual's employment has been terminated by the Atmospheric Gases Acquirer; (2) Linde advertises for employees in newspapers, trade publications, or other media not targeted specifically at the employees; or (3) Linde hires employees who apply for employment with Linde, as long as such employees were not solicited by Linde in violation of this paragraph;
9. Notwithstanding the provisions of Paragraph II.B.8. above, for a period of six (6) months from the Effective Date of Atmospheric Gas Assets Divestiture, Linde shall not employ or make offers of employment to any Held Separate Business Employees or Candidate Atmospheric Gases Employees who have accepted offers of employment with the Atmospheric Gases Acquirer unless any such individual's employment with the Atmospheric Gases Acquirer has been terminated by the Atmospheric Gases Acquirer; and

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10. Linde shall not restrict, preclude, or influence any supplier of goods or services to its retained Atmospheric Gases business from supplying goods or services to the Atmospheric Gases business of the Atmospheric Gases Acquirer.
- C. In the event that Linde is unable to satisfy all conditions necessary to divest any intangible asset that is a permit, license, or right granted by any governmental authority, Linde shall provide such assistance as the Atmospheric Gases Acquirer may reasonably request in the Atmospheric Gases Acquirer's efforts to obtain a comparable permit, license or right. In the event that Linde is unable to satisfy all conditions necessary to divest any other intangible asset (including a contractual right), Linde shall, with the acceptance of the Atmospheric Gases Acquirer and the prior approval of the Commission, substitute equivalent assets or arrangements.
- D. The purpose of the divestiture of the Atmospheric Gases Assets To Be Divested, and of the other provisions of this paragraph, is to ensure the continued operation of the Atmospheric Gases Assets To Be Divested as a viable, ongoing business by the Atmospheric Gases Acquirer that has the ability and incentive to invest and compete in the production, distribution, marketing and sale of Atmospheric Gases sold in liquid form, and to remedy the lessening of competition resulting from the acquisition of BOC by Linde as alleged in Commission's Complaint.

III.**IT IS FURTHER ORDERED** that:

- A. Linde shall divest the Helium Assets To Be Divested and the Escrow Transfills as follows:

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1. Linde shall:
 - a. within ten (10) days after the Effective Date of Acquisition, divest to TNSC, absolutely, and in good faith, pursuant to and in accordance with the TNSC Divestiture Agreement, all the Helium Assets To Be Divested, and
 - b. within two (2) years after the Effective Date of Acquisition, divest to TNSC, absolutely, and in good faith, pursuant to and in accordance with the TNSC Divestiture Agreement, all the Escrow Transfills.

The TNSC Divestiture Agreement is incorporated by reference into this Order and made a part hereof as Confidential Appendix O. Any failure by Linde to comply with the TNSC Divestiture Agreement shall constitute a failure to comply with this Order. The TNSC Divestiture Agreement shall not vary or contradict, or be construed to vary or contradict, the terms of this Order. Nothing in this Order shall reduce, or be construed to reduce, any rights or benefits of TNSC, or any obligations of Linde under the TNSC Divestiture Agreement.

Provided, however, if, at the time the Commission makes this Order final, the Commission determines that TNSC is not an acceptable Helium Acquirer or that the TNSC Divestiture Agreement is not an acceptable manner of divestiture, and so notifies Respondents, then Respondents shall:

- i. within six (6) months after the date Linde or BOC receives notice of such determination from the Commission, divest the Helium Assets To Be

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Divested absolutely and in good faith, at no minimum price, as on-going businesses to a single Helium Acquirer that receives the prior approval of the Commission in whole and not in part and only in a manner that receives the prior approval of the Commission, and

- ii. within two (2) years after the Effective Date of Helium Assets Divestiture, divest the Escrow Transfills absolutely and in good faith, at no minimum price, as on-going businesses to the acquirer of the Helium Assets To Be Divested in whole and not in part in a manner that receives the prior approval of the Commission.

Provided, further, however, Linde shall not be required to divest an Escrow Transfill if:

- i. pursuant to Paragraph III.B.6.b. of this Order, the Commission determines, based on certification by the Monitor pursuant to Paragraph IV.D.1.c. of this Order, that the Helium Acquirer has constructed a Helium Transfill that is a Standard Industry Helium Transfill and approves Linde's retention of that Escrow Transfill, and
 - ii. Linde complies with the other requirements of Paragraph III.B.6.b.
2. If Linde or BOC has divested the Helium Assets To Be Divested or the Escrow Transfills prior to the date this Order becomes final, and if, at the time the Commission makes this Order final, the Commission determines that TNSC is not an acceptable acquirer or that the TNSC Divestiture Agreement is not an acceptable manner of divestiture, and so notifies Respondents, then Linde or BOC shall within three (3)

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business days of receiving such notification, rescind the transaction with TNSC and shall divest the Helium Assets To Be Divested in whole and not in part and the Escrow Transfills in accordance with the first proviso to Paragraph III.A.1. of this Order.

- B. Linde shall divest the Helium Assets To Be Divested on the terms set forth in this Paragraph III.B., in addition to other terms that may be required by this Order and by the Helium Divestiture Agreements; and Linde shall agree with the Helium Acquirer, as part of the Helium Divestiture Agreements, to comply with the terms set forth in this Paragraph III.B.:
1. Linde shall place no restrictions on the use by the Helium Acquirer of any of the Helium Assets To Be Divested.
 2. Linde or BOC shall assign to the Helium Acquirer the ExxonMobil Helium Contract, the Russian Helium Contract, and the Polish Helium Contract, and shall obtain approvals necessary for such assignments. Copies of all such approvals shall be incorporated into the Helium Divestiture Agreements as appendices on or before Effective Date of the Helium Assets Divestiture. If Linde or BOC is unable to obtain approvals for the assignment of the ExxonMobil Helium Contract, the Russian Helium Contract, or the Polish Helium Contract to the Helium Acquirer, as required by Paragraph III.B.2. of this Order, then Linde shall sell to the Helium Acquirer a quantity of refined helium equivalent to the amount that Linde receives under the Helium Supply Rights To Be Divested that could not be assigned at Linde's then-current price under the contract for a period of fifteen (15) years.

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Provided, however, if, after using its commercially reasonable efforts, Linde is unable to obtain any renewals of any Helium Supply Rights To Be Divested that could not be assigned during the fifteen year period as provided in this Paragraph III.B.2., Linde shall sell to the Helium Acquirer a quantity of refined helium equivalent to the average amount it received over the last three years of the Helium Supply Rights To Be Divested that could not be assigned, at the average price paid over the last three years of the Helium Supply Rights To Be Divested that could not be assigned.

3. Neither Linde nor BOC shall:
 - a. on, or prior to, the first opportunity of the Helium Acquirer to renew the ExxonMobil Helium Contract, compete with the Helium Acquirer for the rights that the Helium Acquirer would obtain if the ExxonMobil Helium Contract were renewed;
 - b. on, or prior to, the first opportunity of the Helium Acquirer to renew the Russian Helium Contract, compete with the Helium Acquirer for the rights that the Helium Acquirer would obtain if the Russian Helium Contract were renewed; and
 - c. on, or prior to, the first opportunity of the Helium Acquirer to renew the Polish Helium Contract, compete with the Helium Acquirer for the rights that the Helium Acquirer would obtain if the Polish Helium Contract were renewed.
4. With respect to the Allocation Percentage, Linde shall do the following:

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- a. From the Effective Date of Helium Assets Divestiture until the expiration date of the ExxonMobil Helium Contract in accordance with its terms, in the event that supply of helium under the ExxonMobil Helium Contract is curtailed for any reason outside of the Helium Acquirer's control, then, during that period of time, Linde shall allocate its then available worldwide supply of helium between the Helium Acquirer and the helium customers of Linde on a pro rata basis based on their respective aggregate sales volume of helium so that the Helium Acquirer and Linde's customers shall receive an equal Allocation Percentage, which percentage shall not exceed one hundred percent (100%). The Allocation Percentage, which shall apply equally to both the Helium Acquirer's and Linde's customers, shall be calculated in accordance with the following formula:

$$AP = 1 - \frac{SSL + SSP}{MDL + MDP}, \text{ where}$$

AP = the Allocation Percentage (not to exceed 1).

SSL = The total anticipated shortfall in Linde's then available worldwide helium supply (expressed in thousands of standard cubic feet) during the period of time when the supply of helium pursuant to the ExxonMobil Helium Contract is curtailed. Total anticipated shortfall shall be the excess of Linde's Expected Worldwide Helium Demand relative to Linde's Expected Worldwide Helium Supply during the period of time when the supply of helium pursuant to the ExxonMobil Helium Contract is curtailed.

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SSP = The total anticipated shortfall in the Helium Acquirer's then available worldwide helium supply (expressed in thousands of standard cubic feet) during the period of time when the supply of helium pursuant to the ExxonMobil Helium Contract is curtailed. Total anticipated shortfall shall be the excess of the Helium Acquirer's Expected Worldwide Helium Demand relative to the Helium Acquirer's Expected Worldwide Helium Supply during the period of time when the supply of helium pursuant to the ExxonMobil Helium Contract is curtailed.

MDL = Linde's Expected Worldwide Helium Demand during the period of time when the supply of helium pursuant to the ExxonMobil Helium Contract is curtailed.

MDP = The Helium Acquirer's Expected Worldwide Helium Demand during the period of time when the supply of helium pursuant to the ExxonMobil Helium Contract is curtailed.

- b. The price for any back-up helium supplied under this Paragraph III.B.4. by Linde shall be the then current price of helium under the ExxonMobil Helium Contract.
5. Linde shall require, as a condition of divesting its helium business in the United Kingdom, Linde Gas UK Ltd., that the acquirer of that business agree to accept assignment of Linde AG/TNSC Supply Agreement.

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6. With respect to the Escrow Transfills, Linde shall do the following:
 - a. Until the divestiture of the Escrow Transfills pursuant to this Order, Linde shall place in escrow the purchase price paid by the Helium Acquirer for each of the Escrow Transfills. The Divestiture Agreements shall provide that such purchase prices be paid at the same time as the Helium Acquirer pays to Linde the purchase price for the Helium Assets To Be Divested, and Linde shall not divest the Helium Assets To Be Divested to the Helium Acquirer until after Linde receives the purchase prices for the Escrow Transfills.
 - b. If, prior to the divestiture of an Escrow Transfill to the Helium Acquirer, the Commission determines, based on certification by the Monitor pursuant to Paragraph IV.D.1.c. of this Order, that the Helium Acquirer has constructed a Standard Industry Helium Transfill, then Linde shall retain such Escrow Transfill, and return to the Helium Acquirer the purchase price (including interest accrued in escrow) for that Escrow Transfill within three (3) days after it receives the Commission's approval to retain the Escrow Transfill.
 - c. Until the divestiture of an Escrow Transfill or until Linde receives the approval of the Commission to retain an Escrow Transfill, whichever is earlier, but in no event longer than two (2) years, Linde shall provide Helium Transfill Tolling Services to the Helium Acquirer at that Escrow Transfill on the following terms and conditions:

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- (1) Price shall be equal to Linde's actual Direct Cost of providing such services.
 - (2) Quantity shall not exceed the helium volume purchased by the Helium Acquirer pursuant to the ExxonMobil Helium Contract.
 - (3) In performing Helium Transfill Tolling Services, Linde shall provide all such services in substantially the same manner and applying substantially the same standards and practices that it applies when performing similar services for its own customers, consistent in all material respects with standard industry practices and standards and the standards and practices applied by BOC in carrying out similar services in connection with the sale of helium to the Helium Acquirer prior to the effective date of the Order.
7. Neither Linde nor BOC shall restrict, preclude, or influence any supplier of goods or services to its retained helium business from supplying goods or services to the helium business of the Helium Acquirer.
- Provided, however,* nothing in this Order shall preclude Linde from contracting for helium sources, except as provided in Paragraph III.B.3.
8. With respect to Helium Employees, Respondents shall do the following:
- a. Not later than fifteen (15) business days before the Effective Date of Helium Assets Divestiture, Respondents shall (1) provide to the Helium Acquirer a list of all Helium Employees; (2) allow

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the Helium Acquirer to interview any Helium Employees; and (3) subject to compliance with all laws, allow the Helium Acquirer to inspect the personnel files and other documentation relating to such Helium Employees;

- b. Not later than ten (10) business days before the Effective Date of Helium Assets Divestiture, Respondents shall provide an opportunity for the Helium Acquirer to (1) meet personally, and outside the presence or hearing of any employee or agent of Linde or BOC, with any one or more of the Helium Employees; and (2) make offers of employment to any one or more of the Helium Employees;
- c. Respondents shall not directly or indirectly interfere with the Helium Acquirer's offer of employment to any one or more of the Helium Employees, not directly or indirectly attempt to persuade any one or more of the Helium Employees to decline any offer of employment from the Helium Acquirer, and not offer any incentive to any of the Helium Employees to decline employment with the Helium Acquirer;
- d. Respondents shall irrevocably waive any legal or equitable right to deter any Helium Employee from accepting employment with the Helium Acquirer, including, but not limited to, waiving any non-compete or confidentiality provisions of employment or other contracts with Respondents that relate to helium;
- e. Respondents shall not interfere with the employment by the Helium Acquirer(s) of any Helium Employee;

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- f. Linde or BOC shall continue employee benefits to Helium Employees until fifteen (15) days after the Effective Date of Helium Assets Divestiture consistent with the requirements of the Acquisition Agreement and the employee benefits provided to other similarly situated BOC employees that become employees of Linde after the Effective Date of the Acquisition, including regularly scheduled or merit raises and bonuses, regularly scheduled vesting of all pension benefits, and reimbursement of relocation expenses;
- g. Linde or BOC shall pay, for the benefit of any Helium Employee working outside of the United States who accepts employment with the Helium Acquirer, all accrued bonuses, vested pensions, and other accrued benefits, to the extent that such benefits are not transferable;
- h. Linde or BOC shall pay any Key Helium Employee who accepts employment with the Helium Acquirer an incentive equal to thirty (30) percent of the employee's annual salary (including any other bonuses), payable upon the beginning of his or her employment by the Commission-approved Acquirer.
- i. Linde, subject to the provisions of Paragraph III.B.8.j. below, for a period of two (2) years from the Effective Date of Helium Assets Divestiture, shall not, directly or indirectly, solicit, induce, or attempt to solicit or induce any Helium Employees who have accepted offers of employment with the Helium Acquirer to terminate their employment with the Helium Acquirer; *provided, however*, a violation of this provision will not occur if: (1) the

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individual's employment has been terminated by the Helium Acquirer; (2) Linde advertises for employees in newspapers, trade publications, or other media not targeted specifically at the employees; or (3) Linde hires employees who apply for employment with Linde, as long as such employees were not solicited by Linde in violation of this paragraph; and

- j. Notwithstanding the provisions of Paragraph III.B.8.i. above, for a period of six (6) months from the Effective Date of Helium Assets Divestiture, Linde shall not employ or make offers of employment to any Helium Employees who have accepted offers of employment with the Helium Acquirer unless any such individual's employment with the Helium Acquirer has been terminated by the Helium Acquirer.
9. With respect to Helium Transfill Employees, Respondents shall do the following:
- a. Not later than fifteen (15) business days before the Effective Date of Helium Assets Divestiture, Respondents shall (1) provide to the Helium Acquirer a list of all Helium Transfill Employees; (2) allow the Helium Acquirer to interview any Helium Transfill Employees; and (3) subject to compliance with all laws, allow the Helium Acquirer to inspect the personnel files and other documentation relating to such Helium Transfill Employees;
 - b. Not later than ten (10) business days before the Effective Date of Helium Assets Divestiture, Respondents shall provide an opportunity for the Helium Acquirer to (1) meet personally, and

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outside the presence or hearing of any employee or agent of either Linde or BOC, with any one or more of the Helium Transfill Employees; and (2) make offers of employment to any one or more of the Helium Transfill Employees;

- c. Respondents shall not directly or indirectly interfere with the Helium Acquirer's offer of employment to any one or more of the Helium Transfill Employees, not directly or indirectly attempt to persuade any one or more of the Helium Transfill Employees to decline any offer of employment from the Helium Acquirer, and not offer any incentive to any of the Helium Transfill Employees to decline employment with the Helium Acquirer;
- d. Respondents shall irrevocably waive any legal or equitable right to deter any Helium Transfill Employee from accepting employment with the Helium Acquirer, including, but not limited to, waiving any non-compete or confidentiality provisions of employment or other contracts with Respondents that relate to helium;
- e. Respondents shall not interfere with the employment by the Helium Acquirer(s) of any Helium Transfill Employee;
- f. Respondents shall continue employee benefits to Helium Transfill Employees until fifteen (15) days after the Effective Date of Helium Assets Divestiture consistent with the requirements of the Acquisition Agreement and the employee benefits provided to other similarly situated BOC employees that become employees of Linde after the Effective Date of the Acquisition, including

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regularly scheduled or merit raises and bonuses, regularly scheduled vesting of all pension benefits, and reimbursement of relocation expenses;

- g. Linde or BOC shall pay any Key Helium Transfill Employee who accepts employment with the Helium Acquirer an incentive equal to twenty-five (25) percent of the employee's annual salary (including any other bonuses) to be paid upon the employee's completion of one (1) year of employment with the Commission-approved Acquirer;
- h. Respondents, subject to the provisions of Paragraph III.B.8.i. below, for a period of two (2) years from the Effective Date of Helium Assets Divestiture, shall not, directly or indirectly, solicit, induce, or attempt to solicit or induce any Helium Transfill Employees who have accepted offers of employment with the Helium Acquirer to terminate their employment with the Helium Acquirer; *provided, however*, a violation of this provision will not occur if: (1) the individual's employment has been terminated by the Helium Acquirer; (2) Linde advertises for employees in newspapers, trade publications, or other media not targeted specifically at the employees; or (3) Linde hires employees who apply for employment with Linde, as long as such employees were not solicited by Linde in violation of this paragraph;
- i. Notwithstanding the provisions of Paragraph III.B.8.h. above, for a period of six (6) months from the Effective Date of Helium Assets Divestiture, Linde shall not employ or make offers of employment to any Helium Transfill Employees

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who have accepted offers of employment with the Helium Acquirer unless any such individual's employment with the Helium Acquirer has been terminated by the Helium Acquirer;

- j. At the time the Escrow Transfills are divested to the Helium Acquirer, the provisions of this Paragraph III.B.9. shall apply to the employees of the Escrow Transfills, substituting "Effective Date of Helium Assets Divestiture" with "Effective Date of the Helium Acquirer's New Transfills"; and
 - k. If, prior to the divestiture of the Escrow Transfills to the Helium Acquirer, the Commission determines, based on certification by the Monitor pursuant to Paragraph IV.D.1.c. of this Order, that the Helium Acquirer has constructed a helium transfill that is a Standard Industry Helium Transfill, the provisions of Paragraph III.B.9. shall apply to the employees of the Escrow Transfills, substituting "Effective Date of Helium Assets Divestiture" with "Effective Date of the Helium Acquirer's New Transfills."
- C. The purpose of Paragraph III. of this Order is to ensure the continuation of the Helium Assets To Be Divested to a single entity in whole and not in part as, or as part of, ongoing viable enterprises engaged in the same business in which such assets were engaged at the time of the announcement of the acquisition of BOC by Linde, to ensure that the Helium Assets To Be Divested are operated independently of, and in competition with, Linde, and to remedy the lessening of competition alleged in the Commission's Complaint.

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IV.**IT IS FURTHER ORDERED** that:

- A. Richard M. Klein shall be appointed Monitor to assure that Respondents expeditiously comply with all of their obligations and perform all of their responsibilities as required by Paragraph III. of this Order, the Order To Maintain Assets, and the Helium Divestiture Agreements.
- B. No later than one (1) day after this Order is made final, Respondents shall, pursuant to the Monitor Agreement and to this Order, transfer to the Monitor all the rights, powers, and authorities necessary to permit the Monitor to perform his duties and responsibilities in a manner consistent with the purposes of Paragraph III. of this Order.
- C. In the event a substitute Monitor is required, the Commission shall select the Monitor, subject to the consent of Respondents, which consent shall not be unreasonably withheld. If Respondents have not opposed, in writing, including the reasons for opposing, the selection of a proposed Monitor within ten (10) days after notice by the staff of the Commission to Respondents of the identity of any proposed Monitor, Respondents shall be deemed to have consented to the selection of the proposed Monitor. Not later than ten (10) days after appointment of a substitute Monitor, Respondents shall execute an agreement that, subject to the prior approval of the Commission, confers on the Monitor all the rights and powers necessary to permit the Monitor to monitor Linde's and BOC's compliance with the terms of Paragraph III. of this Order and the Helium Divestiture Agreements in a manner consistent with the purposes of this Order.

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- D. Respondents shall consent to the following terms and conditions regarding the powers, duties, authorities, and responsibilities of the Monitor:
1. The Monitor shall have the power and authority to monitor Linde's and BOC's compliance with Paragraph III. of this Order, the Order To Maintain Assets, and the Helium Divestiture Agreements, and shall exercise such power and authority and carry out the duties and responsibilities of the Monitor in a manner consistent with the purposes of this Order and in consultation with the Commission, including, but not limited to:
 - a. Assuring that Respondents expeditiously comply with all of their obligations and perform all of their responsibilities as required by Paragraph III. of this Order and the Helium Divestiture Agreements, and the Order To Maintain Assets;
 - b. Monitoring any transition services agreements; and
 - c. Determining the completion of a Standard Industry Helium Transfill.
 2. The Monitor shall act in a fiduciary capacity for the benefit of the Commission.
 3. The Monitor shall serve for such time as is necessary to monitor Linde's and BOC's compliance with the provisions of Paragraph III. of this Order, the Order To Maintain Assets, and the Helium Divestiture Agreements.
 4. Subject to any demonstrated legally recognized privilege, the Monitor shall have full and complete access to Linde's and BOC's personnel, books,

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documents, records kept in the ordinary course of business, facilities and technical information, and such other relevant information as the Monitor may reasonably request, related to Linde's and BOC's compliance with their obligations under Paragraph III. of this Order and the Helium Divestiture Agreements. Respondents shall cooperate with any reasonable request of the Monitor and shall take no action to interfere with or impede the Monitor's ability to monitor Linde's and BOC's compliance with Paragraph III. of this Order, the Order to Maintain Assets, and the Helium Divestiture Agreements.

5. The Monitor shall serve, without bond or other security, at the expense of Respondents on such reasonable and customary terms and conditions as the Commission may set. The Monitor shall have authority to employ, at the expense of Respondents, such consultants, accountants, attorneys and other representatives and assistants as are reasonably necessary to carry out the Monitor's duties and responsibilities. The Monitor shall account for all expenses incurred, including fees for services rendered, subject to the approval of the Commission.
6. Respondents shall indemnify the Monitor and hold the Monitor harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Monitor's duties, including all reasonable fees of counsel and other reasonable expenses incurred in connection with the preparations for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Monitor.

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7. Respondents shall report to the Monitor in accordance with the requirements of this Order and/or as otherwise provided in any agreement approved by the Commission. The Monitor shall evaluate the reports submitted to the Monitor by Respondents, and any reports submitted by the Helium Acquirer with respect to the performance of Linde's and BOC's obligations under Paragraph III. of this Order, the Helium Divestiture Agreements, and the Order To Maintain Assets.
 8. Within one (1) month from the date the Monitor is appointed pursuant to this paragraph, every sixty (60) days thereafter, and otherwise as requested by the Commission, the Monitor shall report in writing to the Commission concerning performance by Respondents of their obligations under Paragraph III. of this Order, the Helium Divestiture Agreements, and the Order To Maintain Assets.
 9. Respondents may require the Monitor and the Monitor's consultants, accountants, attorneys, and other representatives and assistants to sign a customary confidentiality agreement; PROVIDED, HOWEVER, such agreement shall not restrict the Monitor from providing any information to the Commission.
- E. The Commission may, among other things, require the Monitor and each of the Monitor's consultants, accountants, attorneys, and other representatives and assistants to sign an appropriate confidentiality agreement relating to Commission materials and information received in connection with the performance of the Monitor's duties.
- F. If the Commission determines that the Monitor has ceased to act or failed to act diligently, the Commission may

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appoint a substitute Monitor in the same manner as provided in this Paragraph IV.

- G. The Commission may on its own initiative, or at the request of the Monitor, issue such additional orders or directions as may be necessary or appropriate to assure compliance with the requirements of Paragraph III. of this Order, the Order to Maintain Assets, and the Helium Divestiture Agreements.
- H. A Monitor appointed pursuant to this Order may be the same Person appointed as Hold Separate Trustee pursuant to Paragraph II. of the Order to Hold Separate and Maintain Assets.

V.**IT IS FURTHER ORDERED** that:

- A. If Linde has not divested all of the Assets To Be Divested as required by Paragraphs II. and III. of this Order, the Commission may appoint a trustee to divest (“Divestiture Trustee”) the remaining Assets To Be Divested in a manner that satisfies the requirements of Paragraphs II. and III. In the event that the Commission or the Attorney General brings an action pursuant to § 5(l) of the Federal Trade Commission Act, 15 U.S.C. § 45(l), or any other statute enforced by the Commission, Linde shall consent to the appointment of a Divestiture Trustee in such action to divest the relevant assets in accordance with the terms of this Order. Neither the appointment of a Divestiture Trustee nor a decision not to appoint a Divestiture Trustee under this Paragraph shall preclude the Commission or the Attorney General from seeking civil penalties or any other relief available to it, including a court-appointed Divestiture Trustee, pursuant to § 5(l) of the Federal Trade Commission Act, or any other statute enforced by the

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Commission, for any failure by Linde to comply with this Order.

- B. The Commission shall select the Divestiture Trustee, subject to the consent of Linde, which consent shall not be unreasonably withheld. The Divestiture Trustee shall be a person with experience and expertise in acquisitions and divestitures. If Linde has not opposed, in writing, including the reasons for opposing, the selection of any proposed Divestiture Trustee within ten (10) days after notice by the staff of the Commission to Linde of the identity of any proposed Divestiture Trustee, Linde shall be deemed to have consented to the selection of the proposed Divestiture Trustee.
- C. Within ten (10) days after appointment of a Divestiture Trustee, Linde shall execute a trust agreement that, subject to the prior approval of the Commission, transfers to the Divestiture Trustee all rights and powers necessary to permit the Divestiture Trustee to effect the relevant divestiture or transfer required by the Order.
- D. If a Divestiture Trustee is appointed by the Commission or a court pursuant to this Order, Linde shall consent to the following terms and conditions regarding the Divestiture Trustee's powers, duties, authority, and responsibilities:
 - 1. Subject to the prior approval of the Commission, the Divestiture Trustee shall have the exclusive power and authority to assign, grant, license, divest, transfer, deliver or otherwise convey the relevant assets that are required by this Order to be assigned, granted, licensed, divested, transferred, delivered or otherwise conveyed.
 - 2. The Divestiture Trustee shall have twelve (12) months from the date the Commission approves the trust

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agreement described herein to accomplish the divestiture, which shall be subject to the prior approval of the Commission. If, however, at the end of the twelve (12) month period, the Divestiture Trustee has submitted a plan of divestiture or believes that the divestiture can be achieved within a reasonable time, the divestiture period may be extended by the Commission; *provided, however*, the Commission may extend the divestiture period only two (2) times.

3. Subject to any demonstrated legally recognized privilege, the Divestiture Trustee shall have full and complete access to the personnel, books, records, and facilities related to the relevant assets that are required to be assigned, granted, licensed, divested, delivered or otherwise conveyed by this Order and to any other relevant information as the Divestiture Trustee may request. Linde shall develop such financial or other information as the Divestiture Trustee may request and shall cooperate with the Divestiture Trustee. Linde shall take no action to interfere with or impede the Divestiture Trustee's accomplishment of the divestiture. Any delays in divestiture caused by Linde shall extend the time for divestiture under this Paragraph V. in an amount equal to the delay, as determined by the Commission or, for a court-appointed Divestiture Trustee, by the court.
4. The Divestiture Trustee shall use commercially reasonable best efforts to negotiate the most favorable price and terms available in each contract that is submitted to the Commission, subject to Linde's absolute and unconditional obligation to divest expeditiously and at no minimum price. The divestiture shall be made in the manner and to an Acquirer as required by this Order; *provided, however*, if the Divestiture Trustee receives bona fide offers

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from more than one acquiring Person, and if the Commission determines to approve more than one such acquiring Person, the Divestiture Trustee shall divest to the acquiring Person selected by Linde from among those approved by the Commission; *provided further, however*, that Linde shall select such Person within five (5) days of receiving notification of the Commission's approval.

5. The Divestiture Trustee shall serve, without bond or other security, at the cost and expense of Linde, on such reasonable and customary terms and conditions as the Commission or a court may set. The Divestiture Trustee shall have the authority to employ, at the cost and expense of Linde, such consultants, accountants, attorneys, investment bankers, business brokers, appraisers, and other representatives and assistants as are necessary to carry out the Divestiture Trustee's duties and responsibilities. The Divestiture Trustee shall account for all monies derived from the divestiture and all expenses incurred. After approval by the Commission and, in the case of a court-appointed Divestiture Trustee, by the court, of the account of the Divestiture Trustee, including fees for the Divestiture Trustee's services, all remaining monies shall be paid at the direction of Linde, and the Divestiture Trustee's power shall be terminated. The compensation of the Divestiture Trustee shall be based at least in significant part on a commission arrangement contingent on the divestiture of all of the relevant assets that are required to be divested by this Order.
6. Linde shall indemnify the Divestiture Trustee and hold the Divestiture Trustee harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the

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Divestiture Trustee's duties, including all reasonable fees of counsel and other expenses incurred in connection with the preparation for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Divestiture Trustee.

7. The Divestiture Trustee shall have no obligation or authority to operate or maintain the relevant assets required to be divested by this Order.
 8. The Divestiture Trustee shall report in writing to Linde and to the Commission every sixty (60) days concerning the Divestiture Trustee's efforts to accomplish the divestiture.
 9. Linde may require the Divestiture Trustee and each of the Divestiture Trustee's consultants, accountants, attorneys, and other representatives and assistants to sign a customary confidentiality agreement; *provided, however,* such agreement shall not restrict the Divestiture Trustee from providing any information to the Commission.
- E. If the Commission determines that a Divestiture Trustee has ceased to act or failed to act diligently, the Commission may appoint a substitute Divestiture Trustee in the same manner as provided in this Paragraph V.
- F. The Commission or, in the case of a court-appointed Divestiture Trustee, the court, may on its own initiative or at the request of the Divestiture Trustee issue such additional orders or directions as may be necessary or appropriate to accomplish the divestiture required by this Order.

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VI.**IT IS FURTHER ORDERED** that:

- A. Within thirty (30) days after the date this Order becomes final and every thirty (30) days thereafter until Respondents have fully complied with the provisions of Paragraphs II., III., and IV. of this Order, Respondents shall each submit to the Commission a verified written report setting forth in detail the manner and form in which it has complied, is complying, and will comply with this Order, the Order to Hold Separate and Maintain Assets, and the Order to Maintain Assets. Respondents shall each include in its compliance reports, among other things that are required from time to time, a full description of the efforts being made to comply with this Order, the Order to Hold Separate and Maintain Assets, and the Order to Maintain Assets, including a description of all substantive contacts or negotiations for the divestiture and the identity of all parties contacted. Respondents shall each include in its compliance reports copies of all written communications to and from such parties, all internal memoranda, and all reports and recommendations concerning divestiture;
- B. Beginning twelve (12) months after the date this Order becomes final, and annually thereafter on the anniversary of the date this Order becomes final, for the next nine (9) years, Linde shall submit to the Commission verified written reports setting forth in detail the manner and form in which it is complying and has complied with this Order, Order to Hold Separate and Maintain Assets, the Order to Maintain Assets, and the Divestiture Agreements. Linde shall submit at the same time a copy of these reports to the Hold Separate Trustee.

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VII.

IT IS FURTHER ORDERED that Linde or BOC shall notify the Commission at least thirty (30) days prior to: (1) any proposed dissolution of Linde or BOC; (2) any proposed acquisition, merger, or consolidation of Linde or BOC; or (3) any other change in Linde or BOC that may affect compliance obligations arising out of this Order, including but, not limited to, assignment, the creation or dissolution of subsidiaries, or any other change in Linde or BOC.

VIII.

IT IS FURTHER ORDERED that for the purpose of determining or securing compliance with this Order, and subject to any legally recognized privilege, and upon written request with reasonable notice to Respondents, Respondents shall permit any duly authorized representative of the Commission:

- A. Access, during office hours of Respondents and in the presence of counsel, to all facilities, and access to inspect and copy all books, ledgers, accounts, correspondence, memoranda and all other records and documents in the possession or under the control of Respondents relating to any matters contained in this Order; and
- B. Upon five (5) days' notice to Linde or BOC and without restraint or interference from it, to interview officers, directors, or employees of Linde or BOC, who may have counsel present, regarding any such matters.

IX.

IT IS FURTHER ORDERED that this Order shall terminate ten (10) years from the date the Order is issued.

By the Commission.

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**NON-PUBLIC
APPENDIX A
TO THE DECISION AND ORDER**

**CANDIDATE ATMOSPHERIC GASES EMPLOYEES
[Redacted From the Public Record
But Incorporated By Reference]**

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**NON-PUBLIC
APPENDIX B
TO THE DECISION AND ORDER**

**HELIUM CONTAINERS TO BE DIVESTED IF TNSC IS
THE HELIUM ACQUIRER
[Redacted From the Public Record
But Incorporated By Reference]**

**NON-PUBLIC
APPENDIX C
TO THE DECISION AND ORDER**

**HELIUM CONTAINERS TO BE DIVESTED IF TNSC IS
NOT THE HELIUM ACQUIRER
[Redacted From the Public Record
But Incorporated By Reference]**

**NON-PUBLIC
APPENDIX D
TO THE DECISION AND ORDER**

**EXCEPTED CONTRACTS FOR HELIUM FROM
TRANSFILL POINTS IF TNSC IS THE HELIUM
ACQUIRER
[Redacted From the Public Record
But Incorporated By Reference]**

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**NON-PUBLIC
APPENDIX E
TO THE DECISION AND ORDER**

**HELIUM CUSTOMER CONTRACTS IN EUROPE AND
TURKEY
[Redacted From the Public Record
But Incorporated By Reference]**

**NON-PUBLIC
APPENDIX F
TO THE DECISION AND ORDER**

**EXCEPTED CONTRACTS FOR HELIUM FROM
TRANSFILL POINTS IF TNSC IS NOT THE HELIUM
ACQUIRER
[Redacted From the Public Record
But Incorporated By Reference]**

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**NON-PUBLIC
APPENDIX G
TO THE DECISION AND ORDER**

**HELIUM CUSTOMER CONTRACTS IN EUROPE AND
TURKEY IF TNSC IS NOT THE HELIUM ACQUIRER
[Redacted From the Public Record
But Incorporated By Reference]**

**NON-PUBLIC
APPENDIX H
TO THE DECISION AND ORDER**

**HELIUM DELIVERY ASSETS TO BE DIVESTED IF TNSC
IS THE HELIUM ACQUIRER
[Redacted From the Public Record
But Incorporated By Reference]**

**NON-PUBLIC
APPENDIX I
TO THE DECISION AND ORDER**

**HELIUM DELIVERY ASSETS TO BE DIVESTED IF TNSC
IS NOT THE HELIUM ACQUIRER
[Redacted From the Public Record
But Incorporated By Reference]**

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**NON-PUBLIC
APPENDIX J
TO THE DECISION AND ORDER**

**ADDITIONAL HELIUM EMPLOYEES
[Redacted From the Public Record
But Incorporated By Reference]**

**NON-PUBLIC
APPENDIX K
TO THE DECISION AND ORDER**

**KEY ATMOSPHERIC GAS EMPLOYEES
[Redacted From the Public Record
But Incorporated By Reference]**

**NON-PUBLIC
APPENDIX L
TO THE DECISION AND ORDER**

**KEY HELIUM EMPLOYEES
[Redacted From the Public Record
But Incorporated By Reference]**

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**NON-PUBLIC
APPENDIX M
TO THE DECISION AND ORDER**

**KEY HELIUM TRANSFILL EMPLOYEES
[Redacted From the Public Record
But Incorporated By Reference]**

**NON-PUBLIC
APPENDIX N
TO THE DECISION AND ORDER**

**MONITOR AGREEMENT BETWEEN LINDE AG AND
RICHARD M. KLEIN
[Redacted From the Public Record But Incorporated By
Reference]**

**NON-PUBLIC
APPENDIX O
TO THE DECISION AND ORDER**

**TNSC DIVESTITURE AGREEMENT
[Redacted From the Public Record
But Incorporated By Reference]**

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**NON-PUBLIC
APPENDIX P
TO THE DECISION AND ORDER**

**CONSENT TO ASSIGNMENT FROM EXXONMOBIL
HELIUM CONTRACT,
POLISH HELIUM CONTRACT, AND RUSSIA HELIUM
CONTRACT**

**[Redacted From the Public Record
But Incorporated By Reference]**

Analysis to Aid Public Comment

ANALYSIS OF CONSENT ORDERS TO AID PUBLIC COMMENT**I. Introduction**

The Federal Trade Commission (“Commission”) has accepted from Linde AG (“Linde”), subject to final approval, an Agreement Containing Consent Orders (“Consent Agreement”), which is designed to remedy the anticompetitive effects resulting from Linde’s acquisition of the entire share capital of The BOC Group plc (“BOC”).

Under the terms of the Consent Agreement, Linde is required to divest air separation units (“ASUs”) and related assets currently owned and operated by Linde in the following eight locations in which the proposed acquisition would lessen competition: (1) Canton, Ohio; (2) Dayton, Ohio; (3) Madison, Wisconsin; (4) Waukesha, Wisconsin; (5) Carrollton, Georgia; (6) Jefferson, Georgia; (7) Rockhill, South Carolina; and (8) Bozrah, Connecticut. The Consent Agreement also requires Linde to divest bulk refined helium assets, including helium source contracts, ancillary distribution assets, and customer contracts, to Taiyo Nippon Sanso Corporation (“Nippon Sanso”).

The proposed Consent Agreement has been placed on the public record for 30 days to solicit comments from interested persons. Comments received during this period will become part of the public record. After 30 days, the Commission will again review the proposed Consent Agreement, and will decide whether it should withdraw from the proposed Consent Agreement or make it final.

Pursuant to a tender offer and agreement dated March 6, 2006, Linde announced its intention to acquire the entire share capital of BOC for an aggregate purchase price of approximately \$14.4 billion. Consummation of this transaction is subject to acceptance of the offer by a sufficient number of the shareholders of BOC.

Analysis to Aid Public Comment

The Commission's complaint alleges the facts described below and that the proposed acquisition, if consummated, would violate Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45, by lessening competition in the market for bulk refined helium worldwide, and certain regional markets in the United States for liquid oxygen and liquid nitrogen.

II. The Parties

Linde is a global supplier of industrial and medical gases and related equipment. Linde LLC is the parent corporation of the United States subsidiary that manufactures and sells a variety of industrial gases, including oxygen, nitrogen, argon, helium, and many other industrial and speciality gases for use in a variety of industries, including the medical, welding, and metal production fields. Linde is the fifth-largest industrial gas supplier in the United States with 11 liquid atmospheric gas producing plants in the United States, most of which are concentrated in the Midwest, Northeast, and Southeast.

BOC is the world's second-largest industrial gas supplier, and the fourth-largest supplier in the United States. BOC operates 23 liquid atmospheric gas producing plants in the United States, many of which are concentrated in the Midwest, Northeast, and Southeast regions, as well as the West and Gulf Coast regions.

III. Liquid Oxygen and Liquid Nitrogen

Both Linde and BOC own and operate ASUs in the United States that produce liquid atmospheric gases, including liquid oxygen and liquid nitrogen. Each gas has specific properties that make it uniquely suited for the applications in which it is used. For most of these applications, there is no substitute for the use of oxygen or nitrogen. Customers would not switch to another gas or product even if the price of liquid oxygen or liquid nitrogen increased by five to ten percent.

Analysis to Aid Public Comment

There are three distinct methods of distributing oxygen and nitrogen: in cylinders, in liquid form, and through on-site ASUs or pipelines. Customers choose a distribution method based on the volume of gas required. Customers who use liquid oxygen or liquid nitrogen require volumes of these gases that are too large to purchase economically in cylinders, but too small to justify the expense of an on-site ASU or pipeline. Thus, even if the price of liquid oxygen or liquid nitrogen increased by five to ten percent, customers would not switch to another method of distribution.

Due to high transportation costs, liquid oxygen and liquid nitrogen may only be purchased economically from a supplier with an ASU located within 150 to 250 miles of the customer. Therefore, it is appropriate to analyze the competitive effects of the proposed acquisition in local geographic markets for liquid oxygen and liquid nitrogen. The relevant geographic markets in which to analyze the effects of the proposed acquisition are the Northeast, the Chicago-Milwaukee Metropolitan Area, the Eastern Midwest, and the Southeast.

The markets for liquid oxygen and liquid nitrogen are highly concentrated. In each of the relevant geographic markets, Linde and BOC are two of only five companies supplying liquid oxygen and liquid nitrogen to customers. As a result of the proposed acquisition, a significant competitor would be eliminated, and a small number of viable competitors would remain. In addition, certain market conditions, including the relative homogeneity of the firms and products involved and availability of detailed market information, are conducive to the firms reaching terms of coordination and detecting and punishing deviations from those terms. Therefore, the proposed acquisition would enhance the likelihood of collusion or coordinated action between or among the remaining firms in each market. Furthermore, by eliminating direct competition between these two suppliers in these areas, the proposed acquisition likely would allow Linde to exercise market power unilaterally, thereby increasing the likelihood that

Analysis to Aid Public Comment

purchasers of liquid oxygen or liquid nitrogen would be forced to pay higher prices in these areas. The proposed acquisition provides Linde a larger base of sales on which to enjoy the benefit of a unilateral price increase and also eliminates a competitor to which customers otherwise could have diverted their sales in markets where alternative sources of supply likely are already limited. In addition, in certain geographic markets, Linde and BOC are the two closest competitors to a significant number of customers.

Significant impediments to new entry exist in the markets for liquid oxygen and liquid nitrogen. In order to be cost competitive in these markets, an ASU must produce at least 250 to 300 tons per day of liquid product. The cost to construct a plant sufficiently large to be cost effective can be 30 to 40 million dollars, most of which are sunk costs and cannot be recovered. Although an ASU can theoretically be constructed within two years, it is not economically justifiable to build an ASU before contracting to sell a substantial portion of the plant's capacity, either to an on-site customer or to liquid customers. On-site customers normally sign long-term contracts. Because such opportunities to contract with these customers are rare, it is uncertain whether such an opportunity would arise in the near future in any of the areas affected by the acquisition. It is even more difficult and time-consuming for a potential new entrant to try to contract with enough liquid gas customers to justify building a new ASU. These customers are generally locked into contracts with existing suppliers that typically last between five and seven years. Even if the new entrant were able to contract with enough customers to justify constructing a new ASU in any of the affected markets, the new entrant may still need to rely on suppliers already in the market to obtain liquid gases to service the new entrant's customers while the ASU was constructed. Given the difficulties of entry, it is unlikely that new entry could be accomplished in a timely manner in the liquid oxygen and liquid nitrogen markets to defeat a likely price increase caused by the acquisition.

Analysis to Aid Public Comment

IV. Bulk Refined Helium

Both Linde and BOC are suppliers of bulk refined helium. Bulk refined helium has specific properties that make it uniquely suited for the applications in which it is used. For most of these applications, there is no substitute for bulk refined helium. Customers likely would not switch to another gas or product even if the price of bulk refined helium increased by five to ten percent.

Refined helium is available to customers in two distinct distribution methods: cylinder form or bulk form. Customers choose a distribution method based on the volume of gas required. Bulk form is generally used by customers that require large volumes of refined helium. In bulk form, refined helium may be packaged into containers known as “dewars” and then distributed in liquid form to customers. Refined helium may also be converted into gaseous form and distributed in high-pressure “tube trailers” in bulk quantities to customers. Bulk refined helium customers obtain helium in bulk form (liquid dewars or gaseous tube trailers) because it is the most cost-effective method of purchasing the volume of refined helium they require. Therefore, customers would not switch to purchasing refined helium via another method of distribution even if the prices of bulk refined helium distributed by one method increased by five to ten percent.

Refined helium is a rare and expensive gas. Because of its high value, refined helium can be, and is, transported economically on a worldwide basis. Because helium is transported globally, foreign helium capacity and demand impact the demand and pricing for domestically-produced helium. Therefore, it is appropriate to analyze the competitive effects of the proposed acquisition using a worldwide market for bulk refined helium.

Analysis to Aid Public Comment

The market for bulk refined helium is highly concentrated. Linde and BOC are two of only five companies in the world with access to refined bulk helium; BOC is the second-largest supplier, and a combined Linde/BOC would become the largest. While Linde is currently the smallest of the five, it has substantial new reserves coming on line in the near future, and already is an aggressive participant in the market for refined bulk helium. In addition, certain market conditions, including the relative homogeneity of the firms and products involved and availability of detailed market information, are conducive to the firms reaching terms of coordination and detecting and punishing deviations from those terms. The Commission's complaint charges that the proposed acquisition would enhance the likelihood of collusion or coordinated action among the remaining firms in the market.

There are substantial barriers to entry in the bulk refined helium market. The most significant impediment to entry is securing a source of refined helium. There are no sources of refined helium available that are not committed to market incumbents in long term contracts. A new entrant would need to locate a new source of crude helium and build a refinery. In addition, tens of millions of dollars would be needed to acquire the necessary infrastructure and ancillary distribution assets, including transfill facilities, cryogenic storage trailers, high-pressure tube trailers and liquid dewars, capable of transporting helium from the refinery to customers. While the costs of entering are high, opportunities to recoup these costs are comparatively limited. As with other industrial gases, helium is sold pursuant to long-term contracts, so only a fraction of the market is available at a given time. Given the difficulties of entering the market, it is unlikely that new entry sufficient to counteract the competitive impact of the proposed acquisition would occur in a timely manner in the market for bulk refined helium.

Analysis to Aid Public Comment

V. The Consent Agreement**A. Liquid Oxygen and Liquid Nitrogen**

The proposed Consent Agreement remedies the acquisition's likely anticompetitive effects in the markets for liquid oxygen and liquid nitrogen. Pursuant to the Consent Agreement, Linde will divest all of its merchant liquid oxygen and nitrogen producing business in the identified geographic markets. Thus, Linde will divest the eight ASUs listed in Section I to a single purchaser that will operate the ASUs as a going concern. The Consent Agreement provides that Linde must find a buyer for the ASUs, at no minimum price, that is acceptable to the Commission, no later than six months from the date the Consent Agreement becomes final. If the Commission determines that Linde has not provided an acceptable buyer for the ASUs within this time period, or that the manner of the divestiture is not acceptable, the Commission may appoint a trustee to divest the assets. The trustee would have the exclusive power and authority to accomplish the divestiture.

The acquirer of the divested assets must receive the prior approval of the Commission. The Commission's goal in evaluating possible purchasers of divested assets is to maintain the competitive environment that existed prior to the acquisition. A proposed acquirer of divested assets must not itself present competitive problems. Numerous entities are interested in purchasing the divested ASUs, including industrial gas suppliers that currently have a regional presence in the industry, but do not compete in the areas affected by the acquisition, as well as entities in related fields that are interested in entering the production and sale of industrial gases. The Commission is therefore satisfied that sufficient potential buyers for the divested liquid oxygen and liquid nitrogen assets exist.

The Consent Agreement also contains an Agreement to Hold Separate and Maintain Assets. This will serve to protect the viability, marketability, and competitiveness of the divestiture

Analysis to Aid Public Comment

asset package until the assets are divested to a buyer approved by the Commission. The Agreement to Hold Separate and Maintain Assets became effective on the date the Commission accepted the Consent Agreement for placement on the public record and will remain in effect until Linde successfully divests the divestiture asset package according to the terms of the Decision and Order.

The Commission has appointed Richard Klein to oversee the management of the divestiture asset package until the divestiture is complete, and for a brief transition period after the sale. Mr. Klein has approximately 23 years experience as the Chief Executive Officer of a global specialty chemicals manufacturer, and is well-respected in the industry. In order to ensure that the Commission remains informed about the status of the proposed divestitures, the proposed Consent Agreement requires the parties to file periodic reports with the Commission until the divestiture is accomplished.

B. Bulk Refined Helium

The Consent Agreement resolves the proposed acquisition's likely anticompetitive effects in the bulk refined helium market by requiring Linde to divest bulk refined helium assets, including helium source contracts, ancillary distribution assets, and customer contracts, to Nippon Sanso no later than ten days after the acquisition. A buyer upfront remedy was required in this market because the helium assets to be divested do not constitute a stand-alone business and require key third-party consents for their transfer under the Order.

Nippon Sanso is particularly well-positioned to compete successfully with the divested helium assets. Nippon Sanso is the largest industrial and speciality gas company in Japan, and is the sixth-largest industrial gas company in the world. Matheson Tri-Gas, Nippon Sanso's U.S. subsidiary, is the sixth-largest industrial gas supplier in the United States. Although it lacks helium sourcing contracts, Nippon Sanso is one of the world's

Analysis to Aid Public Comment

largest helium distributors, selling helium to end-users in the United States and Japan. (Nippon Sanso, however, does not have current access to bulk refined helium.) Having access to the helium sourcing contracts and other ancillary helium assets will provide Nippon Sanso the ability to grow its helium business in the U.S., European, and Asian markets. Nippon Sanso should be successful in restoring the competition that likely would be lost if the proposed Linde/BOC transaction were to proceed unremedied.

If the Commission determines that Nippon Sanso is not an acceptable purchaser, or the manner of the divestiture is not acceptable, the parties must unwind the sale to Nippon Sanso and divest the bulk refined helium assets within six months of the date the Order becomes final to another Commission-approved acquirer. If the parties fail to divest within six months, the Commission may appoint a trustee to divest the bulk refined helium assets.

The Consent Agreement also contains an Order to Maintain Assets. This will serve to ensure that the helium assets are protected and divested in substantially the same condition existing at the time the Consent Agreement was signed. The Order to Maintain Assets became effective on the date the Commission accepted the Consent Agreement for placement on the public record and will remain in effect until Linde successfully divests the helium assets according to the terms of the Decision and Order.

The Commission has also appointed Mr. Klein to oversee the transition in ownership of the divested helium assets to Nippon Sanso and to ensure Linde's and BOC's compliance with all of the provisions of the proposed Consent Agreement. In order to ensure that the Commission remains informed about the status of the proposed divestitures, the proposed Consent Agreement requires Mr. Klein to file reports with the Commission periodically until the divestiture is accomplished.

Analysis to Aid Public Comment

The purpose of this analysis is to facilitate public comment on the Consent Agreement, and it is not intended to constitute an official interpretation of the proposed Decision and Order or the Agreement to Hold Separate, or to modify their terms in any way.

Complaint

IN THE MATTER OF

CARDSYSTEMS SOLUTIONS, INC.CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS OF
SEC. 5 OF THE FEDERAL TRADE COMMISSION ACT

*Docket C-4168; File No. 052 3148
Complaint, September 5, 2006 – Decision, September 5, 2006*

This consent order relates to personal information collected from and about consumers by respondent CardSystems Solutions Inc. and its successor, Solidus Networks, Inc., doing business as Pay By Touch Solutions. The companies provide merchants with products and services used in “authorization processing” – obtaining approval for credit and debit card purchases from banks that issued the cards. CardSystems stored personal information on its computer network and failed to employ reasonable and appropriate security measures to protect the information. The order requires CardSystems and Pay By Touch to establish and maintain a comprehensive information security program in writing that is reasonably designed to protect the security, confidentiality, and integrity of personal information they collect from or about consumers. The security program must contain administrative, technical, and physical safeguards appropriate to their size and complexity, the nature and scope of their activities, and the sensitivity of the personal information collected. In addition, the order requires the respondents to obtain periodic assessments and reports from a qualified, objective, independent third-party professional, certifying, among other things, that they have in place a security program that provides protections that meet or exceed the protections required by this order, and their security program is operating with sufficient effectiveness to provide reasonable assurance that the security, confidentiality, and integrity of consumers’ personal information has been protected. Additional provisions relate to reporting and compliance.

Participants

For the *Commission*: *Molly Crawford, Lara Kaufman, and
Alain Sheer.*

For the *Respondent*: *W. Stephen Cannon, Constantine
Cannon.*

Complaint

COMPLAINT

The Federal Trade Commission, having reason to believe that CardSystems Solutions, Inc. (“respondent”) has violated the provisions of the Federal Trade Commission Act, and it appearing to the Commission that this proceeding is in the public interest, alleges:

1. Respondent CardSystems Solutions, Inc. is a Delaware corporation with its principal office or place of business at 6390 East Broadway, Tucson, Arizona 85710.
2. The acts and practices of respondent as alleged in this complaint have been in or affecting commerce, as “commerce” is defined in Section 4 of the Federal Trade Commission Act.

**VIOLATIONS OF THE FEDERAL TRADE COMMISSION
ACT**

3. Respondent provides merchants with products and services used to obtain authorization for credit and debit card purchases (“card purchases”) from the banks that issued the cards (“issuing banks”). Last year, respondent provided authorization processing for card purchases totaling at least \$15 billion for approximately 119,000 merchants. In connection with these activities, respondent uses the Internet and a web application program (“web application”) to provide information to client merchants about authorizations that have been performed for them, and to provide information to prospective merchants about the services offered.

4. To obtain approval for a card purchase, merchants typically use respondent’s services to: collect information from the card’s magnetic stripe, including, but not limited to, customer name, card number and expiration date, a security code used to verify electronically that the card is genuine, and certain other information (collectively, “personal information”); format the

Complaint

information into an authorization request; and transmit the request to respondent's authorization processing computer network. From there, respondent transmits the request to a computer network operated by or for a bank association (such as Visa or MasterCard) or another entity (such as American Express), which transmits it to the issuing bank. The issuing bank receives the request, approves or declines the purchase, and transmits its response to the merchant over the same computer networks used to process the request. The response includes the personal information that was included in the authorization request the issuing bank received.

5. Since 1998, respondent has stored authorization responses for up to thirty (30) days in one or more databases on its computer network. Each day, these databases contain as many as several million authorization responses.

6. Respondent has engaged in a number of practices that, taken together, failed to provide reasonable and appropriate security for personal information stored on its computer network. Among other things, respondent: (1) created unnecessary risks to the information by storing it in a vulnerable format for up to 30 days; (2) did not adequately assess the vulnerability of its web application and computer network to commonly known or reasonably foreseeable attacks, including but not limited to "Structured Query Language" (or "SQL") injection attacks; (3) did not implement simple, low-cost, and readily available defenses to such attacks; (4) failed to use strong passwords to prevent a hacker from gaining control over computers on its computer network and access to personal information stored on the network; (5) did not use readily available security measures to limit access between computers on its network and between such computers and the Internet; and (6) failed to employ sufficient measures to detect unauthorized access to personal information or to conduct security investigations.

Complaint

7. In September 2004, a hacker exploited the failures set forth in Paragraph 6 by using an SQL injection attack on respondent's web application and website to install common hacking programs on computers on respondent's computer network. The programs were set up to collect and transmit magnetic stripe data stored on the network to computers located outside the network every four days, beginning in November 2004. As a result, the hacker obtained unauthorized access to magnetic stripe data for tens of millions of credit and debit cards.

8. In early 2005, issuing banks began discovering several million dollars in fraudulent credit and debit card purchases that had been made with counterfeit cards. The counterfeit cards contained complete and accurate magnetic stripe data, including the security code used to verify that a card is genuine, and thus appeared genuine in the authorization process. The magnetic stripe data matched the information respondent had stored on its computer network. In response, issuing banks cancelled and re-issued thousands of credit and debit cards. Consumers holding these cards were unable to use them to access their credit and bank accounts until they received replacement cards.

9. As set forth in Paragraphs 6, 7, and 8, respondent's failure to employ reasonable and appropriate security measures to protect personal information it stored caused or is likely to cause substantial injury to consumers that is not offset by countervailing benefits to consumers or competition and is not reasonably avoidable by consumers. This practice was, and is, an unfair act or practice.

10. The acts and practices of respondent as alleged in this complaint constitute unfair or deceptive acts or practices in or affecting commerce in violation of Section 5(a) of the Federal Trade Commission Act.

Decision and Order

THEREFORE, the Federal Trade Commission this fifth day of September, 2006, has issued this complaint against respondent.

By the Commission, Commissioner Harbour recused.

DECISION AND ORDER

The Federal Trade Commission having initiated an investigation of certain acts and practices of the Respondent named in the caption hereof, and the Respondent and its successor corporation, Solidus Networks, Inc., doing business as Pay By Touch Solutions, having been furnished thereafter with a copy of a draft Complaint that the Bureau of Consumer Protection proposed to present to the Commission for its consideration and which, if issued by the Commission, would charge the Respondent with violation of the Federal Trade Commission Act, 15 U.S.C. § 45 *et seq*;

The Respondent, its attorney, its successor corporation, its attorney, and counsel for the Commission having thereafter executed an Agreement Containing Consent Order (“Consent Agreement”), an admission by the Respondent and its successor corporation of all the jurisdictional facts set forth in the aforesaid draft Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondent or its successor corporation that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

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The Commission having thereafter considered the matter and having determined that it has reason to believe that the Respondent has violated the said Act, and that a Complaint should issue stating its charges in that respect, and having thereupon accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days, and having duly considered the comments filed thereafter by interested persons pursuant to Section 2.34 of its Rules, now in further conformity with the procedure described in Section 2.34 of its Rules, the Commission hereby issues its Complaint, makes the following jurisdictional findings and enters the following Order:

1. Proposed respondent CardSystems Solutions, Inc. is a Delaware corporation with its principal office or place of business at 6390 East Broadway, Tucson, Arizona 85710.

Solidus Networks, Inc, doing business as Pay By Touch Solutions, is a Delaware corporation with its principal office or place of business at 101 2nd St Ste 1500, San Francisco, California 94105.

2. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the Respondent and Solidus Networks, Inc., and the proceeding is in the public interest.

ORDER**DEFINITIONS**

For purposes of this order, the following definitions shall apply:

1. "Personal information" shall mean individually identifiable information from or about an individual consumer including, but not limited to: (a) a first and last name; (b) a home or other physical address, including street name and name of city or town; (c) an email address

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or other online contact information, such as an instant messaging user identifier or a screen name that reveals an individual's email address; (d) a telephone number; (e) a Social Security number; (f) credit or debit card information, including card number, expiration date, and data stored on a card's magnetic stripe; (g) a persistent identifier, such as a customer number held in a "cookie" or processor serial number, that is combined with other available data that identifies an individual consumer; or (h) any other information from or about an individual consumer that is combined with (a) through (g) above.

2. Unless otherwise specified, "respondent" shall mean CardSystems Solutions, Inc. and its successors and assigns, including Solidus Networks, Inc., officers, agents, representatives, and employees.

I.

IT IS ORDERED that respondent, directly or through any corporation, subsidiary, division, or other device, in connection with the advertising, marketing, promotion, offering for sale, or sale of any product or service, in or affecting commerce, shall, no later than the date of service of this order, establish and implement, and thereafter maintain, a comprehensive information security program that is reasonably designed to protect the security, confidentiality, and integrity of personal information collected from or about consumers. Such program, the content and implementation of which must be fully documented in writing, shall contain administrative, technical, and physical safeguards appropriate to respondent's size and complexity, the nature and scope of respondent's activities, and the sensitivity of the personal information collected from or about consumers, including:

- A. the designation of an employee or employees to coordinate and be accountable for the information security program.

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- B. the identification of material internal and external risks to the security, confidentiality, and integrity of personal information that could result in the unauthorized disclosure, misuse, loss, alteration, destruction, or other compromise of such information, and assessment of the sufficiency of any safeguards in place to control these risks. At a minimum, this risk assessment should include consideration of risks in each area of relevant operation, including, but not limited to: (1) employee training and management; (2) information systems, including network and software design, information processing, storage, transmission, and disposal; and (3) prevention, detection, and response to attacks, intrusions, or other systems failures.
- C. the design and implementation of reasonable safeguards to control the risks identified through risk assessment, and regular testing or monitoring of the effectiveness of the safeguards' key controls, systems, and procedures.
- D. the evaluation and adjustment of respondent's information security program in light of the results of the testing and monitoring required by subparagraph C, any material changes to respondent's operations or business arrangements, or any other circumstances that respondent knows or has reason to know may have a material impact on the effectiveness of its information security program.

II.

IT IS FURTHER ORDERED that, in connection with its compliance with Paragraph I of this order, respondent shall obtain initial and biennial assessments and reports ("Assessments") from a qualified, objective, independent third-party professional, using procedures and standards generally accepted in the profession. The reporting period for the Assessments shall cover: (1) the first

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one hundred and eighty (180) days after service of the order for the initial Assessment, and (2) each two (2) year period thereafter for twenty (20) years after service of the order for the biennial Assessments. Each Assessment shall:

- A. set forth the specific administrative, technical, and physical safeguards that respondent has implemented and maintained during the reporting period;
- B. explain how such safeguards are appropriate to respondent's size and complexity, the nature and scope of respondent's activities, and the sensitivity of the personal information collected from or about consumers;
- C. explain how the safeguards that have been implemented meet or exceed the protections required by Paragraph I of this order; and
- D. certify that respondent's security program is operating with sufficient effectiveness to provide reasonable assurance that the security, confidentiality, and integrity of personal information is protected and has so operated throughout the reporting period.

Each Assessment shall be prepared and completed within sixty (60) days after the end of the reporting period to which the Assessment applies by a person qualified as a Certified Information System Security Professional (CISSP) or as a Certified Information Systems Auditor (CISA); a person holding Global Information Assurance Certification (GIAC) from the SysAdmin, Audit, Network, Security (SANS) Institute; or a similarly qualified person or organization approved by the Associate Director for Enforcement, Bureau of Consumer Protection, Federal Trade Commission, Washington, D.C. 20580.

Respondent shall provide the initial Assessment, as well as all: plans, reports, studies, reviews, audits, audit trails, policies,

Decision and Order

training materials, and assessments, whether prepared by or on behalf of respondent, relied upon to prepare such Assessment to the Associate Director for Enforcement, Bureau of Consumer Protection, Federal Trade Commission, Washington, D.C. 20580, within ten (10) days after the Assessment has been prepared. All subsequent biennial Assessments shall be retained by respondent until the order is terminated and provided to the Associate Director of Enforcement within ten (10) days of request.

III.

IT IS FURTHER ORDERED that respondent shall maintain, and upon request make available to the Federal Trade Commission for inspection and copying, a print or electronic copy of each document relating to compliance, including but not limited to:

- A. for a period of five (5) years: any documents, whether prepared by or on behalf of respondent, that contradict, qualify, or call into question respondent's compliance with this order; and
- B. for a period of three (3) years after the date of preparation of each biennial Assessment required under Paragraph II of this order: all plans, reports, studies, reviews, audits, audit trails, policies, training materials, and assessments, whether prepared by or on behalf of respondent, relating to respondent's compliance with Paragraphs I and II of this order for the compliance period covered by such biennial Assessment.

IV.

IT IS FURTHER ORDERED that respondent shall deliver a copy of this order to all current and future principals, officers, directors, and managers, and to all current and future employees, agents, and representatives having managerial responsibilities

Decision and Order

relating to the subject matter of this order. Respondent shall deliver this order to such current personnel within thirty (30) days after service of this order, and to such future personnel within thirty (30) days after the person assumes such position or responsibilities.

V.

IT IS FURTHER ORDERED that respondent shall notify the Commission at least thirty (30) days prior to any change in the corporation that may affect compliance obligations arising under this order, including, but not limited to, a dissolution, assignment, sale, merger, or other action that would result in the emergence of a successor corporation; the creation or dissolution of a subsidiary, parent, or affiliate that engages in any acts or practices subject to this order; the proposed filing of a bankruptcy petition; or a change in either corporate name or address. *Provided, however,* that, with respect to any proposed change in the corporation about which respondent learns less than thirty (30) days prior to the date such action is to take place, respondent shall notify the Commission as soon as is practicable after obtaining such knowledge. All notices required by this Paragraph shall be sent by certified mail to the Associate Director, Division of Enforcement, Bureau of Consumer Protection, Federal Trade Commission, Washington, D.C. 20580.

VI.

IT IS FURTHER ORDERED that respondent shall, within one hundred and eighty (180) days after service of this order, and at such other times as the Commission may require, file with the Commission an initial report, in writing, setting forth in detail the manner and form in which it has complied with this order.

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VII.

This order will terminate on September 5, 2026, or twenty (20) years from the most recent date that the United States or the Federal Trade Commission files a complaint (with or without an accompanying consent decree) in federal court alleging any violation of the order, whichever comes later; *provided, however*, that the filing of such a complaint will not affect the duration of:

- A. any Paragraph in this order that terminates in less than twenty (20) years;
- B. this order's application to any respondent that is not named as a defendant in such complaint; and
- C. this order if such complaint is filed after the order has terminated pursuant to this Paragraph.

Provided, further, that if such complaint is dismissed or a federal court rules that respondent did not violate any provision of the order, and the dismissal or ruling is either not appealed or upheld on appeal, then the order will terminate according to this Paragraph as though the complaint had never been filed, except that the order will not terminate between the date such complaint is filed and the later of the deadline for appealing such dismissal or ruling and the date such dismissal or ruling is upheld on appeal.

By the Commission, Commissioner Harbour recused.

Analysis to Aid Public Comment

ANALYSIS OF CONSENT ORDER TO AID PUBLIC COMMENT

The Federal Trade Commission has accepted, subject to final approval, a consent agreement from CardSystems Solutions Inc. (“CardSystems”) and its successor, Solidus Networks, Inc., doing business as Pay By Touch Solutions (“Pay By Touch”).

The consent agreement has been placed on the public record for thirty (30) days for receipt of comments by interested persons. Comments received during this period will become part of the public record. After thirty (30) days, the Commission will again review the agreement and the comments received, and will decide whether it should withdraw from the agreement and take appropriate action or make final the agreement’s proposed order.

According to the Commission’s proposed complaint, CardSystems provides merchants with products and services used in “authorization processing”— obtaining approval for credit and debit card purchases from banks that issued the cards. Last year, it processed about 210 million card purchases, totaling more than \$15 billion, for more than 119,000 small and mid-size merchants. In the course of processing these credit and debit card purchases, CardSystems collected and stored personal information about consumers, including card number and expiration date and other information, from magnetic stripes on the cards. Pay By Touch acquired CardSystems’ assets on December 9, 2005, at which time CardSystems ceased doing business. Pay By Touch uses CardSystems’ former employees, equipment, and technology to process transactions for the same merchants CardSystems served.

The Commission’s proposed complaint alleges that CardSystems stored personal information on computers on its computer network and failed to employ reasonable and appropriate security measures to protect the information. The complaint alleges that this failure was an unfair practice because it caused or was likely to cause substantial consumer injury that was

Analysis to Aid Public Comment

not reasonably avoidable and was not outweighed by countervailing benefits to consumers or competition. In particular, CardSystems engaged in a number of practices that, taken together, failed to provide reasonable and appropriate security for personal information stored on its computer network. Among other things, it: (1) created unnecessary risks to the information by storing it; (2) did not adequately assess the vulnerability of its computer network to commonly known or reasonably foreseeable attacks, including but not limited to “Structured Query Language” injection attacks; (3) did not implement simple, low-cost, and readily available defenses to such attacks; (4) failed to use strong passwords to prevent a hacker from gaining control over computers on its computer network and access to personal information stored on the network; (5) did not use readily available security measures to limit access between computers on its network and between such computers and the Internet; and (6) failed to employ sufficient measures to detect unauthorized access to personal information or to conduct security investigations.

The complaint further alleges that several million dollars in fraudulent purchases were made using counterfeit copies of credit and debit cards that contained the same personal information CardSystems had collected from the magnetic stripes of credit and debit cards and then stored on its computer network. After discovering the fraudulent purchases, banks cancelled and re-issued thousands of these credit and debit cards, and consumers holding these cards were unable to use them to access credit and their own bank accounts.

The proposed order applies to personal information from or about consumers that CardSystems and Pay By Touch (as CardSystems’ successor) collect in connection with authorization processing. The proposed order contains provisions designed to prevent them from engaging in the future in practices similar to those alleged in the complaint.

Analysis to Aid Public Comment

Part I of the proposed order requires CardSystems and Pay By Touch to establish and maintain a comprehensive information security program in writing that is reasonably designed to protect the security, confidentiality, and integrity of personal information they collect from or about consumers. The security program must contain administrative, technical, and physical safeguards appropriate to their size and complexity, the nature and scope of their activities, and the sensitivity of the personal information collected. Specifically, the order requires CardSystems and Pay By Touch to:

- § Designate an employee or employees to coordinate and be accountable for the information security program.
- § Identify material internal and external risks to the security, confidentiality, and integrity of consumer information that could result in unauthorized disclosure, misuse, loss, alteration, destruction, or other compromise of such information, and assess the sufficiency of any safeguards in place to control these risks.
- § Design and implement reasonable safeguards to control the risks identified through risk assessment, and regularly test or monitor the effectiveness of the safeguards' key controls, systems, and procedures.
- § Evaluate and adjust their information security program in light of the results of testing and monitoring, any material changes to their operations or business arrangements, or any other circumstances that they know or have to reason to know may have a material impact on the effectiveness of their information security program.

Part II of the proposed order requires that CardSystems and Pay By Touch obtain within 180 days, and on a biennial basis thereafter, an assessment and report from a qualified, objective, independent third-party professional, certifying, among other

Analysis to Aid Public Comment

things, that: (1) they have in place a security program that provides protections that meet or exceed the protections required by Part I of the proposed order, and (2) their security program is operating with sufficient effectiveness to provide reasonable assurance that the security, confidentiality, and integrity of consumers' personal information has been protected.

Parts III through VII of the proposed order are reporting and compliance provisions. Part III requires CardSystems and Pay By Touch to retain documents relating to their compliance with the order. Part IV requires dissemination of the order now and in the future to persons with responsibilities relating to the subject matter of the order. Part V requires them to notify the Commission of changes in their corporate status. Part VI mandates that CardSystems and Pay By Touch submit compliance reports to the FTC. Part VII is a provision "sunsetting" the order after twenty (20) years, with certain exceptions.

This case is similar to the recent FTC cases against BJ's Wholesale Club and DSW Inc., which also involved alleged failures to secure credit and debit card information. As in those cases, CardSystems faces potential liability in the millions of dollars under bank procedures and in private litigation for losses related to the breach.

The purpose of this analysis is to facilitate public comment on the proposed order. It is not intended to constitute an official interpretation of the proposed order or to modify its terms in any way.

Complaint

IN THE MATTER OF

**NEW CENTURY HEALTH QUALITY ALLIANCE,
INC., AND PRIME CARE OF NORTHEAST
KANSAS, L.L.C., AND ELIZABETH GALLUP,
M.D., J.D., STEVEN BUIE, M.D., THOMAS
ALLEN, M.D., AND G. ROBERT POWERS, M.D.,
AND ASSOCIATES IN FAMILY MEDICINE, P.A.,
BRIARCLIFF MEDICAL ASSOCIATES, P.C.,
COLLEGE PARK FAMILY CARE CENTER, P.A.,
FAMILY HEALTH GROUP, CHARTERED,
FAMILY MEDICAL GROUP, P.A., HICKMAN
MILLS CLINIC, INC., KANZA
MULTISPECIALTY GROUP, P.A., LANDMARK
MEDICAL CENTER, INC., MICHAEL E.
MONACO, M.D. D/B/A SELECT HEALTHCARE,
P.A., KENNETH NORTON, M.D., P.A.,
OVERLAND PARK FAMILY HEALTH
PARTNERS, P.A., QUIVERA INTERNAL
MEDICINE, L.L.C., SEAPORT FAMILY
PRACTICE, P.C., SHAWNEE FAMILY CARE,
P.A., STATLAND CLINIC, LTD., SUNFLOWER
MEDICAL GROUP, P.A., UNITED MEDICAL
GROUP, L.L.C., AND KIMBERLY M. WIRTHS,
M.D., P.A.**

CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS OF
SEC. 5 OF THE FEDERAL TRADE COMMISSION ACT

Docket C-4169; File No. 051 0137

Complaint, September 29, 2006 – Decision, September 29, 2006

This consent order addresses allegations that New Century Health Quality Alliance, Inc., and Prime Care of Northeast Kansas, as well as certain officials

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and members of New Century or Prime Care, entered into, orchestrated, and implemented agreements to fix prices and other contract terms on which their physician practice members would deal with health plans. The order prohibits the respondents from entering into, or facilitating, any agreement between or among any physicians: (1) to negotiate with payors on any physician's behalf; (2) to deal, not to deal, or threaten not to deal with payors; (3) regarding on what terms to deal with any payor; or (4) not to deal individually with any payor, or to deal with any payor only through an arrangement involving New Century or Prime Care. The order also prohibits the respondents from facilitating exchanges of information between or among physicians concerning whether, or on what terms, to contract with a payor. For three years, New Century and Prime Care are required to notify the Commission before entering into any arrangement to act as an agent on behalf of any physicians with payors regarding contracts or before participating in contracting with health plans on behalf of a qualified risk-sharing joint arrangement, or a qualified clinically-integrated joint arrangement. Also, for three years, named New Century and Prime Care officials may not (1) negotiate or act as an agent on behalf of any physician or medical group practice that participates or has participated in either New Century or Prime Care or (2) advise any physician or medical group practice that participates in or has participated in either New Century or Prime Care on contracts, offers, contract terms, conditions, or requirements for dealing with any payors. In addition, for three years, both New Century and Prime Care are required to distribute the complaint and order (1) to all physicians who have participated, currently participate, or express interest in participating in New Century or Prime Care; and (2) to payors that have negotiated contracts with or that contract in the future with New Century or Prime Care.

Participants

For the *Commission*: *Ellen Connelly, David M. Narrow, and Anne R. Schenof.*

For the *Respondent*: *George E. Leonard, Shugart, Thomson & Kilroy, PC.*

COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act, as amended, 15 U.S.C. § 41 *et seq.*, and by virtue of the authority vested in it by said Act, the Federal Trade Commission

Complaint

(“Commission”), having reason to believe that New Century Health Quality Alliance, Inc. (“New Century”), Prime Care of Northeast Kansas, L.L.C. (“Prime Care”), Elizabeth Gallup, M.D., J.D., Steven Buie, M.D., Thomas Allen, M.D., and G. Robert Powers, M.D., Associates in Family Medicine, P.A., Briarcliff Medical Associates, P.C., College Park Family Care Center, P.A., Family Health Group, Chartered, Family Medical Group, P.A., Hickman Mills Clinic, Inc., Kanza Multispecialty Group, P.A., Landmark Medical Center, Inc., Michael E. Monaco, M.D., d/b/a Select Healthcare, P.A., Kenneth Norton, M.D., P.A., Overland Park Family Health Partners, P.A., Quivera Internal Medicine, L.L.C., Seaport Family Practice, P.C., Shawnee Family Care, P.A., Statland Clinic Ltd., Sunflower Medical Group, P.A., United Medical Group, L.L.C., and Kimberly M. Wirths, M.D., P.A., hereinafter sometimes collectively referred to as “Respondents,” have violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues this Complaint stating its charges in that respect as follows:

NATURE OF THE CASE

1. This matter concerns an agreement among competing physicians to refuse to deal, except on collectively determined terms, including price terms, with Humana Health Plan, Inc. (“Humana”), and with others offering coverage for health care services (“payors”) in the Kansas City area, which includes areas in both Missouri and Kansas. The physicians orchestrated this behavior with and through their respective independent practice associations (“IPAs”), New Century and Prime Care, and through activities undertaken jointly by New Century and Prime Care.

RESPONDENTS

2. New Century, a not-for-profit corporation established in 1998, is organized, existing, and doing business as an IPA under and by virtue of the laws of the State of Kansas, with its principal

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address at 5799 Broadmoor, Suite 104, Mission, Kansas 66202. New Century consists of 16 medical practices with a total of approximately 87 primary care physicians who treat patients in the Kansas City area.

3. Prime Care, a for-profit limited liability company established in 1996, is organized, existing, and doing business as an IPA under and by virtue of the laws of the State of Kansas, with its principal address at 5799 Broadmoor, Suite 104, Mission, Kansas 66202. Prime Care consists of nine medical practices with a total of approximately 40 primary care physicians who treat patients in the Kansas City area.

4. In 2002, New Century and Prime Care combined their Board meetings, offices, and administrative staff and operations. New Century and Prime Care voted to formally merge into a single entity, effective January 1, 2005. However, New Century and Prime Care did not complete a merger or formal restructuring that consolidated the two, legally distinct, organizations.

5. New Century and Prime Care took actions in furtherance of the agreements and actions hereinafter alleged to be unfair methods of competition in violation of Section 5 of the Federal Trade Commission Act, through the following officials (hereinafter referred to as "Respondent Officials"), among others:

a. Elizabeth Gallup, M.D., J.D., is New Century's President. In that capacity, she directly participated in the conduct regarding Humana and other payors that is described and challenged as unlawful in this Complaint. Her principal address is 236 Arapahoe Circle, East, Lake Quivera, Kansas 66217.

b. Steven Buie, M.D., who was New Century's Chairman of the Board from 1999 through 2004. During that time, and in that capacity, he directly participated in the conduct regarding Humana and other payors that is described and

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challenged as unlawful in this Complaint. His principal address is 11201 Colorado Avenue, Kansas City, Missouri 64137.

c. Thomas Allen, M.D., who is, and has been, New Century's Chairman of the Board since January 1, 2005. During that time, and in that capacity, he directly participated in the conduct regarding Humana and other payors that is described and challenged as unlawful in this Complaint. His principal address is 4601 West 109th Street, #212, Overland Park, Kansas 66211.

d. G. Robert Powers, M.D., who is, and has been, Prime Care's Chairman of the Board. In that capacity, he directly participated in the conduct regarding Humana that is described and challenged as unlawful in this Complaint. His principal address is 2040 Hutton, #102, Kansas City, Kansas 66109.

6. Each of the following is a for-profit medical practice that is in the business of providing professional medical services, including physician services, to patients for a fee (hereinafter referred to as "Physician Practice Respondents"):

a. Associates in Family Medicine, P.A., whose principal address is 8940 State Avenue, Kansas City, Kansas 66112;

b. Briarcliff Medical Associates, P.C., whose principal address is 5400 North Oak Trfwy., Suite 200, Kansas City, Missouri 64118;

c. College Park Family Care Center, P.A., whose principal address is 11755 West 112th Street, Overland Park, Kansas 66210;

d. Family Health Group, Chartered, whose principal address is 12330 Metcalf, Suite 500, Overland Park, Kansas 66213;

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e. Family Medical Group, P.A., whose principal address is 8101 Parallel Parkway, Suite 100, Kansas City, Kansas 66112;

f. Hickman Mills Clinic, Inc., whose principal address is 11201 Colorado Avenue, Kansas City, Missouri 64137;

g. Kanza Multispecialty Group, P.A., whose principal address is 1428 South 32nd, Kansas City, Kansas 66106;

h. Landmark Medical Center, Inc., whose principal address is 8800 N.W. 112th Street, Kansas City, Missouri 64153;

i. Michael E. Monaco, M.D., d/b/a Select Healthcare, P.A., whose principal address is 5701 West 119th Street, Suite 345, Overland Park, Kansas 66209;

j. Kenneth Norton, M.D., P.A., whose principal address is 8901 W. 74th Street, Suite 333, Shawnee Mission, Kansas 66204;

k. Overland Park Family Health Partners, P.A., whose principal address is 6740 West 121st Street, Overland Park, Kansas 66209;

l. Quivera Internal Medicine, L.L.C., whose principal address is 10601 Quivera Road, Suite 210, Overland Park, Kansas 66215;

m. Seaport Family Practice, P.C., whose principal address is 140 Westwoods Drive, Liberty, Missouri 64068;

n. Shawnee Family Care, P.A., whose principal address is 5949 Nieman, Shawnee, Kansas 66203;

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o. Statland Clinic, Ltd., whose principal address is 5701 West 119th Street, Suite 240, Overland Park, Kansas 66209;

p. Sunflower Medical Group, P.A., whose principal address is 5555 West 58th Street, Mission, Kansas 66202;

q. United Medical Group, L.L.C., whose principal address is 5701 State Avenue, Suite 100, Kansas City, Kansas 66102; and

r. Kimberly M. Wirths, M.D., P.A., whose principal address is 8675 College Boulevard, Suite 100, Overland Park, Kansas 66210.

THE FTC HAS JURISDICTION OVER RESPONDENTS

7. At all times relevant to this Complaint, New Century and Prime Care, acting separately or in concert, and acting through Respondent Officials, among others, have been engaged in the business of negotiating or attempting to negotiate contracts with payors for the provision of physician services on behalf, and for the pecuniary benefit, of their members, including the Physician Practice Respondents.

8. Except to the extent that competition has been restrained as alleged herein: (a) the Physician Practice Respondents that are members of New Century, are now, and have been, in competition with each other and with other members of New Century for the provision of physician services in the Kansas City area; (b) the Physician Practice Respondents that are members of Prime Care, are now, and have been, in competition with each other and with other members of Prime Care for the provision of physician services in the Kansas City area; and (c) the Physician Practice Respondents that are members of Respondent New Century and the Physician Practice Respondents that are members of Respondent Prime Care, are now, and have been, in competition with each other and with other members of New Century or Prime

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Care for the provision of physician services in the Kansas City area.

9. All Respondents are “persons, partnerships, or corporations” within the meaning of Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

10. The general business practices of all Respondents, including the acts and practices alleged herein, are in or affect “commerce” as defined in the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

OVERVIEW OF PHYSICIAN CONTRACTING WITH PAYORS

11. Individual physicians and physician group practices contract with payors of health care services and benefits, including insurance companies, Blue Cross and Blue Shield plans, health maintenance organizations (HMOs), preferred provider organizations (PPOs), self-insured employers, and others, to establish the terms and conditions, including price terms, under which the physicians will render their professional medical services to the payors’ subscribers or covered employees and dependents. Physicians and physician group practices entering into such contracts often agree to accept lower compensation from payors in order to obtain access to additional patients made available by the payors’ relationship with the covered individuals. These contracts may reduce payors’ costs and enable them to lower the price of insurance or of providing health benefits, thereby resulting in lower medical costs for covered individuals.

12. Physicians and physician group practices sometimes form or participate in financially integrated joint ventures to provide physician services under agreements with payors willingly seeking such arrangements. Under such arrangements, the physicians and physician group practices may share financial risks and rewards based on their collective success in achieving pre-

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established targets or goals regarding aggregate utilization and costs of the services provided to covered individuals.

13. Other than through their participation in integrated joint ventures, and absent anticompetitive agreements among them, otherwise competing physicians and physician group practices unilaterally decide whether to enter into contracts with payors to provide services to individuals covered by a payor's programs, and what prices they will accept as payment for their services pursuant to such contracts.

NEW CENTURY'S AND PRIME CARE'S OPERATION

14. Since their formation, New Century and Prime Care each have entered into contracts with payors for and on behalf of their respective member medical practices, under which New Century and Prime Care received capitation payments from the payors in exchange for the medical practices' agreement to provide their professional medical services to persons covered by the contracting payors. The capitation contracts provided to payors, in addition to the physicians' services, an insurance guarantee component that all covered physician services needed by persons covered under a payor's program would be provided by the contracting IPA's members for the predetermined capitation charge, regardless of the actual quantity or type of covered services needed and provided.

15. The member medical practices' participation in New Century and Prime Care, and their offering of their services through the IPAs' capitation contracts, was not, however, the physicians' exclusive or even primary method of selling their professional medical services. Rather, the medical practices also continued to sell their medical services individually, on a fee-for-service basis, outside of New Century and Prime Care, to individual patients and through contracts individually entered into between the medical practice and payors.

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ANTICOMPETITIVE CONDUCT

16. At various times from 1999 to 2005, certain payors decided that they no longer wished to purchase both physician services and the insurance guarantee component jointly provided by the IPAs' member medical practices through New Century's and Prime Care's capitation contracts. Those payors sought to contract solely for the professional medical services of the individual members of New Century and Prime Care on a fee-for-service basis. During that time (and presently) New Century's and Prime Care's physician members offered and sold their professional medical services on a fee-for-service basis to payors and individual patients who did not deal with them through New Century or Prime Care.

17. New Century and Prime Care, each acted in conspiracy with their respective member medical practices, including the Physician Practice Respondents, both as combinations of their respective members and together as a combination of the two organizations' collective members. The purpose of the conspiracies was to prevent payors who previously had capitation contracts with one or both of the IPAs from terminating those contracts and dealing directly with the IPAs' individual medical practices to purchase or contract for their professional medical services. Through their joint agreements and actions, New Century and Prime Care, and New Century's and Prime Care's members, including the Physician Practice Respondents, and often acting through Respondent Officials, restrained competition by, among other things, having their members agree to refrain, and in fact refrain, from dealing individually or contracting with payors, other than on a capitation basis through New Century and Prime Care, and by engaging in collective negotiations over terms, including price terms, and conditions of dealing with payors regarding the individual member medical practices' professional medical services.

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18. Respondents conducted their anticompetitive activities on two levels. First, the member medical practices of New Century and Prime Care, including the Physician Practice Respondents, agreed to refuse to deal, and refused to deal, with payors regarding payors' offers of fee-for-service contracts with each individual physician practice. Rather, the physicians agreed to deal, and only would deal, with the payors through New Century and Prime Care, and only on terms, including price terms, that were collectively agreed upon through New Century and Prime Care. Second, New Century and Prime Care joined together to increase the bargaining power of the two IPAs with payors, and to attempt to force Humana and other payors to accept the terms of dealing jointly agreed upon through New Century and Prime Care on behalf of their combined membership.

19. The Physician Practice Respondents acted affirmatively to further the anticompetitive actions undertaken on their behalf by New Century and Prime Care, by engaging in one or more of the following actions: (a) participating in the adoption or implementation of anticompetitive policies or actions by New Century or Prime Care through their representatives' participation in meetings and decisions of the New Century or Prime Care Boards; (b) participating in closing their medical practices to new Humana patients, as orchestrated by New Century and Prime Care, in order to coerce Humana into contracting through New Century and Prime Care on the physicians' collectively determined terms; (c) sending or distributing notices to their Humana patients, or otherwise informing them, of the patients' impending loss of their primary care physicians due to termination of the physicians' contracts with Humana, as orchestrated by New Century and Prime Care, in order to encourage patients to pressure Humana to contract with New Century and Prime Care on the physicians' collectively determined terms; and (d) refusing to deal individually with Humana, and informing Humana that they only would deal with Humana collectively through New Century or Prime Care.

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EARLY CONTRACT NEGOTIATIONS WITH PAYORS

20. New Century and Prime Care began operations as two separate legal entities, and thereafter entered into separate risk-sharing contracts with payors, including Humana, Cigna, and Mid America Health Care Plans, Inc. (“Mid America”).

21. Beginning as early as 2000, New Century physicians attempted to prevent MidAmerica from changing from a risk-sharing contract to a non-risk-sharing, fee-for-service, contract with New Century physicians, by refusing to deal with Mid America except through New Century, and by threatening to terminate Mid America if it did not agree to a risk-sharing contract with the physicians through New Century. These tactics succeeded, and Mid America agreed to the risk-sharing contract that the physicians, acting through New Century, demanded.

22. After succeeding in their efforts to prevent Mid America from obtaining a fee-for-service arrangement, the New Century physicians employed similar tactics in their 2001 negotiations with Cigna. Cigna also sought to change its contractual relationship with the physicians in New Century from a risk-sharing contract to a fee-for-service reimbursement plan. The New Century physicians were concerned that a fee-for-service reimbursement plan would result in their experiencing a significant drop in their payments from Cigna. To prevent Cigna from making this contractual change, the New Century physicians agreed to refuse, and did refuse, to contract with Cigna except through a group contract with New Century, and threatened to terminate the then-existing contract with Cigna if it continued its efforts to switch to fee-for-service reimbursement for the physicians’ services. However, as of mid-2005, New Century did not have any contract with Cigna.

23. In 2002, New Century and Prime Care joined forces to bargain with payors. When New Century again found itself in a contract dispute with Mid America, Prime Care agreed to help

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New Century by negotiating together with New Century. New Century and Prime Care united because they realized that acting together would give them more leverage in their negotiations with payors. Together, New Century and Prime Care represented approximately 125 primary care physicians in the Kansas City area

NEGOTIATIONS WITH HUMANA

24. Humana, a health maintenance organization (HMO), is a payor that does business in the Kansas City area, which includes Wyandotte County, Kansas, Johnson County, Kansas, and other counties and areas. Humana offers the only Medicare HMO program in Wyandotte County and has approximately 5,000 enrollees in its program there. Prime Care physicians represent approximately 95% of Humana's primary care physician network in Wyandotte County. Humana also offers one of the two Medicare HMO programs in Johnson County. New Century physicians represent approximately 50% of Humana's primary care physician network in Johnson County. New Century and Prime Care were aware that without at least a substantial portion of the Prime Care and New Century physicians in its networks, Humana would have an insufficient number of primary care physicians to be able to offer its Medicare HMO programs in either Wyandotte or Johnson counties. New Century and Prime Care used this information to attempt to coerce Humana into accepting their contract demands. New Century and Prime Care physicians also represented a substantial portion of Humana's primary care physician network for its commercial lines of business in the Kansas City area.

25. Humana had been providing coverage to enrollees in the Kansas City area under its various programs, including its Medicare HMO program, in part through separate full capitation risk contracts with New Century and Prime Care. In 2004, however, Humana decided to eliminate all risk contracting in the Kansas City area, and to contract with individual physicians and

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physician group practices on a fee-for-service basis. Humana first informally notified New Century and Prime Care of its intention to eliminate its risk contracts with them. Subsequently, by letters dated September 1, 2004, and sent to New Century and Prime Care, Humana provided the formal notification, required by its contracts with each, to exercise its option to terminate each of those contracts without cause, effective December 31, 2004. However, those contracts required the New Century and Prime Care member medical practices to continue treating Humana patients for 180 days after a contract termination, or, based on the date notification was given, until June 30, 2005. The contract provided that the physicians would be paid on a fee-for-service basis for services rendered during this period.

26. The physicians in New Century and Prime Care wanted to continue contracting with Humana only through New Century and Prime Care, and on the terms of their previous capitation contracts with Humana. They did not want to contract directly with Humana on a fee-for-service basis, because they believed that Humana would offer lower payments than those the physicians previously had received under the capitation contracts.

27. On September 2, 2004, New Century and Prime Care sent a joint letter to Humana, signed by Drs. Buie and Powers in their capacities as chairmen of the two organizations. The letter informed Humana that New Century's and Prime Care's physicians would not negotiate with Humana on an individual basis, and would continue to contract with it only on a joint basis through New Century and Prime Care. In this letter, New Century and Prime Care also threatened that, unless Humana agreed to a contract by October 1, 2004, they would begin notifying patients covered by Humana, and the Medicare HMO program, who used New Century and Prime Care physicians that those physicians would withdraw from Humana's provider network. New Century and Prime Care sent copies of this letter to various executives at Humana, as well as to their member medical practices.

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28. New Century and Prime Care previously had used similar tactics in their 2001-2002 contract negotiations with Humana. At that time, those tactics succeeded in preventing Humana from eliminating its risk contracts and implementing individual, non-risk contracts with physicians or medical practices. New Century and Prime Care used their prior success to encourage the physicians in their member medical practices to remain resolute, and to stick together through New Century and Prime Care, in their ongoing 2004 and 2005 dealings with Humana.

29. Almost immediately after sending Humana the September 2, 2004, letter, New Century and Prime Care embarked on a multifaceted public relations campaign, which included media advertisements geared toward employers and patients covered by Humana, flyers and letters to patients, meetings with employers, and communications with insurance brokers. This campaign was designed to pressure Humana to contract with New Century's and Prime Care's physicians through the IPAs, and on their desired terms. To prevent Humana from contracting individually with their member medical practices, including the Physician Practice Respondents, New Century and Prime Care together repeatedly urged their member medical practices not to meet individually with Humana representatives, and to refer all calls from Humana to the designated New Century and Prime Care representatives.

30. In early 2005, as part of the campaign to put pressure on Humana to accede to their contracting demands, New Century and Prime Care prepared draft letters for their member medical practices to send to their patients to warn them of an impending likely loss of their primary care physicians under their Humana coverage, and blaming Humana for the impending disruption in their care. New Century and Prime Care recommended that the letters be put on each medical practice's letterhead, and then have the practice either send copies to its Humana patients, or distribute it to patients at the practice's offices. At least seven of New Century's and Prime Care's approximately 25 member medical practices sent such letters to their Humana patients, and other

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member medical practices may have distributed the letters to patients or posted the letters in their offices. The following Physician Practice Respondents sent letters based on the drafts prepared by New Century and Prime Care to at least some of their Humana patients:

College Park Family Care Center, P.A.;
Kanza Multispecialty Group, P.A.;
Landmark Medical Center, Inc.;
Seaport Family Practice, P.C.;
Statland Clinic Ltd.;
Sunflower Medical Group, P.A.; and
United Medical Group, L.L.C.

31. In early December of 2004, New Century and Prime Care presented Humana with a proposed letter of agreement for a new contract, which included, in addition to continued payment by capitation for Humana's Medicare HMO business, a 30% increase in the reimbursement to physicians under the commercial capitation part of the contract. By letter of December 10, 2004, Humana rejected this proposal, and reiterated its desire only to contract individually and directly with the physicians and medical practices in New Century and Prime Care.

32. New Century and Prime Care were aware of Humana's need to have their physicians in its provider network in order for Humana to be able to offer its products for sale in the Kansas City area, and were aware of the disruption that would occur to patients covered under Humana programs if the New Century and Prime Care physicians did not contract with Humana. New Century and Prime Care expressed such awareness both to their members in Board meetings and memoranda, and to Humana in letters.

33. On February 18, 2005, the Boards of Directors of New Century and Prime Care jointly decided to encourage their member medical practices to contact Humana and inform it that

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they were closing their practices to new Humana patients. This was done, at least in part, to eliminate Humana's ability to market its products, thereby putting pressure on Humana to contract with New Century and Prime Care on the physicians' collectively determined desired terms. In February and March, 2005, New Century and Prime Care sent draft letters to all their member medical practices for use in notifying Humana that they were closing their practices to new Humana patients. New Century and Prime Care encouraged the physician practices to send the letters to Humana. The following Physician Practice Respondents, accounting for more than 100 of New Century's and Prime Care's approximately 125 total physicians, sent such letters to Humana closing their practices to new Humana patients:

Associates in Family Medicine, P.A.;
Briarcliff Medical Associates, P.C.;
College Park Family Care Center, P.A.;
Family Health Group, Chartered;
Hickman Mills Clinic, Inc.;
Kanza Multispecialty Group, P.A.;
Landmark Medical Center, Inc.;
Michael E. Monaco, M.D., d/b/a Select Healthcare, P.A.;
Overland Park Family Health Partners, P.A.;
Quivera Internal Medicine, L.L.C.;
Seaport Family Practice, P.C.;
Statland Clinic Ltd.;
Sunflower Medical Group, P.A.;
United Medical Group, L.L.C.; and
Kimberly M. Wirths, M.D., P.A.

34. Throughout late 2004 and early 2005, Humana repeatedly attempted to contract directly with the individual New Century and Prime Care member medical practices. These efforts were unsuccessful. New Century and Prime Care Board meeting minutes reported on Humana's failure to obtain such individual contracts or arrange for physician alternatives, and noted Humana's increasing frustration at the situation. New Century

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and Prime Care attributed Humana's lack of success in obtaining individual contracts to "the leverage the physicians have as a unified group." The following Physician Practice Respondents, when contacted by Humana, refused to deal individually with Humana, and referred the Humana representatives to New Century and Prime Care for contract discussions:

Briarcliff Medical Associates, P.C.;
Family Health Group, Chartered;
Family Medical Group, P.A.;
Landmark Medical Center, Inc.;
Michael E. Monaco, M.D., d/b/a Select Healthcare, P.A.;
Kenneth Norton, M.D., P.A.;
Overland Park Family Health Partners, P.A.;
Quivera Internal Medicine, L.L.C.;
Seaport Family Practice, P.C.; and
Sunflower Medical Group, P.A.

35. Humana was able to sign an individual contract with one New Century member medical practice consisting of three physicians. However, this group, Shawnee Family Care, P.A., immediately rescinded its agreement with Humana after discussions with New Century and Prime Care officials.

36. On April 1, 2005, New Century and Prime Care together filed a lawsuit against Humana in Kansas state court for breach of contract regarding Humana's termination of its capitation contracts with New Century and Prime Care, and seeking a preliminary injunction against that termination. Humana removed the case to federal district court for the Western District of Missouri and, on May 7, 2005, filed a counterclaim alleging federal and state antitrust law violations by New Century and Prime Care, acting as representatives of their member medical practices. After Humana had filed its antitrust counterclaim, and the Federal Trade Commission commenced an investigation of the actions of New Century and Prime Care, New Century's and Prime Care's member medical practices began to cease their

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concerted refusal to deal with Humana, and began to deal individually with Humana regarding its contract offers to them.

RESPONDENTS' CONDUCT IS NOT LEGALLY JUSTIFIED

37. Respondents' joint refusal to deal and negotiation of fees and other competitively significant terms, and the agreements, acts, and practices described above, have not been, and are not, reasonably related to any efficiency-enhancing integration among the physician members of New Century and Prime Care, or between New Century and Prime Care and their respective members, including the Physician Practice Respondents.

RESPONDENTS' ACTIONS HAVE HAD, OR COULD BE EXPECTED TO HAVE, SUBSTANTIAL ANTICOMPETITIVE EFFECTS

38. Respondents' actions described in paragraphs 15 to 35 of this Complaint have had, have tended to have, or if successful would have had, the effect of restraining trade unreasonably and hindering competition in the provision of physician services in the Kansas City area in the following ways, among others:

- a. unreasonably restraining price and other forms of competition among physicians whose medical practices are members of New Century, among physicians whose medical practices are members of Prime Care, and between New Century and Prime Care, and their respective medical practice members;
- b. increasing prices for physician services;
- c. depriving payors, including insurers and employers, and individual consumers, of the benefits of competition among physicians; and

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d. depriving consumers of the benefits of competition among payors.

39. The combination, conspiracy, acts, and practices described above constitute unfair methods of competition in violation of Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45. Such combination, conspiracy, acts, and practices, or the effects thereof, are continuing and will continue or recur in the absence of the relief herein requested.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this twenty-ninth day of September, 2006, issues its Complaint against Respondents New Century Health Quality Alliance, Inc., Prime Care of Northeast Kansas, L.L.C., Elizabeth Gallup, M.D., J.D., Steven Buie, M.D., Thomas Allen, M.D., G. Robert Powers, M.D., Associates in Family Medicine, P.A., Briarcliff Medical Associates, P.C., College Park Family Care Center, P.A., Family Health Group, Chartered, Family Medical Group, P.A., Hickman Mills Clinic, Inc., Kanza Multispecialty Group, P.A., Landmark Medical Center, Inc., Michael E. Monaco, M.D., d/b/a Select Healthcare, P.A., Kenneth Norton, M.D., P.A., Overland Park Family Health Partners, P.A., Quivera Internal Medicine, L.L.C., Seaport Family Practice, P.C., Shawnee Family Care, P.A., Statland Clinic Ltd., Sunflower Medical Group, P.A., United Medical Group, L.L.C., and Kimberly M. Wirths, M.D., P.A.

By the Commission.

Decision and Order

DECISION AND ORDER

The Federal Trade Commission (“Commission”), having initiated an investigation of certain acts and practices of New Century Health Quality Alliance, Inc. (“New Century”), Prime Care of Northeast Kansas, L.L.C. (“Prime Care”), Elizabeth Gallup, M.D., J.D., Steven Buie, M.D., Thomas Allen, M.D., G. Robert Powers, M.D., Associates in Family Medicine, P.A., Briarcliff Medical Associates, P.C., College Park Family Care Center, P.A., Family Health Group, Chartered, Family Medical Group, P.A., Hickman Mills Clinic, Inc., Kanza Multispecialty Group, P.A., Landmark Medical Center, Inc., Michael E. Monaco, M.D., d/b/a Select Healthcare, P.A., Kenneth Norton, M.D., P.A., Overland Park Family Health Partners, P.A., Quivera Internal Medicine, L.L.C., Seaport Family Practice, P.C., Shawnee Family Care, P.A., Statland Clinic Ltd., Sunflower Medical Group, P.A., United Medical Group, L.L.C., and Kimberly M. Wirths, M.D., P.A. (hereinafter collectively referred to as “Respondents”), and Respondents having been furnished thereafter with a copy of the draft of Complaint that counsel for the Commission proposed to present to the Commission for its consideration and which, if issued, would charge Respondents with violations of Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondents, their attorney, and counsel for the Commission having thereafter executed an Agreement Containing Consent Order to Cease and Desist (“Consent Agreement”), containing an admission by Respondents of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondents that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

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The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondents have violated said Act, and that a Complaint should issue stating its charges in that respect, and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby issues its Complaint, makes the following jurisdictional findings, and issues the following Order:

1. Respondent New Century is a not-for-profit corporation, organized, existing, and doing business as an independent practice association (“IPA”) under and by virtue of the laws of the State of Kansas, and its principal address is 5799 Broadmoor, Suite 104, Mission, Kansas 66202.
2. Respondent Prime Care is a for-profit limited liability company, organized, existing, and doing business as an IPA under and by virtue of the laws of the State of Kansas, and its principal address is 5799 Broadmoor, Suite 104, Mission, Kansas 66202.
3. Respondent Elizabeth Gallup, M.D., J.D., an individual, is New Century’s President. Her principal address is 236 Arapahoe Circle, East, Lake Quivera, Kansas 66217.
4. Respondent Steven Buie, M.D., an individual, was New Century’s Chairman of the Board from 1999 through 2004. His principal address is 11201 Colorado Avenue, Kansas City, Missouri 64137.
5. Respondent Thomas Allen, M.D., an individual, is New Century’s current Chairman of the Board. His principal address is 4601 W. 109th Street, #212, Overland Park, Kansas 66211.

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6. Respondent G. Robert Powers, M.D., an individual, is Prime Care's Chairman of the Board. His principal address is 2040 Hutton, #102, Kansas City, Kansas 66109.
7. Respondent Associates in Family Medicine, P.A., is a Medical Group Practice that participates in Respondent Prime Care. Its principal address is 8940 State Avenue, Kansas City, Kansas 66112.
8. Respondent Briarcliff Medical Associates, P.C., is a Medical Group Practice that participates in Respondent New Century. Its principal address is 5400 North Oak Trfwy., Suite 200, Kansas City, Missouri 64118.
9. Respondent College Park Family Care Center, P.A., is a Medical Group Practice that participates in Respondent New Century. Its principal address is 11755 West 112th Street, Overland Park, Kansas 66210.
10. Respondent Family Health Group, Chartered, is a Medical Group Practice that participates in Respondent New Century. Its principal address is 12330 Metcalf, Suite 500, Overland Park, Kansas 66213.
11. Respondent Family Medical Group, P.A., is a Medical Group Practice that participates in Respondent Prime Care. Its principal address is 8101 Parallel Parkway, Suite 100, Kansas City, Kansas 66112.
12. Respondent Hickman Mills Clinic, Inc., is a Medical Group Practice that participates in Respondent New Century. Its principal address is 11201 Colorado Avenue, Kansas City, Missouri 64137.
13. Respondent Kanza Multispecialty Group, P.A., is a Medical Group Practice that participates in Respondent Prime Care.

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Its principal address is 1428 South 32nd, Kansas City, Kansas 66106.

14. Respondent Landmark Medical Center, Inc., is a Medical Group Practice that participates in Respondent New Century. Its principal address is 8800 N.W. 112th Street, Kansas City, Missouri 64153.
15. Respondent Michael E Monaco, M.D., d/b/a Select Healthcare, P.A., is a Medical Group Practice that participates in Respondent New Century. Its principal address is 5701 West 119th Street, Suite 345, Overland Park, Kansas 66209.
16. Respondent Kenneth Norton, M.D., P.A. is a Medical Group Practice that participates in Respondent New Century. Its principal address is 8901 West 74th Street, Suite 333, Shawnee Mission, Kansas 66204.
17. Respondent Overland Park Family Health Partners, P.A., is a Medical Group Practice that participates in Respondent New Century. Its principal address is 6740 West 121st Street, Overland Park, Kansas 66209.
18. Respondent Quivera Internal Medicine, L.L.C., is a Medical Group Practice that participates in Respondent New Century. Its principal address is 10601 Quivera Road, Suite 210, Overland Park, Kansas 66215.
19. Respondent Seaport Family Practice, P.C., is a Medical Group Practice that participates in Respondent New Century. Its principal address is 140 Westwoods Drive, Liberty, Missouri 64068.
20. Respondent Shawnee Family Care, P.A., is a Medical Group Practice that participates in Respondent New Century. Its principal address is 5949 Nieman, Shawnee, Kansas 66203.

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21. Respondent Statland Clinic, Ltd., is a Medical Group Practice that participates in Respondent Prime Care. Its principal address is 5701 West 119th Street, Suite 240, Overland Park, Kansas 66209.
22. Respondent Sunflower Medical Group, P.A., is a Medical Group Practice that participates in Respondent New Century. Its principal address is 5555 West 58th Street, Mission, Kansas 66202.
23. Respondent United Medical Group, L.L.C., is a Medical Group Practice that participates in Respondent Prime Care. Its principal address is 5701 State Avenue, Suite 100, Kansas City, Kansas 66102.
24. Respondent Kimberly M. Wirths, M.D., P.A., is a Medical Group practice that participates in Respondent New Century. Its principal address is 8675 College Boulevard, Suite 100, Overland Park, Kansas 66210.
25. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the Respondents, and the proceeding is in the public interest.

ORDER

I.

IT IS ORDERED that, as used in this Order, the following definitions shall apply:

- A. “Respondent New Century” means New Century Health Quality Alliance, Inc., its officers, directors, employees, agents, attorneys, representatives, successors, and assigns; and the subsidiaries, divisions, groups, and affiliates controlled by it, and the respective officers, directors,

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employees, agents, attorneys, representatives, successors, and assigns of each.

- B. “Respondent Prime Care” means Prime Care of Northeast Kansas, L.L.C., its officers, directors, employees, agents, attorneys, representatives, successors, and assigns; and the subsidiaries, divisions, groups, and affiliates controlled by it, and the respective officers, directors, employees, agents, attorneys, representatives, successors, and assigns of each.
- C. “Respondent IPAs” means Respondent New Century and Respondent Prime Care, each of which is a “Respondent IPA”.
- D. “Respondent Gallup” means Elizabeth Gallup, M.D., J.D.
- E. “Respondent Buie” means Steven Buie, M.D.
- F. “Respondent Allen” means Thomas Allen, M.D.
- G. “Respondent Powers” means G. Robert Powers, M.D.
- H. “Respondent Officials” means Respondent Gallup, Respondent Buie, Respondent Allen, and Respondent Powers.
- I. “Physician Practice Respondents” means Respondent Associates in Family Medicine, P.A., Respondent Briarcliff Medical Associates, P.C., Respondent College Park Family Care Center, P.A., Respondent Family Health Group Chartered, Respondent Family Medical Group, P.A., Respondent Hickman Mills Clinic, Inc., Respondent Kanza Multispecialty Group, P.A., Respondent Landmark Medical Center, Inc., Respondent Michael E. Monaco, M.D., d/b/a Select Healthcare, P.A., Respondent Kenneth Norton, M.D., P.A., Respondent Overland Park Family

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Health Partners, P.A., Respondent Quivera Internal Medicine, L.L.C., Respondent Seaport Family Practice, P.C., Respondent Shawnee Family Care, P.A., Respondent Statland Clinic Ltd., Respondent Sunflower Medical Group, P.A., Respondent United Medical Group, L.L.C., and Respondent Kimberly M. Wirths, M.D., P.A.

- J. “Respondents” means Respondent IPAs, Respondent Officials, and Physician Practice Respondents.
- K. “Medical group practice” means a bona fide, integrated firm in which physicians practice medicine together as partners, shareholders, owners, members, or employees, or in which only one physician practices medicine.
- L. “Participate” in an entity means (1) to be a partner, shareholder, owner, member, or employee of such entity, or (2) to provide services, agree to provide services, or offer to provide services to a payor through such entity. This definition applies to all tenses and forms of the word “participate,” including, but not limited to, “participating,” “participated,” and “participation.”
- M. “Payor” means any person that pays, or arranges for payment, for all or any part of any physician services for itself or for any other person, as well as any person that develops, leases, or sells access to networks of physicians.
- N. “Person” means both natural persons and artificial persons, including, but not limited to, corporations, unincorporated entities, and governments.
- O. “Physician” means a doctor of allopathic medicine (“M.D.”) or a doctor of osteopathic medicine (“D.O.”).

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- P. “Principal address” means either (1) primary business address, if there is a business address, or (2) primary residential address, if there is no business address.
- Q. “Qualified clinically-integrated joint arrangement” means an arrangement to provide physician services in which:
1. all physicians who participate in the arrangement participate in active and ongoing programs of the arrangement to evaluate and modify the practice patterns of, and create a high degree of interdependence and cooperation among, the physicians who participate in the arrangement, in order to control costs and ensure the quality of services provided through the arrangement; and
 2. any agreement concerning price or other terms or conditions of dealing entered into by or within the arrangement is reasonably necessary to obtain significant efficiencies that result from such integration through the arrangement.
- R. “Qualified risk-sharing joint arrangement” means an arrangement to provide physician services in which:
1. all physicians who participate in the arrangement share substantial financial risk through their participation in the arrangement and thereby create incentives for the physicians who participate jointly to control costs and improve quality by managing the provision of physician services such as risk-sharing involving:
 - a. the provision of physician services at a capitated rate,

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- b. the provision of physician services for a predetermined percentage of premium or revenue from payors,
 - c. the use of significant financial incentives (*e.g.*, substantial withholds) for physicians who participate to achieve, as a group, specified cost-containment goals, or
 - d. the provision of a complex or extended course of treatment that requires the substantial coordination of care by physicians in different specialties offering a complementary mix of services, for a fixed, predetermined price, when the costs of that course of treatment for any individual patient can vary greatly due to the individual patient's condition, the choice, complexity, or length of treatment, or other factors; and
2. any agreement concerning price or other terms or conditions of dealing entered into by or within the arrangement is reasonably necessary to obtain significant efficiencies that result from such integration through the arrangement.

II.

IT IS FURTHER ORDERED that Respondents, directly or indirectly, or through any corporate or other device, in connection with the provision of physician services in or affecting commerce, as "commerce" is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44, cease and desist from:

- A. Entering into, adhering to, participating in, maintaining, organizing, implementing, enforcing, or otherwise facilitating any combination, conspiracy, agreement, or

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understanding between or among any physicians with respect to their provision of physician services:

1. To negotiate on behalf of any physician with any payor;
 2. To deal, refuse to deal, or threaten to refuse to deal with any payor;
 3. Regarding any term, condition, or requirement upon which any physician deals, or is willing to deal, with any payor, including, but not limited to, price terms; or
 4. Not to deal individually with any payor, or not to deal with any payor other than through Respondent New Century or Respondent Prime Care;
- B. Exchanging or facilitating in any manner the exchange or transfer of information among physicians concerning any physician's willingness to deal with a payor, or the terms or conditions, including price terms, on which the physician is willing to deal with a payor;
- C. Attempting to engage in any action prohibited by Paragraphs II.A or II.B above; and
- D. Encouraging, suggesting, advising, pressuring, inducing, or attempting to induce any person to engage in any action that would be prohibited by Paragraphs II.A through II.C above.

Provided, however, that nothing in this Paragraph II shall prohibit any agreement or conduct involving any Respondent: (a) that subject to the requirements of Paragraph IV of this Order, is reasonably necessary to form, participate in, or take any action in furtherance of, a qualified risk-sharing joint arrangement or a qualified clinically-integrated joint arrangement, so long as such

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qualified joint arrangement does not restrict the ability of, or facilitate the refusal of, physicians who participate in it to deal with payors on an individual basis or through any other arrangement; or (b) where such agreement or conduct solely involves physicians in the same medical group practice.

III.

IT IS FURTHER ORDERED that, for three (3) years after the date this Order becomes final, for any arrangement under which a Respondent IPA would act as an agent, or as a messenger, on behalf of any physician or any medical group practice with any payor regarding contracts, the Respondent IPA proposing to enter into such arrangement shall notify the Secretary of the Commission in writing (“Paragraph III Notification”) at least sixty (60) days prior to entering into the arrangement for which Paragraph III Notification is required. The Paragraph III Notification shall include the number of proposed physician participants in the proposed arrangement; the proposed geographic area in which the proposed arrangement would operate; a copy of any proposed physician participation agreement; a description of the proposed arrangement’s purpose and function; a description of any resulting efficiencies expected to be obtained through the proposed arrangement; and a description of procedures to be implemented to limit possible anticompetitive effects of the proposed arrangement, such as those prohibited by this Order. If, within fifteen (15) days from the date of the Commission’s receipt of the Paragraph III Notification, a representative of the Commission makes a written request for additional information to the Respondent IPA that provided the Paragraph III Notification then that Respondent IPA shall not enter into the arrangement described in the Paragraph III Notification prior to the expiration of sixty (60) days after substantially complying with such request.

Provided, however, that written confirmation reducing the applicable waiting period may be granted, upon request to the

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Bureau of Competition. The expiration of any waiting period described herein without a request for additional information or without the initiation of an enforcement proceeding shall not be construed as a determination by the Commission, or its staff, that a violation of the law, or of this Order, may not have occurred.

Receipt by the Commission of any Paragraph III Notification is not to be construed as a determination by the Commission that any action described in such Paragraph III Notification does or does not violate this Order or any law enforced by the Commission.

IV.

IT IS FURTHER ORDERED that for three (3) years from the date this Order becomes final, pursuant to each qualified clinically-integrated joint arrangement or qualified risk-sharing joint arrangement (referred to in this Paragraph IV as “Arrangement”) in which any Respondent is a participant, that Respondent participant shall notify the Secretary of the Commission in writing (“Paragraph IV Notification”) at least sixty (60) days prior to:

- A. Participating in, organizing, or facilitating any discussion or understanding with or among any physicians or medical group practices in such Arrangement relating to price or other terms or conditions of dealing with any payor; or
- B. Contacting a payor, pursuant to an Arrangement to negotiate or enter into any agreement concerning price or other terms or conditions of dealing with any payor, on behalf of any physician or medical group practice in such Arrangement.

Provided, further, however, Paragraph IV Notification shall include the following information regarding the Arrangement

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pursuant to which Respondent intends to engage in the above identified conduct:

- a. the total number of physicians and the number of physicians in each specialty participating in the Arrangement;
- b. a description of the Arrangement, including its purpose and geographic area of operation;
- c. a description of the nature and extent of the integration and the efficiencies resulting from the Arrangement;
- d. an explanation of the relationship of any agreement on prices, or contract terms related to price, to furthering the integration and achieving the efficiencies of the Arrangement;
- e. a description of any procedures proposed to be implemented to limit possible anticompetitive effects resulting from the Arrangement or its activities; and
- f. all studies, analyses, and reports that were prepared for the purpose of evaluating or analyzing competition for physician services in any relevant market, including, but not limited to, the market share of physician services in any relevant market.

Provided, however, that any Physician Practice Respondent or any Respondent Official, who is participating in an Arrangement solely as participant in a Physician Practice Respondent, may, upon written affirmation, exclude from his, her, or its Paragraph IV Notification any information that is not known by such Physician Practice Respondent or such Respondent Official.

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Provided, further if, within sixty (60) days from the Commission's receipt of the Paragraph IV Notification, a representative of the Commission makes a written request for additional information to the Respondent that provided that Paragraph IV Notification, that Respondent shall not engage in any conduct described in Paragraph IV.A or Paragraph IV.B of this Order prior to the expiration of thirty (30) days after substantially complying with such request for additional information, or such shorter waiting period as may be granted in writing from the Bureau of Competition. The expiration of any waiting period described herein without a request for additional information shall not be construed as a determination by the Commission, or its staff, that a violation of the law, or of this Order, may not have occurred. In addition, the absence of notice that the Arrangement has been rejected, regardless of a request for additional information, shall not be construed as a determination by the Commission, or its staff, that the Arrangement has been approved. Further, receipt by the Commission of any Paragraph IV Notification regarding activity pursuant to an Arrangement is not to be construed as a determination by the Commission that any such Arrangement does or does not violate this Order or any law enforced by the Commission;

Provided, further, that Paragraph IV Notification shall not be required prior to engaging in any activity described at Paragraph IV.A or Paragraph IV.B of the Order pursuant to any Arrangement for which Paragraph IV Notification has previously been given.

V.

IT IS FURTHER ORDERED that, for three (3) years from the date this Order becomes final, Respondent Officials, directly or indirectly, or through any corporate or other device, in connection with the provision of physician services in or affecting commerce, as "commerce" is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44, cease and desist from:

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- A. Negotiating, or acting as an agent or messenger, on behalf of any physician or any medical group practice that participates or has participated in either Respondent IPA with any payor, notwithstanding whether such conduct also is prohibited by Paragraph II of this Order; and
- B. Advising any physician or medical group practice that participates, or has participated, in either Respondent New Century or Respondent Prime Care, to accept or reject any contract, offer, contract term, condition, or requirement of dealing with any payor, notwithstanding whether such conduct also is prohibited by Paragraph II of this Order.

Provided, however, that nothing in this Paragraph V shall prohibit a Respondent Official from: (a) subject to the requirements of Paragraph IV of this Order, forming, participating in, or taking any action in furtherance of a qualified risk-sharing joint arrangement or qualified clinically-integrated joint arrangement so long as such qualified joint arrangement does not restrict the ability or facilitate the refusal of physicians who participate in it to deal with payors on an individual basis or through any other arrangement; or (b) any activity that solely involves physicians in a medical group practice in which the Respondent Official participates.

VI.

IT IS FURTHER ORDERED that each Respondent IPA shall:

- A. Within thirty (30) days after the date on which this Order becomes final:
 - 1. send by first-class mail with delivery confirmation or electronic mail with return confirmation, a copy of this Order and the Complaint to:

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- a. every physician who participates, or has participated, in Respondent IPA at any time since January 1, 2000; and
 - b. each current officer, director, manager, and employee of Respondent IPA; and
2. send by first-class mail, return receipt requested, a copy of this Order and the Complaint to the chief executive officer of each payor that has contracted with Respondent IPA for the provision of physician services at any time since January 1, 2000;
- B. For three (3) years from the date this Order becomes final:
1. Distribute by first-class mail, return receipt requested, a copy of this Order and the Complaint to:
 - a. each physician who begins participating in Respondent IPA, and who did not previously receive a copy of this Order and the Complaint from such Respondent IPA, within thirty (30) days of the time that such participation begins;
 - b. each payor who contracts with Respondent IPA for the provision of physician services, and who did not previously receive a copy of this Order and the Complaint from such Respondent IPA, within thirty (30) days of the time that such payor enters into such contract; and
 - c. each person who becomes an officer, director, manager, or employee of Respondent IPA, and who did not previously receive a copy of this Order and the Complaint from Respondent IPA, within

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thirty (30) days of the time that he or she assumes such position with such Respondent IPA; and

2. Annually publish in an official annual report or newsletter sent to all physicians who participate in Respondent IPA, a copy of this Order and the Complaint with such prominence as is given to regularly featured articles.
- C. Notify the Commission at least thirty (30) days prior to any proposed: (1) dissolution of Respondent IPA; (2) acquisition, merger or consolidation of Respondent IPA; or (3) other change in Respondent IPA that may affect compliance obligations arising out of this Order, including but not limited to assignment, the creation or dissolution of subsidiaries, or any other change in Respondent IPA; and
- D. File verified written reports within sixty (60) days from the date this Order becomes final, annually thereafter for three (3) years on the anniversary of the date this Order becomes final, and at such other times as the Commission may by written notice require. Each report shall include:
1. a detailed description of the manner and form in which the Respondent IPA has complied and is complying with this Order;
 2. the name, address, and telephone number of each payor with which the Respondent IPA has had any contact; and
 3. copies of the delivery confirmations or electronic mail with return confirmations required by Paragraph VI.A.1, and copies of the signed return receipts required by Paragraphs VI.A.2 and VI.B.1.

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VII.

IT IS FURTHER ORDERED that each Respondent Official shall file a verified written report within ninety (90) days from the date this Order becomes final, annually thereafter for three (3) years on the anniversary of the date this Order becomes final, and at such other times as the Commission may by written notice require. Each report shall include a detailed description of the manner and form in which the Respondent Official filing the report has complied and is complying with this Order.

VIII.

IT IS FURTHER ORDERED that each Physician Practice Respondent shall:

- A. Within thirty (30) days from the date that this Order becomes final send by first-class mail, return receipt requested, to each physician who participates in such Physician Practice Respondent a copy of the notice specified in Appendix A to this Order;
- B. File a verified written report within ninety (90) days from the date this Order becomes final and at such other times as the Commission may by written notice require. Each report shall include:
 1. a detailed description of the manner and form in which the Physician Practice Respondent has complied and is complying with this Order; and
 2. copies of the signed return receipts required by Paragraph VIII.A of this Order; and
- C. Notify the Commission at least thirty (30) days prior to any proposed change in the Physician Practice Respondent

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that may affect compliance obligations arising out of this Order.

IX.

IT IS FURTHER ORDERED that, for three (3) years from the date this Order becomes final, each Respondent shall notify the Commission of any change in his, her, or its respective principal address within twenty (20) days of such change in address.

X.

IT IS FURTHER ORDERED that, for the purpose of determining or securing compliance with this Order:

- A. Each Respondent shall permit any duly authorized representative of the Commission access, during office hours and in the presence of counsel, to inspect and copy all books, ledgers, accounts, correspondence, memoranda, calendars, and other records and documents in the possession, or under the control, of such Respondent relating to any matter contained in this Order; and
- B. Upon five (5) days' notice:
 1. Each Respondent IPA and each Physician Practice Respondent, in the presence of counsel and without restraint or interference, permit any duly authorized representative of the Commission to interview its officers, directors, employees, agents or representatives, or any participant in any Physician Practice Respondent; and
 2. Each Respondent Official shall, in the presence of counsel and without restraint or interference, permit

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any duly authorized representative of the Commission to interview him or her.

XI.

IT IS FURTHER ORDERED that this Order shall terminate on September 29, 2026.

By the Commission.

Appendix A

[Letterhead of Physician Practice Respondent]

[Date]

[Name and Address of Participating Physician]

Dear [Participating Physician]:

On [Date], the Federal Trade Commission (“FTC”) issued a complaint and decision and order (“Order”) against New Century Health Quality Alliance, Inc. (“New Century”), Prime Care of Northeast Kansas, L.L.C. (“Prime Care”), and various officials and physician practice members of those organizations, including [Physician Practice Respondent]. Pursuant to Paragraph VIII.A. of the Order [Physician Practice Respondent] must provide you with notice of this Order, and this letter is intended to provide that notice.

The Order is designed to correct illegal conduct described by the FTC in the complaint, which alleges, in part, that New Century,

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Prime Care, certain New Century and Prime Care officials, and certain New Century and Prime Care members violated federal antitrust laws by agreeing to fix prices and other terms on which they would contract with health plans and by refusing to contract with health plans except on collectively determined terms. In short, the Order prohibits New Century, Prime Care, the New Century and Prime Care officials named in the Order, and the New Century and Prime Care physician practice members named in the Order, including [Physician Practice Member], from entering into or facilitating any agreement between or among physicians (1) to negotiate with health plans on any physicians' behalf, (2) to deal, not to deal, or threaten not to deal with health plans on any physicians' behalf, (3) regarding on what terms to deal with any health plan, or (4) to not deal individually with any health plan.

Certain legitimate joint-contracting arrangements among competing physicians are exempted from the general prohibition. These arrangements would include, for example, qualified risk-sharing joint arrangements and qualified clinically-integrated joint arrangements, as defined in the Order. The FTC must still be given prior notification of these arrangements, however.

The Order expires in twenty years. A copy is enclosed for your review.

Sincerely,

[Signatory]

Analysis to Aid Public Comment

ANALYSIS OF CONSENT ORDER TO AID PUBLIC COMMENT

The Federal Trade Commission has accepted, subject to final approval, an agreement containing a proposed consent order with New Century Health Quality Alliance, Inc. (“New Century”), Prime Care of Northeast Kansas (“Prime Care”), four current or former officials of New Century or Prime Care, and 18 physician practices that are members of New Century or Prime Care (collectively referred to as “Proposed Respondents”).

New Century and Prime Care each are a type of physician joint venture known as an independent practice association (IPA). The New Century and Prime Care IPAs were comprised of competing physician practices in the Kansas City area who came together to jointly offer their services to certain payors who sought to purchase the physicians’ services under capitation payment arrangements. Through the IPAs, the physicians shared financial risk that the services provided under the contracts might exceed the capitation payment from the payor to the IPA. In addition to together offering capitation risk-sharing contracts through the IPAs, each individual physician practice also continued to offer and sell its medical services to individual patients and payors on a fee-for-service basis as the physician practice’s primary method of doing business.

At various times, certain payors attempted to purchase the services of the individual physician practices in New Century and Prime Care not as part of the IPAs’ risk-sharing capitation contracts as the payors had done in the past, but rather directly and on an individual fee-for-service basis. Although the physician practices continued to offer their services in competition with one another individually and on a fee-for-service basis in the market to other payors, the physician practices, acting through New Century and Prime Care and their officials, agreed that they would only sell their services to those payors through capitation contracts entered into between the payors and the IPAs.

Analysis to Aid Public Comment

The physician practices did this because they believed that they would receive lower payments under the direct, fee-for-service arrangements than they were making under the capitation contracts with the payors.

The four named officials led New Century's and Prime Care's efforts to force the payors to deal through the IPAs in order to obtain access to the services of those physician practices, and actively encouraged the physician practice members of New Century and Prime Care to refuse to deal individually with health plans outside the IPAs. Each of the 18 named physician practices took one or more affirmative actions in furtherance of the illegal agreement alleged in the proposed Complaint. In the absence of market power, jointly offering medical services on a capitation risk-sharing basis through New Century and Prime Care may be lawful and even procompetitive. However, the agreement by the physician members of New Century and Prime Care, respectively, to provide capitation risk contracts through each IPA does not justify their agreements not to deal, or only to deal on collectively determined terms, including price terms, regarding the sale of the individual physician practices' services outside the joint ventures. The member physicians' practices have not been fully integrated through either of the IPAs, and the individual physician practices in each IPA continue to compete with each other outside the IPAs in the sale of their services on a fee-for-service basis. Moreover, the offering by each IPA of capitation risk contracts does not justify the agreement of the two IPAs, at various times, to coordinate their actions, and the actions of their physician members, regarding the separate capitation risk contracts that each IPA had with payors. Neither the two IPAs, nor their respective physician memberships, were integrated at all with each other regarding those separate capitation risk contracts. Likewise, the IPAs' offering of capitation risk contracts, either separately or together, does not justify the two IPAs' agreement to act together, and their joint actions, regarding the sale of their individual member physician practices' medical services on a fee-for-service basis outside of the IPAs.

Analysis to Aid Public Comment

The agreement settles charges that the Proposed Respondents violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, by entering into, orchestrating, and implementing agreements to fix prices and other contract terms on which the physician practice members of the IPAs would deal with health plans. Even though the physician practice members offered their services jointly regarding their capitation risk contracts through the IPAs, they remained competitors in the sale of physician services and their refusals to deal with health plans except collectively and on collectively-determined terms through the IPAs violated Section 5.

The proposed consent order has been placed on the public record for 30 days to receive comments from interested persons. Comments received during this period will become part of the public record. After 30 days, the Commission will review the agreement and the comments received, and will decide whether it should withdraw from the agreement or make the proposed order final. The purpose of this analysis is to facilitate public comment on the proposed order. The analysis is not intended to constitute an official interpretation of the agreement and proposed order, or to modify their terms in any way. Further, the proposed consent order has been entered into for settlement purposes only and does not constitute an admission by Proposed Respondents that they violated the law or that the facts alleged in the complaint (other than jurisdictional facts) are true.

The Complaint

The allegations of the Complaint are summarized below.

New Century is an independent practice association (“IPA”) that consists of 16 medical practice groups with a total of approximately 87 primary care physicians who treat patients in the Kansas City area. Prime Care also is an IPA, and consists of nine medical practice groups with a total of about 40 primary care

Analysis to Aid Public Comment

physicians who treat patients in the Kansas City area. In 2002, the two IPAs began combining their Board meetings, offices, and administrative staff and operations. They voted to merge into a single entity, effective January 1, 2005, but never completed the steps legally necessary to consolidate.

At various times, the physician practice members of New Century and Prime Care, acting jointly through those IPAs and their officials, and with the two IPAs acting either in concert or separately on different occasions, refused to deal with various health plans on any terms except by contracting through the IPAs and on a capitated basis.

Most recently, in 2004 and 2005, the physician practice members of New Century and Prime Care, acting together through the two IPAs and their officials, agreed to refuse to contract, and did refuse to contract, with Humana Health Plan, Inc. (“Humana”) regarding its offers of fee-for-service payment contracts with the individual physician practices. Humana notified New Century and Prime Care of its intention to eliminate its use of capitated arrangements in the Kansas City area, and also notified them of its intention to terminate the separate, pre-existing, capitated contracts it had with each IPA. Before the capitated contract terminations were to become effective, Humana attempted to enter into new, individual, fee-for-service contracts with each of the physician practices that were members of New Century or Prime Care. However, New Century’s and Prime Care’s physician members agreed that they would deal with Humana only through their IPAs, acting in concert, and only on terms, including price terms, that were collectively agreed upon by the IPAs’ physician practice members. These demands included, among other things, continued joint contracting, payment by capitation, and a 30% increase in physician reimbursement under one health plan contract.

New Century and Prime Care, and their physician practice members, realized that together, with approximately 125 primary

Analysis to Aid Public Comment

care physicians concentrated in certain parts of the Kansas City Area, they would have a better chance of forcing health plans, including Humana, to accept their contract demands. For example, they and their member physician practices were aware that Humana would be unable to offer certain of its programs to customers in the Kansas City area without the New Century and Prime Care physicians under contract as participating providers, and used that information to attempt to coerce Humana to accede to their contract demands.

When Humana objected to New Century and Prime Care's demands, and refused to contract on a capitated basis or otherwise to deal with New Century or Prime Care in attempting to contract with the physician practices, New Century and Prime Care embarked on a multi-faceted campaign to encourage employers, brokers, and patients to put pressure on Humana to accept the contract terms demanded by the IPAs. Among the actions taken in furtherance of the challenged agreement were that various physician practice members of New Century and Prime Care, with the active encouragement and assistance of New Century and Prime Care officials: notified Humana that they were closing their medical practices to new patients covered by Humana's programs; mailed or distributed notices to patients covered by Humana programs informing the patients of impending disruption in their physician care due to Humana's refusal to enter into a contract with the physicians on acceptable terms; and rebuffed efforts by Humana to contract with the individual physician practices, referring Humana back to New Century and Prime Care for all contracting issues. By the acts set forth in the Complaint, the Proposed Respondents violated Section 5 of the FTC Act.

The Proposed Consent Order

The proposed order is designed to remedy the illegal conduct charged in the Complaint and prevent its recurrence. It is similar to recent consent orders that the Commission has issued to settle

Analysis to Aid Public Comment

charges that physician groups engaged in unlawful agreements to raise fees they receive from health plans.

The proposed order's specific provisions are as follows:

Paragraph II.A prohibits the Proposed Respondents from entering into, or facilitating, any agreement between or among any physicians: (1) to negotiate with payors on any physician's behalf; (2) to deal, not to deal, or threaten not to deal with payors; (3) regarding on what terms to deal with any payor; or (4) not to deal individually with any payor, or to deal with any payor only through an arrangement involving New Century or Prime Care.

Other parts of Paragraph II reinforce these general prohibitions. Paragraph II.B prohibits the Proposed Respondents from facilitating exchanges of information between or among physicians concerning whether, or on what terms, to contract with a payor. Paragraph II.C bars attempts to engage in any action prohibited by Paragraph II.A or II.B, and Paragraph II.D proscribes the Proposed Respondents from inducing anyone to engage in any action prohibited by Paragraphs II.A through II.C.

As in other Commission orders addressing providers' collective bargaining with health care purchasers, certain kinds of agreements are excluded from the general bar on joint negotiations. The Proposed Respondents would not be precluded from engaging in conduct that is reasonably necessary to form or participate in legitimate joint contracting arrangements among competing physicians in a "qualified risk-sharing joint arrangement" or a "qualified clinically-integrated joint arrangement." The arrangement, however, must not facilitate the refusal of, or restrict, physicians in contracting with payors outside of the arrangement. As defined in the proposed order, a "qualified risk-sharing joint arrangement" possesses two key characteristics. First, all physician participants must share substantial financial risk through the arrangement, such that the arrangement creates incentives for the physician participants

Analysis to Aid Public Comment

jointly to control costs and improve quality by managing the provision of services. Second, any agreement concerning reimbursement or other terms or conditions of dealing must be reasonably necessary to obtain significant efficiencies through the joint arrangement.

A “qualified clinically-integrated joint arrangement,” on the other hand, need not involve any sharing of financial risk. Instead, as defined in the proposed order, physician participants must participate in active and ongoing programs to evaluate and modify their clinical practice patterns in order to control costs and ensure the quality of services provided, and the arrangement must create a high degree of interdependence and cooperation among physicians. As with qualified risk-sharing arrangements, any agreement concerning price or other terms of dealing must be reasonably necessary to achieve the efficiency goals of the joint arrangement.

Paragraph III, for three years, requires New Century and Prime Care to notify the Commission before entering into any arrangement to act as an agent on behalf of any physicians, with payors regarding contracts. Paragraph III also sets out the information necessary to make the notification complete.

Paragraph IV, for three years, requires the Proposed Respondents to notify the Commission before participating in contracting with health plans on behalf of a qualified risk-sharing joint arrangement, or a qualified clinically-integrated joint arrangement. The contracting discussions that trigger the notice provision may be either among physicians, or between New Century or Prime Care and health plans. Paragraph IV also sets out the information necessary to satisfy the notification requirement.

Paragraph V provides that, for three years, the New Century and Prime Care officials named in the proposed complaint and order may not: (1) negotiate or act as an agent on behalf of any

Analysis to Aid Public Comment

physician or medical group practice that participates or has participated in either New Century or Prime Care; or (2) advise any physician or medical group practice that participates in or has participated in either New Century or Prime Care on contracts, offers, contract terms, conditions, or requirements for dealing with any payors. Exempted from Paragraph V's prohibition are the officials' participation in: (1) certain qualified risk-sharing joint arrangements; (2) certain qualified clinically-integrated joint arrangements; and (3) activities that solely involve physicians in a medical group practice in which the official participates.

For three years, Paragraph VI requires both New Century and Prime Care, respectively, to distribute the complaint and order: (1) to all physicians who have participated in the IPAs, who currently participate in the IPAs, or who express interest in participating in the IPAs; and (2) to payors that have negotiated contracts with the IPAs, or that contract with the IPAs in the future.

Paragraphs VII, VIII, IX, and X of the proposed order impose various obligations on the Proposed Respondents to report or provide access to information to the Commission to facilitate the monitoring of compliance with the order. Paragraph XI provides that the proposed order will expire in 20 years.

Complaint

IN THE MATTER OF

**DAN L. DUNCAN, EPCO, INC., TEXAS EASTERN
PRODUCTS PIPELINE COMPANY, LLC, AND
TEPPCO PARTNERS, L.P.**

CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS
OF SEC. 7 OF THE CLAYTON ACT AND SEC. 5 OF THE FEDERAL
TRADE COMMISSION ACT

*Docket C-4173, File No. 051 0108
Complaint, October 31, 2006 – Decision, October 31, 2006*

This consent order addresses the acquisition by Dan L. Duncan and EPCO, Inc., of TEPPCO's general partner, Texas Eastern Products Pipeline Company, LLC, and 2.5 million limited partnership units of TEPPCO Partners, L.P. Both EPCO and TEPPCO are leading providers of salt dome storage for natural gas liquids in Mont Belvieu, Texas. The order directs the respondents to sell TEPPCO's interests in Mont Belvieu Storage Partners and related pipeline, land, and other assets to a Commission-approved buyer, to remedy the lessening of competition resulting from the acquisition. If the respondents are unable to divest these assets to a Commission-approved buyer within the given time frame, the Commission may appoint a trustee to divest the assets. The order also requires the respondents to provide prior notice to the Commission of planned acquisitions, operatorships, or management of any natural gas liquid storage facility in Mont Belvieu, Texas, for a period of 10 years and to send copies of all new natural gas liquid storage leases with third-party storage facilities in Mont Belvieu within a specific time frame to ensure that subsequent acquisitions or leases do not adversely impact competition in the market and undermine the remedial goals of the order. Other provisions ensure that the acquirer receives all resources necessary to operate the divested assets. To maintain the competitive viability of the divested assets, the order contains several provisions relating to the operation of TEPPCO's TE Products Pipeline, an important outlet for natural gas liquids stored at the Mont Belvieu Storage Partners facility. The purpose of these provisions is to maintain the competitive viability of the Mont Belvieu Storage Partners facility by ensuring that the respondents cannot disadvantage shippers who originate product movements from that facility in favor of shippers who use respondents' own storage facility.

Complaint

Participants

For the *Commission*: *Eric D. Rohlck, Nancy E. Turnblacer,*
and *Amanda L. Wait.*

For the *Respondent*: *Dan Wellington, Fulbright & Jaworski,*
and *Neil Imus and Dionne Lomax, Vinson & Elkins.*

COMPLAINT

The Federal Trade Commission (“FTC” or “Commission”), having reason to believe that Dan L. Duncan, through EPCO, Inc. and Enterprise Products Partners L.P., acquired a controlling interest in Texas Eastern Products Pipeline Company, LLC and limited partnership interests in TEPPCO Partners, L.P. in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45, and that a proceeding in respect thereof would be in the public interest, hereby issues its complaint, stating its charges as follows:

I. THE PARTIES***A. Respondents Dan L. Duncan and EPCO, Inc.***

1. Dan L. Duncan is a natural person whose office and principal place of business is located at 1100 Louisiana Street, Suite 1800, Houston, Texas 77002.

2. EPCO, Inc. (“EPCO”) is a corporation organized, existing, and doing business under and by virtue of the laws of the State of Texas, with its office and principal place of business at 1100 Louisiana Street, Suite 1800, Houston, Texas 77002.

3. Dan L. Duncan is the ultimate parent entity of EPCO. Dan L. Duncan controls EPCO.

Complaint

4. Dan L. Duncan and EPCO control, and at all times relevant herein have controlled, the general partner of Enterprise Products Partners, L.P. (“Enterprise”).

5. Enterprise is, and at all times relevant herein has been, engaged in the midstream energy business, including the transportation, fractionation, and storage of natural gas liquids.

6. As part of its midstream operations Enterprise owns and operates salt dome storage for natural gas liquids in Mont Belvieu, Texas.

7. Dan L. Duncan and EPCO are, and at all times relevant herein have been, engaged in or affecting commerce as “commerce” is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. § 12, and in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

B. Respondents Texas Eastern Products Pipeline Company, LLC and TEPPCO Partners, L.P.

8. Texas Eastern Products Pipeline Company, LLC (“Texas Eastern”) is a limited liability company organized, existing, and doing business under and by virtue of the laws of the State of Delaware, with its office and principal place of business located at 1100 Louisiana Street, Suite 1300, Houston, Texas 77002.

9. TEPPCO Partners, L.P. (“TEPPCO”) is a limited partnership organized, existing, and doing business under and by virtue of the laws of the State of Delaware, with its office and principal place of business located at 1100 Louisiana Street, Suite 1300, Houston, Texas 77002.

10. Texas Eastern is, and at all times relevant herein has been, the general partner of TEPPCO.

Complaint

11. TEPPCO is, and at all times relevant herein has been, engaged in the midstream energy business, including the transportation, fractionation, and storage of natural gas liquids.

12. As part of its midstream operations, TEPPCO, through its wholly-owned subsidiary TE Products Pipeline Company, Limited Partnership, holds a 50% interest in a joint venture called Mont Belvieu Storage Partners which owns salt dome storage for natural gas liquids in Mont Belvieu, Texas.

13. TEPPCO, through its wholly-owned subsidiary TE Products Pipeline Company, Limited Partnership, carries out the day-to-day operations of the Mont Belvieu Storage Partners storage facility.

14. TEPPCO and Texas Eastern are, and at all times relevant herein have been, engaged in or affecting commerce as “commerce” is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. § 12, and in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

II. THE ACQUISITION

15. On February 24, 2005, Dan L. Duncan and EPCO, Inc., through DFI GP Holdings L.P., acquired from Duke Energy Field Services, LLC: (1) TEPPCO Partners, L.P.’s general partner, Texas Eastern Products Pipeline Company, LLC, and (2) 2.5 million limited partnership units of TEPPCO Partners, L.P. (collectively “the Acquisition”).

III. TRADE AND COMMERCE

A. Relevant Product Market

16. A relevant product market in which to evaluate the effects of the Acquisition is salt dome storage for natural gas liquids.

Complaint

17. Enterprise There is no economic alternative to salt dome storage for storing natural gas liquids.

B. Relevant Geographic Market

18. A relevant geographic market in which to evaluate the effects of the Acquisition is Mont Belvieu, Texas.

19. Customers of Mont Belvieu salt dome storage for natural gas liquids have no economic alternative to storing in Mont Belvieu.

C. Market Structure

20. The market for salt dome storage for natural gas liquids in Mont Belvieu was highly concentrated prior to the Acquisition and is significantly more concentrated as a result of the Acquisition.

21. Enterprise and TEPPCO compete in the market for salt dome storage for natural gas liquids in Mont Belvieu.

22. The Acquisition combined two of four providers of commercial salt dome storage for natural gas liquids in Mont Belvieu.

23. The pre-Acquisition Herfindahl-Hirschman Index was more than 3,400, and increased post-Acquisition by more than 3,000 points to a level exceeding 6,400.

D. Entry Conditions

24. Entry into the market for salt dome storage for natural gas liquids in Mont Belvieu would not be timely, likely, or sufficient to prevent the anticompetitive effects that are likely to result from the Acquisition.

Complaint

25. Construction of a salt dome storage facility and its necessary infrastructure, including pipelines and brine storage and handling facilities, is subject to significant regulatory and other legal constraints, and requires significant sunk costs and substantial time to accomplish.

IV. ANTICOMPETITIVE EFFECTS

26. The Acquisition may substantially lessen competition in the following ways, among others:

a. by eliminating competition between Enterprise and TEPPCO;

b. by enhancing Enterprise's ability unilaterally to exercise market power; and

c. by increasing the likelihood of, or facilitating, collusion or coordinated interaction between or among the remaining firms; each of which increases the likelihood that customers would be forced to pay higher prices for or would experience degradations in service for salt dome storage for natural gas liquids in Mont Belvieu.

V. VIOLATIONS CHARGED

27. The effect of the Acquisition may be substantially to lessen competition or tend to create a monopoly in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this thirty-first day of October, 2006, issues its complaint against Respondents.

By the Commission, Commissioner Rosch recused.

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DECISION AND ORDER

The Federal Trade Commission (“Commission”), having initiated an investigation of the acquisition of Respondent Texas Eastern Products Pipeline Company, LLC, the general partner of Respondent TEPPCO Partners, L.P., and limited partnership interests in Respondent TEPPCO Partners, L.P., from Duke Energy Field Services, LLC, by entities indirectly controlled by Respondent EPCO, Inc. and Respondent Dan L. Duncan, hereinafter collectively referred to as “Respondents,” and Respondents having been furnished thereafter with a draft of Complaint that the Bureau of Competition proposed to present to the Commission for its consideration and, that, if issued by the Commission, would charge Respondents with violations of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondents, their attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Order (“Consent Agreement”), containing an admission by Respondents of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondents that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondents have violated the said Acts, and that a Complaint should issue stating its charges in that respect, and having thereupon issued its Complaint, and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure

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described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby makes the following jurisdictional findings and issues the following Decision and Order (“Order”):

1. Respondent Dan L. Duncan is a natural person with his office and principal place of business located at 1100 Louisiana Street, Suite 1800, Houston, Texas 77002.

2. Respondent EPCO, Inc. is a corporation organized, existing, and doing business under and by virtue of the laws of the State of Texas, with its office and principal place of business at 1100 Louisiana Street, Suite 1800, Houston, Texas 77002.

3. Respondent Texas Eastern Products Pipeline Company, LLC is a limited liability company organized, existing, and doing business under and by virtue of the laws of the State of Delaware, with its office and principal place of business at 1100 Louisiana Street, Suite 1300, Houston, Texas 77002.

4. Respondent TEPPCO Partners, L.P. is a publicly traded limited partnership organized, existing, and doing business under and by virtue of the laws of the State of Delaware, with its office and principal place of business located at 1100 Louisiana Street, Suite 1300, Houston, Texas 77002.

5. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of Respondents, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that, as used in this Order, the following definitions shall apply:

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- A. “Duncan” means Dan L. Duncan, a natural person, all partnerships, joint ventures, subsidiaries, divisions, groups, and affiliates controlled by Dan L. Duncan (including, but not limited to, EPCO, Texas Eastern, and TEPPCO), and the respective partners, directors, officers, employees, agents, attorneys, representatives, predecessors, successors, and assigns of each.
- B. “EPCO” means EPCO, Inc., a corporation, its directors, officers, employees, agents, attorneys, representatives, predecessors, successors, and assigns; its joint ventures, subsidiaries, divisions, groups, and affiliates controlled by EPCO, Inc., and the respective partners, directors, officers, employees, agents, attorneys, representatives, predecessors, successors, and assigns of each.
- C. “TEPPCO” means TEPPCO Partners, L.P., a publicly traded limited partnership, its partners (including, but not limited to, Texas Eastern), directors, officers, employees, agents, attorneys, representatives, predecessors, successors, and assigns; its joint ventures, subsidiaries, divisions, groups, and affiliates controlled by TEPPCO Partners L.P. (including, but not limited to, TE Products Pipeline Company), and the respective partners, directors, officers, employees, agents, attorneys, representatives, predecessors, successors, and assigns of each. *Provided, however,* TEPPCO does not include Mont Belvieu Storage Partners or Louis Dreyfus.
- D. “Texas Eastern” means Texas Eastern Products Pipeline Company, LLC, a limited liability company, its directors, officers, employees, agents, attorneys, representatives, predecessors, successors, and assigns; its joint ventures, subsidiaries, divisions, groups, and affiliates controlled by Texas Eastern Products Pipeline Company, LLC, and the respective partners, directors, officers, employees, agents, attorneys, representatives, predecessors, successors, and

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assigns of each. *Provided, however*, Texas Eastern does not include Mont Belvieu Storage Partners.

- E. “Respondents” means Duncan, EPCO, Texas Eastern, and TEPPCO.
- F. “Commission” means the Federal Trade Commission.
- G. “Acquirer” means any entity that receives the prior approval of the Commission to acquire the TEPPCO NGL Storage Assets pursuant to Paragraphs II or III of this Order.
- H. “Acquisition” means the February 24, 2005, acquisition by entities controlled by Respondent Dan L. Duncan from Duke Energy of (1) Texas Eastern, the general partner of TEPPCO, and (2) 2.5 million limited partnership units of TEPPCO.
- I. “Baytown Terminal” means the NGL and refined products terminal facility and all related assets owned by TEPPCO in Baytown, Texas.
- J. “Divestiture Agreement” means any agreement or agreements pursuant to which Respondents or a Divestiture Trustee divests to an Acquirer pursuant to Paragraphs II or III of this Order and with the prior approval of the Commission.
- K. “Divestiture Trustee” means any trustee appointed by the Commission pursuant to Paragraph III of this Order.
- L. “Duke Energy” means Duke Energy Field Services, LLC, a limited liability company organized, existing, and doing business under and by the virtue of the laws of the State of Delaware, with its executive offices at 370 17th Street, Suite 2500, Denver, Colorado 80202.

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- M. “Effective Date of Divestiture” means the date on which Respondents (or a Divestiture Trustee) divest to an Acquirer the TEPPCO NGL Storage Assets as required by Paragraphs II or III of this Order.
- N. “Governmental Entity” means any federal, state, local, or non-U.S. government, or any court, legislature, governmental agency, or governmental commission, or any judicial or regulatory authority of any government.
- O. “Intangible Property” means intangible property relating to the assets associated with Mont Belvieu Storage Partners and the TEPPCO NGL Partnership Agreements including, but not limited to, intellectual property, software, computer programs, patents, know-how, goodwill, technology, trade secrets, technical information, marketing information, protocols, quality control information, trademarks, trade names, service marks, logos, and any modifications or improvements to such intangible property. *Provided, however,* Intangible Property does not include Licensed Intangible Property or TEPPCO trademarks, trade names, service marks, or logos.
- P. “Licensed Intangible Property” means Intangible Property licensed to Respondents from a third party. *Provided, however,* Licensed Intangible Property does not include any modifications and improvements to Intangible Property that are not themselves licensed to Respondents.
- Q. “Louis Dreyfus” means Louis Dreyfus Energy Services L.P., a publicly traded limited partnership, organized, existing, and doing business under and by virtue of the laws of the State of Delaware, with its principal place of business located at 20 Westport Road, Wilton, Connecticut 06897.

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- R. “LPGs” means normal butane, isobutane, mixed butanes, and propane.
- S. “Material Confidential Information” means competitively sensitive or proprietary information not independently known to a Person from sources other than the Person to which the information pertains, and includes, but is not limited to, all customer lists, price lists, cost information, marketing methods, patents, technologies, processes, or other trade secrets.
- T. “Mont Belvieu Storage Partners” means the partnership by and between TE Products Pipeline Company and Louis Dreyfus pursuant to the Agreement of Limited Partnership of Mont Belvieu Storage Partners, L.P., dated January 21, 2003, as amended or clarified by that certain Letter of Agreement Clarifying Rights and Obligations of the Parties Under the Mont Belvieu Storage Partners, L.P., Partnership Agreement and the Mont Belvieu Venture, LLC, LLC Agreement, dated October 25, 2003, and amendments, schedules, and attachments thereto. Mont Belvieu Storage Partners also means the partnership existing after the divestiture required by this Order and any successors or assigns to that entity.
- U. “Mont Belvieu Storage Partners Terminals” means the NGL salt dome storage facility owned by Mont Belvieu Storage Partners in Mont Belvieu, Texas, and described in the TEPPCO NGL Partnership Agreements.
- V. “NGL” means natural gas liquids either as a mixed stream, known as “y-grade” or “raw mix,” or separately as ethane, propane, butane, isobutane, natural gasoline, and ethane-propane mixture. NGLs include LPGs.

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- W. “Open Stock Service” means Respondent TEPPCO’s practice, through TE Products Pipeline Company, of allowing shippers, who have adequate inventory in storage under the custody and control of TE Products Pipeline Company on, or in storage facilities connected to, the TEPPCO Mainline Delivery System including, but not limited to, the Mont Belvieu Storage Partners Terminals, to take delivery of propane at TEPPCO’s terminals along the TEPPCO Mainline Delivery System, when propane is available at the terminal, without making the shipper wait for the pipeline transit time it would take to move the propane from origin to destination. Such Open Stock Service practice is subject to, and historically has been subject to, availability of inventory and operational constraints including, but not limited to, pipeline prorationing, transit time requirements, scheduling requirements, regulatory constraints, emergency conditions, and force majeure events. *Provided, however*, Open Stock Service does not require, and nothing in this Order shall be construed as requiring, Respondent TEPPCO to lease space in its name at any NGL storage facility or continue its earned storage program at any NGL storage facility.
- X. “Person” means any individual, partnership, association, company, or corporation.
- Y. “Reasonable Construction Costs” means all direct costs and expenses necessary for safe and environmentally sound design, engineering, and construction.
- Z. “South Mont Belvieu” means the NGL salt dome storage facility owned by Mont Belvieu Storage Partners in Mont Belvieu, Texas known as the South Terminal, and described in the TEPPCO NGL Partnership Agreements.

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- AA. “TE Products Pipeline Company” means TE Products Pipeline Company, Limited Partnership, a limited partnership, its partners (including, but not limited to, TEPPCO), directors, officers, employees, agents, attorneys, representatives, predecessors, and assigns; its joint ventures, subsidiaries, divisions, groups, and affiliates controlled by TE Products Pipeline Company, Limited Partnership, and the respective partners, directors, officers, employees, agents, attorneys, representatives, predecessors, successors, and assigns of each. *Provided, however,* TE Products Pipeline Company does not include Mont Belvieu Storage Partners.
- BB. “TEPPCO Intangible Property” means Intangible Property solely relating to the TEPPCO NGL Pipelines and the TEPPCO Land including, but not limited to, intellectual property, software, computer programs, patents, know-how, goodwill, technology, trade secrets, technical information, marketing information, protocols, quality control information, and any modifications or improvements to such intangible property. *Provided, however,* TEPPCO Intangible Property does not include TEPPCO trademarks, trade names, service marks, and logos, or Licensed Intangible Property.
- CC. “TEPPCO Land” means certain parcels of real property, or portions thereof, located in Chambers County, Texas, owned by TEPPCO, situated south of road FM-1942 and west of Highway TX-146, including, but not limited to, those parcels described in Appendix B, and TEPPCO Intangible Property to the extent it relates to such parcels of land. *Provided, however,* TEPPCO may retain easements and rights of way in Parcels 11 and 21 for the P-78 pipeline, and TEPPCO may retain easements and rights of way in Parcels 24, 41, and 46 for the P-61 pipeline.

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- DD. “TEPPCO Mainline Delivery System” means TE Products Pipeline Company’s 18-inch/20-inch diameter pipelines running from Mont Belvieu, Texas, to Middletown, Ohio (TE Products Pipeline Company’s Todhunter Terminal); 8-inch diameter pipeline running from Middletown, Ohio, to Greensburg, Pennsylvania; 6-inch/8-inch diameter pipelines running from Greensburg, Pennsylvania, to Eagle, Pennsylvania; and 8-inch diameter pipeline running from Greensburg, Pennsylvania, to Selkirk, New York, and all associated assets, including all NGL terminals owned by TEPPCO or in which TEPPCO leases storage.
- EE. “TEPPCO MBSP Employee” means any individual who is employed by Respondent EPCO and who has worked more than ten (10) percent of his or her time in support of the TEPPCO NGL Storage Assets or the TEPPCO NGL Pipelines at any time since October 1, 2005, regardless of whether the individual has also worked on or in support of other operations owned by Respondents, including, but not limited to, the area manager, operations coordinators, maintenance supervisor, measurement specialist, integrity specialist, technicians, control point operators, operators, and the individuals listed in Appendix C.
- FF. “TEPPCO NGL Partnership Agreements” means the “Limited Liability Company Agreement of Mont Belvieu Venture, LLC, Between TE Products Pipeline Company, Limited Partnership, and Louis Dreyfus Energy Services L.P.,” dated January 21, 2003, and the “Agreement of Limited Partnership of Mont Belvieu Storage Partners, L.P.,” dated January 21, 2003, and any other documents, appendices, or schedules related to those agreements.
- GG. “TEPPCO NGL Pipelines” means the NGL pipelines owned by TEPPCO, described in Appendix A, with the

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continued use of all current easements and rights of way and any lease agreements or access easements at the Baytown Terminal, and TEPPCO Intangible Property to the extent it relates to such pipelines.

HH. “TEPPCO NGL Storage Assets” means:

1. all of Respondents’ interests in Mont Belvieu Storage Partners and the TEPPCO NGL Partnership Agreements. The assets of Mont Belvieu Storage Partners include, but are not limited to:
 - a. Mont Belvieu Storage Partners Terminals;
 - b. brine handling and storage facilities;
 - c. pipelines to and from the Mont Belvieu Storage Partners Terminals, including, but not limited to, pipelines designated as P-11, P-12, P-13, P-14, P-15, P-49, P-53, P-54, P-55, P-67, P-68, P-86, P-96, P-96A, P-97, P-97A, P-97B, P-97C, P-97D, P-105, and P-106 in Appendix E , with all associated pipeline pumps, pipeline injection facilities and related equipment, buildings, equipment, machinery, fixtures, and other appurtenances, and with the continued use of all current easements and rights of way;
 - d. truck and rail facilities, including truck and rail racks, for the receipt and delivery of NGLs stored in the Mont Belvieu Storage Partners Terminals, and related software;
 - e. land owned or leased by Mont Belvieu Storage Partners;

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- f. current contracts, *provided, however*, TEPPCO's rights and obligations as an independent entity in the Storage and Service Agreement Between Mont Belvieu Storage Partners, L.P. and TE Products Pipeline Company, Limited Partnership, dated August 13, 2003 (effective retroactively as of January 21, 2003) are not considered part of Mont Belvieu Storage Partners' assets;
- g. the continued use of all current easements and rights of way;
- h. the Dixie dehydrator;
- i. the scraper trap site, header site, and LPG manifold, located at the Baytown Terminal;
- j. pipelines to and from the Baytown Terminal including, but not limited to, pipelines designated as P-3, P-5, P-6 (from the interconnection with the P-59 pipeline at the Deepwater Cogen plant westward to the termination of the P-6 pipeline within the Lyondell refinery), P-7, P-50, P-59, P-60, and P-94 in Appendix E, with the continued use of all current easements and rights of way;
- k. documents, plans, strategies, financials, and other documents relating to Mont Belvieu Storage Partners, the assets included in Mont Belvieu Storage Partners, the TEPPCO NGL Partnership Agreements, and Respondents' interests in Mont Belvieu Storage Partners;
- l. Intangible Property; and

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- m. all licenses, permits, contracts, agreements, and understandings relating to the ownership and operation of Mont Belvieu Storage Partners Terminals.
2. TEPPCO NGL Pipelines;
3. TEPPCO Land;
4. all documents relating to the assets described in subparagraphs 1, 2, and 3, of this Paragraph, above, including, but not limited to, copies of plans, tariffs, customer lists, strategic planning documents that have been submitted to the managing board, and annual and quarterly financial statements;
5. a royalty-free perpetual worldwide license for the use, without any limitation, of all TEPPCO Intangible Property including the right to transfer or sublicense such TEPPCO Intangible Property, exclusively or nonexclusively, to others by any means;
6. lease agreements or access easements for the TEPPCO NGL Pipelines at the Baytown Terminal, including, but not limited to, those listed in Appendix D.

II.**IT IS FURTHER ORDERED** that:

- A. No later than December 31, 2006, Respondents shall divest the TEPPCO NGL Storage Assets absolutely and in good faith, at no minimum price.
- B. Respondents shall divest the TEPPCO NGL Storage Assets to an acquirer that receives the prior approval of the

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Commission and only in a manner that receives the prior approval of the Commission.

- C. Until the Effective Date of Divestiture, Respondents shall take such actions as are necessary to maintain the viability and marketability of the TEPPCO NGL Storage Assets and to prevent the destruction, removal, wasting, deterioration, or impairment of the TEPPCO NGL Storage Assets, except for ordinary wear and tear.
- D. Prior to the Effective Date of Divestiture, Respondents shall secure all consents and waivers, including rights of approval and rights of first refusal, from all Persons and Governmental Entities that are necessary for the divestiture of the TEPPCO NGL Storage Assets to the Acquirer, including, but not limited to, any consents or waivers required from Louis Dreyfus or its successor with respect to the TEPPCO NGL Storage Assets.
- E. Beginning from the date the Respondents sign the Consent Agreement until sixty (60) days after the Effective Date of Divestiture of the TEPPCO NGL Storage Assets, Respondents shall:
 - 1. facilitate employment interviews between each TEPPCO MBSP Employee and the Acquirer, including providing the names and contact information for such employees and allowing such employees reasonable opportunity to interview with the Acquirer, and shall not discourage such employee from participating in such interviews;
 - 2. not interfere in employment negotiations between each TEPPCO MBSP Employee and the Acquirer;

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3. with respect to each TEPPCO MBSP Employee who receives an offer of employment from the Acquirer:
 - a. not prevent, prohibit, or restrict, or threaten to prevent, prohibit, or restrict the TEPPCO MBSP Employee from being employed by the Acquirer, and shall not offer any incentive to the TEPPCO MBSP Employee to decline employment with the Acquirer;
 - b. cooperate with the Acquirer in effecting transfer of the TEPPCO MBSP Employee to the employ of the Acquirer, if the TEPPCO MBSP Employee accepts an offer of employment from the Acquirer;
 - c. eliminate any contractual provisions or other restrictions entered into or imposed by Respondents that would otherwise prevent the TEPPCO MBSP Employee from being employed by the Acquirer;
 - d. eliminate any confidentiality restrictions that would prevent the TEPPCO MBSP Employee who accepts employment with the Acquirer from using or transferring to the Acquirer any information relating to the operation of the TEPPCO NGL Storage Assets;
 - e. pay, for the benefit of any TEPPCO MBSP Employee who accepts employment with the Acquirer, all accrued bonuses, vested pensions, and other accrued benefits.
- F. Respondents shall, for a period of two (2) years following the Effective Date of Divestiture, not, directly or indirectly, solicit, induce, or attempt to solicit or induce any TEPPCO MBSP Employee who is employed by the

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Acquirer to terminate his or her employment relationship with the Acquirer, unless that employment relationship has already been terminated by the Acquirer; *provided, however*, Respondents may make general advertisements for employees including, but not limited to, in newspapers, trade publications, websites, or other media not targeted specifically at the Acquirer's employees; *provided, further, however*, Respondents may hire TEPPCO MBSP Employees who apply for employment with Respondents as long as such employees were not solicited by Respondents in violation of this Paragraph.

- G. Respondents shall convey to the Acquirer the right to use any Licensed Intangible Property (to the extent permitted by the third-party licensor), if such right is needed for the operation of the TEPPCO NGL Storage Assets by the Acquirer and if the Acquirer is unable, using commercially reasonable efforts, to obtain equivalent rights from other third parties on commercially reasonable terms and conditions.
- H. The purposes of this Order with respect to the divestiture of the TEPPCO NGL Storage Assets are: (1) to ensure the continuation of the TEPPCO NGL Storage Assets as a going concern in the same manner as of the date the Consent Agreement is signed, and (2) to remedy the lessening of competition resulting from the Acquisition as alleged in the Commission's Complaint.

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III.**IT IS FURTHER ORDERED** that:

- A. If Respondents have not fully complied with the obligation to divest the TEPPCO NGL Storage Assets as required by, and within the time required by, Paragraph II of this Order, the Commission may appoint a Divestiture Trustee to divest the TEPPCO NGL Storage Assets in a manner that satisfies the requirements of Paragraph II.

In the event that the Commission or the Attorney General brings an action pursuant to § 5(l) of the Federal Trade Commission Act, 15 U.S.C. § 45(l), or any other statute enforced by the Commission, Respondents shall consent to the appointment of a Divestiture Trustee in such action to divest the TEPPCO NGL Storage Assets. Neither the appointment of a Divestiture Trustee nor a decision not to appoint a Divestiture Trustee under this Paragraph III shall preclude the Commission or the Attorney General from seeking civil penalties or any other relief available to it, including a court-appointed trustee, pursuant to § 5(l) of the Federal Trade Commission Act, or any other statute enforced by the Commission, for any failure by Respondents to comply with this Order.

- B. The Commission shall select the Divestiture Trustee, subject to the consent of Respondents, which consent shall not be unreasonably withheld. The Divestiture Trustee shall be a person with experience and expertise in acquisitions and divestitures. If Respondents have not opposed, in writing, including the reasons for opposing, the selection of any proposed Divestiture Trustee within ten (10) days after notice by the staff of the Commission to Respondents of the identity of any proposed Divestiture

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Trustee, Respondents shall be deemed to have consented to the selection of the proposed Divestiture Trustee.

- C. Not later than ten (10) days after the appointment of a Divestiture Trustee, Respondents shall execute a trust agreement that, subject to the prior approval of the Commission, transfers to the Divestiture Trustee all rights and powers necessary to permit the Divestiture Trustee to effect the divestitures required by this Order.
- D. If a Divestiture Trustee is appointed by the Commission or a court pursuant to this Paragraph III, Respondents shall consent to the following terms and conditions regarding the Divestiture Trustee's powers, duties, authority, and responsibilities:
 1. Subject to the prior approval of the Commission, the Divestiture Trustee shall have the exclusive power and authority to divest the TEPPCO NGL Storage Assets.
 2. The Divestiture Trustee shall have one (1) year after the date the Commission approves the trust agreement described herein to accomplish the divestiture, which shall be subject to the prior approval of the Commission. If, however, at the end of the one (1) year period, the Divestiture Trustee has submitted a plan of divestiture or believes that the divestiture can be achieved within a reasonable time, the divestiture period may be extended by the Commission; *provided, however,* the Commission may extend the divestiture period only two (2) times.
 3. Subject to any demonstrated legally recognized privilege, the Divestiture Trustee shall have full and complete access to the personnel, books, records, and facilities related to the relevant assets that are required

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to be divested by this Order and to any other relevant information, as the Divestiture Trustee may request. Respondents shall develop such financial or other information as the Divestiture Trustee may request and shall cooperate with the Divestiture Trustee. Respondents shall take no action to interfere with or impede the Divestiture Trustee's accomplishment of the divestiture. Any delays in divestiture caused by Respondents shall extend the time for divestiture under this Paragraph III in an amount equal to the delay, as determined by the Commission.

4. The Divestiture Trustee shall use commercially reasonable best efforts to negotiate the most favorable price and terms available in each contract that is submitted to the Commission, subject to Respondents' absolute and unconditional obligation to divest expeditiously and at no minimum price. The divestiture or divestitures shall be made in the manner and to an acquirer as required by this Order; *provided, however*, if the Divestiture Trustee receives bona fide offers from more than one acquiring entity, and if the Commission determines to approve more than one such acquiring entity, the Divestiture Trustee shall divest to the acquiring entity selected by Respondents from among those approved by the Commission; *provided, further, however*, that Respondents shall select such entity within five (5) days after receiving notification of the Commission's approval.
5. The Divestiture Trustee shall serve, without bond or other security, at the cost and expense of Respondents, on such reasonable and customary terms and conditions as the Commission or a court may set. The Divestiture Trustee shall have the authority to employ, at the cost and expense of Respondents, such consultants, accountants, attorneys, investment

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bankers, business brokers, appraisers, and other representatives and assistants as are necessary to carry out the Divestiture Trustee's duties and responsibilities. The Divestiture Trustee shall account for all monies derived from the divestiture and all expenses incurred. After approval by the Commission of the account of the Divestiture Trustee, including fees for the Divestiture Trustee's services, all remaining monies shall be paid at the direction of Respondents, and the Divestiture Trustee's power shall be terminated. The compensation of the Divestiture Trustee shall be based at least in significant part on a commission arrangement contingent on the divestiture of all of the relevant assets that are required to be divested by this Order.

6. Respondents shall indemnify the Divestiture Trustee and hold the Divestiture Trustee harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Divestiture Trustee's duties, including all reasonable fees of counsel and other expenses incurred in connection with the preparation for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Divestiture Trustee.
7. The Divestiture Trustee shall have no obligation or authority to operate or maintain the relevant assets required to be divested by this Order.
8. The Divestiture Trustee shall act in a fiduciary capacity for the benefit of the Commission.

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9. The Divestiture Trustee shall report in writing to Respondents and to the Commission every sixty (60) days concerning the Divestiture Trustee's efforts to accomplish the divestiture.
 10. Respondents may require the Divestiture Trustee and each of the Divestiture Trustee's consultants, accountants, attorneys, and other representatives and assistants to sign a customary confidentiality agreement; *provided, however*, such agreement shall not restrict the Divestiture Trustee from providing any information to the Commission.
- E. If the Commission determines that a Divestiture Trustee has ceased to act or failed to act diligently, the Commission may appoint a substitute Divestiture Trustee in the same manner as provided in this Paragraph III.
- F. The Commission or, in the case of a court-appointed Divestiture Trustee, the court, may on its own initiative or at the request of the Divestiture Trustee issue such additional orders or directions as may be necessary or appropriate to accomplish the divestiture required by this Order.

IV.

IT IS FURTHER ORDERED that for a period of ten (10) years from the date this Order becomes final:

- A. Respondents shall not, without providing advance written notification to the Commission in the manner described in this Paragraph IV.A, directly or indirectly:
 1. Acquire any stock, share capital, equity, or other interest in any concern, corporate or non-corporate,

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other than acquisitions in Respondents, that owns a salt dome storage facility within Chambers County, Texas permitted or used, either at the time of such acquisition or within the two (2) years preceding such acquisition, to store NGLs;

2. Acquire any salt dome storage facility within Chambers County, Texas permitted or used, either at the time of such acquisition or within the two (2) years preceding such acquisition, to store NGLs;
3. Manage or operate any salt dome storage facility within Chambers County, Texas permitted or used, either at the time of such management or operation or within the two (2) years preceding such management or operation, to store NGLs, unless such storage facility is owned by Respondents.

Said notification shall be given on the Notification and Report Form set forth in the Appendix to Part 803 of Title 16 of the Code of Federal Regulations as amended (herein referred to as "the Notification"), 16 C.F.R. § 803 App., and shall be prepared and transmitted in accordance with the requirements of that Part, except that no filing fee will be required for any such notification, notification shall be filed with the Secretary of the Commission, notification need not be made to the United States Department of Justice, and notification is required only of Respondents and not of any other party to the transaction. Respondents shall provide the Notification to the Commission at least thirty (30) days prior to consummating the transaction (hereinafter referred to as the "first waiting period"). If, within the first waiting period, representatives of the Commission make a written request for additional information or documentary material (within the meaning of 16 C.F.R. § 803.20), Respondents shall not consummate

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the transaction until thirty (30) days after submitting such additional information or documentary material. Early termination of the waiting periods in this Paragraph may be requested and, where appropriate, granted by letter from the Bureau of Competition. *Provided, however,* that prior notification shall not be required by this Paragraph for an acquisition, if the Respondents acquire no more than one (1) percent of the outstanding securities or other equity interest in an entity described in subparagraphs IV.A and IV.B, unless such acquisition results in the Respondents controlling the entity or having a controlling interest in the entity. *Provided, further, however,* that prior notification shall not be required by this Paragraph for a transaction for which Notification is required to be made, and has been made, pursuant to Section 7A of the Clayton Act, 15 U.S.C. § 18a. *Provided, further, however,* that prior notification shall not be required by this Paragraph for Respondents' continued ownership, management, or operation of the assets required to be divested (i) pursuant to Paragraph II of this Order pending such divestiture; and (ii) pursuant to the Divestiture Agreement.

- B. Respondents shall not, without providing advance written notification to the Commission, implement new allocation procedures relating to the movement of NGLs from and between storage facilities, the TEPPCO Mainline Delivery System, and customers, including all rules and regulations regarding NGL nominations and scheduling.

The notification for the allocation procedures in this Paragraph IV.B., shall be as follows: (1) Respondent TEPPCO shall not be required to use the Notification and Report form. No filing fee will be required for any such notification, notification shall be filed with the Secretary of the Commission, notification need not be made to the

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United States Department of Justice, and notification is required only of Respondent TEPPCO and not of any other party. Respondent TEPPCO shall file the allocation procedures and all documents relating to such procedures including, but not limited to, related rules and regulations, memoranda, or other documents discussing the allocation procedures, rules, and regulations, correspondence with the Federal Energy Regulatory Commission and any other third party regarding such procedures; (2) Respondent TEPPCO shall submit such documentation at least ninety (90) days before the implementation of such allocation procedures (hereinafter referred to as the “first waiting period”); (3) If, within the first waiting period, representatives of the Commission make a written request for additional information or documentary material (within the meaning of 16 C.F.R. § 803.20), Respondent TEPPCO shall not implement the allocation procedures until thirty (30) days after submitting such additional information or documentary material. Early termination of the waiting periods in this Paragraph may be requested and, where appropriate, granted by letter from the Bureau of Competition.

- C. Within fifteen (15) days of the earlier of the signing date or the effective date, Respondents shall submit to the Commission, with copies to Bureau of Competition Mergers III Division and Compliance Division, any lease, and any contract summary relating to the lease, for NGL storage within Chambers County, Texas from any Person, including Mont Belvieu Storage Partners. Upon request of the Commission, Respondents shall provide copies of all documents relating to the lease including, but not limited to, memoranda, meeting notes, emails, or other documents. *Provided, however,* that Respondents do not have to submit any storage leases currently in effect, including the Storage and Service Agreement Between

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Mont Belvieu Storage Partners, L.P. and TE Products Pipeline Company, Limited Partnership, dated August 12, 2003 (effective retroactively as of January 21, 2003), or extensions of leases currently in effect if the volume leased under such extended leases is not ten percent (10%) in excess of the volume currently leased pursuant to such current leases.

V.

IT IS FURTHER ORDERED that:

- A. Within thirty (30) days after the date this Order becomes final, and every sixty (60) days thereafter until Respondents have fully complied with Paragraphs II.A-II.E, II.G, and III of this Order, Respondents shall submit to the Commission a verified written report setting forth in detail the manner and form in which they intend to comply, are complying, and have complied with this Order. Respondents shall submit at the same time a copy of their reports concerning compliance with this Order to the Divestiture Trustee, if any Divestiture Trustee has been appointed pursuant to this Order. Respondents shall include in their reports, among other things that are required from time to time, a full description of the efforts being made to comply with the relevant Paragraphs of the Order, including a description of all substantive contacts or negotiations related to the divestiture of the relevant assets and the identity of all parties contacted. Respondents shall include in their reports copies of all written communications to and from such parties, all internal memoranda, and all reports and recommendations concerning completing the obligations.
- B. Beginning twelve (12) months after the date this Order becomes final, and annually thereafter on the anniversary

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of the date this Order becomes final, until the Order terminates, Respondents shall submit to the Commission verified written reports setting forth in detail the manner and form in which they are complying and have complied with this Order and the Divestiture Agreements.

VI.

IT IS FURTHER ORDERED that:

- A. Respondents shall continue to operate the Open Stock Service for shippers who (1) ship propane on the TEPPCO Mainline Delivery System, and (2) store propane at the Mont Belvieu Storage Partners Terminals;
- B. Respondents shall, in the event Respondents build, or any Respondent builds, a new pipeline connecting an NGL storage facility in Chambers County, Texas (other than the Mont Belvieu Storage Partners Terminals) to the TEPPCO Mainline Delivery System (“New Pipeline”);
 - 1. at their cost, extend any such New Pipeline to a point agreeable to both Respondents and Mont Belvieu Storage Partners at the property line of property owned by Mont Belvieu Storage Partners (“Terminus Point”); and
 - 2. reimburse Mont Belvieu Storage Partners for Reasonable Construction Costs to extend any such New Pipeline from the Terminus Point to the manifold connected to the Mont Belvieu Storage Partners Terminal.
- C. If Respondents build a New Pipeline:

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1. and propane is shipped on the New Pipeline from an NGL storage facility to the TEPPCO Mainline Delivery System where there has not been a past practice of shipping propane directly onto such system, then Respondent TEPPCO shall operate the Open Stock Service for shippers who ship propane on the TEPPCO Mainline Delivery System from any NGL storage facility in Mont Belvieu, Texas on terms and conditions that are no less advantageous than those given to shippers who designate that propane be shipped from any NGL storage facility in Mont Belvieu, Texas owned by Respondents;
2. and NGLs, other than propane, are shipped on the New Pipeline from an NGL storage facility directly to the TEPPCO Mainline Delivery System where there has not been a past practice of shipping NGLs, other than propane, directly onto such system, then Respondent TEPPCO shall operate the TEPPCO Mainline Delivery System for shipping NGLs, other than propane, from any NGL storage facility in Mont Belvieu, Texas on terms and conditions that are no less advantageous than those given to shippers who designate that NGLs, other than propane, be shipped from any NGL storage facility in Mont Belvieu, Texas owned by Respondents;
3. At the time Respondents begin to move product to the TEPPCO Mainline Delivery System from any storage facility connected to the New Pipeline (other than the Mont Belvieu Storage Partners Terminals), or any time thereafter, Respondents shall allow Mont Belvieu Storage Partners to amend or terminate the Storage and Service Agreement Between Mont Belvieu Storage Partners, L.P. and TE Products Pipeline Company, Limited Partnership, dated August 12, 2003 (effective

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retroactively as of January 21, 2003), on the following terms:

- a. with regard to propane,
 - (1) upon ninety (90) days written notice before termination,
 - (2) with no termination penalty, and
 - (3) provided that the termination cannot occur before March 31, 2007;
 - b. with regard to NGLs, other than propane,
 - (1) upon ninety (90) days written notice before termination,
 - (2) with no termination penalty, and
 - (3) provided that the termination cannot occur before March 31, 2008;
 4. In the event Respondents implement any new allocation procedures, including rules and regulations, regarding the TEPPCO Mainline Delivery System, such new allocation procedures shall allow shippers who ship on the TEPPCO Mainline Delivery System from any NGL storage facility in Mont Belvieu, Texas to ship on terms and conditions that are no less advantageous than those given to shippers who ship from any NGL storage facility in Mont Belvieu, Texas owned by Respondents.
- D. Respondent TEPPCO shall not disclose Material Confidential Information to Respondent Duncan,

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Respondent Enterprise, and Respondent EPCO concerning shippers who store NGLs in Mont Belvieu Storage Partners Terminals, in any other storage facility, or on the TEPPCO Mainline Delivery System.

- E. The purpose of this Paragraph VI is (1) to allow the operation of the TEPPCO Mainline Delivery System in the same manner as of the date the Consent Agreement is signed, and (2) to remedy the lessening of competition resulting from the Acquisition as alleged in the Commission's Complaint.

VII.

IT IS FURTHER ORDERED that Respondents shall notify the Commission at least thirty (30) days prior to any proposed (1) dissolution of Respondents, (2) acquisition, merger, or consolidation of Respondents, or (3) any other change in Respondents that may affect compliance obligations arising out of the Order including, but not limited to, assignment and the creation or dissolution of subsidiaries.

VIII.

IT IS FURTHER ORDERED that, for the purpose of determining or securing compliance with this Order, and subject to any legally recognized privilege, upon written request with reasonable notice, Respondents shall permit any duly authorized representative of the Commission:

- A. Access, during office hours of Respondents and in the presence of counsel, to all facilities and access to inspect and copy all books, ledgers, accounts, correspondence, memoranda, and all other records and documents in the possession or under the control of Respondents related to compliance with this Order; and

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- B. Upon five (5) days' notice to Respondents and without restraint or interference from Respondents, to interview officers, directors, or employees of Respondents, who may have counsel present, regarding such matters.

IX.

IT IS FURTHER ORDERED that this Order shall terminate on October 31, 2016.

By the Commission, Commissioner Rosch recused.

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Appendices**APPENDIX A****TEPPCO NGL PIPELINES**Line P-46

6 inch diameter pipeline commencing at MBSP's Mont Belvieu North Terminal; THENCE running generally in a Southwesterly direction through Chambers and Harris Counties, Texas, a distance of approximately 12 miles to a point of termination located within Grantor's Baytown Terminal in Harris County, Texas.

Line P-93

8 inch diameter pipeline commencing at MBSP's Mont Belvieu North Terminal; THENCE running generally in a Southwesterly direction through Chambers and Harris Counties, Texas, a distance of approximately 12 miles into and through Grantor's Baytown Terminal in Harris County, Texas; THENCE running generally in a Southwesterly direction, a distance of approximately 8 miles, and terminating at a point of interconnection with Grantor's 16 inch diameter P-64 Pipeline at Grantor's Deer Park Junction.

Line P-64

16 inch diameter pipeline commencing at Grantor's Ellington Field Junction located in Harris County, Texas, on the South side of the Sam Houston Parkway, East of its intersection with State Highway 3; THENCE running generally in a Northeasterly direction through Harris County, Texas, a distance of approximately 9.21 miles and terminating at a point of interconnection with Grantor's 8 inch diameter P-93 pipeline at Grantor's Deer Park Junction located in Harris County, Texas, North of State Highway 225, West of its intersection with State Highway 134 (Battleground Road).

Line P-66

8 inch diameter pipeline commencing at Grantor's Hastings Delivery Facility located in Brazoria County, Texas where County Road No. 129 intersects State Highway 35; THENCE running generally in a Northeasterly direction through Brazoria and Harris Counties, Texas, a distance of approximately 9.18 miles and terminating at a point of interconnection with Grantor's 16 inch diameter P-64 pipeline at Grantor's Ellington Field Junction located in Harris County, Texas, on the South side of the Sam Houston Parkway, East of its intersection with State Highway 3.

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APPENDIX B

TEPPCO LAND

The portions of each of the following parcels, which portions are situated south of road FM-1942 and west of Highway TX-146 in Chambers County, Texas:

Parcel 8: William Bloodgood League A-4; Chambers County, Texas; approximately 8 acres; **Warranty Deed** dated 3/10/60 from S. S. Hindman and Mary Ann Hindman, husband and wife to Texas Eastern Transmission Corporation recorded on 3/24/60 in Bk. 219 Pg. 586 File # 533. (An undivided 3/8ths interest.)

Parcel 12: William Bloodgood League A-4; Chambers County, Texas; approximately 8 acres; reserve land; **Warranty Deed** dated 5/11/60 from Fleda M. Schilling (1/2 interest) to Texas Eastern Transmission Corporation recorded on 5/25/60 in Bk. 221 Pg. 437 File # 1138; **Warranty Deed** dated 4/29/60 from Elizabeth V. Lillie, et al. (1/2 interest) to Texas Eastern Transmission Corporation recorded on 5/25/60 in Bk. 221 Pg. 380 File # 1099.

Parcel 18: William Bloodgood League A-4; Chambers County, Texas; approximately 14 acres; **Warranty Deed** dated 10/11/61 from Lyle Fisher Jones, et al., to Texas Eastern Transmission Corporation recorded on 10/25/61 in Bk. 233, Pg. 116; being Lot No. 24 of the partition of the Joseph Fisher Estate, and being the same land set aside to A. M. Fisher by Commissioner in partition shown of record in Vol. C, Pg. 225 of the probate records of Chambers County, Texas, to which reference is here made for a more detailed description.

Parcels 20, 21, and 11: William Bloodgood League A-4; Chambers County, Texas; South Terminal; Zadie Fisher Pump Station; **Deed** dated 5/18/60 from O. E. Barber, guardian of the Estate of Zadie Fisher to Texas Eastern Transmission Corporation recorded on (date not found) in Bk. 221 Pg. 383 File # 1100; Parcel 11 - approximately 2.77 acres; reserved from this conveyance, all oil, gas, and other minerals; **Correction Deed** (on the above) dated 6/10/60 from O. E. Barber, guardian of the Estate of Zadie Fisher to Texas Eastern Transmission Corporation recorded on 6/30/60 in Bk. 222 Pg. 254, File # 1433; correcting ambiguities in the description of Tract II; **Deed** dated 3/20/62 from Nellie Lintelman, guardian of the Estate of Zadie Fisher to Texas Eastern Transmission Corporation recorded on 3/28/62 in Bk. 236 Pg. 76 File # 650; Parcel 20 for approximately 23.49 acres and Parcel 21 for approximately 8.619 acres; reserved from this conveyance all oil, gas, and other minerals.

Parcel 23: William Bloodgood League A-4; Chambers County, Texas; approximately 35 acres; **Quit Claim Deed** dated 9/6/62 from Sam Silverman, Louis Silverman, and Harry Freedman to Texas Eastern Transmission Corporation recorded on 10/25/62 in Bk. 240 Pg. 381 File # 2547; **Quit Claim Deed** dated 9/6/62 from Sam Silverman, Louis Silverman, and Harry Freedman to Texas Eastern Transmission Corporation recorded on 10/25/62 in Bk. 240 Pg. 383 File # 2548;

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Warranty Deed dated 6/28/62 from Alma Dutton, et al., to Texas Eastern Transmission Corporation recorded on 8/15/62 in Bk. 239 Pg. 195 File # 1969;

Quit Claim Deed 6/28/62 from Alma Dutton, et al., to Texas Eastern Transmission Corporation recorded on 8/15/62 in Bk. 239 Pg. 200 File # 1970; this Deed covers approximately 58.22 acres with approximately 35 acres being for Parcel 23 but appears to also cover portions of Parcels 17, 19, and 20;

Warranty Deed dated 1/23/62 from Thelma Barber Bryant and husband, William D. Bryant to Texas Eastern Transmission Corporation recorded on 3/21/62 in Bk. 236 Pg. 40 File # 613;

Quit Claim Deed dated 1/18/62 from Thelma Barber Bryant and husband, William D. Bryant to Texas Eastern Transmission Corporation recorded on 3/21/62 in Bk. 236 Pg. 42 File # 614.

Parcel 24: Reserve Land; William Bloodgood League A-4; Chambers County, Texas; approximately 8.75 acres;

Warranty Deed dated 7/12/62 from D. W. McLeod, Trustee, of the County of Chambers to Texas Eastern Transmission Corporation recorded on 7/25/62 in Bk. 238 Pg. 129 File # 1636.

Parcels 36 and 37: Henry Griffith Survey A-12; Chambers County, Texas; North Terminal;

Warranty Deed dated 3/31/64 from Texas Natural Storage Company to Texas Eastern Transmission Corporation recorded on 4/29/64 in Bk. 252 Pg. 641 File # 1108; (the salt formation - approximately 11.94 acres Parcels 36 and 37;

provided that respondents only must divest the portions of Parcels 36 and 37 that lie south of road FM1942.

Parcel 39: William Bloodgood League A-4; Chambers County, Texas; * 1/3rd interest;

Special Warranty Deed dated 1/9/69 from Mildred F. Somers to Warren Petroleum Corporation Humble Pipe Line Company, and Texas Eastern Transmission Corporation recorded on 1/21/69 in Bk. 303 Pg. 540 File # 121; approximately 1.442 acres; surface only; plus the use of the ditch known as Bloodgood Bayou for discharge of fluids into Cedar Bayou;

Special Warranty Deed dated 1/7/69 from Barbara F. Benson and husband, Joseph M. Benson to Warren Petroleum Corporation, Humble Pipe Line Company, and Texas Eastern Transmission Corporation recorded on 1/21/69 in Bk. 303 Pg. 527 File # 116; approximately 1.442 acres; surface only; plus the use of the ditch known as Bloodgood Bayou for discharge of fluids into Cedar Bayou;

Special Warranty Deed dated 1/6/69 from Evelyn F. Lansford and B. L. Lansford, Jr. to Warren Petroleum Corporation, Humble Pipe Line Company, and Texas Eastern Transmission Corporation recorded on 1/21/69 in Bk. 303 Pg. 534 File # 119; approximately 1.442 acres; surface only; plus the use of the ditch known as Bloodgood Bayou for discharge of fluids into Cedar Bayou;

Special Warranty Deed dated 1/6/69 from Carl J. Fitzgerald and Jewel Fitzgerald to Warren Petroleum Corporation, Humble Pipe Line Company, and Texas Eastern Transmission Corporation recorded on 1/21/69 in Bk. 303 Pg. 532 File # 118; approximately 1.442 acres; surface only; plus the use of the ditch known as Bloodgood Bayou for discharge of fluids into Cedar Bayou;

Special Warranty Deed dated 1/6/69 from Elda Fitzgerald to Warren Petroleum Corporation, Humble Pipe Line Company, and Texas Eastern Transmission Corporation recorded on 1/21/69

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in Bk. 303 Pg. 525 File # 115; approximately 5.768 acres; surface only; plus the use of the ditch known as Bloodgood Bayou for discharge of fluids into Cedar Bayou;

Special Warranty Deed dated 1/4/68 (note: this date was probably meant to read 1/4/69 as the acknowledgments were dated in 1969) from Rollie B. Williams, et al., to Warren Petroleum Corporation, Humble Pipe Line Company, and Texas Eastern Transmission Corporation recorded on 1/21/69 in Bk. 303 Pg. 529 and in Bk. 7489 Pg. 460; approximately 41.176 acres; surface only.

Parcel 41: Partial Ownership; William Bloodgood League A-4; Chambers County, Texas; approximately 35 acres;

Warranty Deed dated 11/23/83 from Diamond Shamrock Chemicals Company to Texas Eastern Transmission Corporation recorded on 1/5/84 in Bk. 542 Pg. 55; *(retained by TEPPCO) save and except that portion of said approximately 35 acres described in that certain Special Warranty Deed dated November 30, 1995 from TE Products Pipeline Company, Limited Partnership to Chevron U.S.A. Inc., acting by and through its division, Warren Petroleum Company, recorded in Vol. 282 Pg. 775 File # 5859-B of the OPR of Chambers Co., TX; and save and except that portion of Parcel 14 lying west of the tract of land described by metes and bounds conveyed by said deed recorded in Vol. 282 Pg. 775 referenced above.

Parcel 42: William Bloodgood League A-4; Chambers County, Texas; approximately 8.1752 acres;

Special Warranty Deed dated 5/18/88 from First City Bank of Dallas to Texas Eastern Products Pipeline Company recorded on 7/8/88 in Film Code # 88 51 71 File # 2820-B.

Parcel 46: Partial Ownership; William Bloodgood League A-4; Chambers County, Texas; Lot 19 - approximately 14 acres (P71, P61, and P46 lines); Lot 18 - approximately 7 acres;

Special Warranty Deed dated 11/30/95 from Chevron USA Inc., acting by and through its division, Warren Petroleum Company to TE Products Pipeline Company, Limited Partnership recorded on 12/8/95 in Film Code 95 282 766 File # 5858-B; * Parcel 46 west of the brine pond is owned by TEPPCO; the remainder was sold to Mt. Belvieu Storage Partners;

Permit to Maintain and Use a Pit dated 9/19/94 from Railroad Commission of Texas to TE Products Pipeline Company, Limited Partnership (not recorded); for a brine pit; Permit # P010692;

Second Amendment to Deed of Trust, Security Agreement and Fixture Filing executed on 11/28/95 but effective 11/30/95 recorded on 12/8/95 in File # 5860-B Film Code # 95 282 782; note: as a part of this transaction, TEPPCO conveyed to Warren an approximately 15.5465 acre tract in William Bloodgood Survey A4; this tract comprises part of Parcels 41, 42, 22, 17, and 14.

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Nonpublic Appendix C

[Redacted From the Public Record Version But Incorporated By Reference]

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(i) Other Interests. With respect to the properties, rights, titles and interests described in Section 1.1(a) through and including Section 1.1(h) above, all and singular the tenements, hereditaments and appurtenances belonging or in any wise appertaining to such property, or any part thereof, including, without limitation, all reversionary interests and reversions, remainders, tolls, rents, revenues, issues, earnings, income, products and profits thereof, and all the right, title, interest, estate and claim whatsoever, at law as well as in equity, of Grantor in and to the above described property from and after the Effective Date.

The properties, rights, titles and interests described in this Section 1.1, **SAVE AND EXCEPT** the Reserved Property (as defined in Section 1.2), shall be referred to herein as the "Subject Property".

1.2 Reservation Clause.

Grantor hereby **RESERVES, SAVES AND EXCEPTS** from this conveyance, the following:

(a) Shared Easements. All right, title and interest of Grantor in and to those certain rights-of-way and easements more particularly described on Exhibit D attached hereto and made a part hereof for all purposes (collectively, the "Shared Easements," and singularly, each a "Shared Easement"), including as part of the reserved interest, without limitation, all rights to lay, construct, operate and maintain pipelines in addition to those heretofore constructed and operated across the same tract or parcel, commonly referred to as "additional line rights," and all reversionary interests and reversions;

(b) Reserved Assets. All of Grantor's right, title and interest in and to those pipelines, dehydrations towers, metering equipment and other assets described on Exhibit I attached hereto and made a part hereof for all purposes and the equipment, machinery and other items of personal property attached thereto and used in the operation thereof (collectively, the "Reserved Assets," and singularly, each a "Reserved Asset");

(c) Reserved New Easements upon the Fee Lands. The Reserved New Easements upon the Fee Lands (as defined in Section 1.5 hereof);

(d) Grantor's Right of Access upon the Fee Lands. Grantor's Right of Access upon the Fee Lands (as defined in Section 1.6);

(e) Storage Capacity. Four million (4,000,000) barrels of space in the underground storage facility lying underneath the surface of the Fee Lands for purposes of injecting, storing and retrieving propane, isobutane, normal butane and natural gasoline, all in accordance with that certain Storage and Service Agreement dated effective as of January 21, 2003 (the "Storage Agreement"), by and between Grantor and Grantee. The Storage Agreement and Grantee's obligations thereunder shall be covenants running with the Fee Lands and shall be binding on Grantee's successors and assigns and all subsequent owners of all or any part of the Fee Lands; and

(f) Reserved Other Interests. With respect to the property described in Section 1.2(a) through and including Section 1.2(e) above, all and singular the tenements, hereditaments and appurtenances belonging or in any wise appertaining to such property, or any part thereof, including, without limitation, all reversionary interests and reversions, remainders, tolls, rents, revenues, issues, earnings, income, products and profits thereof, and all the right, title, interest, estate and claim whatsoever, at law as well as in equity, of Grantor in and to such property.

The properties, rights, titles and interests described in this Section 1.2 shall be referred to herein as the "Reserved Property".

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1.3 Assigned Rights in the Shared Easements.

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(a) To the extent of Grantor's right, title and interest in and to the Shared Easements, Section 1.1(d) covers and includes:

(1) such rights, but only such rights, as relate to and are necessary and appropriate for the use and operation of the Pipelines situated on each Shared Easement in the manner and for the purposes permitted in each such Shared Easement; and

(2) any additional rights and privileges under or through each Shared Easement to the extent such rights and privileges specifically relate to that portion of the Pipelines situated on such Shared Easement; provided, with respect to the interest described in this Section 1.3(a), if and to the extent such additional rights and privileges are applicable to both (i) the Pipelines and (ii) the Reserved Assets, this Section 1.3(a) covers and includes the nonexclusive right to exercise such rights and privileges with respect to the Pipelines only, all upon and subject to the terms and conditions set forth below

(collectively, the "Assigned Rights in the Shared Easements," and singularly, the "Assigned Rights in a Shared Easement").

(b) The Assigned Rights in the Shared Easements are assigned and accepted upon, subject to and limited by, the terms and conditions of the applicable Shared Easement, and the purposes expressly set forth above and shall not include any other right or privilege of Grantor in and to such Shared Easement, including, without limitation, "additional line rights," if any.

(c) Grantor shall not be obligated to maintain any Shared Easements in force and effect for the use or benefit of Grantee. As between Grantor and Grantee, each shall have the right, at any time and from time to time, to the extent permitted by law:

(1) to amend and modify any Shared Easement with respect to that party's right, title and interest, but no amendment or modification shall bind or affect, or purport to bind or affect, the right, title and interest of the other party unless such party joins in the amendment or modification; and

(2) to assign or encumber its rights, titles and interests in any Shared Easement without the consent of the other. As between Grantor and Grantee, the rights assigned and reserved herein in each Shared Easement are mutually nonexclusive and shall rank equally.

1.4 New Easements.

(a) The New Easements conveyed in Section 1.1(e) (collectively, the "New Easements," and singularly, the "New Easement") are non-exclusive easements for the benefit of Grantee upon, over, under and through the lands described on Exhibits E-1 through E-31 attached hereto and made a part hereof for all purposes to construct, lay, alter, inspect, maintain, repair, operate, test, renew, protect, replace, and remove all or any part of the Pipelines in their present location, together with necessary appurtenances thereto, including, without limitation, valves, fittings, tie-overs, corrosion control equipment and other apparatus above and below ground, for the transportation of oil, petroleum products, natural gas, natural gas liquids, condensate, other gaseous and liquid hydrocarbons or any other material or substance which can be transported through a pipeline; provided, however, should any such New Easement cease to be used for the transportation of any such material or substance for a continuous period of two (2) years, then, at any time thereafter and prior to Grantee resuming the use of such New Easement for the transportation of any such material or substance, Grantor shall have the right to deliver written notice to Grantee providing that if Grantee does not resume use of such New Easement for the transportation of any such material or substance within two (2) years from the date of such notice, such New Easement shall terminate and all rights granted hereunder with respect to such New Easement shall terminate and revert to Grantor, its

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successors and assigns.

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(b) Grantee shall (i) pay all damages to stock, crops, fences, timber, land and improvements which may be suffered from any operation conducted by, through or under Grantee on a New Easement and which are owed to third parties, (ii) not relocate the Pipelines, nor construct additional facilities, on a New Easement without the prior written consent of Grantor, which consent shall not be unreasonably withheld, conditioned or delayed, (iii) comply with the terms and conditions of the Permitted Encumbrances relating to a New Easement and (iv) conduct all construction and operations relating to the New Easements in accordance with applicable laws, rules, regulations, ordinances, orders and decrees of governmental authorities or tribunals having jurisdiction.

(c) Grantor shall have the right to use the surface and subsurface of the land affected by the New Easements for any purpose not inconsistent with the New Easements; provided, however, that Grantor shall not change the grade of the land affected by the New Easement.

(d) Grantee shall not conduct any environmental remediation in connection with the New Easements or Grantee's assets located thereon without the prior written approval of Grantor, which approval shall include the right to approve (i) the contractors and/or personnel who will conduct any such environmental remediation and (ii) the location of where any materials removed are disposed. Further, Grantor reserves the right to conduct any such environmental remediation that is necessary or advisable, and Grantee shall promptly reimburse Grantor for any costs incurred in connection therewith to the extent that Grantee is liable for such remediation pursuant to the terms hereof.

(e) Grantee understands and agrees that the rights herein granted in the New Easements are for land necessary to accommodate the Pipelines and that similar permission may be given to others for installation, maintenance, operation and use of other facilities in close proximity (but in no event less than two (2) feet of clearance above, below, or beside Grantee's facilities) to those provided for hereby; and Grantee shall not have and there is not given hereby any exclusive right of use or occupancy of any portion of Grantor's property.

(f) Grantee shall observe all applicable rules and regulations that have been or may hereafter be promulgated by Grantor for the conduct of individuals while on Grantor's real estate, including, but not limited to, rules and regulations with respect to acts or practices deemed hazardous, and Grantee also agrees to enforce compliance therewith by its employees, agents, contractors, subcontractors and invitees.

(g) Grantee shall exercise all due precaution and safety in connection with its operation and maintenance of the Pipelines and appurtenances, and shall ditch by hand in the areas in which ditching by machinery cannot be safely performed.

(h) It is understood and agreed that any right of Grantee herein to the New Easements shall be subordinate to the rights of Grantor, and Grantor shall have the right to fully use and enjoy the lands covered by the New Easements in any way not inconsistent with the rights herein-above granted. In the event the business or operations of Grantor should make it necessary or desirable in Grantor's sole discretion to use the property through which the New Easements pass in a manner which would make it necessary or advisable to relocate any of the Pipelines, Grantee, at its sole cost, risk and expense, will accomplish such relocation within ninety (90) days after it is notified to do so by Grantor; provided, however, if Grantor requires Grantee to relocate the same Pipeline within three (3) years after such Pipeline was previously relocated, then such relocation shall be at Grantor's sole cost and expense. In the event relocation is required, Grantor agrees to furnish Grantee with suitable right of way for the relocation at no additional cost, subject to the terms of this instrument. Such notice shall designate the location on Grantor's property to which the Pipeline is to be relocated. Grantee agrees, in the event of such request by Grantor, that in accomplishing any relocation, Grantee will leave the property which is vacated by the New Easement in substantially the same

Decision and Order

condition as when entered upon by Grantee, ordinary wear and tear excepted. 03 639 5

(i) Except in the case of emergency, for which Grantor shall be immediately notified at (800)-530-1050 (or such other number as Grantor may give Grantee notice of from time to time), Grantee shall submit construction or maintenance plans for Grantor's approval prior to any proposed activity on any of the New Easements. Except for matters requiring emergency inspection, testing, maintenance, repair, or replacement of the Pipelines, Grantee shall notify Grantor, a minimum of three (3) days prior to the start of any such activity, of Grantee's intention to enter upon Grantor's premises. Such plans and notice shall be mailed or delivered to Grantor's Region Office located at 5730 Independence Boulevard, Suite 100, Baytown, Texas 77521 (or such other address as Grantor may give Grantee notice of from time to time).

1.5 Reserved New Easements upon the Fee Lands.

(a) The Reserved New Easements upon the Fee Lands reserved, saved and excepted pursuant to Section 1.2(c) (collectively, the "Reserved New Easements," and singularly, a "Reserved New Easement") are perpetual, non-exclusive easements for the benefit of Grantor upon, over, under and through the lands described on Exhibits J-1 through J-23 attached hereto and made a part hereof for all purposes to construct, lay, alter, inspect, maintain, repair, operate, test, renew, protect, replace, change the size of, and remove all or any part of the Reserved Assets in their present location on the Fee Lands, together with necessary appurtenances thereto, including, without limitation, valves, fittings, tie-overs, corrosion control equipment and other apparatus above and below ground, for the transportation of oil, petroleum products, natural gas, natural gas liquids, condensate, other gaseous and liquid hydrocarbons or any other material or substance which can be transported through a pipeline.

(b) Grantor shall (i) notify Grantee in writing at least five (5) days in advance of any construction on a Reserved New Easement, except in an emergency and then as soon as possible by telephone, promptly confirmed in writing, (ii) pay all damages to stock, crops, fences, timber, land and improvements which may be suffered from operations conducted by, through or under Grantor on a Reserved New Easement and which are owed to third parties, (iii) not relocate the Pipelines, nor construct additional facilities, on a Reserved New Easement, without the prior written consent of Grantee, which consent shall not be unreasonably withheld, conditioned or delayed, (iv) comply with the terms and conditions of the Permitted Encumbrances relating to a Reserved New Easement and (v) conduct all construction and operations relating to the Reserved New Easements in accordance with applicable laws, rules, regulations, ordinances, orders and decrees of governmental authorities or tribunals having jurisdiction.

(c) Grantee shall have the right to use the surface and subsurface of the land affected by the Reserved New Easements for any purpose not inconsistent with the Reserved New Easements; provided, however, that Grantee shall not change the grade of the land affected by the Reserved New Easements.

1.6 Grantor's Right of Access upon the Fee Lands.

(a) Grantor's Rights of Access upon the Fee Lands reserved, saved and excepted pursuant to Section 1.2(d) ("Grantor's Right of Access upon the Fee Lands") are perpetual, non-exclusive easements and rights of ingress and egress to and from the Fee Lands for the benefit of Grantor along, over and across existing roads, routes, sidewalks, utility lines, conduits and electrical lines (collectively, the "Facilities," and singularly, a "Facility") on and over the Fee Lands for the purposes and to the extent the Facilities have been heretofore utilized in connection with the Reserved Property, including, without limitation, the right to maintain, repair, replace and operate existing Facilities in their present location on the Fee Lands to the extent, but only to the extent, the same are necessary or useful in connection with the ownership and operation of the Reserved Property.

(b) Grantor's Right of Access upon the Fee Lands shall be subject to such reasonable rules and regulations as Grantee may from time to time prescribe, which shall not,

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EXHIBIT "E-1"

TEPPCO 03 639 44
CENTERLINE DESCRIPTION
HENRY GRIFFITH LEAGUE, A-12
CHAMBERS COUNTY, TEXAS
PIPELINE P-67

A centerline description for a fourteen (14") inch diameter pipeline on, over and across those certain called tracts of land being further described as a 10-acre tract of land and Lots 3 through 11 of the Annie Higgins Subdivision No. 4, as referred to in Exhibit A of Part I in item No. 12 (**Parcel 3**) in a deed dated February 26, 1990, conveyed unto TE Products Pipeline Company, Limited Partnership, recorded in Volume 105, Page 300 of the Official Public Records of Chambers County, Texas and being situated in the Henry Griffith League, Abstract No. 12, in Chambers County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a concrete right of way monument found in a westerly line of said 10-acre tract, said corner also being in the east right of way line of State Highway No. 146 (120' in width), said monument marking the point of tangency of a curve of said right of way, from said commencement point monument "WA-01" bears South 03° 32' 28" East - 4,653.55 feet;

THENCE South 07° 17' 56" East, following the west line of said 10-acre tract, being common with the east right of way line of said State Highway No. 146, for a distance of 294.24 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE North 84° 07' 39" East, leaving said common line, for a distance of 27.36 feet to an angle point;

THENCE North 07° 40' 45" West, for a distance of 164.19 feet to an angle point;

THENCE North 07° 26' 28" West, at a distance of 222.54 feet pass the north line of said 10-acre tract, being common with the south line of said Lot 4, continuing in all for a distance of 224.56 feet to an angle point;

THENCE North 06° 33' 02" West, at a distance of 108.48 feet pass the east line of said Lot 4, being common with the west line of Lot 3, continuing in all for a distance of 110.06 feet to the **TERMINAL POINT** in the north line of said Lot 3, being common with the south right of way line of Winfree Road (50' in width), said line crossing said 10-acre tract, said Lot 4 and said Lot 3 for a total distance of 526.71 feet or 31.89 rods.

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into Mont Belvieu Subsidence Monitoring Network Reference Benchmark monument "WA-01". Having published geographic coordinates of Latitude = N 29° 50' 15.81373", Longitude = W 94° 53' 42.64844", (NAD 1983 DATUM) November 1996 Survey. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.999902856.

Decision and Order

03 639 45

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 31, 2003

Compiled by:
S Oliver & Associates, L.P.
7507 Bayway Drive
Baytown, Texas 77520

Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File:EXHIBIT-E-1
Rev:0

Decision and Order

EXHIBIT "E-2"

TEPPCO
 CENTERLINE DESCRIPTION
 HENRY GRIFFITH LEAGUE, A-12
 CHAMBERS COUNTY, TEXAS
 PIPELINE P-68

03 639 46

A centerline description for an eight (8") inch diameter pipeline on, over and across those certain called tracts of land being further described as a 10-acre tract of land and Lots 3 through 11 of the Annie Higgins Subdivision No. 4, as referred to in Exhibit A of Part I in item No. 12 (Parcel 3) in a deed dated February 26, 1990, conveyed unto TE Products Pipeline Company, Limited Partnership, recorded in Volume 105, Page 300 of the Official Public Records of Chambers County, Texas and being situated in the Henry Griffith League, Abstract No. 12, in Chambers County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a concrete right of way monument found in a westerly line of said 10-acre tract, said corner also being in the east right of way line of State Highway No. 146 (120' in width), said monument marking the point of tangency of a curve of said right of way, from said commencement point monument "WA-01" bears South 03° 32' 28" East - 4,653.55 feet;

THENCE South 07° 17' 56" East, following the west line of said 10-acre tract, being common with the east right of way line of said State Highway No. 146, for a distance of 299.09 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE North 84° 26' 15" East, leaving said common line, for a distance of 31.22 feet to an angle point;

THENCE North 07° 38' 02" West, for a distance of 168.73 feet to an angle point;

THENCE North 07° 36' 56" West, for a distance of 224.64 feet to an angle point in the north line of said 10-acre tract, being common with the south line of said Lot 4;

THENCE North 06° 02' 14" West, at a distance of 100.47 feet pass the east line of said Lot 4, being common with the west line of Lot 3, continuing in all for a distance of 112.62 feet to the **TERMINAL POINT** in the north line of said Lot 3, being common with the south right of way line of Winfree Road (50' in width), said line crossing said 10-acre tract, said Lot 4 and said Lot 3 for a total distance of 537.21 feet of 32.56 rods.

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into Mont Belvieu Subsidence Monitoring Network Reference Benchmark monument "WA-01". Having published geographic coordinates of Latitude = N 29° 50' 15.81373", Longitude = W 94° 53' 42.64844", (NAD 1983 DATUM) November 1996 Survey. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.999902856.

Decision and Order

03 639 47

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

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File: EXHIBIT-E-2
Rev: 0

Decision and Order

EXHIBIT "E-3"

03 639 48

TEPPCO
CENTERLINE DESCRIPTION
HENRY GRIFFITH LEAGUE, A-12
CHAMBERS COUNTY, TEXAS
PIPELINE P-67

A centerline description for a fourteen (14") inch diameter pipeline on, over and across those certain called tracts of land being further described as a 2.0445-acre tract of land as referred to in Exhibit A of Part I in item No. 21 (Parcel 40) and a 22.957-acre tract of land as referred to in Exhibit A of Part I in item No. 8 (Parcel 25) in a deed dated February 26, 1990, conveyed unto TE Products Pipeline Company, Limited Partnership, recorded in Volume 105, Page 300 of the Official Public Records of Chambers County, Texas and being situated in the Henry Griffith League, Abstract No. 12, in Chambers County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 3/4-inch iron rod found at the southwest corner of said 2.0445-acre tract, said corner also being in the east right of way line of State Highway No. 146 (120' in width) and the north right of way line of Winfree Road (50' in width), from said commencement point monument "WA-01" bears South 03° 42' 30" East - 4,900.41 feet;

THENCE North 57° 18' 34" East, following the south line of said 2.0445-acre tract, being common with said north right of way line of Winfree Road, for a distance of 28.73 feet to the **POINT OF BEGINNING** of in the herein described centerline;

THENCE North 06° 33' 02" West, leaving said common line, for a distance of 0.53 feet to an angle point;

THENCE North 05° 19' 06" West, for a distance of 110.04 feet to an angle point;

THENCE North 03° 52' 18" West, for a distance of 159.74 feet to an angle point;

THENCE North 03° 02' 02" West, for a distance of 213.62 feet to an angle point;

THENCE North 00° 13' 29" East, at a distance of 88.90 feet passing the east line of said 2.0445-acre tract and the west line of said 22.957-acre tract, continuing in all for a total distance of 235.13 feet to an angle point;

THENCE North 01° 55' 46" East, for a distance of 261.98 feet to the center of an underground valve;

THENCE North 04° 14' 11" East, for a distance of 232.47 feet to an angle point;

THENCE North 07° 01' 46" East, for a distance of 276.20 feet to an angle point;

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THENCE North 08° 05' 31" East, for a distance of 258.02 feet to the **TERMINAL POINT** in the north line of said 22.957-acre tract, said line crossing said 2.0445-acre tract and said 22.957-acre tract for a total distance of 1,747.73 feet of 105.92 rods.

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into Mont Belvieu Subsidence Monitoring Network Reference Benchmark monument "WA-01". Having published geographic coordinates of Latitude = N 29° 50' 15.81373", Longitude = W 94° 53' 42.64844", (NAD 1983 DATUM) November 1996 Survey. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.999902856.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 31, 2003

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Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File:EXHIBIT-E-3
Rev:0

Decision and Order

EXHIBIT "E-4"

TEPPCO
CENTERLINE DESCRIPTION
HENRY GRIFFITH LEAGUE, A-12
CHAMBERS COUNTY, TEXAS
PIPELINE P-68

03 639 50

A centerline description for an eight (8") inch diameter pipeline on, over and across those certain called tracts of land being further described as a 2.0445-acre tract of land as referred to in Exhibit A of Part I in item No. 21 (Parcel 40) and a 22.957-acre tract of land as referred to in Exhibit A of Part I in item No. 8 (Parcel 25) in a deed dated February 26, 1990, conveyed unto TE Products Pipeline Company, Limited Partnership, recorded in Volume 105, Page 300 of the Official Public Records of Chambers County, Texas and being situated in the Henry Griffith League, Abstract No. 12, in Chambers County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 3/4-inch iron rod found at the southwest corner of said 2.0445-acre tract, said corner also being in the east right of way line of State Highway No. 146 (120' in width) and the north right of way line of Winfree Road (50' in width), from said commencement point monument "WA-01" bears South 03° 42' 30" East - 4,900.41 feet;

THENCE North 57° 18' 34" East, following the south line of said 2.0445-acre tract, being common with said north right of way line of Winfree Road, for a distance of 34.06 feet to the **POINT OF BEGINNING** of in the herein described centerline;

THENCE North 06° 02' 14" West, leaving said common line, for a distance of 1.09 feet to an angle point;

THENCE North 04° 55' 35" West, for a distance of 108.07 feet to an angle point;

THENCE North 04° 12' 17" West, for a distance of 158.66 feet to an angle point;

THENCE North 02° 39' 57" West, for a distance of 212.76 feet to an angle point;

THENCE North 00° 03' 23" West, at a distance of 80.64 feet passing the east line of said 2.0445-acre tract and the west line of said 22.957-acre tract, continuing for a total distance of 235.35 feet to an angle point;

THENCE North 02° 52' 05" East, for a distance of 493.92 feet to an angle point;

THENCE North 06° 56' 54" East, for a distance of 276.44 feet to an angle point;

THENCE North 08° 05' 18" East, for a distance of 260.52 feet to the **TERMINAL POINT** in the north line of said 22.957-acre tract, said line crossing said 2.0445-acre tract and said 22.957-acre tract for a total distance of 1,746.81 feet or 105.87 rods.

Decision and Order

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All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into Mont Belvieu Subsidence Monitoring Network Reference Benchmark monument "WA-01". Having published geographic coordinates of Latitude = N 29° 50' 15.81373", Longitude = W 94° 53' 42.64844", (NAD 1983 DATUM) November 1996 Survey. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.999902856.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

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Registered Professional Land Surveyor No. 5490

File: EXHIBIT-E-4
Rev: 0

Decision and Order

EXHIBIT "E-5"

TEPPCO
 CENTERLINE DESCRIPTION
 WILLIAM BLOODGOOD LEAGUE, A-4
 CHAMBERS COUNTY, TEXAS
 PIPELINE P-11

03 639 52

A centerline description for a twelve (12) inch diameter pipeline on, over and across those certain called tracts of land being further described as an 8.619-acre tract of land as referred to in Exhibit A of Part I in item No. 37 (Parcel 21) and a 2.77-acre tract of land as referred to in Exhibit A of Part I in item No. 11 (Parcel 11) in a deed dated February 26, 1990, conveyed unto TE Products Pipeline Company, Limited Partnership, recorded in Volume 105, Page 300 of the Official Public Records of Chambers County, Texas and being situated in the William Bloodgood League, Abstract No. 4, in Chambers County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a ½-inch iron rod with cap found at the northwest corner of said 8.619-acre tract, said corner being common with the southwest corner of said 2.77-acre tract and being in the west line of Lot 10 and common with the east line of Lot 11 of the Joseph Fisher Estate Partition, recorded in Volume C, Page 222 of the Probate Minutes of Chambers County, Texas, from said commencement point monument "WA-01" bears South 80° 20' 30" East - 3,874.33 feet;

THENCE South 12° 22' 08" East, following the west line of said 8.619-acre tract and Lot 10, being common with the east line of said Lot 11, at a distance of 863.90 feet pass the southeast corner of said Lot 11, being common with the northeast corner of a 52.71-acre tract, recorded in Volume 303, Page 529 of the Deed Records of Chambers County, Texas, continuing along the west line of said 8.619-acre tract and Lot 10, being common with the east line of said 52.71 acre tract, continuing in all for a total distance of 1018.89 feet to the southwest corner of said 8.619-acre tract;

THENCE North 77° 33' 52" East, following the south line of said 8.619-acre tract and said Lot 11, being common with the north line of a 2.22 acre tract as described by deed recorded in Volume 282, Page 667 of the Deed Records of Chambers County, Texas, for a distance of 140.82 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE North 33° 00' 22" East, leaving said common line, for a distance of 137.61 feet to an angle point;

THENCE North 06° 44' 29" East, for a distance of 233.78 feet to an angle point;

THENCE North 06° 12' 50" East, for a distance of 240.22 feet to an angle point;

THENCE North 00° 14' 32" West, for a distance of 232.88 feet to an angle point;

THENCE North 01° 40' 02" West, for a distance of 156.14 feet to an angle point;

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THENCE North 06° 38' 28" West, passing the north line of said 8.619-acre tract and the south line of said 2.77-acre tract at 92.83 feet, for a total distance of 146.60 feet to an angle point;

THENCE North 06° 10' 57" West, for a distance of 85.13 feet to an angle point;

THENCE North 77° 55' 35" East, for a distance of 27.03 feet to the **TERMINAL POINT** in the east line of said 2.77-acre tract, said east line also being the west right of way line of Southern Pacific Railroad (100' in width), said line crossing said 8.619-acre tract and said 2.77-acre tract for a distance of 1259.39 feet or 76.33 rods.

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into Mont Belvieu Subsidence Monitoring Network Reference Benchmark monument "WA-01". Having published geographic coordinates of Latitude = N 29° 50' 15.81373", Longitude = W 94° 53' 42.64844", (NAD 1983 DATUM) November 1996 Survey. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.999902856.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 31, 2003

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Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File:EXHIBIT-E-5
Rev:0

Decision and Order

EXHIBIT "E-6"

TEPPCO
CENTERLINE DESCRIPTION
WILLIAM BLOODGOOD LEAGUE, A-4
CHAMBERS COUNTY, TEXAS
PIPELINE P-12

03 639 54

A centerline description for a twelve (12) inch diameter pipeline on, over and across those certain called tracts of land being further described as an 8.619-acre tract of land as referred to in Exhibit A of Part I in item No. 37 (**Parcel 21**) and a 2.77-acre tract of land as referred to in Exhibit A of Part I in item No. 11 (**Parcel 11**) in a deed dated February 26, 1990, conveyed unto TE Products Pipeline Company, Limited Partnership, recorded in Volume 105, Page 300 of the Official Public Records of Chambers County, Texas and being situated in the William Bloodgood League, Abstract No. 4, in Chambers County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a ½-inch iron rod with cap found at the northwest corner of said 8.619-acre tract, said corner being common with the southwest corner of said 2.77-acre tract and being in the west line of Lot 10 and common with the east line of Lot 11 of the Joseph Fisher Estate Partition, recorded in Volume C, Page 222 of the Probate Minutes of Chambers County, Texas, from said commencement point monument "WA-01" bears South 80° 20' 30" East - 3,874.33 feet;

THENCE South 12° 22' 08" East, following the west line of said 8.619-acre tract and Lot 10, being common with the east line of said Lot 11, at a distance of 863.90 feet pass the southeast corner of said Lot 11, being common with the northeast corner of a 52.71-acre tract, recorded in Volume 303, Page 529 of the Deed Records of Chambers County, Texas, continuing along the west line of said 8.619-acre tract and Lot 10, being common with the east line of said 52.71 acre tract, continuing in all for a total distance of 1018.89 feet to the southwest corner of said 8.619-acre tract;

THENCE North 77° 33' 52" East, following the south line of said 8.619-acre tract and said Lot 11, being common with the north line of a 2.22 acre tract as described by deed recorded in Volume 282, Page 667 of the Deed Records of Chambers County, Texas, for a distance of 119.19 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE North 26° 58' 40" East, leaving said common line, for a distance of 157.11 feet to an angle point;

THENCE North 09° 32' 22" East, for a distance of 216.93 feet to an angle point;

THENCE North 06° 32' 38" East, for a distance of 239.26 feet to an angle point;

THENCE North 00° 27' 20" West, for a distance of 231.94 feet to an angle point;

THENCE North 01° 28' 12" West, for a distance of 156.19 feet to an angle point;

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THENCE North 04° 07' 33" West, passing the north line of said 8.619-acre tract and the south line of said 2.77-acre tract at 90.25 feet, for a total distance of 144.67 feet to an angle point;

THENCE North 04° 00' 45" West, for a distance of 58.48 feet to an angle point;

THENCE North 77° 48' 39" East, for a distance of 34.25 feet to the **TERMINAL POINT** in the east line of said 2.77-acre tract, said east line also being the west right of way line of Southern Pacific Railroad (100' in width), said line crossing said 8.619-acre tract and said 2.77-acre tract for a distance of 1238.83 feet or 75.08 rods.

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into Mont Belvieu Subsidence Monitoring Network Reference Benchmark monument "WA-01". Having published geographic coordinates of Latitude = N 29° 50' 15.81373", Longitude = W 94° 53' 42.64844", (NAD 1983 DATUM) November 1996 Survey. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.999902856.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 31, 2003

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Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File: EXHIBIT-E-6
Rev: 0

Decision and Order

EXHIBIT "E-7"

TEPPCO
CENTERLINE DESCRIPTION
WILLIAM BLOODGOOD LEAGUE, A-4
CHAMBERS COUNTY, TEXAS
PIPELINE P-13

03 639 56

A centerline description for a twelve (12) inch diameter pipeline on, over and across those certain called tracts of land being further described as an 8.619-acre tract of land as referred to in Exhibit A of Part I in item No. 37 (Parcel 21) and a 2.77-acre tract of land as referred to in Exhibit A of Part I in item No. 11 (Parcel 11) in a deed dated February 26, 1990, conveyed unto TE Products Pipeline Company, Limited Partnership, recorded in Volume 105, Page 300 of the Official Public Records of Chambers County, Texas and being situated in the William Bloodgood League, Abstract No. 4, in Chambers County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a ¼-inch iron rod with cap found at the northwest corner of said 8.619-acre tract, said corner being common with the southwest corner of said 2.77-acre tract and being in the west line of Lot 10 and common with the east line of Lot 11 of the Joseph Fisher Estate Partition, recorded in Volume C, Page 222 of the Probate Minutes of Chambers County, Texas, from said commencement point monument "WA-01" bears South 80° 20' 30" East - 3,874.33 feet;

THENCE South 12° 22' 08" East, following the west line of said 8.619-acre tract and Lot 10, being common with the east line of said Lot 11, at a distance of 863.90 feet pass the southeast corner of said Lot 11, being common with the northeast corner of a 52.71-acre tract, recorded in Volume 303, Page 529 of the Deed Records of Chambers County, Texas, continuing along the west line of said 8.619-acre tract and Lot 10, being common with the east line of said 52.71 acre tract, continuing in all for a total distance of 1018.89 feet to the southwest corner of said 8.619-acre tract;

THENCE North 77° 33' 52" East, following the south line of said 8.619-acre tract and said Lot 11, being common with the north line of a 2.22 acre tract as described by deed recorded in Volume 282, Page 667 of the Deed Records of Chambers County, Texas, for a distance of 115.09 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE North 25° 37' 59" East, for a distance of 147.70 feet to an angle point;

THENCE North 09° 46' 23" East, for a distance of 226.65 feet to an angle point;

THENCE North 06° 46' 41" East, for a distance of 238.92 feet to an angle point;

THENCE North 00° 38' 35" West, for a distance of 230.62 feet to an angle point;

THENCE North 01° 13' 10" West, for a distance of 156.28 feet to an angle point;

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THENCE North 06° 38' 45" West, passing the north line of said 8.619-acre tract and the south line of said 2.77-acre tract at 88.04 feet, for a total distance of 142.75 feet to an angle point;

THENCE North 06° 23' 04" West, for a distance of 121.21 feet to the **TERMINAL POINT** in the east line of said 2.77-acre tract, said east line also being the west right of way line of Southern Pacific Railroad (100' in width), said line crossing said 8.619-acre tract and said 2.77-acre tract for a distance of 1264.13 feet or 76.61 rods;

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into Mont Belvieu Subsidence Monitoring Network Reference Benchmark monument "WA-01". Having published geographic coordinates of Latitude = N 29° 50' 15.81373", Longitude = W 94° 53' 42.64844", (NAD 1983 DATUM) November 1996 Survey. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.999902856.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 31, 2003

Compiled by:
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7507 Bayway Drive
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Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File:EXHIBIT-E-7
Rev:0

Decision and Order

EXHIBIT "E-8"

03 639 58

**TEPPCO
CENTERLINE DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
BAYTOWN LPG FLARE LINE
TO LPG FLARE SITE**

A centerline description for a six (6") inch diameter flare line on, over and through a portion of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 5/8-inch iron rod found for a northwesterly corner of said 70.488-acre tract, said corner bears North 45° 29' 22" East - 113.83 feet from the northwest corner of said 70.488-acre tract, said corner also being a southerly corner of a remainder of a 124.81-acre tract as described by deed recorded in Volume 1683, Page 706 of the Deed Records of Harris County, Texas, from said commencement point NGS monument "HGCS D 33" bears North 09° 31' 16" West - 6,288.75 feet;

THENCE North 85° 46' 35" East, following a northerly line of said 70.488-acre tract, being common with the southerly line of said remainder of a 124.81-acre tract, for a distance of 856.39 feet to a point;

THENCE South 04° 13' 25" East, leaving said common line, for a distance of 221.84 feet to the **POINT OF BEGINNING** of the herein described centerline at the center of a vertical riser with blind flange;

THENCE South 86° 05' 18" West, for a distance of 596.46 feet to an angle point;

THENCE South 85° 09' 22" West, for a distance of 83.09 feet to an angle point;

THENCE North 23° 26' 48" West, for a distance of 16.64 feet to an angle point;

THENCE North 32° 46' 30" West, for a distance of 52.28 feet to an angle point; 7,854 square feet (0.1803 acres)

THENCE North 72° 53' 05" West, at a distance of 3.89 feet pass the east side of a circular flare site, being a 0.1803-acre surface site, as described in Exhibit "E-20 by metes and bounds and described in Exhibit "E-26" by plat prepared on even date, continuing for a total distance of 51.00 feet to the **TERMINAL POINT** at the center of six (6") inch flanges. Said line crossing said 70.488-acre tract for a distance of 799.47 feet or 48.45 rods.

Decision and Order

03 639 59

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCSO 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying a scale factor of 0.9999894634.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 30, 2003

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Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File:EXHIBIT-E-8
Rev:0

Decision and Order

EXHIBIT "E-9"

.03 639 60

TEPPCO
CENTERLINE DESCRIPTION
WILLIAM BLOODGOOD LEAGUE, A-4
CHAMBERS COUNTY, TEXAS
MONT BELVIEU BRINE FACILITY FRESH WATER LINE

A centerline description for a twelve (12") inch diameter water line on, over and across those certain called tracts of land being further described as a called 8-acre tract of land out of Lot 14 of the Joseph Fisher Estate Partition, recorded in Volume C, Page 222 of the Probate Minutes of Chambers County, Texas, as referred to in Exhibit A of Part I in item No. 10 (**Parcel 8**), a called 8-acre tract of land out of Lot 11 said Joseph Fisher Estate Partition, as referred to in Exhibit A of Part I in item No. 16 (**Parcel 12**), a called 8,619-acre tract of land out of Lot 10 said Joseph Fisher Estate Partition as referred to in Exhibit A of Part I in item No. 37 (**Parcel 21**), and a called 2.77-acre tract of land out of said Lot 10 referred to in Exhibit A of Part I in item No. 11 (**Parcel 11**) in a deed dated February 26, 1990, conveyed unto TE Products Pipeline Company, Limited Partnership, recorded in Volume 105, Page 300 of the Official Public Records of Chambers County, Texas and being situated in the William Bloodgood League, Abstract No. 4, in Chambers County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 1-inch galvanized iron pipe found at the northwest corner of said 8-acre tract out of Lot 14, being common with the northeast corner of a 3.57-acre tract of land as described by correction deed recorded in Volume 222, Page 254 of the Deed Records of Chambers County, Texas, from said commencement point monument "WA-01" bears South 83° 48' 35" East - 5,433.67 feet;

THENCE South 12° 54' 24" East, following the west line of said 8-acre tract out of Lot 14, being common with the east line of said 3.57-acre tract, for a distance of 75.29 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE South 88° 41' 21" East, for a distance of 73.81 feet to an angle point;

THENCE South 86° 36' 54" East, at a distance of 243.67 feet pass the east line of said called 8-acre tract out of Lot 14, being common with the west line of said 8-acre tract out of Lot 11, continuing in all for a total distance of 246.45 feet to an angle point;

THENCE South 84° 29' 50" East, for a distance of 140.14 feet to an angle point;

THENCE South 84° 27' 05" East, for a distance of 157.99 feet to an angle point;

THENCE South 89° 10' 18" East, for a distance of 165.70 feet to an angle point;

THENCE South 89° 35' 22" East, for a distance of 142.22 feet to an angle point;

THENCE North 88° 23' 20" East, for a distance of 47.43 feet to an angle point;

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THENCE North 79° 45' 41" East, for a distance of 145.82 feet to an angle point;

THENCE North 79° 51' 38" East, for a distance of 91.29 feet to an angle point;

THENCE North 77° 47' 18" East, for a distance of 148.16 feet to an angle point;

THENCE South 16° 20' 04" East, for a distance of 46.26 feet to an angle point;

THENCE North 64° 31' 11" East, for a distance of 236.20 feet to an angle point;

THENCE North 65° 03' 16" East, at a distance of 1.41 feet pass the east line of said 8-acre tract out of Lot 11, being common with the west line of said 8.619-acre tract out of Lot 10, continuing in all for a total distance of 132.27 feet to an angle point;

THENCE North 65° 02' 28" East, at a distance of 121.12 feet pass the north line of said 8.619-acre tract out of Lot 10, being common with the south line of said 2.77-acre tract out of Lot 10, continuing in all for a total for a distance of 187.32 feet to an angle point;

THENCE North 64° 12' 34" East, for a distance of 75.23 feet to an angle point;

THENCE North 15° 30' 23" West, for a distance of 143.31 feet to the **TERMINAL POINT** in a north interior line of said 2.77-acre tract out of Lot 10, being common with the south line of a 0.50-acre tract as referred to in Exhibit A of Part I in item No. 1 (Parcel 5) of said deed, said line crossing said tracts for a total distance of 2179.60 feet or 132.10 rods;

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into Mont Belvieu Subsidence Monitoring Network Reference Benchmark monument "WA-01". Having published geographic coordinates of Latitude = N 29° 50' 15.81373", Longitude = W 94° 53' 42.64844", (NAD 1983 DATUM) November 1996 Survey. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.999902856.

Decision and Order

03 639 62

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 31, 2003

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Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File:EXHIBIT-E-9
Rev:0

Decision and Order

EXHIBIT "E-10"

03 639 63

TEPPCO
CENTERLINE DESCRIPTION
WILLIAM BLOODGOOD LEAGUE, A-4
CHAMBERS COUNTY, TEXAS
MONT BELVIEU SOUTH TERMINAL FRESH WATER LINE

A centerline description for a twelve (12) inch diameter pipeline line on, over and across that certain called tract of land being further described as a called 2.77-acre tract of land out of said Lot 10 of the Joseph Fisher Estate Partition, recorded in Volume C, Page 222 of the Probate Minutes of Chambers County, Texas, referred to in Exhibit A of Part I in item No. 11 (Parcel 11) in a deed dated February 26, 1990, conveyed unto TE Products Pipeline Company, Limited Partnership, recorded in Volume 105, Page 300 of the Official Public Records of Chambers County, Texas and being situated in the William Bloodgood League, Abstract No. 4, in Chambers County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at the northeast corner of said 2.77-acre tract out of Lot 10, also being the northwest corner of the a 0.500-acre tract out of said Lot 10 as referred to in Exhibit A of Part I in item No. 1 (Parcel 5) of said deed, from said point a ½-inch iron rod bears South 76° 09' 22" West a distance of 1.16 feet, from said commencement point monument "WA-01" bears South 74° 24' 45" East - 3,472.80 feet;

THENCE South 77° 37' 56" West, following the northeasterly interior line of said 2.77-acre tract out of Lot 10, being common with the south line of said 0.50-acre tract out of Lot 10 for a distance of 155.12 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE South 12° 07' 22" East, for a distance of 29.02 feet to an angle point;

THENCE North 79° 14' 47" East, for a distance of 83.47 feet to an angle point;

THENCE North 78° 08' 42" East, for a distance of 68.88 feet to the **TERMINAL POINT** in the east line of said 2.77-acre tract out of Lot 10, being common with the west right of way line of Southern Pacific Railroad (100' in width), said line crossing the said 2.77-acre tract for a total distance of 181.37 feet or 10.99 rods;

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into Mont Belvieu Subsidence Monitoring Network Reference Benchmark monument "WA-01". Having published geographic coordinates of Latitude = N 29° 50' 15.81373", Longitude = W 94° 53' 42.64844", (NAD 1983 DATUM) November 1996 Survey. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.999902856.

Decision and Order

03 639 64
This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 31, 2003

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Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File:EXHIBIT-E-10
Rev:0

Decision and Order

EXHIBIT "E-11"

03 639 65

TEPPCO
CENTERLINE DESCRIPTION
WILLIAM BLOODGOOD LEAGUE, A-4
CHAMBERS COUNTY, TEXAS
POWER LINE

A centerline description for a power line on, over and across those certain called tracts of land being further described as a called 8-acre tract of land out of Lot 14 of the Joseph Fisher Estate Partition, recorded in Volume C, Page 222 of the Probate Minutes of Chambers County, Texas, as referred to in Exhibit A of Part I in item No. 10 (**Parcel 8**), a called 8-acre tract of land out of Lot 11 said Joseph Fisher Estate Partition, as referred to in Exhibit A of Part I in item No. 16 (**Parcel 12**), and a called 2.77-acre tract of land out of said Lot 10 referred to in Exhibit A of Part I in item No. 11 (**Parcel 11**) in a deed dated February 26, 1990, conveyed unto TE Products Pipeline Company, Limited Partnership, recorded in Volume 105, Page 300 of the Official Public Records of Chambers County, Texas and being situated in the William Bloodgood League, Abstract No. 4, in Chambers County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 1-inch galvanized iron pipe found at the northwest corner of said 8-acre tract out of Lot 14, being common with the northeast corner of a 3.57-acre tract of land as described by correction deed recorded in Volume 222, Page 254 of the Deed Records of Chambers County, Texas, from said commencement point monument "WA-01" bears South 83° 48' 35" East - 5,433.67 feet;

South 12° 54' 24" East, following the west line of said 8-acre tract out of Lot 14, being common with the east line of said 3.57-acre tract, for a distance of 157.38 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE South 74° 46' 31" East, for a distance of 50.86 feet to an angle point;

THENCE North 78° 00' 24" East, at a distance of 260.62 feet pass the east line of said 8-acre tract out of Lot 14, being common with the west line of said 8-acre tract out of Lot 11, at a distance of 1513.13 feet pass the east line of said 8-acre tract out of Lot 11, being common with the west line of said 2.77-acre tract out of Lot 10, continuing in all for a total distance of 1517.03 feet to an angle point;

THENCE North 53° 48' 29" East, for a distance of 310.09 feet to an angle point;

THENCE North 26° 33' 55" East, for a distance of 36.88 feet to the **TERMINAL POINT** in a north interior line of said 2.77-acre tract out of Lot 10, being common with the west line of a 0.50-acre tract as referred to in Exhibit A of Part I in item No. 1 (**Parcel 5**) of said deed, said line crossing said tracts for a total distance of 1914.86 feet or 116.05 rods;

Decision and Order

03 639 66

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into Mont Belvieu Subsidence Monitoring Network Reference Benchmark monument "WA-01". Having published geographic coordinates of Latitude = N 29° 50' 15.81373", Longitude = W 94° 53' 42.64844", (NAD 1983 DATUM) November 1996 Survey. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.999902856.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 31, 2003

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Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File:EXHIBIT-E-11
Rev:0

Decision and Order

EXHIBIT "E-12"

03 639 67

TEPPCO
CENTERLINE DESCRIPTION
WILLIAM BLOODGOOD LEAGUE, A-4
CHAMBERS COUNTY, TEXAS
BRINE PIPELINE & FLARE LINE

A centerline description for a twenty (20") inch diameter pipeline and two (2) inch diameter flare line on, over and across those certain called tracts of land being further described as a called 8-acre tract of land out of Lot 14 of the Joseph Fisher Estate Partition, recorded in Volume C, Page 222 of the Probate Minutes of Chambers County, Texas, as referred to in Exhibit A of Part I in item No. 10 (**Parcel 8**), a called 8-acre tract of land out of Lot 11 said Joseph Fisher Estate Partition, as referred to in Exhibit A of Part I in item No. 16 (**Parcel 12**), a called 8.619-acre tract of land out of Lot 10 said Joseph Fisher Estate Partition as referred to in Exhibit A of Part I in item No. 37 (**Parcel 21**), and a called 2.77-acre tract of land out of said Lot 10 referred to in Exhibit A of Part I in item No. 11 (**Parcel 11**) in a deed dated February 26, 1990, conveyed unto TE Products Pipeline Company, Limited Partnership, recorded in Volume 105, Page 300 of the Official Public Records of Chambers County, Texas and being situated in the William Bloodgood League, Abstract No. 4, in Chambers County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 1-inch galvanized iron pipe found at the northwest corner of said 8-acre tract out of Lot 14, being common with the northeast corner of a 3.57-acre tract of land as described by correction deed recorded in Volume 222, Page 254 of the Deed Records of Chambers County, Texas, from said commencement point monument "WA-01" bears South 83° 48' 35" East - 5,433.67 feet;

THENCE South 12° 54' 24" East, following the west line of said 8-acre tract out of Lot 14, being common with the east line of said 3.57-acre tract, for a distance of 90.51 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE South 87° 00' 59" East, for a distance of 71.36 feet to an angle point;

THENCE South 86° 55' 50" East, for a distance of 242.06 feet to an angle point;

THENCE South 85° 34' 00" East, at a distance of 4.29 feet pass the east line of said called 8-acre tract out of Lot 14, being common with the west line of said 8-acre tract out of Lot 11, continuing in all for a total distance of 145.40 feet to an angle point;

THENCE South 85° 48' 10" East, for a distance of 157.04 feet to an angle point;

THENCE South 87° 36' 38" East, for a distance of 179.67 feet to an angle point;

THENCE South 88° 23' 23" East, for a distance of 129.09 feet to an angle point;

THENCE North 89° 35' 14" East, for a distance of 49.42 feet to an angle point;

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THENCE North 78° 02' 08" East, for a distance of 370.33 feet to an angle point;

THENCE South 26° 59' 38" East, for a distance of 55.94 feet to an angle point;

THENCE North 62° 57' 55" East, at a distance of 243.06 feet pass the east line of said 8-acre tract out of Lot 11, being common with the west line of said 8.619-acre tract out of Lot 10, continuing in all for a total distance of 245.87 feet to an angle point;

THENCE North 63° 38' 14" East, for a distance of 131.18 feet to an angle point;

THENCE North 64° 02' 35" East, at a distance of 146.64 feet pass the north line of said 8.619-acre tract out of Lot 10, being common with the south line of said 2.77-acre tract out of Lot 10, continuing in all for a total for a distance of 187.53 feet to an angle point;

THENCE North 65° 07' 01" East, for a distance of 62.23 feet to an angle point;

THENCE North 13° 19' 03" West, for a distance of 130.27 feet to an angle point;

THENCE North 77° 49' 32" East, for a distance of 85.69 feet to an angle point;

THENCE North 77° 48' 03" East, for a distance of 65.38 to the **TERMINAL POINT** in the east line of said 2.77-acre tract out of Lot 10, being common with the west right of way line of Southern Pacific Railroad (100' in width), said line crossing the said tracts for a total distance of 2308.46 feet of 139.91 rods;

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into Mont Belvieu Subsidence Monitoring Network Reference Benchmark monument "WA-01". Having published geographic coordinates of Latitude = N 29° 50' 15.81373", Longitude = W 94° 53' 42.64844", (NAD 1983 DATUM) November 1996 Survey. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.999902856.

Decision and Order

03 639 69

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 31, 2003

Compiled by:
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Stanley A. Oliver
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File: EXHIBIT-E-12
Rev: 0

Decision and Order

EXHIBIT "E-13"

TEPPCO
CENTERLINE DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
PIPELINE P-5-BAYTOWN

03 639 70

A centerline description for an eight (8") inch diameter pipeline on, over and through a portion of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 5/8-inch iron rod found for a northwesterly corner of said 70.488-acre tract, said corner bears North 45° 29' 22" East - 113.83 feet from the northwest corner of said 70.488-acre tract, said corner also being a southerly corner of a remainder of a 124.81-acre tract as described by deed recorded in Volume 1683, Page 706 of the Deed Records of Harris County, Texas, from said commencement point NGS monument "HGCSD 33" bears North 09° 31' 16" West - 6288.75 feet;

THENCE South 45° 29' 22" West, following a northwesterly line of said 70.488-acre tract, being common with a southwesterly line of said remainder of a 124.81-acre tract, for a distance of 113.83 feet to a point for the northwest corner of said 70.488-acre tract, said point being on a northeasterly line of an 8.93-acre tract as described by deed recorded in Volume 1163, Page 576 of the Deed Records of Harris County, Texas, said northeasterly line being a non-tangent curve to the left having a radius of 397.94 feet;

THENCE a chord bearing of South 36° 16' 08" East, a chord distance of 168.23 feet following a westerly line of said 70.488-acre tract, being common with a northeasterly line of said 8.931-acre tract, for a distance along the arc of said curve 169.50 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE North 66° 30' 07" East, leaving said common line, for a distance of 87.35 feet to an angle point;

THENCE North 64° 40' 07" East, for a distance of 83.59 feet to an angle point;

THENCE North 86° 50' 37" East, for a distance of 218.42 feet to an angle point;

THENCE North 87° 01' 05" East, for a distance of 388.03 feet to an angle point;

THENCE South 47° 40' 36" East, for a distance of 116.46 feet to an angle point;

THENCE North 86° 58' 33" East, at a distance of 42.90 feet, passing the west line of a 0.0372-acre surface site, said site described in Exhibit "E-21" by metes and bounds and described in Exhibit "E-28" by plat prepared on even date,

Decision and Order

03 639 71
continuing for a total distance of 68.07 feet to the **TERMINAL POINT** at the center of the bypass tee. Said line crossing said 70.488-acre tract for a distance of 961.92 feet or 58.30 rods.

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCSD 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.999894634.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 30, 2003

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Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File: EXHIBIT-E-13
Rev: 0

Decision and Order

EXHIBIT "E-14"

03 639 72

TEPPCO
CENTERLINE DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
PIPELINE P-7-BAYTOWN

A centerline description for a six (6) inch diameter pipeline on, over and through a portion of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 5/8-inch iron rod found for a northwesterly corner said 70.488-acre tract, said corner bears North 45° 29' 22" East - 113.83 feet from the northwest corner of said 70.488-acre tract, said corner also being a southerly corner of a remainder of a 124.81-acre tract as described by deed recorded in Volume 1683, Page 706 of the Deed Records of Harris County, Texas, from said commencement point NGS monument "HGCS 33" bears North 09° 31' 16" West - 6288.75 feet;

THENCE South 45° 29' 22" West, following a northwesterly line of the said 70.488-acre tract, being common with a southwesterly line of said remainder of a 124.81-acre tract, for a distance of 113.83 feet to a point for the northwest corner of said 70.488-acre tract, said point being on a northeasterly line of an 8.93-acre tract as described by deed recorded in Volume 1163, Page 576 of the Deed Records of Harris County, Texas, said northeasterly line being a non-tangent curve to the left having a radius of 397.94 feet;

THENCE a chord bearing of South 18° 07' 25" East, a chord distance of 402.12 feet following a westerly line of said 70.488-acre tract, being common with a northeasterly line of said 8.931-acre tract, for a distance along the arc of said curve 421.56 feet to a point;

THENCE South 12° 13' 28" West, following said common line, for a distance of 874.57 feet to a point for the southwest corner of said 70.488-acre tract;

THENCE North 86° 54' 01" East, following the south line of said 70.488-acre tract, being common with the north line of a 13.895-acre tract as described by deed recorded in Volume 7802, Page 90 of the Deed Records of Harris County, Texas, for a distance of 1191.24 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE North 03° 08' 02" West, leaving said common line, for a distance of 417.89 feet to an angle point;

THENCE North 03° 13' 53" West, for a distance of 198.89 feet to an angle point;

THENCE North 50° 16' 49" West, for a distance of 95.53 feet to an angle point;

Decision and Order

THENCE North 71° 42' 46" West, for a distance of 48.68 feet to an angle point; 03' 639 73

THENCE North 32° 02' 14" West, for a distance of 30.34 feet to an angle point;

THENCE North 20° 49' 22" East, for a distance of 39.95 feet to an angle point;

THENCE North 86° 40' 33" East, at a distance of 0.43 feet, passing the west line of a 0.5003-acre surface site, said site described in Exhibit "E-22" by metes and bounds and described in Exhibit "E-29" by plat prepared on even date, for a total distance of 32.14 feet to the **TERMINAL POINT** at the center of the manifold tee. Said line crossing said 70.488-acre tract for a distance of 863.42 feet or 52.33 rods.

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCS D 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.9999894634.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 30, 2003

Compiled by:
S Oliver & Associates, L.P.
7507 Bayway Drive
Baytown, Texas 77520

Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File: EXHIBIT-E-14
Rev: 0

Decision and Order

EXHIBIT "E-15"

03 639 74

TEPPCO
CENTERLINE DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
PIPELINE P-11-BAYTOWN

A centerline description for a twelve (12") inch diameter pipeline on, over and through a portion of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 2-inch iron pipe found for a northeasterly corner of said 70.488-acre tract, said corner also being on the southwest right of way line of State Highway No. Spur 330, also known as Decker Drive (varying in width), said 2-inch iron pipe bears South 45° 48' 44" East - 294.23 feet from the north corner of said 70.488-acre tract, from said commencement point NGS monument "HGCS D 33" bears North 22° 12' 25" West - 6,385.84 feet;

THENCE South 52° 09' 30" East, following a northeasterly line of said 70.488-acre tract, being common with the southwest right of way line of said Spur 330, for a distance of 148.96 feet to a point;

THENCE South 44° 02' 44" East, following said common line, for a distance of 124.48 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE South 54° 29' 35" West, leaving said common line, for a distance of 159.13 feet to an angle point;

THENCE South 87° 31' 10" West, for a distance of 197.39 feet to an angle point;

THENCE South 85° 58' 14" West, for a distance of 114.13 feet to an angle point;

THENCE South 82° 05' 45" West, for a distance of 216.60 feet to an angle point;

THENCE South 79° 03' 05" West, for a distance of 37.78 feet to an angle point;

THENCE South 82° 54' 33" West, for a distance of 81.53 feet to an angle point;

THENCE South 39° 10' 54" West, for a distance of 38.85 feet to an angle point;

THENCE South 00° 20' 58" East, for a distance of 66.01 feet to an angle point;

THENCE South 24° 22' 04" East, for a distance of 16.62 feet to an angle point;

Decision and Order

03 639 75

THENCE South 50° 50' 43" East, for a distance of 27.49 feet to an angle point;

THENCE South 65° 10' 59" East, for a distance of 17.00 feet to an angle point;

THENCE North 87° 21' 42" East, at a distance of 43.72 feet passing the west line of a 0.0372-acre surface site, as described in Exhibit "E-21" by metes and bounds and described in Exhibit "E-27" by plat prepared on even date, continuing for a total distance of 57.17 feet to the **TERMINAL POINT** at the center of the bypass tee. Said line crossing said 70.488-acre tract for a total distance of 1,029.70 feet or 62.41 rods.

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCSO 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.9999894634.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 30, 2003

Compiled by:
S Oliver & Associates, L.P.
7507 Bayway Drive
Baytown, Texas 77520

Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File: EXHIBIT-E-15
Rev: 0

Decision and Order

EXHIBIT "E-16"

03 639 76

TEPPCO
CENTERLINE DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
PIPELINE P-12-BAYTOWN

A centerline description for a ten (10") inch diameter pipeline on, over and through a portion of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 2-inch iron pipe found for a northeasterly corner of said 70.488-acre tract, said corner also being on the southwest right of way line of State Highway No. Spur 330, also known as Decker Drive (varying in width), said 2-inch iron pipe bears South 45° 48' 44" East - 294.23 feet from the north corner of said 70.488-acre tract, from said commencement point NGS monument "HGCSO 33" bears North 22° 12' 25" West - 6,385.84 feet;

THENCE South 52° 09' 30" East, following a northeasterly line of said 70.488-acre tract, being common with the southwest right of way line of said Spur 330, for a distance of 148.96 feet to a point;

THENCE South 44° 02' 44" East, following said common line, for a distance of 186.25 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE South 55° 21' 09" West, leaving said common line, for a distance of 82.67 feet to an angle point;

THENCE South 37° 15' 26" West, for a distance of 82.50 feet to an angle point;

THENCE South 39° 03' 14" West, for a distance of 233.27 feet to an angle point;

THENCE South 03° 10' 43" East, for a distance of 190.26 feet to an angle point;

THENCE South 49° 13' 01" West, for a distance of 139.61 feet to an angle point;

THENCE South 87° 39' 07" West, at a distance of 132.59 feet passing the east line of a 0.5003-acre surface site, as described in Exhibit "E-22" by metes and bounds and described in Exhibit "E-29" by plat prepared on even date, continuing for a total distance of 167.78 feet to the **TERMINAL POINT** at the center of the manifold tee. Said line crossing said 70.488-acre tract for a total distance of 896.09 feet or 54.31 rods.

Decision and Order

03 639 77

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCS 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.9999894634.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 25, 2003

Compiled by:
S Oliver & Associates, L.P.
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Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File: EXHIBIT-E-16
Rev:0

Decision and Order

EXHIBIT "E-17"

03 639 78

TEPPCO
CENTERLINE DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
PIPELINE P-13-BAYTOWN

A centerline description for a twelve (12") inch diameter pipeline on, over and through a portion of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 2-inch iron pipe found for a northeasterly corner of said 70.488-acre tract, said corner also being on the southwest right of way line of State Highway No. Spur 330, also known as Decker Drive (varying in width), said 2-inch iron pipe bears South 45° 48' 44" East - 294.23 feet from the north corner of said 70.488-acre tract, from said commencement point NGS monument "HGCSD 33" bears North 22° 12' 25" West - 6,385.84 feet;

THENCE South 52° 09' 30" East, following a northeasterly line of said 70.488-acre tract, being common with the southwest right of way line of said Spur 330, for a distance of 148.96 feet to a point;

THENCE South 44° 02' 44" East, following said common line, for a distance of 182.07 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE South 55° 19' 32" West, leaving said common line, for a distance of 74.17 feet to an angle point;

THENCE South 28° 31' 53" West, for a distance of 123.08 feet to an angle point;

THENCE South 31° 49' 51" West, for a distance of 209.67 feet to an angle point;

THENCE South 03° 18' 48" East, for a distance of 197.80 feet to an angle point;

THENCE South 52° 43' 25" West, for a distance of 114.98 feet to an angle point;

THENCE South 85° 33' 16" West, at a distance of 143.24 feet passing the east line of a 0.5003-acre surface site, as described in Exhibit "E-22" by metes and bounds and described in Exhibit "E-29" by plat prepared on even date, continuing in all for a total distance of 158.74 feet to the **TERMINAL POINT** at the center of the manifold tee. Said line crossing said 70.488-acre tract for a total distance of 878.44 feet or 53.24 rods.

Decision and Order

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCS D 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.9999894634.

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This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

79

July 30, 2003

Compiled by:
S Oliver & Associates, L.P.
7507 Bayway Drive
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Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File: EXHIBIT-E-17
Rev: 0

Decision and Order

EXHIBIT "E-18"

03 639 80

TEPPCO
CENTERLINE DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
PIPELINE P-94-BAYTOWN

A centerline description for a six (6) inch diameter pipeline on, over and through a portion of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 5/8-inch iron rod found for a northwesterly corner of said 70.488-acre tract, said corner bears North 45° 29' 22" East - 113.83 feet from the northwest corner of said 70.488-acre tract, said corner also being a southerly corner of a remainder of a 124.81-acre tract as described by deed recorded in Volume 1683, Page 706 of the Deed Records of Harris County, Texas, from said commencement point NGS monument "HGCS D 33" bears North 09° 31' 16" West - 6288.75 feet;

THENCE South 45° 29' 22" West, following a northwesterly line of said 70.488-acre tract, being common with a southwesterly line of said remainder of a 124.81-acre tract, for a distance of 113.83 feet to a point for the northwest corner of said 70.488-acre tract, said point being on a northeasterly line of an 8.93-acre tract as described by deed recorded in Volume 1163, Page 576 of the Deed Records of Harris County, Texas, said northeasterly line being a non-tangent curve to the left having a radius of 397.94 feet;

THENCE a chord bearing of South 18° 07' 25" East, a chord distance of 402.12 feet following a westerly line of said 70.488-acre tract, being common with a northeasterly line of said 8.931-acre tract, for a distance along the arc of said curve 421.56 feet to a point;

THENCE South 12° 13' 28" West, following said common line, for a distance of 874.57 feet to a point for the southwest corner of said 70.488-acre tract;

THENCE North 86° 54' 01" East, following the south line of said 70.488-acre tract, being common with the north line of a 13.895-acre tract as described by deed recorded in Volume 7802, Page 90 of the Deed Records of Harris County, Texas, for a distance of 1181.85 feet to the **POINT OF BEGINNING** of the herein described centerline;

THENCE North 02° 56' 55" West, for a distance of 407.33 feet to an angle point;

THENCE North 02° 44' 35" West, at a distance of 285.76 feet, passing the south line of a 0.5003-acre surface site, said site described in Exhibit "E-22" by metes and bounds and described in Exhibit "E-29" by plat prepared on even date, for a total distance of 306.82 feet to an angle point;

Decision and Order

THENCE South 87° 47' 54" West, for a distance of 75.88 feet to an angle point

THENCE North 02° 46' 28" West, for a distance of 10.77 feet to the **TERMINAL POINT** at the manifold side of the face of flange of a 6-inch valve no. 248. Said line crossing said 70.488-acre tract for a distance of 800.80 feet or 48.53 rods.

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCSO 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.9999894634.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 30, 2003

Compiled by:
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Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File:EXHIBIT-E-18
Rev:0

Decision and Order

EXHIBIT "E-20"

03 639 82

TEPPCO
METES AND BOUNDS DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
LPG FLARE SITE – BAYTOWN TERMINAL

A metes and bounds description for a Surface Site containing 7,854 square feet (0.1803 acres) of land being out of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said Surface Site being more particularly described as follows:

COMMENCING FOR REFERENCE at a 5/8-inch iron rod found for a northwesterly corner of said 70.488-acre tract, said corner bears North 45° 29' 22" East - 113.83 feet from the northwest corner of said 70.488-acre tract, said corner also being a southerly corner of a remainder of a 124.81-acre tract as described by deed recorded in Volume 1683, Page 706 of the Deed Records of Harris County, Texas, from said commencement point NGS monument "HGCS D 33" bears North 09° 31' 16" West – 6,288.75 feet;

THENCE North 85° 46' 35" East, following a northerly line of said 70.488-acre tract, being common with the southerly line of said remainder of a 124.81-acre tract, for a distance of 142.76 feet to a point;

THENCE South 04° 13' 25" East, for a distance of 156.44 feet to the **POINT OF BEGINNING** herein described site, said point being on the line of a circular site having a radius of 50.00 feet, a radius bearing of North 74° 39' 17" West and a central angle of 360°00'00", said point being the intersection said site line with a six (6") inch flare line as described in Exhibit "E-28" by centerline description;

THENCE along said circular site line, being a curve to the right, an arc length (circumference) of 314.16 feet to the **POINT OF BEGINNING** and containing 7,854 square feet (0.1803 acres) of land, more or less.

The above described site shown on plat attached hereto as Exhibit "E-26".

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCS D 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.9999894634.

Decision and Order

EXHIBIT "E-19"

03 639 83

TEPPCO
CENTERLINE DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
TERMINAL PIPING FROM P-5, P-11 SCRAPER TRAP
TO LPG MANIFOLD

A centerline description for an eight (8") inch diameter pipeline on, over and through a portion of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 5/8-inch iron rod found for a northwesterly corner of said 70.488-acre tract, said corner bears North 45° 29' 22" East - 113.83 feet from the northwest corner of said 70.488-acre tract, said corner also being a southerly corner of a remainder of a 124.81-acre tract as described by deed recorded in Volume 1683, Page 706 of the Deed Records of Harris County, Texas, from said commencement point NGS monument "HGCS D 33" bears North 09° 31' 16" West - 6,288.75 feet;

THENCE North 85° 46' 35" East, following a northerly line of said 70.488-acre tract, being common with the southerly line of said remainder of a 124.81-acre tract, for a distance of 918.35 feet to a point;

THENCE South 04° 13' 25" East, leaving said common line, a distance of 260.32 feet to the center of the bypass tee and the **POINT OF BEGINNING** of the herein described centerline, said point being in a 0.0372-acre surface site, as described in Exhibit "E-21" by metes and bounds and described in Exhibit "E-27" by plat prepared on even date;

THENCE South 87° 26' 14" West, at a distance of 26.76 feet passing the west line of said 0.0372-acre surface site, continuing in all for a total distance of 64.33 feet to an angle point;

THENCE South 03° 40' 02" East, for a distance of 40.97 feet to an angle point;

THENCE South 51° 58' 04" East, for a distance of 100.89 feet to an angle point;

THENCE South 00° 31' 16" East, for a distance of 118.64 feet to an angle point;

THENCE South 06° 23' 10" West, a distance of 42.01 feet to a point on the north line of a 0.5003-acre surface site, as described in Exhibit "E-22" by metes and bounds and described in Exhibit "E-29" by plat prepared on even date;

THENCE South 13° 46' 40" West, entering said site, for a distance of 17.89 feet to an angle point;

Decision and Order

THENCE South 85° 45' 36" West, for a distance of 21.15 feet to an angle point;

THENCE North 86° 58' 33" East, for a distance of 4.49 feet to the **TERMINAL POINT** at the manifold side of the face of flange of a 6-Inch valve no. 330. Said line crossing said 70.488-acre tract for a total distance of 410.37 feet or 24.87 rods.

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCSD 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.9999894634.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 30, 2003

Compiled by:
S Oliver & Associates, L.P.
7507 Bayway Drive
Baytown, Texas 77520

Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File:EXHIBIT-E-19
Rev:0

03
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Decision and Order

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

A survey plat of even date accompanies this description.

July 30, 2003

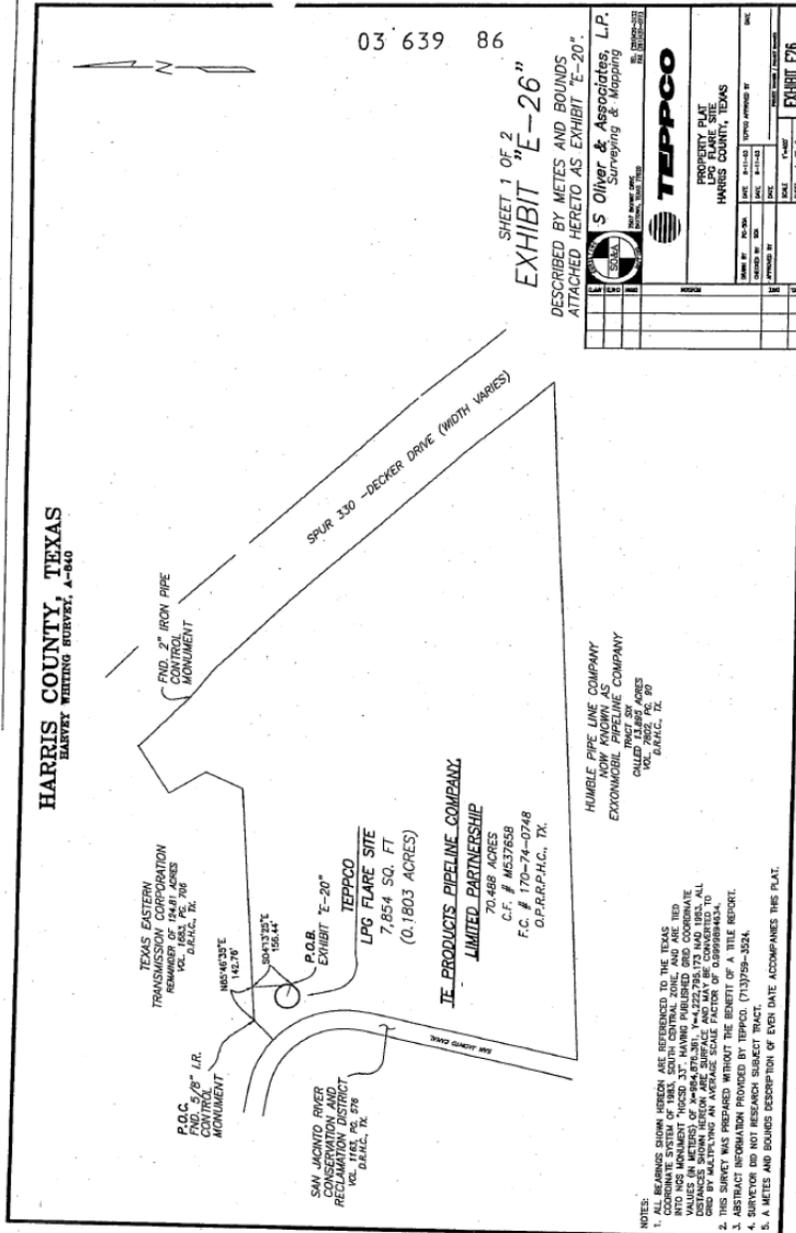
Compiled by:
S Oliver & Associates, L.P.
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Baytown, Texas 77520

Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

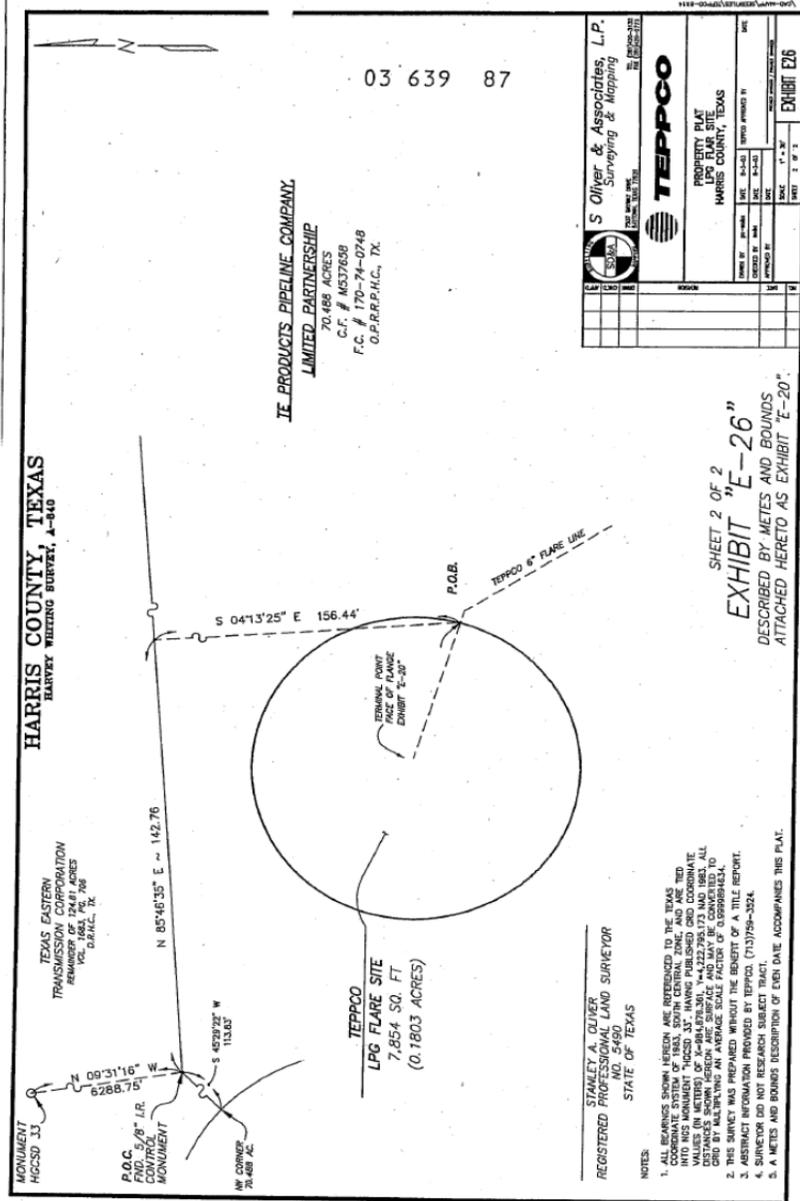
File:EXHIBIT-E-20
Rev:0

03 639 85

Decision and Order



Decision and Order



Decision and Order

EXHIBIT "E-21"

03 639 88

TEPPCO
METES AND BOUNDS DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
P-5, P-11 SCRAPER TRAP SITE – BAYTOWN TERMINAL

A metes and bounds description for a Surface Site containing 1,621 square feet (0.0372 acres) of land being out of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said Surface Site being more particularly described as follows:

COMMENCING FOR REFERENCE at a 5/8-inch iron rod found for a northwesterly corner of said 70.488-acre tract, said corner bears North 45° 29' 22" East - 113.83 feet from the northwest corner of said 70.488-acre tract, said corner also being a southerly corner of a remainder of a 124.81-acre tract as described by deed recorded in Volume 1683, Page 706 of the Deed Records of Harris County, Texas, from said commencement point NGS monument "HGCS D 33" bears North 09° 31' 16" West – 6,288.75 feet;

THENCE North 85° 46' 35" East, following a northerly line of said 70.488-acre tract, being common with the southerly line of said remainder of a 124.81-acre tract, for a distance of 892.28 feet to a point;

THENCE South 04° 13' 25" East, leaving said common line, for a distance of 250.18 feet to the **POINT OF BEGINNING** and the northwest corner of the herein described site;

THENCE North 86° 58' 33" East, for a distance of 33.30 feet to a point for the northeast corner of said site;

THENCE South 03° 01' 27" East, for a distance of 48.69 feet to a point for the southeast corner of said site;

THENCE South 86° 58' 33" West, for a distance of 33.30 feet to a point for the southwest corner of said site;

THENCE North 03° 01' 27" West, for a distance of 48.69 feet to **POINT OF BEGINNING** and containing 1,621 square feet (0.0372 acres) of land, more or less.

Decision and Order

The above described site shown on plat attached hereto as Exhibit "E-27".

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCSD 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.999894634.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

A survey plat of even date accompanies this description.

July 30, 2003

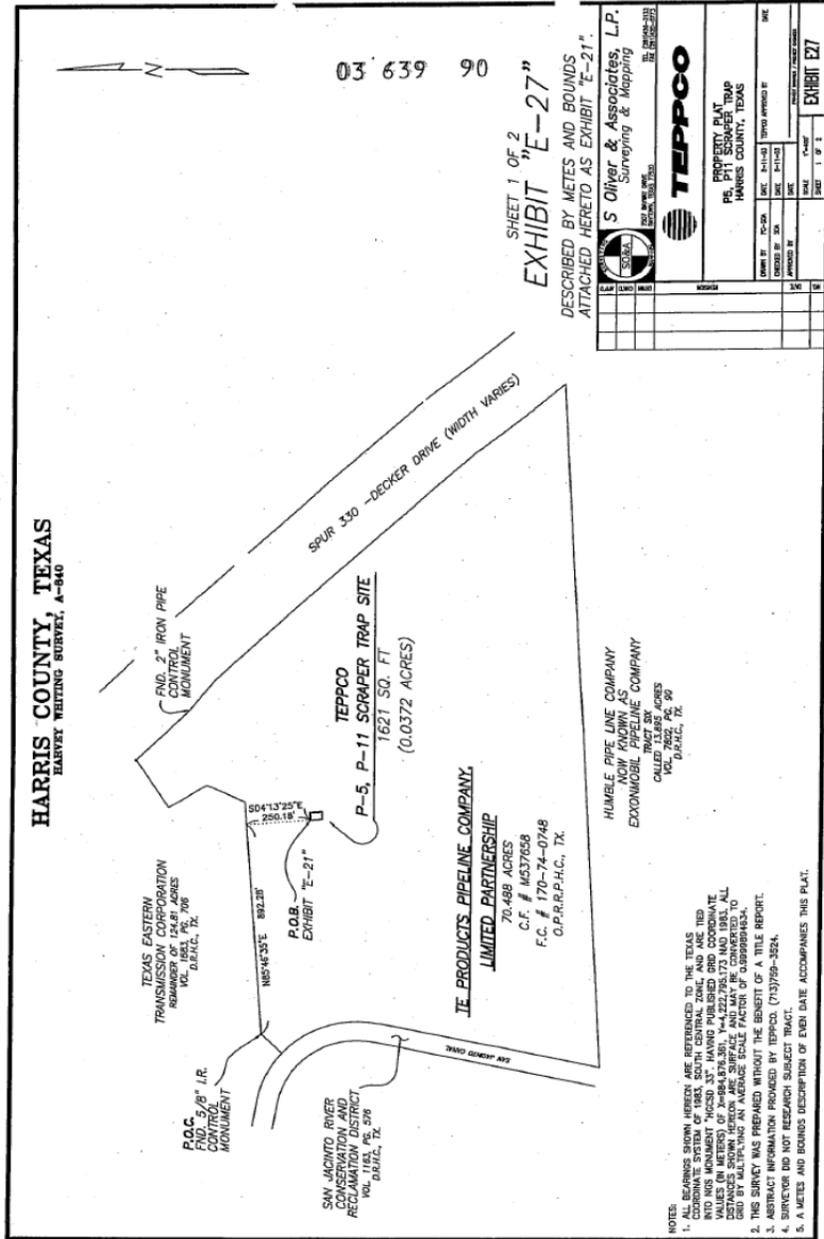
Compiled by:
S Oliver & Associates, L.P.
7507 Bayway Drive
Baytown, Texas 77520

Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File: EXHIBIT-E-21
Rev:0

03
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89

Decision and Order



03 639 90

SHEET 1 OF 2
EXHIBIT "E-27"

DESCRIBED BY METES AND BOUNDS
ATTACHED HERETO AS EXHIBIT "E-21"

S. Oliver & Associates, L.P.
Surveying & Mapping
11000 WEST 23RD STREET, SUITE 200
DALLAS, TEXAS 75244

TEPPCO

PROPERTY PLAT
P-5, P-11 SCRAPER TRAP
HARRIS COUNTY, TEXAS

DATE	BY	DATE	BY
11-1-03	TEPPCO APPROVED	11-1-03	TEPPCO APPROVED
11-1-03	TEPPCO APPROVED	11-1-03	TEPPCO APPROVED
11-1-03	TEPPCO APPROVED	11-1-03	TEPPCO APPROVED

EXHIBIT E27

HARRIS COUNTY, TEXAS
HARVEY WHITING SURVEY, A-940

TEXAS EASTERN
TRANSMISSION CORPORATION
REMAINDER OF 124.81 ACRES
VOL. 1983, PG. 706
DALLAS, TX

P.O.C.
FND. 5/8" I.R.
CONTROL
MONUMENT

SAN JACINTO RIVER
CONSERVATION AND
RECREATION DISTRICT
VOL. 1183, PG. 278
DALLAS, TX

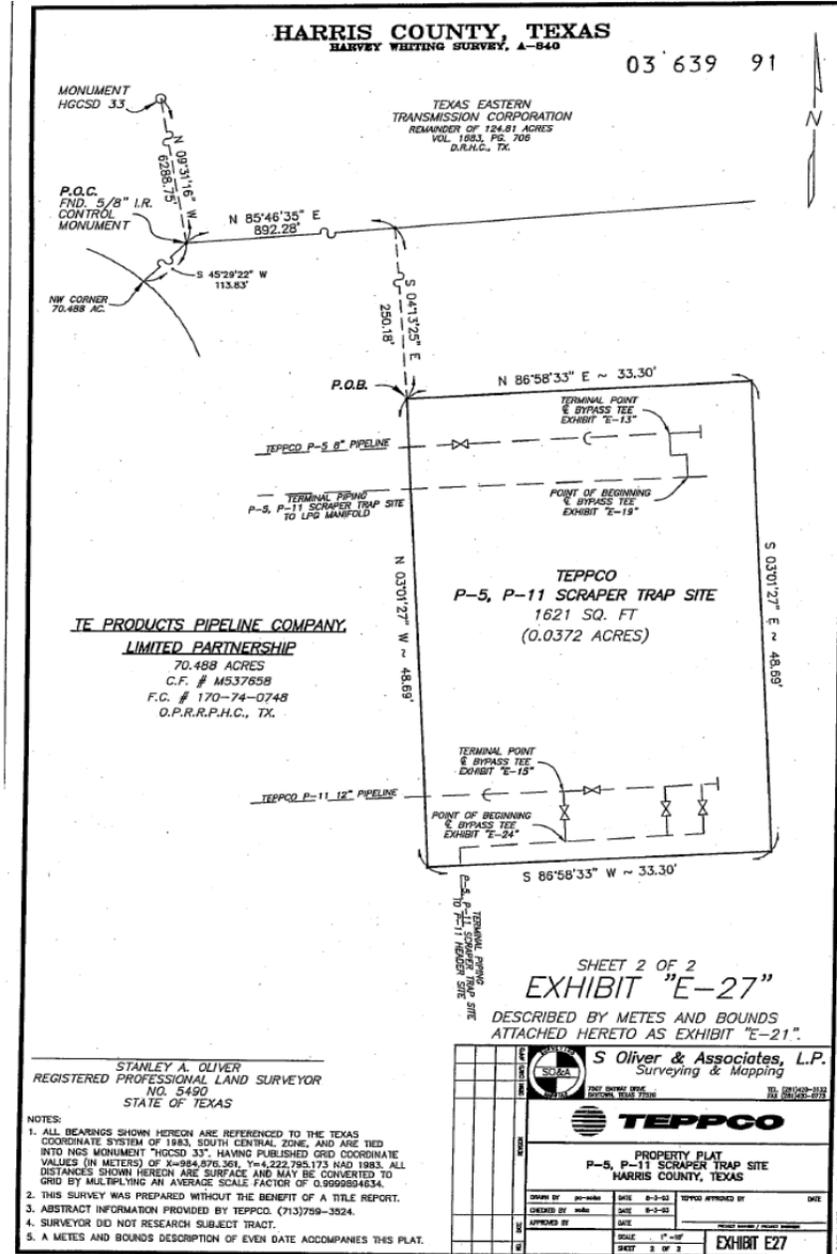
TEPPCO
P-5, P-11 SCRAPER TRAP SITE
1621 SQ. FT.
(0.0372 ACRES)

IE PRODUCTS PIPELINE COMPANY,
LIMITED PARTNERSHIP
70.488 ACRES
C.F. # M537658
F.C. # 170-74-0748
O.P.R.P.H.C., TX

HUMBLE PIPE LINE COMPANY
NOW KNOWN AS
EXXONMOBIL PIPELINE COMPANY
TRACT 504
CALL 7822, PG. 90
DALLAS, TX

- NOTES:
- ALL BEARINGS SHOWN HEREON ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE, AND ARE TIED INTO MONUMENT "H020", 35' HAVING PUBLISHED GRID COORDINATE 1000000.000, 1000000.000. ALL DISTANCES SHOWN HEREON ARE SURFACE AND MAY BE CORRECTED BY MULTIPLYING AN AVERAGE SCALE FACTOR OF 0.9999994834.
 - THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT.
 - ABSTRACT INFORMATION PROMISED BY TEPPCO. (7/3/99-3524).
 - SURVEYOR DID NOT RESEARCH SUBJECT TRACT.
 - A METES AND BOUNDS DESCRIPTION OF EXHIBIT DATE ACCOMPANIES THIS PLAT.

Decision and Order



Decision and Order

EXHIBIT "E-22"

03 639 92

TEPCO
METES AND BOUNDS DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
LPG MANIFOLD SITE – BAYTOWN TERMINAL

A metes and bounds description for a Surface Site containing 21,791 square feet (0.5003 acres) of land being out of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey; Abstract No. 840, in Harris County, Texas. Said Surface Site being more particularly described as follows:

COMMENCING FOR REFERENCE at a 5/8-inch iron rod found for a northwesterly corner of said 70.488-acre tract, said corner bears North 45° 29' 22" East - 113.83 feet from the northwest corner of said 70.488-acre tract, said corner also being a southerly corner of a remainder of a 124.81-acre tract as described by deed recorded in Volume 1683, Page 706 of the Deed Records of Harris County, Texas, from said commencement point NGS monument "HGCS D 33" bears North 09° 31' 16" West – 6,288.75 feet;

THENCE North 85° 46' 35" East, following a northerly line of said 70.488-acre tract, being common with the southerly line of said remainder of a 124.81-acre tract, for a distance of 854.98 feet to a point;

THENCE South 04° 13' 25" East, leaving said common line, for a distance of 525.27 feet to the **POINT OF BEGINNING** and the northwest corner of the herein described site;

THENCE North 87° 19' 28" East, for a distance of 230.96 feet to a point for the northeast corner of said site;

THENCE South 02° 40' 32" East, for a distance of 94.35 feet to a point for the southeast corner of said site;

THENCE South 87° 19' 38" West, for a distance of 230.96 feet to a point for the southwest corner of said site;

THENCE North 02° 40' 32" West, for a distance of 94.35 feet to the **POINT OF BEGINNING** and containing 21,791 square feet (0.5003 acres) of land, more or less.

Decision and Order

The above described site shown on plat attached hereto as Exhibit "E-29".

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCSD 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.9999894634.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

A survey plat of even date accompanies this description.

July 30, 2003

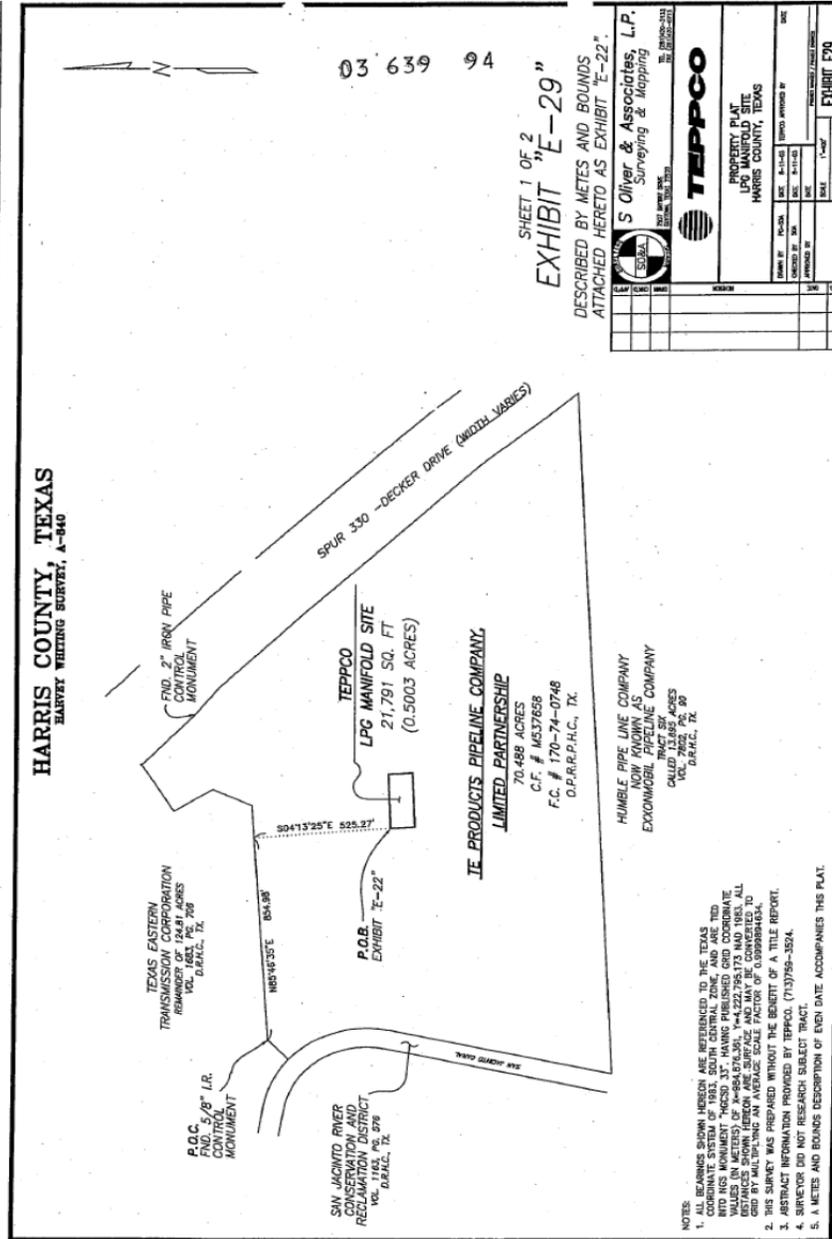
Compiled by:
S Oliver & Associates, L.P.
7507 Bayway Drive
Baytown, Texas 77520

Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File:EXHIBIT-E-22
Rev:0

03
639
93

Decision and Order



NOTES:
1. BEARINGS SHOWN HEREON ARE REFERENCED TO THE TEXAS 1983 COORDINATE SYSTEM, HORIZONTAL DATUM, WHICH HAS BEEN TRANSFERRED INTO THIS MONUMENT "HCCSD 33" HAVING PUBLISHED GRID COORDINATE VALUES IN METERS, OF X=684,976.361, Y=4,222,795.173 (NAD 1983). ALL DISTANCES SHOWN HEREON ARE IN FEET AND DECIMALS THEREOF. THE GRID BY MULTIPLYING AN AVERAGE SCALE FACTOR OF 1.0000000000000000 TO THE METERS.

2. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT.

3. ABSTRACT INFORMATION PROVIDED BY TEPPCO. (713)759-3524.

4. SURVEYOR DID NOT RESEARCH SUBJECT TRACT.

5. A METES AND BOUNDS DESCRIPTION OF EACH DATE ACCOMPANIES THIS PLAT.

Decision and Order

EXHIBIT "E-23"

03 639 96

**TEPPCO
 METES AND BOUNDS DESCRIPTION
 HARVEY WHITING SURVEY, A-840
 HARRIS COUNTY, TEXAS
 P-11 HEADER SITE – BAYTOWN TERMINAL**

A metes and bounds description for a Surface Site containing 489 square feet (0.0112 acres) of land being out of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said Surface Site being more particularly described as follows:

COMMENCING FOR REFERENCE at a 5/8-inch iron rod found for a northwesterly corner of said 70.488-acre tract, said corner bears North 45° 29' 22" East - 113.83 feet from the northwest corner of said 70.488-acre tract, said corner also being a southerly corner of a remainder of a 124.81-acre tract as described by deed recorded in Volume 1683, Page 706 of the Deed Records of Harris County, Texas, from said commencement point NGS monument "HGCS D 33" bears North 09° 31' 16" West – 6,288.75 feet;

THENCE North 85° 46' 35" East, following a northerly line of said 70.488-acre tract, being common with the southerly line of said remainder of a 124.81-acre tract, for a distance of 947.87 feet to a point;

THENCE South 04° 13' 25" East, for a distance of 300.86 feet to the **POINT OF BEGINNING** and the northwest corner of the herein described site;

THENCE North 87° 34' 25" East, leaving said common line, for a distance of 16.37 feet to a point for the northeast corner of said site;

THENCE South 02° 25' 35" East, for a distance of 29.90 feet to a point for the southeast corner of said site;

THENCE South 87° 34' 25" West, for a distance of 16.37 feet to a point for the southwest corner of said site;

THENCE North 02° 25' 35" West, for a distance of 29.90 feet to the **POINT OF BEGINNING** and containing 489 square feet (0.0112 acres) of land, more or less.

Decision and Order

The above described site shown on plat attached hereto as Exhibit "E-28".

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCS D 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.9999894634.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

A survey plat of even date accompanies this description.

July 30, 2003

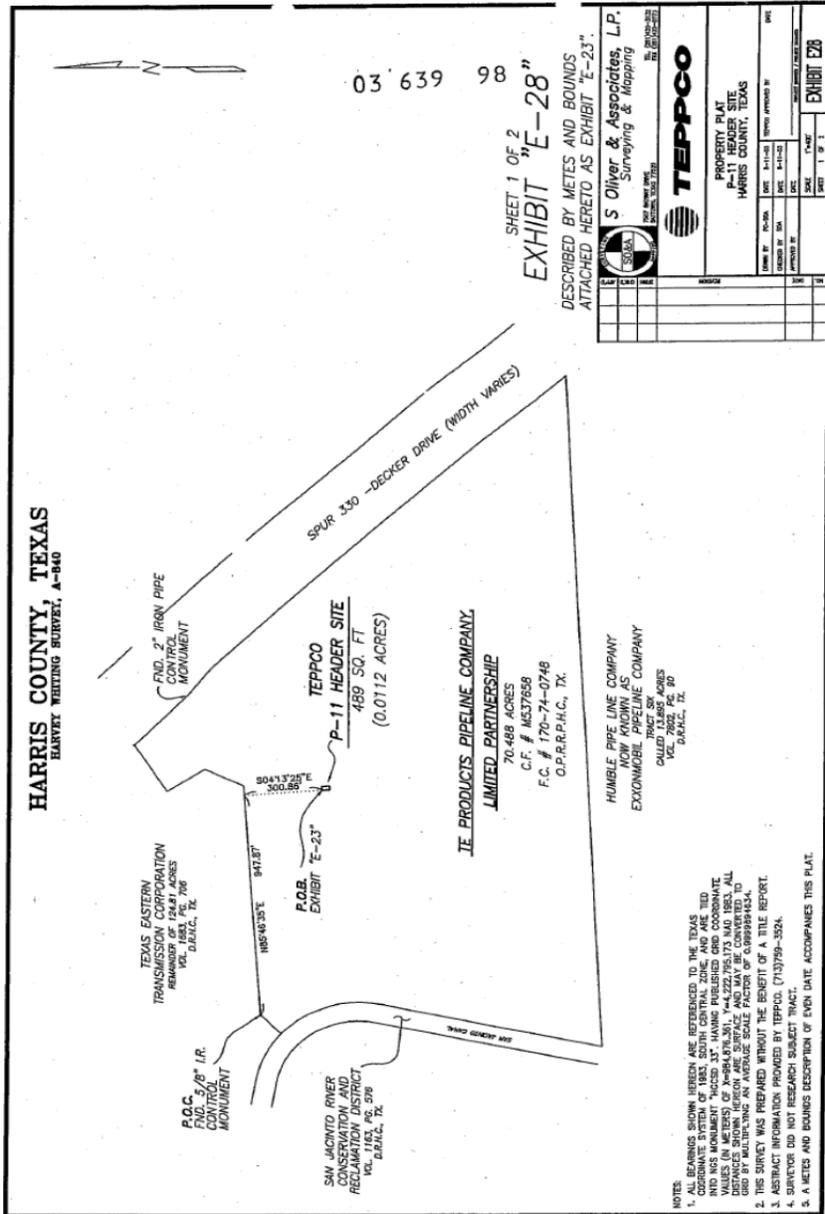
Compiled by:
S Oliver & Associates, L.P.
7507 Bayway Drive
Baytown, Texas 77520

Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

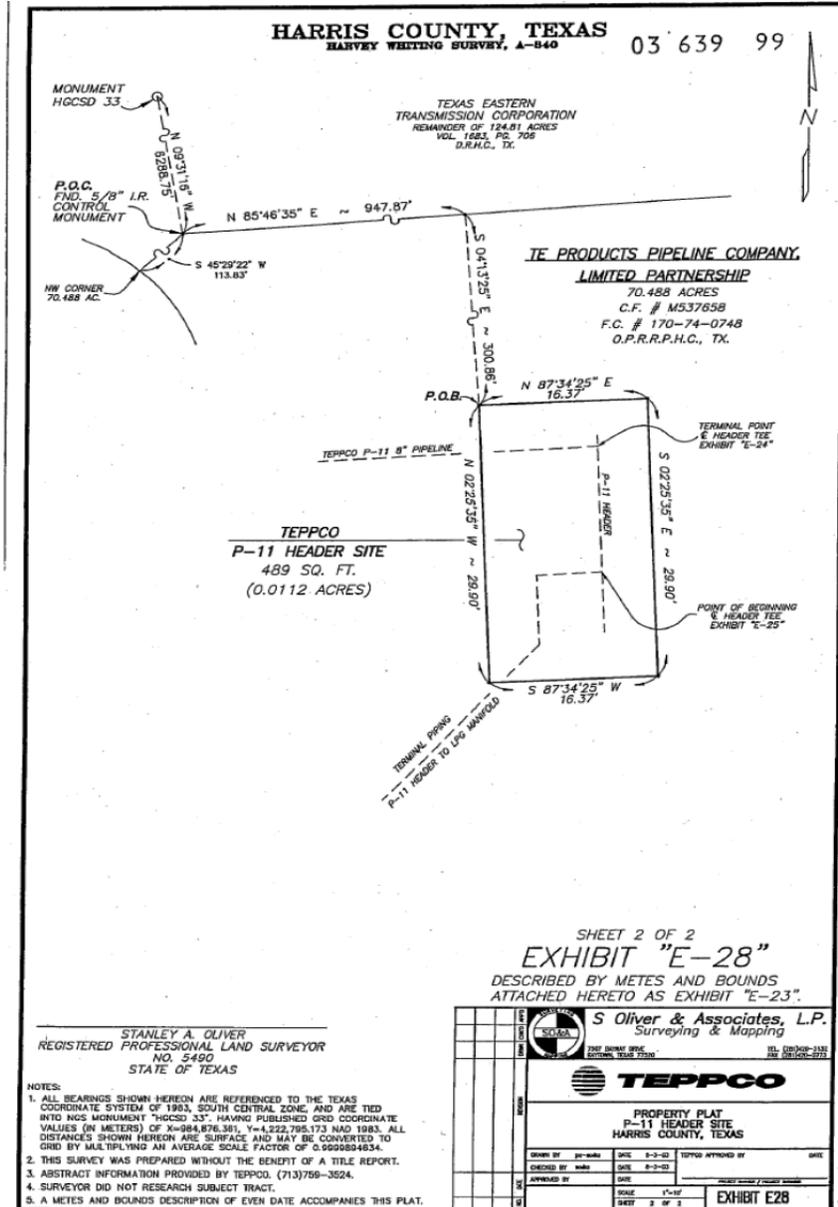
File:EXHIBIT-E-23
Rev:0

03 639 97

Decision and Order



Decision and Order



Decision and Order

EXHIBIT "E-24"

03 639 100

TEPPCO
CENTERLINE DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
TERMINAL PIPING FROM P-11, P-5 SCRAPER TRAP
TO P-11 HEADER SITE

A centerline description for an eight (8") inch diameter pipeline on, over and through a portion of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 5/8-inch iron rod found for a northwesterly corner of the aforementioned 70.488-acre tract, said corner bears North 45° 29' 22" East - 113.83 feet from the northwest corner of said 70.488-acre tract, said corner also being a southerly corner of a remainder of a 124.81-acre tract as described by deed recorded in Volume 1683, Page 706 of the Deed Records of Harris County, Texas, from said commencement point NGS monument "HGCS D 33" bears North 09° 31' 16" West - 6,288.75 feet;

THENCE North 85° 46' 35" East, following a northerly line of said 70.488-acre tract, being common with the southerly line of said remainder of a 124.81-acre tract, for a distance of 918.06 feet to a point;

THENCE South 04° 13' 25" East, leaving said common line, for a distance of 297.37 feet to the center of the bypass tee and the **POINT OF BEGINNING** of the herein described centerline, said point being in a 0.0372-acre surface site, as described in Exhibit "E-21" by metes and bounds and described in Exhibit "E-27" by plat prepared on even date;

THENCE South 86° 13' 20" West, for a distance of 10.24 feet to an angle point;

THENCE South 02° 55' 50" East, at a distance of 1.84 feet passing the south line of said site, continuing in all for a total distance of 8.13 feet to an angle point;

THENCE North 86° 39' 00" East, at a distance of 53.38 feet passing the west line of a 0.0112-acre surface site, as described in Exhibit "E-21" by metes and bounds and described in Exhibit "E-27" by plat prepared on even date, continuing in all for a total distance of 64.75 feet to the **TERMINAL POINT** at the center of the header tee. Said line crossing said 70.488 acre-tract for a total distance of 83.12 feet or 5.04 rods.

Decision and Order

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCS D 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.9999894634.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 30, 2003

Compiled by:
S Oliver & Associates, L.P.
7507 Bayway Drive
Baytown, Texas 77520

Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File: EXHIBIT-E-24
Rev: 0

Decision and Order

EXHIBIT "E-25"

03 639 102

TEPPCO
CENTERLINE DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
TERMINAL PIPING FROM P-11 HEADER SITE
TO LPG MANIFOLD SITE

A centerline description for a ten (10") inch diameter pipeline on, over and through a portion of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 5/8-inch iron rod found for a northwesterly corner of said 70.488-acre tract, said corner bears North 45° 29' 22" East - 113.83 feet from the northwest corner of said 70.488-acre tract, said corner also being a southerly corner of a remainder of a 124.81-acre tract as described by deed recorded in Volume 1683, Page 706 of the Deed Records of Harris County, Texas, from said commencement point NGS monument "HGCSO 33" bears North 09° 31' 16" West - 6,288.75 feet;

THENCE North 85° 46' 35" East, following a northerly line of said 70.488-acre tract, being common with the southerly line of said remainder of a 124.81-acre tract, for a distance of 958.66 feet to a point;

THENCE South 04° 13' 25" East, leaving said common line, for a distance of 319.60 feet to the center of the header tee and the **POINT OF BEGINNING** of the herein described centerline, said point being in a 0.0112-acre surface site, as described in Exhibit "E-23" by metes and bounds and described in Exhibit "E-28" by plat prepared on even date;

THENCE South 86° 43' 35" West, for a distance of 6.37 feet to an angle point;

THENCE South 02° 16' 34" East, for a distance of 7.50 feet to an angle point;

THENCE South 41° 43' 50" West, at a distance of 5.45 feet passing the south line of said site, continuing in all for a total distance of 26.70 feet to an angle point;

THENCE South 02° 55' 31" East, for a distance of 85.39 feet to an angle point;

THENCE South 01° 46' 06" East, for a distance of 56.07 feet to an angle point;

Decision and Order

THENCE South 01° 10' 57" East, at a distance of 40.31 feet passing the north line of a 0.5003-acre surface site, as described in Exhibit "E-22 by metes and bounds and described in Exhibit "E-29" by plat prepared on even date, continuing for a total distance of 56.58 feet to the **TERMINAL POINT** at the center of the manifold tee. Said line crossing said 70.488-acre tract for a distance of 238.61 feet or 14.46 rods.

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCS D 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying a scale factor of 0.9999894634.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 30, 2003

Compiled by:
S Oliver & Associates, L.P.
7507 Bayway Drive
Baytown, Texas 77520

Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File: EXHIBIT-E-25
Rev: 0

03 639 103

Decision and Order

EXHIBIT "E-30"

03 639 104

**TEPPCO
CENTERLINE DESCRIPTION
HARVEY WHITING SURVEY, A-840
HARRIS COUNTY, TEXAS
LOW SULPHUR DIESEL PIPELINE - BAYTOWN**

A centerline description for a ten (10") inch diameter pipeline and twelve (12") inch diameter pipeline on, over and through a portion of that certain called 70.488-acre tract of land dated March 2, 1990, conveyed by deed unto TE Products Pipeline Company, Limited Partnership, recorded under Clerk's File No. M537658, Film Code No. 170-74-0748 of the Official Public Records of Real Property of Harris County, Texas and being situated in the Harvey Whiting Survey, Abstract No. 840, in Harris County, Texas. Said centerline being more particularly described as follows:

COMMENCING FOR REFERENCE at a 5/8-inch iron rod found for a northwesterly corner of said 70.488-acre tract, said corner bears North 45° 29' 22" East - 113.83 feet from the northwest corner of said 70.488-acre tract, said corner also being a southerly corner of a remainder of a 124.81-acre tract as described by deed recorded in Volume 1683, Page 706 of the Deed Records of Harris County, Texas, from said commencement point NGS monument "HGCS D 33" bears North 09° 31' 16" West - 6,288.75 feet;

THENCE North 85° 46' 35" East, following a northerly line of said 70.488-acre tract, being common with the southerly line of said remainder of a 124.81-acre tract, for a distance of 990.04 feet to a point for an interior north corner of said 70.488-acre tract, being common with the most southerly east corner of said remainder of a 124.81-acre tract;

THENCE South 09° 54' 03" East, leaving said common line, for a distance of 595.93 feet to the **POINT OF BEGINNING** at the center of the manifold tee of the herein described centerline, said point being in a 0.5003-acre surface site, as described in Exhibit "E-22" by metes and bounds and described in Exhibit "E-29" by plat prepared on even date;

THENCE South 09° 59' 36" West, for a distance of 5.36 feet to an angle point;

THENCE South 88° 07' 50" West, for a distance of 20.02 feet to an angle point;

THENCE North 03° 07' 05" West, for a distance of 53.14 feet to an angle point;

THENCE South 86° 39' 01" East, for a distance of 19.69 feet to an angle point;

THENCE South 02° 19' 46" East, for a distance of 9.88 feet to an angle point;

THENCE South 17° 10' 49" East, for a distance of 61.96 feet to an angle point;

Decision and Order

THENCE South 03° 31' 12" East, for a distance of 9.17 feet to the **TERMINAL POINT** at the opposite of the manifold side of the face of flange. Said line crossing said 70.488-acre tract for a total distance of 185.41 feet or 11.24 rods.

All bearings shown hereon are referenced to the Texas Coordinate System of 1983, South Central Zone, and are tied into NGS monument "HGCS 33". Having published grid coordinate values (in meters) of X=984,876.361, Y=4,222,795.173 NAD 1983. All distances shown hereon are surface and may be converted to grid by multiplying an average scale factor of 0.9999894634.

This description was prepared without the benefit of a title report. Abstract information was provided by Teppco, (713)759-3524. Surveyor did not research subject tract.

July 25, 2003

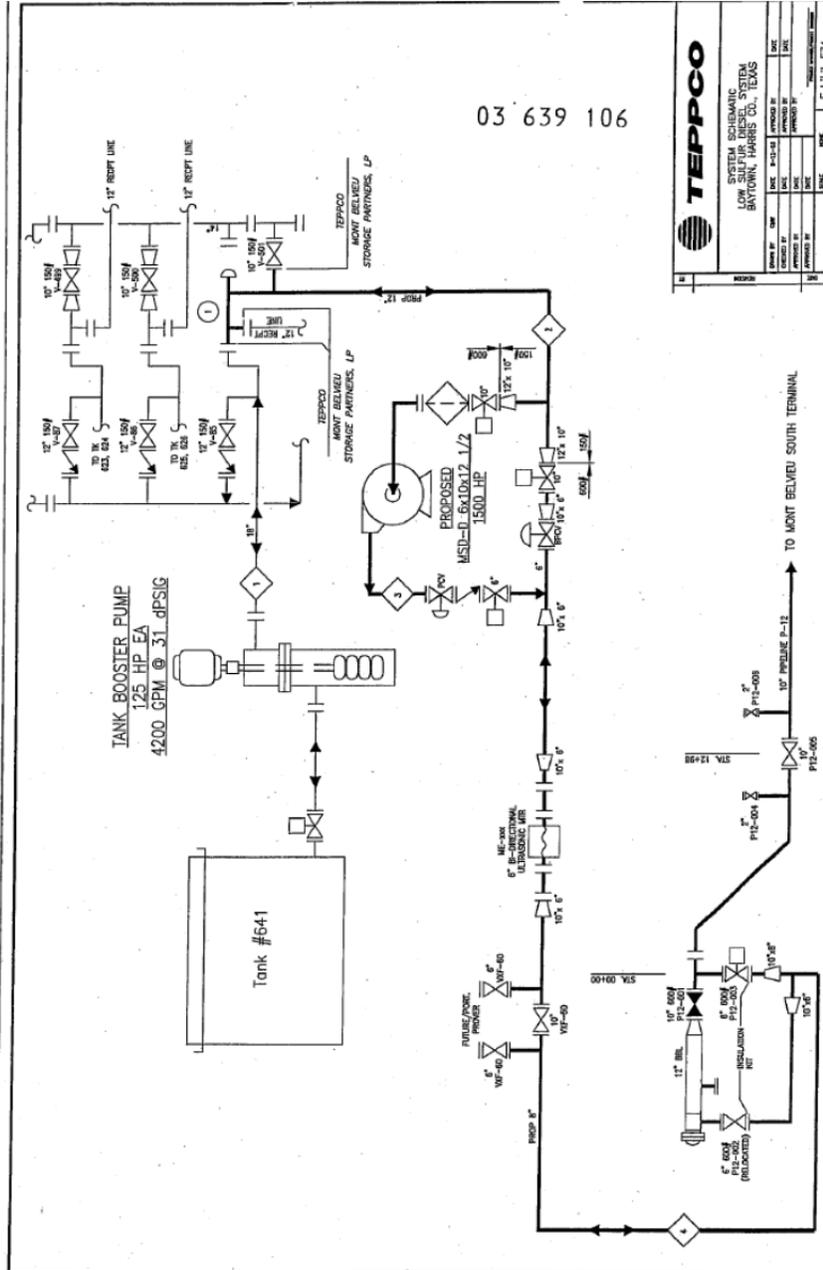
Compiled by:
S Oliver & Associates, L.P.
7507 Bayway Drive
Baytown, Texas 77520

Stanley A. Oliver
Registered Professional Land Surveyor No. 5490

File: EXHIBIT-E-30
Rev:0

03 639 105

Decision and Order



Decision and Order

EXHIBIT F

03 639 107

LEASES

Forty (40)-Year Ground Lease with Option for Additional Forty (40) Years dated February 26, 1970, from Thelma Barber, as "Lessor," to Texas Eastern Transmission Corporation, as "Lessee," recorded in Volume 314, Page 65 of the Deed Records of Chambers County, Texas, which lease is subject to (i) Sublease and Easement Agreement dated October 1, 1971, from Texas Eastern Transmission Corporation, as "Sublessor," to Mobil Pipe Line Company, as "Sublessee," recorded in Volume 350, Page 135, of the Deed Records of Chamber County, Texas, and (ii) Sublease and Easement Agreement dated October 28, 1996, from TE Products Pipeline Company, Limited Partnership, as "Sublessor," to Mobil Pipe Line Company, as "Sublessee," recorded in Volume 314, Page 150 of the Official Public Records of Chambers County, Texas.

Leases

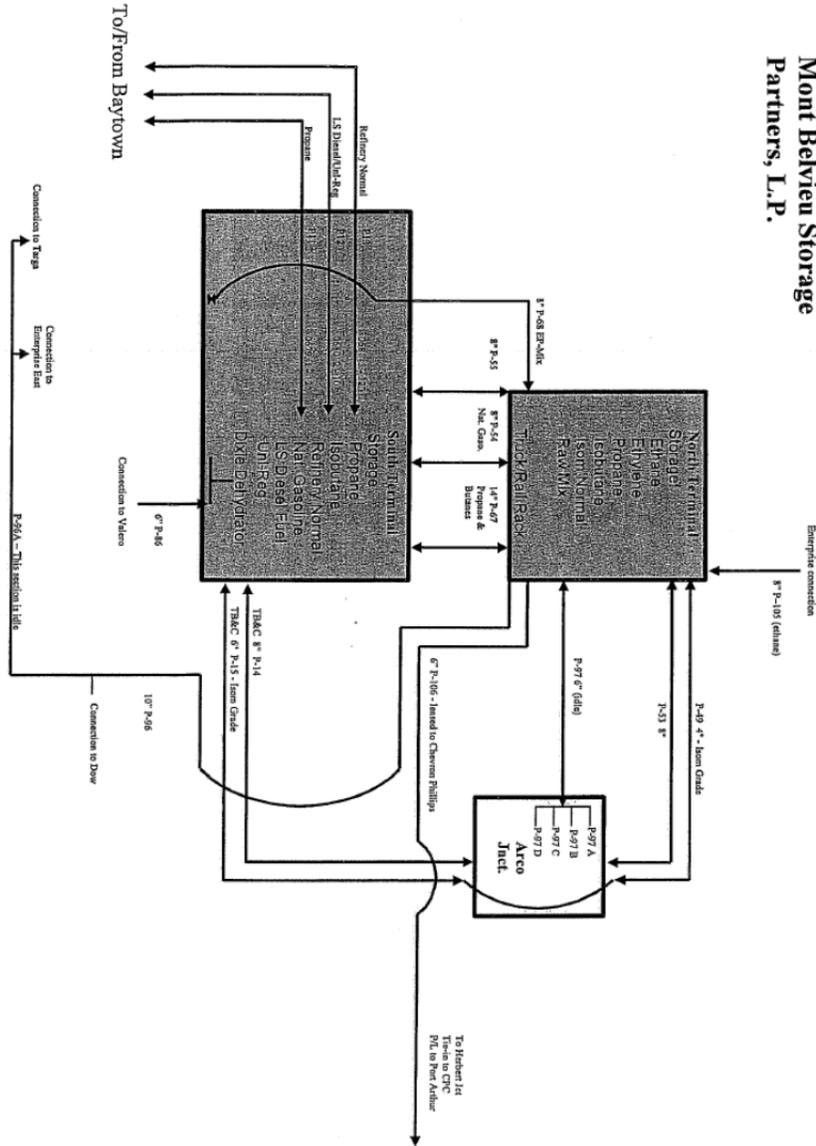
Decision and Order

APPENDIX E

**PIPELINES OWNED BY MONT BELVIEU STORAGE PARTNERS IN MONT
BELVIEU**

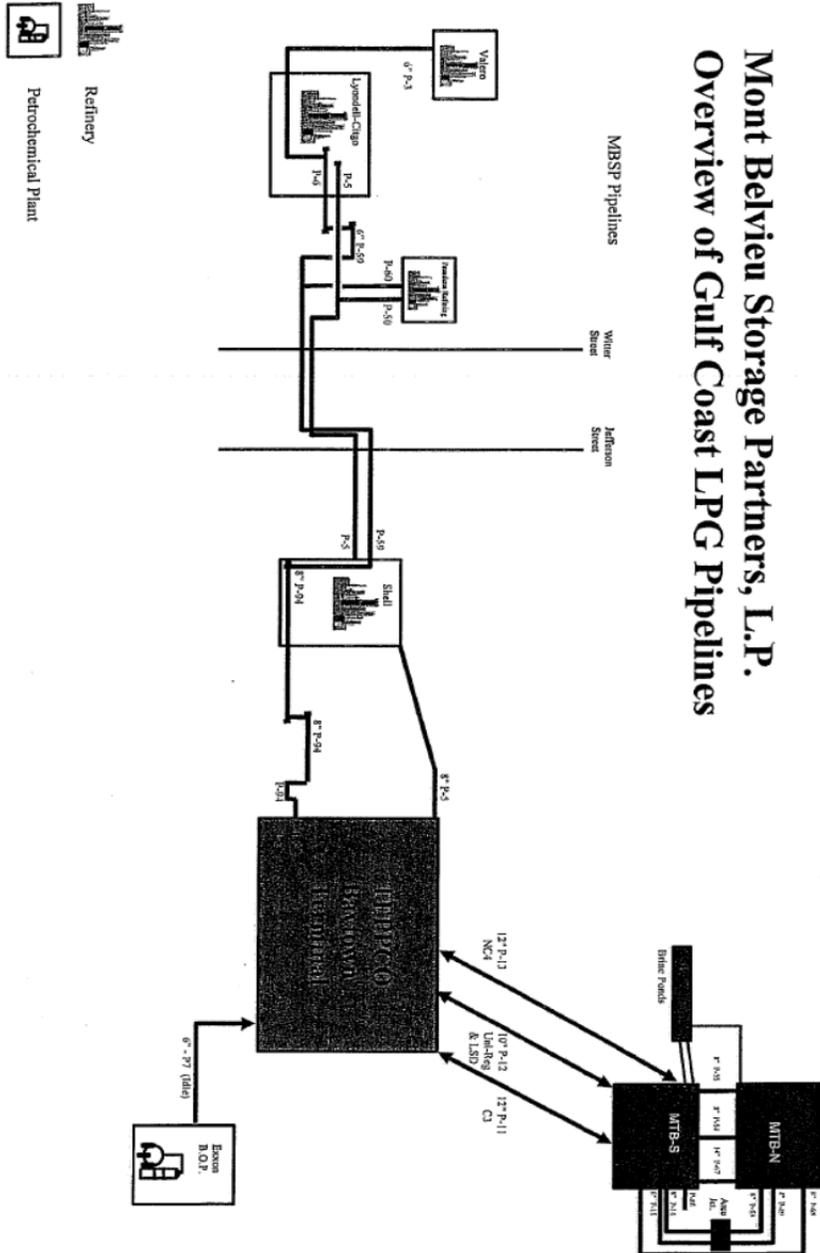
Decision and Order

**Mont Belvieu Storage
Partners, L.P.**



Decision and Order

Mont Belvieu Storage Partners, L.P. Overview of Gulf Coast LPG Pipelines



Analysis to Aid Public Comment

ANALYSIS OF CONSENT ORDER TO AID PUBLIC COMMENT

The Federal Trade Commission, subject to its final approval, has accepted for public comment an Agreement Containing Consent Order (“Consent Agreement”) with Dan L. Duncan, EPCO, Inc., Texas Eastern Products Pipeline Company, LLC, and TEPPCO Partners, L.P. (collectively “Duncan”). The Consent Agreement remedies the anticompetitive effects that otherwise would be likely to result from the acquisition described herein. The terms of the Consent Agreement require Duncan to divest its interests in the Mont Belvieu Storage Partners natural gas liquids storage facility and related pipeline, land, and other assets to a buyer approved by the Commission.

The proposed Consent Agreement has been placed on the public record for thirty (30) days to solicit comments from interested people. Comments received during this period will become part of the public record. After thirty (30) days, the Commission again will review the proposed Consent Agreement and the comments received, and will decide whether it should withdraw the proposed Consent Agreement or make it final.

On February 24, 2005, EPCO, Inc., through DFI GP Holdings, L.P., acquired from Duke Energy Field Services, LLC: (1) TEPPCO’s general partner, Texas Eastern Products Pipeline Company, LLC, for \$1.1 billion, and (2) 2.5 million limited partnership units of TEPPCO Partners, L.P., at an estimated value of \$100 million (collectively “the acquisition”). The acquisition was not reportable under the Hart-Scott-Rodino Act. Both EPCO and TEPPCO are leading providers of salt dome storage for natural gas liquids (“NGLs”) in Mont Belvieu, Texas. EPCO operates the Enterprise NGL storage facility in Mont Belvieu. TEPPCO operates the Mont Belvieu Storage Partners NGL storage facility in Mont Belvieu. As a result of this acquisition, two of the four commercial storage providers for NGLs were placed under Enterprise’s control.

Analysis to Aid Public Comment

I. The Parties

Enterprise Products Partners L.P. (“Enterprise”) is one of the largest publicly traded midstream energy partnerships in the United States, with an enterprise value of approximately \$15 billion. Enterprise’s services include NGL fractionation, transportation, import/export terminaling, and storage. Enterprise owns the largest and most liquid NGL storage facility in Mont Belvieu, along with several pipelines into and out of Mont Belvieu, and substantial brine handling capacity in Mont Belvieu. Enterprise also markets NGLs in Mont Belvieu. Dan L. Duncan ultimately controls Enterprise and EPCO, Inc. (“EPCO”), the general partner of Enterprise.

TEPPCO Partners, L.P. (“TEPPCO”) is a publicly traded master limited partnership. TEPPCO’s general partner is Texas Eastern Products Pipeline Company, LLC (“Texas Eastern”), which, post-acquisition, ultimately is controlled by EPCO and Dan L. Duncan. Through various subsidiaries, TEPPCO owns and operates NGL transportation and storage assets. TEPPCO’s Mont Belvieu NGL storage assets are owned by Mont Belvieu Storage Partners, a 50/50 joint venture between TEPPCO and Louis Dreyfus Energy Services L.P. TEPPCO controlled, and continues to control, the day-to-day operations of the Mont Belvieu Storage Partners NGL storage facility, through its wholly-owned subsidiary, TE Products Pipeline Company, Limited Partnership. TEPPCO also owns and operates the TE Products Pipeline, the primary source of propane to the northeastern United States and an important outlet for NGLs stored at the Mont Belvieu Storage Partners facility.

Since the acquisition, the general partners of Enterprise and TEPPCO have maintained separate boards of directors and management teams. The practical result of the acquisition, however, is that Dan L. Duncan ultimately owns and controls both entities.

Analysis to Aid Public Comment

II. Salt Dome Storage for Natural Gas Liquids in Mont Belvieu, Texas

The relevant market in which to analyze the effects of the acquisition is the market for salt dome storage for natural gas liquids (“NGLs”) in Mont Belvieu, Texas. NGLs are a group of light hydrocarbons—including ethane, propane, normal butane, isobutane, and natural gasoline—which are used, among other uses, as feedstocks in the production of ethylene and propylene, as fuel for heating or industrial processes, and in blending components for motor gasoline. NGLs primarily are stored in large underground wells formed out of geological salt domes under the Earth’s surface until they are delivered to end-users, usually via pipeline. Mont Belvieu, Texas, comprises the largest NGL storage system in the world and pipeline connections that allow NGL marketers to reach the broadest array of end use markets. There are no viable competitive alternatives to salt dome storage for NGLs in Mont Belvieu.

The market for salt dome storage for NGLs in Mont Belvieu, Texas, is highly concentrated, with Enterprise and TEPPCO as the two largest suppliers based on storage volumes, and two of the three largest suppliers based on permitted storage volume. Together the two account for about 70% of storage volume in Mont Belvieu. Targa Resources, Inc. and Valero Energy Corporation are the two other competitors that account for the remaining volume.

Storage wells are differentiated by their connectivity, both to pipelines bringing product into the wells from fractionators, and to pipelines taking product out of storage to the major product pipelines that transport NGLs to markets throughout the United States. Mont Belvieu’s attraction as a storage hub for NGLs stems from the flexibility it provides to owners to move their product to various markets. Storage customers evaluate wells on the basis of the flexibility they provide in receiving and moving product.

Analysis to Aid Public Comment

Prior to the acquisition, Enterprise and TEPPCO directly competed for storage volumes in Mont Belvieu based on price and service levels. Both Enterprise and TEPPCO are connected to the Dixie Pipeline and competed for storage volumes for customers wishing to ship product, primarily propane, into the Southeastern United States. In addition, Enterprise and TEPPCO, along with Targa Resources, Inc., competed for storage customers' marginal volumes. Many customers must store minimum volumes at certain facilities due to pipeline connections or other restrictions. Finally, Enterprise and TEPPCO competed for trading volumes. Because Enterprise and TEPPCO are the two most liquid storage providers, many trading customers ranked them as their first and second choice for storage.

The acquisition significantly increased concentration in the Mont Belvieu market for salt dome storage for NGLs, leaving EPCO controlling a dominant share of storage volume and capacity. A combined Enterprise/TEPPCO would have an enhanced ability unilaterally to exercise market power in the market because many customers view the two suppliers as first and second choices and the handful of other viable suppliers are incapable of replacing the competition lost as a result of the merger. Reducing the already small number of competitors also increases the likelihood of coordinated interaction after the merger. Thus, eliminating competition between the two leading suppliers likely would result in higher prices and lower levels of service for storage customers.

III. Entry

Entry into the Mont Belvieu storage market is unlikely to deter or counteract the likely anticompetitive effects. Entry is difficult and time-consuming and potential entrants would face substantial barriers in the form of permit requirements and land use restrictions.

Analysis to Aid Public Comment

IV. Terms of the Proposed Consent Agreement

The proposed Consent Agreement effectively remedies the acquisition's alleged anticompetitive effects by requiring TEPPCO to divest its interests in Mont Belvieu Storage Partners and certain related pipeline, land, and other assets (collectively the "divested assets"). The Commission's purposes with respect to the divestiture are: (1) to ensure the continuation of the divested assets as a going concern in the same manner as of the date the Consent Agreement was signed, and (2) to remedy the lessening of competition resulting from the acquisition as alleged in the Commission's Complaint.

In order to achieve these purposes, Paragraph II of the proposed Consent Agreement directs Duncan to sell TEPPCO's interests in certain Mont Belvieu NGL storage assets and related pipeline, land, and other assets to a Commission-approved buyer no later than December 31, 2006, and in a manner approved by the Commission, subject to the Commission's final approval. If Duncan is unable to divest this set of assets to a Commission-approved buyer within this timeframe, Paragraph III of the proposed Consent Agreement contains the standard divestiture trustee provisions pursuant to which the Commission may appoint a trustee to divest the assets to a Commission-approved buyer.

Paragraph IV.A of the proposed Consent Agreement requires Duncan to provide prior notice to the Commission of its planned acquisitions, operatorships, or management of any NGL storage facility in Mont Belvieu, Texas, for a period of ten (10) years. Paragraph IV.C requires Duncan to send copies of all new NGL storage leases with third party NGL storage facilities in Mont Belvieu within the earlier of fifteen (15) days of being signed or becoming effective. These provisions ensure that subsequent acquisitions or leases do not adversely impact competition in the market at issue and undermine the remedial goals of the proposed Consent Agreement.

Analysis to Aid Public Comment

In order to achieve successfully the Commission's purposes, Paragraph II of the proposed Consent Agreement contains provisions that ensure that the acquirer receives all resources necessary to operate the divested assets. First, Paragraph II requires Duncan to give the acquirer the opportunity to interview and hire employees who spend more than ten percent (10%) of their time working on the divested assets, and prevents Duncan from offering these employees incentives to decline the acquirer's offer of employment. This will ensure that the acquirer has access to staff who are familiar with the NGL storage, pipelines, and other related assets. Second, Paragraph II requires Duncan to convey to the acquirer licensed intangible property necessary for the operation of the divested assets to ensure that the acquirer has the software and other assets necessary to operate the divested assets in the same manner as of the day the parties signed the Consent Agreement.

To maintain the competitive viability of the divested assets, including TEPPCO's interest in Mont Belvieu Storage Partners, in the same manner as of the date the Consent Agreement was signed, the proposed Consent Agreement contains several provisions relating to the operation of TEPPCO's TE Products Pipeline. TEPPCO provides "open stock" service to propane shippers from Mont Belvieu Storage Partners, a service whereby shippers who ship on the pipeline and who have adequate inventory in the TEPPCO system, given certain inventory and availability requirements, can take delivery of propane at any of TEPPCO's terminals along the pipeline without having to wait for the pipeline transit time it would take to move the product physically from origin to destination. The open stock service allows TEPPCO to transfer product from any origination point along the pipeline it chooses to meet shippers' needs, irrespective of the storage facility in which the shipper actually has inventory. EPCO's plans to build a pipeline connecting its Mont Belvieu storage facility to the TEPPCO pipeline raises several concerns regarding its ability to disadvantage any prospective acquirer of TEPPCO's interest in Mont Belvieu Storage Partners. First,

Analysis to Aid Public Comment

TEPPCO could decline to offer the open stock service at Mont Belvieu Storage Partners, or offer the service there at less advantageous terms than at EPCO's Mont Belvieu facility. Second, TEPPCO could impede Mont Belvieu Storage Partners' ability to market its storage capacity by allocating product from other storage facilities along the pipeline to meet shipper's needs, keeping Mont Belvieu Storage Partners' capacity occupied disproportionately. The proposed Consent Agreement contains provisions addressing these concerns.

First, the proposed Consent Agreement requires TEPPCO to continue to operate the TE Products Pipeline on open stock service for propane. Second, if Duncan builds a pipeline, referred to in the proposed Consent Agreement as the "New Pipeline," connecting the TE Products Pipeline to any NGL storage facility it owns in Mont Belvieu, Texas, the proposed Consent Agreement requires Duncan to (1) connect the new pipeline to the Mont Belvieu Storage Partners NGL storage facility at its own cost, (2) operate the TE Products Pipeline for propane on an open stock basis for shippers who ship from Mont Belvieu Storage Partners on terms and conditions that are no less advantageous than those for shippers who ship propane from an NGL storage facility in Mont Belvieu owned by Duncan, and (3) operate the TE Products Pipeline for products other than propane on terms and conditions that are no less advantageous than those for shippers who ship products other than propane from an NGL storage facility in Mont Belvieu owned by Duncan.

Third, the proposed Consent Agreement contains provisions relating to the implementation of new allocation procedures for the TE Products Pipeline. Paragraph IV.B requires TEPPCO to provide advance written notice to the Commission of any new allocation procedures relating to the movements of NGLs on the TE Products Pipeline originating in Mont Belvieu, Texas. Paragraph VI requires any new allocation procedures to include a requirement that shippers originating product movements on the pipeline from the Mont Belvieu Storage Partners NGL storage

Analysis to Aid Public Comment

facility nominate that movement to both TEPPCO and Mont Belvieu Storage Partners and also provides that such new allocation procedures shall allow shippers who ship product originating at Mont Belvieu Storage Partners' facility to ship on terms and conditions that are no less advantageous than those given to shippers who ship from an NGL storage facility owned by Duncan.

The purpose of the provisions relating to the operation of the TE Products Pipeline is to maintain the competitive viability of the Mont Belvieu Storage Partners NGL storage facility in the same manner as of the date the Consent Agreement was signed by ensuring that Duncan cannot disadvantage shippers who originate product movements from the Mont Belvieu Storage Partners' facility in favor of shippers who originate product movements from its own storage facility in the event that Duncan interconnects an NGL storage facility it owns in Mont Belvieu, Texas, to the TE Products Pipeline.

V. Opportunity for Public Comment

By accepting the proposed Consent Agreement, subject to final approval, the Commission anticipates that the competitive problems alleged in the Complaint will be resolved. The purpose of this analysis is to invite public comment on the proposed Consent Agreement, including the proposed divestitures, to aid the Commission in its determination of whether it should make final the proposed Consent Agreement contained in the agreement. This analysis is not intended to constitute an official interpretation of the proposed Consent Agreement or modify the terms of the proposed Consent Agreement in any way. Further, the proposed Consent Agreement has been entered into for settlement purposes only and does not constitute an admission by Dan L. Duncan, EPCO, Texas Eastern, or TEPPCO that it violated the law or that the facts alleged in the Complaint, other than jurisdictional facts, are true.

Complaint

IN THE MATTER OF

BARR PHARMACEUTICALS, INC.CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS
OF SEC. 7 OF THE CLAYTON ACT AND SEC. 5 OF THE FEDERAL
TRADE COMMISSION ACT*Docket C-4171, File No. 061 0217**Complaint, October 19, 2006 – Decision, November 22, 2006*

This consent order addresses the acquisition of Pliva d.d. by Barr Pharmaceuticals, Inc. Both companies are engaged in the research, development, manufacture, and sale of generic pharmaceutical products. Barr's acquisition of Pliva would reduce the number of current or future competing generic suppliers of three pharmaceutical products: trazodone hydrochloride tablets, triamterene with hydrochlorothiazide tablets, and nimodipine soft-gel capsules. The order requires Barr to divest to Apotex, Inc., or another Commission-approved buyer, Barr's generic trazodone and triamterene with hydrochlorothiazide businesses. The order also requires that Barr return marketing rights to Pliva's generic nimodipine product in development to its joint venture partner, Banner Pharmacaps, Inc., or alternatively, that Barr return marketing rights to its nimodipine product in development to its development partner, Cardinal Health, Inc. Finally, the order requires Barr to divest Pliva's branded organ preservation solution, Custodiol, to New Custodiol LLC, a company formed for the purpose of marketing and selling this product. The assets for each of the divestitures include all of the relevant intellectual property, customer lists, research and development information, and regulatory materials. If Barr fails to divest within the specified time frame, the Commission may appoint a trustee to divest the assets.

Participants

For the *Commission*: *Stephanie C. Bovee, Elizabeth A. Jex, Christine Naglieri, David von Nirschl, and Kari A. Wallace.*

For the *Respondent*: *Mark L. Kovner and Marimichael O. Skubel, Kirkland & Ellis LLP; and Mary N. Lehner and Thomas A. McGrath III, Linklaters.*

Complaint

COMPLAINT

Pursuant to the Clayton Act and the Federal Trade Commission Act, and its authority thereunder, the Federal Trade Commission (“Commission”), having reason to believe that Respondent Barr Pharmaceuticals, Inc., a corporation subject to the jurisdiction of the Commission, has agreed to acquire Pliva, d.d., a corporation subject to the jurisdiction of the Commission, in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act (“FTC Act”), as amended, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding in respect thereof would be in the public interest, hereby issues its Complaint, stating its charges as follows:

I. DEFINITIONS

1. “Commission” means the Federal Trade Commission.
2. “FDA” means the United States Food and Drug Administration.
3. “Respondent” means Barr.
4. “Generic nimodipine” means all formulations containing nimodipine.
5. “Generic trazodone” means all formulations of generic trazodone hydrochloride, excluding the 300 mg formulation.
6. “Generic triamterene/HCTZ” means all formulations of generic triamterene with hydrochlorothiazide.
7. “Organ Preservation Solutions” means any product which is used for the preservation of organs intended for transplantation.

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II. RESPONDENTS

8. Respondent Barr Pharmaceuticals, Inc. (“Barr”) is a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its headquarters address at 400 Chestnut Ridge Road, Woodcliff Lake, New Jersey 07677. Barr is engaged in the research, development, manufacture and sale of, among other things, generic pharmaceutical products.

9. Pliva d.d. (“Pliva”) is a corporation organized, existing and doing business under and by virtue of the laws of the Republic of Croatia, having its headquarters address at Ulica grad Vukovara 49, 10000 Zagreb, Croatia. Pliva is engaged in the research, development, manufacture and sale of, among other things, generic pharmaceutical products.

10. Respondent is, and at all times relevant herein has been, engaged in commerce, as “commerce” is defined in Section 1 of the Clayton Act as amended, 15 U.S.C. § 12, and is a corporation whose business is in or affects commerce, as “commerce” is defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

III. THE PROPOSED ACQUISITION

11. On June 27, 2006, Barr announced its intention to acquire all of the issued and outstanding shares of Pliva in a transaction valued at approximately \$2.3 billion (the “Acquisition”).

IV. THE RELEVANT MARKETS

12. For the purposes of this Complaint, the relevant lines of commerce in which to analyze the effects of the Acquisition are the manufacture and sale of the following pharmaceutical products:

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- a. Generic trazodone tablets;
- b. Generic triamterene/HCTZ tablets;
- c. Organ preservation solutions; and
- d. Generic nimodipine soft-gel capsules.

13. For the purposes of this Complaint, the United States is the relevant geographic area in which to analyze the effects of the Acquisition in the relevant lines of commerce.

V. THE STRUCTURE OF THE MARKETS

14. Trazodone hydrochloride is an antidepressant. Currently, Barr, Pliva, Watson Pharmaceuticals, Inc. (“Watson”), Teva Pharmaceutical Industries Ltd. (“Teva”), and United Research Laboratories/Mutual Pharmaceutical Company (“URL/Mutual”) are the only active suppliers of generic trazodone in the United States. Although there are five suppliers of generic trazodone, not all suppliers are capable of supplying all formulations. For instance, Barr and Pliva are two of only three suppliers of the 150 mg formulation of generic trazodone. The Acquisition would reduce the number of suppliers of generic trazodone from five to four, and increase Barr’s market share to 58 percent. The Herfindahl-Hirschman Index (“HHI”) would increase by 1,272 points, resulting in a post-acquisition HHI of 3,857 points.

15. Triamterene with hydrochlorothiazide is a combination product used to treat high blood pressure. Currently, Barr, Pliva, Watson, Mylan and Sandoz are the only active suppliers of various formulations of generic triamterene/HCTZ tablets in the United States. The Acquisition would reduce the number of suppliers from five to four, and increase Barr’s market share to about 35 percent for all formulations. The HHI would increase by 520 points, resulting in a post-acquisition HHI of 2,961 points.

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16. Organ preservation solutions are used during the harvesting of donor organs to flush and preserve the viability of the donor organs prior to transplantation. The market for organ preservation solutions in the United States is highly concentrated. Barr and Pliva have market shares of approximately 60 and 30 percent, respectively, in the \$17 million U.S. market. The rest of the market is divided among several smaller, niche players. The Acquisition would significantly increase concentration in this market, and would leave Barr with a near monopoly share of the organ preservation solution market. The post-acquisition HHI would increase to approximately 8,100 points.

17. Nimodipine is used to treat symptoms resulting from a ruptured blood vessel in the brain. The branded version of this product, Nimotop, is manufactured and sold by Bayer, and the patents for the branded product have already expired. Currently, there are no generic suppliers of nimodipine on the market. Barr, in conjunction with Cardinal Health Inc., plans to introduce generic nimodipine in the fall of 2006. Pliva also plans to introduce generic nimodipine with its partner, Banner Pharmaceuticals Inc. in the same time frame. Pliva and Barr are the only two firms seeking approval to offer generic nimodipine and the only suppliers capable of entering this market in a timely manner. Accordingly, the Acquisition would eliminate potential competition in the generic nimodipine market.

VI. ENTRY CONDITIONS

18. Entry into each of the relevant product markets identified in Paragraph 10 would not be timely, likely, or sufficient in its magnitude, character, and scope to deter or counteract the anticompetitive effects of the Acquisition. Developing the products and obtaining the necessary FDA approval for the manufacture and sale of these products takes at least two years due to substantial regulatory, technological, and intellectual property barriers.

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VII. EFFECTS OF THE ACQUISITION

19. The effects of the Acquisition, if consummated, may be to substantially lessen competition and to tend to create a monopoly in the relevant markets in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45, in the following ways, among others:

a. by eliminating actual, direct, and substantial competition between Barr and Pliva, and reducing the number of competitors, in the markets for the manufacture and sale of generic trazodone tablets, generic triamterene/HCTZ tablets, and organ preservation solutions, thereby: (i) increasing the likelihood that Barr will be able to unilaterally exercise market power in these markets; (ii) increasing the likelihood and degree of coordinated interaction between or among competitors; and (iii) increasing the likelihood that customers would be forced to pay higher prices; and

b. by eliminating potential competition between Barr and Pliva in the market for the manufacture and sale of generic nimodipine capsules, thereby increasing the likelihood that Barr would forego or delay the launch of one of the parties' generic nimodipine capsules and increasing the likelihood that Barr would delay or eliminate the substantial additional price competition that would have resulted from one party's independent entry into the future market for generic nimodipine capsules.

VIII. VIOLATIONS CHARGED

20. The Acquisition described in Paragraph 7, if consummated, would constitute a violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45.

Order to Maintain Assets

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this nineteenth day of October, 2006, issues its Complaint against said Respondent.

By the Commission.

ORDER TO MAINTAIN ASSETS

The Federal Trade Commission (“Commission”), having initiated an investigation of the proposed acquisition by Respondent Barr Pharmaceuticals, Inc. (“Barr”), hereinafter referred to as “Respondent,” of PLIVA d.d. (“PLIVA”) and Respondent having been furnished thereafter with a copy of a draft Complaint that the Bureau of Competition proposed to present to the Commission for its consideration and that, if issued by the Commission, would charge Respondent with violations of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondent, its attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Orders (“Consent Agreement”), containing an admission by Respondent of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondent that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined to accept the executed Consent Agreement and

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to place such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby issues its Complaint, makes the following jurisdictional findings and issues this Order to Maintain Assets:

1. Respondent Barr Pharmaceuticals, Inc. is a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its headquarters address at 400 Chestnut Ridge Road, Woodcliff Lake, New Jersey 07677.
2. PLIVA d.d. is a corporation organized, existing and doing business under and by virtue of the laws of the Republic of Croatia, with its headquarters address at Ulica grad Vukovara 49, 10000 Zagreb, Croatia, and the address of the principal place of business of its United States subsidiaries at 72 Eagle Rock Avenue, P.O. Box 371, East Hanover, New Jersey 07936.
3. The Commission has jurisdiction of the subject matter of this proceeding and of Respondent, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that, as used in this Order to Maintain Assets, the following definitions and the definitions used in the Consent Agreement and the proposed Decision and Order (and when made final, the Decision and Order), which are attached hereto as Appendix A and incorporated herein by reference and made a part hereof, shall apply:

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- A. “Barr” means Barr Pharmaceuticals, Inc., its directors, officers, employees, agents, representatives, predecessors, successors, and assigns; and its joint ventures, subsidiaries, divisions, groups and affiliates in each case controlled by Barr (including, but not limited to, Barr Laboratories, Inc.), and the respective directors, officers, employees, agents, representatives, predecessors, successors, and assigns of each. After the Acquisition, Barr shall include PLIVA.
- B. “PLIVA” means PLIVA d.d., its directors, officers, employees, agents, representatives, predecessors, successors, and assigns; and its joint ventures, subsidiaries, divisions, groups and affiliates in each case controlled by PLIVA (including, but not limited to, its United States subsidiaries, *i.e.*, PLIVA Inc., PLIVA USA, and Odyssey Pharmaceuticals, Inc.), and the respective directors, officers, employees, agents, representatives, predecessors, successors, and assigns of each.
- C. “Respondent” means Barr.
- D. “Commission” means the Federal Trade Commission.
- E. “Divestiture Assets” means the Custodiol Product Assets, the Nimodipine (Barr) Product Assets, the Nimodipine (PLIVA) Product Assets, the Trazodone Hydrochloride Product Assets, the Triamterene and Hydrochlorothiazide Product Assets and the ViaSpan Product Assets, as defined in the attached Decision and Order.
- F. “Divestiture Product Business(es)” means the Respondent’s business within the Geographic Territory specified in the Decision and Order related to each of the Divestiture Products, including the research, Development, manufacture, distribution, marketing, and sale of each Divestiture Product and the assets related to

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such business, including, but not limited to, the Divestiture Assets.

- G. “Divestiture Product Core Employees” means the Product Research and Development Employees and the Product Manufacturing Employees related to each Divestiture Product(s), individually and collectively.
- H. “Interim Monitor” means any monitor appointed pursuant to Paragraph III of this Order to Maintain Assets or Paragraph V of the Decision and Order.
- I. “Orders” means the Decision and Order and this Order to Maintain Assets.
- J. “Pre-Acquisition Marketing Plan” means any marketing or sales plan that was planned or implemented within the period immediately prior to the Acquisition and without consideration of the influence of the pending Acquisition for the Divestiture Product Businesses.

II.

IT IS FURTHER ORDERED that from the date this Order to Maintain Assets becomes final:

- A. Respondent shall take such actions as are necessary to maintain the full economic viability, marketability and competitiveness of the Divestiture Product Businesses, to minimize any risk of loss of competitive potential for the Divestiture Product Businesses, and to prevent the destruction, removal, wasting, deterioration, or impairment of the Divestiture Product Businesses except for ordinary wear and tear. Respondent shall not sell, transfer, encumber or otherwise impair the Divestiture Assets (other than in the manner prescribed in the Decision and Order) nor take any action that lessens the full economic

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viability, marketability or competitiveness of the Divestiture Product Businesses.

- B. Respondent shall maintain the operations of the Divestiture Product Businesses in the regular and ordinary course of business and in accordance with past practice (including regular repair and maintenance of the assets of such businesses) and/or as may be necessary to preserve the marketability, viability, and competitiveness of the Divestiture Product Businesses and shall use its best efforts to preserve the existing relationships with the following: suppliers; vendors and distributors, including, but not limited to, the High Volume Accounts; customers; Agencies; employees; and others having business relations with the Divestiture Product Businesses. Respondent's responsibilities shall include, but are not limited to, the following:
1. providing the Divestiture Product Businesses with sufficient working capital to operate at least at current rates of operation, to meet all capital calls with respect to such businesses and to carry on, at least at their scheduled pace, all capital projects, business plans and promotional activities for the Divestiture Product Businesses;
 2. continuing, at least at their scheduled pace, any additional expenditures for the Divestiture Product Businesses authorized prior to the date the Consent Agreement was signed by Respondent including, but not limited to, all research, Development, manufacture, distribution, marketing and sales expenditures;
 3. provide such resources as may be necessary to respond to competition against the Divestiture Products and/or to prevent any diminution in sales of the Divestiture

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Products during and after the Acquisition process and prior to divestiture of the related Divestiture Assets;

4. provide such resources as may be necessary to maintain the competitive strength and positioning of the Divestiture Products at the High Volume Accounts;
 5. making available for use by the Divestiture Product Businesses funds sufficient to perform all routine maintenance and all other maintenance as may be necessary to, and all replacements of, the assets related to such business, including the Divestiture Assets;
 6. providing the Divestiture Product Businesses with such funds as are necessary to maintain the full economic viability, marketability and competitiveness of the Divestiture Product Businesses; and
 7. providing such support services to the Divestiture Product Businesses as were being provided to these businesses by Respondent or PLIVA (whichever party is relevant to such Divestiture Product(s)) as of the date the Consent Agreement was signed by Respondent.
- C. Respondent shall maintain a work force at least equivalent in size, training, and expertise to what has been associated with the Divestiture Products for the relevant Divestiture Product's most recent Pre-Acquisition Marketing Plan.
- D. Until the Closing Date for each respective set of Divestiture Assets, Respondent shall provide all the related Divestiture Core Employees with reasonable financial incentives to continue in their positions and to research, Develop, and manufacture the relevant Divestiture Products consistent with past practices and/or as may be necessary to preserve the marketability,

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viability and competitiveness of such Divestiture Products pending divestiture and to ensure successful execution of the Pre-Acquisition Marketing Plans related to the relevant Divestiture Products. Such incentives shall include a continuation of all employee benefits offered by Respondent or PLIVA (whichever party is relevant to such Divestiture Product(s)) until the Closing Date for the divestiture of the respective Divestiture Assets has occurred, including regularly scheduled raises, bonuses, vesting of pension benefits (as permitted by Law), and additional incentives as may be necessary to prevent any diminution of the relevant Divestiture Product's competitiveness.

E. Respondent shall:

1. for each Paragraph II Divestiture Product (as defined in the Decision and Order), for a period of at least twelve (12) months from the relevant Closing Date or upon the hiring of ten (10) Divestiture Product Core Employees by the relevant Commission-approved Acquirer, whichever occurs earlier, provide the relevant Commission-approved Acquirer with the opportunity to enter into employment contracts with the Divestiture Product Core Employees related to such Divestiture Products and assets acquired by such Commission-approved Acquirer. Each of these periods is hereinafter referred to as the "Divestiture Product Employee Access Period(s)"; and
2. not later than the earlier of the following dates: (1) ten (10) days after notice by staff of the Commission to Respondent to provide the Product Employee Information; or (2) ten (10) days after the relevant Closing Date, provide the relevant Commission-approved Acquirer or the relevant Proposed Acquirer with the Product Employee Information related to the

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relevant Divestiture Product Core Employees. Failure by Respondent to provide the Product Employee Information for any Divestiture Product Core Employee within the time provided herein shall extend the Divestiture Product Employee Access Period(s) with respect to that employee in an amount equal to the delay.

3. during the Divestiture Product Employee Access Period, not interfere with the hiring or employing by the relevant Commission-approved Acquirer of Divestiture Product Core Employees, and shall remove any impediments within the control of Respondent that may deter these employees from accepting employment with such Commission-approved Acquirer, including, but not limited to, any noncompete provisions of employment or other contracts with Respondent or PLIVA (whichever party is relevant to such Divestiture Product(s)) that would affect the ability or incentive of those individuals to be employed by such Commission-approved Acquirer. In addition, Respondent shall not make any counteroffer to a Divestiture Product Core Employee who receives a written offer of employment from the relevant Commission-approved Acquirer;

provided, however, that this Paragraph II.E.3. shall not prohibit Respondent or PLIVA from continuing to employ any Divestiture Product Core Employee (subject to the conditions of continued employment prescribed in the Decision and Order).

- F. Pending divestiture of the relevant Divestiture Assets, Respondent shall:
 1. not use, directly or indirectly, any such Confidential Business Information related to the research,

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Development, manufacturing, marketing, or sale of the relevant Divestiture Product(s) other than as necessary to comply with the following: (1) the requirements of the Orders; (2) Respondent's obligations to the Commission-approved Acquirer under the terms of any Remedial Agreement related to relevant Divestiture Product(s); or (3) applicable Law;

2. not disclose or convey any such Confidential Business Information, directly or indirectly, to any person except the relevant Commission-approved Acquirer;
 3. not provide, disclose or otherwise make available, directly or indirectly, any such Confidential Business Information related to the marketing or sales of the relevant Divestiture Products to the employees associated with business related to those Retained Products that are approved by the FDA for the same or similar indications as the relevant Divestiture Products; and
 4. institute procedures and requirements to ensure that the above-described employees:
 - a. do not provide, disclose or otherwise make available, directly or indirectly, any Confidential Business Information in contravention of this Order to Maintain Assets; and
 - b. do not solicit, access or use any Confidential Business Information that they are prohibited under this Order to Maintain Assets from receiving for any reason or purpose.
- G. Not later than thirty (30) days following the Effective Date, Respondent shall provide to all of Respondent's employees and other personnel who may have access to

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Confidential Business Information related to each of the respective Divestiture Products written or electronic notification of the restrictions on the use of such information by Respondent's personnel. At the same time, if not provided earlier, Respondent shall provide a copy of such notification by e-mail with return receipt requested or similar transmission, and keep an electronic file of such receipts for one (1) year after the Closing Date. Respondent shall provide a copy of the form of such notification to the Commission-approved Acquirer, the Interim Monitor(s), and the Commission. Respondent shall also obtain from each employee covered by this Paragraph II.G. an agreement to abide by the applicable restrictions. Respondent shall maintain complete records of all such agreements at Respondent's corporate headquarters and shall provide an officer's certification to the Commission stating that such acknowledgment program has been implemented and is being complied with. Respondent shall monitor the implementation by its employees and other personnel of all applicable restrictions, and take corrective actions for the failure of such employees and personnel to comply with such restrictions or to furnish the written agreements and acknowledgments required by this Order to Maintain Assets. Respondent shall provide the Commission-approved Acquirer with copies of all certifications, notifications and reminders sent to Respondent's employees and other personnel.

- H. Respondent shall adhere to and abide by the Remedial Agreements (which agreements shall not vary or contradict, or be construed to vary or contradict, the terms of the Orders, it being understood that nothing in the Orders shall be construed to reduce any obligations of Respondent under such agreement(s)), which are incorporated by reference into this Order to Maintain Assets and made a part hereof.

Order to Maintain Assets

- I. The purpose of this Order to Maintain Assets is to maintain the full economic viability, marketability and competitiveness of the Divestiture Product Businesses through their respective transfer to the Commission-approved Acquirer(s), to minimize any risk of loss of competitive potential for the Divestiture Product Businesses, and to prevent the destruction, removal, wasting, deterioration, or impairment of any of the Divestiture Assets except for ordinary wear and tear.

III.**IT IS FURTHER ORDERED** that:

- A. At any time after Respondent signs the Consent Agreement in this matter, the Commission may appoint an Interim Monitor to assure that Respondent expeditiously complies with all of its obligations and performs all of its responsibilities as required by the Orders and the Remedial Agreements. The Commission may appoint one or more Interim Monitors to assure Respondent's compliance with the requirements of the Orders, and the related Remedial Agreements.
- B. The Commission shall select the Interim Monitor, subject to the consent of Respondent which consent shall not be unreasonably withheld. If Respondent has not opposed, in writing, including the reasons for opposing, the selection of a proposed Interim Monitor within ten (10) Days after notice by the staff of the Commission to Respondent of the identity of any proposed Interim Monitor, Respondent shall be deemed to have consented to the selection of the proposed Interim Monitor.
- C. Not later than ten (10) Days after the appointment of the Interim Monitor, Respondent shall execute an agreement

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that, subject to the prior approval of the Commission, confers on the Interim Monitor all the rights and powers necessary to permit the Interim Monitor to monitor Respondent's compliance with the relevant requirements of the Orders in a manner consistent with the purposes of the Orders.

- D. If one or more Interim Monitors are appointed pursuant to this Paragraph or pursuant to the relevant provisions of the Decision and Order in this matter, Respondent shall consent to the following terms and conditions regarding the powers, duties, authorities, and responsibilities of each Interim Monitor:
1. The Interim Monitor shall have the power and authority to monitor Respondent's compliance with the divestiture and asset maintenance obligations and related requirements of the Orders, and shall exercise such power and authority and carry out the duties and responsibilities of the Interim Monitor in a manner consistent with the purposes of the Orders and in consultation with the Commission;
 2. The Interim Monitor shall act in a fiduciary capacity for the benefit of the Commission;
 3. The Interim Monitor shall serve until the later of:
 - a. the completion by Respondent of:
 - (1) the divestiture of all Divestiture Assets in a manner that fully satisfies the requirements of the Orders; and
 - (2) notification by each of the relevant Commission-approved Acquirers to the Interim Monitor that such Commission-approved

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Acquirer is: (1) approved by the FDA to manufacture the Trazodone Hydrochloride Products and the Triamterene Products, and (2) able to manufacture such Divestiture Products in commercial quantities, in a manner consistent with cGMP, independently of Respondent and PLIVA; and

- b. the completion by Respondent of the last obligation under the Orders pertaining to the Interim Monitor's service;

provided, however, that the Commission may extend or modify this period as may be necessary or appropriate to accomplish the purposes of the Orders.

- E. Subject to any demonstrated legally recognized privilege, the Interim Monitor shall have full and complete access to Respondent's personnel, books, documents, records kept in the normal course of business, facilities and technical information, and such other relevant information as the Interim Monitor may reasonably request, related to Respondent's compliance with its obligations under the Orders, including, but not limited to, its obligations related to the relevant assets. Respondent shall cooperate with any reasonable request of the Interim Monitor and shall take no action to interfere with or impede the Interim Monitor's ability to monitor Respondent's compliance with the Orders.
- F. The Interim Monitor shall serve, without bond or other security, at the expense of Respondent on such reasonable and customary terms and conditions as the Commission may set. The Interim Monitor shall have authority to employ, at the expense of Respondent, such consultants, accountants, attorneys and other representatives and

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assistants as are reasonably necessary to carry out the Interim Monitor's duties and responsibilities.

- G. Respondent shall indemnify the Interim Monitor and hold the Interim Monitor harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Interim Monitor's duties, including all reasonable fees of counsel and other reasonable expenses incurred in connection with the preparations for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Interim Monitor.
- H. Respondent shall report to the Interim Monitor in accordance with the requirements of this Order to Maintain Assets and/or as otherwise provided in any agreement approved by the Commission. The Interim Monitor shall evaluate the reports submitted to the Interim Monitor by Respondent, and any reports submitted by the Commission-approved Acquirer with respect to the performance of Respondent's obligations under the Orders or the Remedial Agreement. Within one (1) month from the date the Interim Monitor receives these reports, the Interim Monitor shall report in writing to the Commission concerning performance by Respondent of its obligations under the Orders.
- I. Respondent may require the Interim Monitor and each of the Interim Monitor's consultants, accountants, attorneys and other representatives and assistants to sign a customary confidentiality agreement;

provided, however, that such agreement shall not restrict the Interim Monitor from providing any information to the Commission.

Order to Maintain Assets

- J. The Commission may, among other things, require the Interim Monitor and each of the Interim Monitor's consultants, accountants, attorneys and other representatives and assistants to sign an appropriate confidentiality agreement related to Commission materials and information received in connection with the performance of the Interim Monitor's duties.
- K. If the Commission determines that the Interim Monitor has ceased to act or failed to act diligently, the Commission may appoint a substitute Interim Monitor in the same manner as provided in this Paragraph or the relevant provisions of the Decision and Order in this matter.
- L. The Commission may on its own initiative, or at the request of the Interim Monitor, issue such additional orders or directions as may be necessary or appropriate to assure compliance with the requirements of the Orders.
- M. The Interim Monitor appointed pursuant to this Order to Maintain Assets or the relevant provisions of the Decision and Order in this matter may be the same person appointed as a Divestiture Trustee pursuant to the relevant provisions of the Decision and Order.

IV.

IT IS FURTHER ORDERED that within thirty (30) Days after the date this Order to Maintain Assets becomes final, and every thirty (30) Days thereafter until Respondent has fully complied with its obligations to assign, grant, license, divest, transfer, deliver or otherwise convey relevant assets as required by Paragraphs II.A., II.B., and III.A. of the related Decision and Order in this matter, Respondent shall submit to the Commission a verified written report setting forth in detail the manner and form in which it intends to comply, is complying, and has complied with this Order to Maintain Assets and the related

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V.

IT IS FURTHER ORDERED that Respondent shall notify the Commission at least thirty (30) Days prior to any proposed (1) dissolution of Respondent, (2) acquisition, merger or consolidation of Respondent, or (3) any other change in Respondent that may affect compliance obligations arising out of the order, including, but not limited to, assignment, the creation or dissolution of subsidiaries, or any other change in Respondent.

VI.

IT IS FURTHER ORDERED that, for purposes of determining or securing compliance with this Order to Maintain Assets, and subject to any legally recognized privilege, and upon written request and upon five (5) days notice to Respondent made to its principal United States offices or its headquarters address, Respondent shall, without restraint or interference, permit any duly authorized representative of the Commission:

- A. access, during business office hours of Respondent and in the presence of counsel, to all facilities and access to inspect and copy all books, ledgers, accounts, correspondence, memoranda and all other records and documents in the possession or under the control of Respondent related to compliance with this Order, which copying services shall be provided by Respondent at the request of the authorized representative(s) of the Commission; and

Order to Maintain Assets

- B. to interview officers, directors, or employees of Respondent, who may have counsel present, regarding such matters.

VII.

IT IS FURTHER ORDERED that this Order to Maintain Assets shall terminate on the earlier of:

- A. Three (3) Days after the Commission withdraws its acceptance of the Consent Agreement pursuant to the provisions of Commission Rule 2.34, 16 C.F.R. § 2.34; or
- B. The latter of:
 - 1. The day after the divestiture of all of the Divestiture Assets, as required by and described in the Decision and Order, has been completed and each Interim Monitor, in consultation with Commission staff and the Commission-approved Acquirer(s), notifies the Commission that all assignments, conveyances, deliveries, grants, licenses, transactions, transfers and other transitions related to such divestitures are complete, or the Commission otherwise directs that this Order to Maintain Assets is terminated; or
 - 2. the day the related Decision and Order becomes final.

By the Commission.

Order to Maintain Assets

PUBLIC
APPENDIX A
TO THE ORDER TO MAINTAIN ASSETS
AGREEMENT CONTAINING CONSENT ORDER
AND PROPOSED DECISION AND ORDER

Decision and Order

DECISION AND ORDER

The Federal Trade Commission (“Commission”), having initiated an investigation of the proposed acquisition by Respondent Barr Pharmaceuticals, Inc. of PLIVA d.d., and Respondent having been furnished thereafter with a copy of a draft Complaint that the Bureau of Competition proposed to present to the Commission for its consideration and that, if issued by the Commission, would charge Respondent with violations of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondent, its attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Orders (“Consent Agreement”), containing an admission by Respondent of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondent that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondent has violated the said Acts, and that a Complaint should issue stating its charges in that respect, and having thereupon issued its Complaint and an Order to Maintain Assets (attached to this Order as Appendix I), and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby makes the following jurisdictional findings and issues the following Decision and Order (“Order”):

Decision and Order

1. Respondent Barr Pharmaceuticals, Inc. is a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its headquarters address at 400 Chestnut Ridge Road, Woodcliff Lake, New Jersey 07677.
2. PLIVA d.d. is a corporation organized, existing and doing business under and by virtue of the laws of the Republic of Croatia, with its headquarters address at Ulica Graden Vukovara 49, 10000 Zagreb, Croatia, and the address of the principal place of business of its United States subsidiaries at 72 Eagle Rock Avenue, P.O. Box 371, East Hanover, New Jersey 07936.
3. The Commission has jurisdiction of the subject matter of this proceeding and of Respondent, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that, as used in the Order, the following definitions shall apply:

- A. "Barr" means Barr Pharmaceuticals, Inc., its directors, officers, employees, agents, representatives, predecessors, successors, and assigns; and its joint ventures, subsidiaries, divisions, groups and affiliates in each case controlled by Barr (including, but not limited to, Barr Laboratories, Inc.) and the respective directors, officers, employees, agents, representatives, predecessors, successors, and assigns of each. After the Acquisition, Barr shall include PLIVA.
- B. "PLIVA" means PLIVA d.d., its directors, officers, employees, agents, representatives, predecessors, successors, and assigns; and its joint ventures,

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subsidiaries, divisions, groups and affiliates in each case controlled by PLIVA (including, but not limited to, its United States subsidiaries, *i.e.*, PLIVA, Inc., PLIVA USA, and Odyssey Pharmaceuticals, Inc.), and the respective directors, officers, employees, agents, representatives, predecessors, successors, and assigns of each.

- C. “Respondent” means Barr.
- D. “Commission” means the Federal Trade Commission.
- E. “Acquisition” means the Respondent’s acquisition of fifty percent (50%) or more of the voting securities of PLIVA.
- F. “Agency(ies)” means any government regulatory authority or authorities in the world responsible for granting approval(s), clearance(s), qualification(s), license(s), or permit(s) for any aspect of the research, Development, manufacture, marketing, distribution, or sale of a Product. The term “Agency” includes, but is not limited to, the United States Food and Drug Administration (“FDA”).
- G. “Apotex” means Apotex, Inc., a corporation organized, existing, and doing business under and by virtue of the laws of Canada, with its headquarters address at 200 Barmac Drive, Toronto ON M9L2Z7 and its United States subsidiary Apotex Corp, a corporation organized, existing, and doing business under and by virtue of the laws of State of Delaware.
- H. “Application(s)” means all of the following: “New Drug Application” (“NDA”), “Abbreviated New Drug Application” (“ANDA”), “Supplemental New Drug Application” (“SNDAs”), or “Marketing Authorization Application” (“MAA”) means the applications for a Product filed or to be filed with the FDA pursuant to 21 C.F.R. Part 314, and all supplements, amendments, and

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revisions thereto, any preparatory work, drafts and data necessary for the preparation thereof, and all correspondence between Respondent and the FDA related thereto. The term “Application” also includes an “Investigational New Drug Application” (“IND”) for a Product filed or to be filed with the FDA pursuant to 21 C.F.R. Part 312, and all supplements, amendments, and revisions thereto, any preparatory work, drafts and data necessary for the preparation thereof, and all correspondence between Respondent and the FDA related thereto.

- I. “Banner” means Banner Pharmacaps Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its headquarters address at 4125 Premier Drive, High Point, NC 27265-8144.
- J. “Cardinal” means Cardinal Health, Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of Ohio, with its headquarters address at 7000 Cardinal Place, Dublin, OH 43017.
- K. “Categorized Assets” means the following assets related to the specified Divestiture Product(s):
 - 1. all Product Intellectual Property related to such Divestiture Product(s);
 - 2. perpetual, fully paid-up and royalty-free license(s) with rights to sublicense to all Product Licensed Intellectual Property to use, make, distribute, offer for sale, promote, advertise, sell, import, export, or have used, made, distributed, offered for sale, promoted, advertised, sold, imported, or exported the Divestiture Product(s) within the specified Geographic Territory;

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3. all Product Registrations related to such Divestiture Product(s);
4. all Product Manufacturing Technology related to such Divestiture Product(s);
5. all Product Marketing Materials related to such Divestiture Product(s);
6. a list of all of the NDC Numbers related to such Divestiture Product(s), and rights, to the extent permitted by Law:
 - a. to require Respondent to discontinue the use of those NDC Numbers in the sale or marketing of Products other than with respect to returns, rebates, allowances, and adjustments for Divestiture Products sold prior to the Effective Date;
 - b. to prohibit Respondent from seeking from any customer any type of cross- referencing of those NDC Numbers with any Retained Product(s);
 - c. to seek to change any cross-referencing by a customer of those NDC Numbers with the Retained Product(s) (including the right to receive notification from Respondent of any such cross-referencing that is discovered by Respondent);
 - d. to seek cross-referencing from a customer of those NDC Numbers with the relevant Commission-approved Acquirer's NDC Numbers related to the Divestiture Product(s);
 - e. to approve the timing of Respondent's discontinued use of those NDC Numbers in the sale or marketing of Products other than with

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respect to returns, rebates, allowances, and adjustments for Divestiture Products sold prior to the Effective Date;

- f. to approve any notification(s) from Respondent to any customer(s) regarding the use or discontinued use of such numbers by Respondent prior to such notification(s) being disseminated to the customer(s);
7. all rights to all of Respondent's Applications related to such Divestiture Product(s);
8. Right of Reference or Use to the Drug Master Files related to the above-described Applications including, but not limited to, the pharmacology and toxicology data contained in all Application(s);
9. for each Divestiture Product that is a medical device, all rights to all of Respondent's or PLIVA's (whichever party is relevant to such Divestiture Product(s)) Premarket Approvals and Premarket Notifications related to such Divestiture Product(s);
10. for each Divestiture Product that is a medical device, all rights to all of Respondent's or PLIVA's (whichever party is relevant to such Divestiture Product(s)) medical device reports, *i.e.*, all submissions to and correspondence from the FDA related to the Divestiture Product made pursuant to 21 C.F.R. § 803;
11. all Product Development Reports related to such Divestiture Product(s);
12. at the relevant Commission-approved Acquirer's option, all Product Assumed Contracts related to such

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Divestiture Product(s) (copies to be provided to the relevant Commission-approved Acquirer on or before the Closing Date);

13. all strategic safety program(s) submitted to the FDA related to such Divestiture Product(s) that is designed to decrease product risk by using one or more interventions or tools beyond the package insert;
14. all patient registries related to such Divestiture Product(s), and any other systematic active post-marketing surveillance program to collect patient data, laboratory data and identification information required to be maintained by the FDA to facilitate the investigation of adverse effects related to such Divestiture Product(s);
15. a list of all customers and/or targeted customers for such Divestiture Product(s) and the net sales (in either units or dollars) of such Divestiture Products to such customers on either an annual, quarterly, or monthly basis including, but not limited to, a separate list specifying the above-described information for the High Volume Accounts and including the name of the employee(s) for each High Volume Account that is or has been responsible for the purchase of such Divestiture Products on behalf of the High Volume Account and his or her business contact information;
16. at the relevant Commission-approved Acquirer's option and to the extent approved by the Commission in the relevant Remedial Agreement, all inventory in existence as of the Closing Date including, but not limited to, raw materials, packaging materials, work-in-process and finished goods related to such Divestiture Product(s);

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17. copies of all unfilled customer purchase orders for such Divestiture Product(s) as of the Closing Date, to be provided to the relevant Commission-approved Acquirer not later than two (2) days after the Closing Date;
18. at the relevant Commission-approved Acquirer's option, subject to any rights of the customer, all unfilled customer purchase orders for such Divestiture Products; and
19. all of the Respondent's or PLIVA's (whichever party is relevant to such Divestiture Product(s)) books, records, and files directly related to the foregoing or to such Divestiture Product(s);

provided, however, that "Categorized Assets" shall not include documents relating to Respondent's or PLIVA's general business strategies or practices relating to research, development, manufacture, marketing or sales of generic pharmaceutical Products, where such documents do not discuss with particularity the Divestiture Products;

provided further, the "Categorized Assets" shall not include administrative, financial, and accounting records;

provided further, Respondent may exclude from the "Categorized Assets" quality control records that are determined by the Interim Monitor or the Commission-approved Acquirer not to be material to the manufacture of the Divestiture Product(s);

provided further, that in cases in which documents or other materials included in the relevant assets to be divested contain information: (1) that relates both to

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such Divestiture Product(s) and to other Products or businesses of the Respondent or PLIVA and cannot be segregated in a manner that preserves the usefulness of the information as it relates to such Divestiture Product(s); or (2) for which the relevant party has a legal obligation to retain the original copies, the relevant party shall be required to provide only copies or relevant excerpts of the documents and materials containing this information. In instances where such copies are provided to the relevant Commission-approved Acquirer, the relevant party shall provide such Commission-approved Acquirer access to original documents under circumstances where copies of documents are insufficient for evidentiary or regulatory purposes. The purpose of this proviso is to ensure that Respondent provides the relevant Commission-approved Acquirer with the above-described information without requiring Respondent completely to divest itself of information that, in content, also relates to Retained Product(s).

- L. “cGMP” means current Good Manufacturing Practice as set forth in the United States Federal, Food, Drug, and Cosmetic Act, as amended, and includes all rules and regulations promulgated by the FDA thereunder.
- M. “Closing Date” means, as to each Divestiture Product, the date on which Respondent (or a Divestiture Trustee) consummates a transaction to assign, grant, license, divest, transfer, deliver, or otherwise convey assets related to such Divestiture Product to a Commission-approved Acquirer pursuant to this Order.
- N. “Commission-approved Acquirer” means the following:
 - 1. an entity specified by name in this Order to acquire particular assets or rights that Respondent is required

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to assign, grant, license, divest, transfer, deliver, or otherwise convey pursuant to this Order and that has been approved by the Commission to accomplish the requirements of this Order in connection with the Commission's determination to make this Order final; or

2. an entity approved by the Commission to acquire particular assets or rights that Respondent is required to assign, grant, license, divest, transfer, deliver, or otherwise convey pursuant to this Order.
- O. "Confidential Business Information" means all information owned by, or in the possession or control of, Respondent or PLIVA that is not in the public domain and that is directly related to the research, Development, manufacture, marketing, commercialization, importation, exportation, cost, supply, sales, sales support or use of the Divestiture Product(s); *provided however*, that the restrictions contained in this Order regarding the use, conveyance, provision or disclosure of "Confidential Business Information" shall not apply to the following:
1. information that subsequently falls within the public domain through no violation of this Order or breach of confidentiality or non-disclosure agreement with respect to such information by Respondent;
 2. information related to the Nimodipine (Barr) Products, Trazodone Hydrochloride Products, the Triamterene and Hydrochlorothiazide Products or the ViaSpan Products that PLIVA can demonstrate it obtained without the assistance of Respondent prior to the Acquisition;
 3. information related to the Custodiol Products or the Nimodipine (PLIVA) Products that Respondent can

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demonstrate it obtained without the assistance of PLIVA prior to the Acquisition;

4. information related to the Trazodone Hydrochloride Tablets USP 300 mg;
 5. information that is required by Law to be publicly disclosed;
 6. information that does not directly relate to the Divestiture Product(s);
 7. information relating to Respondent or PLIVA's general business strategies or practices relating to research, development, manufacture, marketing or sales of generic pharmaceutical Products that does not discuss with particularity the Divestiture Product(s); or
 8. information specifically excluded from the Categorized Assets.
- P. "Contract Manufacture" means the manufacture of a Divestiture Product to be supplied by Respondent or a Designee to a Commission-approved Acquirer.
- Q. "Custodiol Product(s)" means all Products that contain Histidine, Tryptophan, Potassium hydrogen 2-Ketoglutarate and Mannitol, researched, Developed, in Development, manufactured, marketed or sold by PLIVA on or before the Effective Date. The term "Custodiol Products" includes, but is not limited to, all Products in Development, manufactured, marketed or sold by PLIVA on or before the Effective Date that are planned to be marketed for use in the preservation or cleansing of human organs during transplantation and/or for use in cardioplegia.

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- R. “Custodiol Product Assets” means all of PLIVA’s rights, title and interest in and to all assets related to PLIVA’s business within the United States of America (including all of the territories within its jurisdiction or control) and Canada related to the Custodiol Products to the extent legally transferable, including the research, Development, manufacture, distribution, marketing, and sale of the Custodiol Products, including, without limitation, the Categorized Assets related to the Custodiol Products.
- S. “Custodiol Product Divestiture Agreements” means the “Asset Purchase Agreement” by and between Odyssey Pharmaceuticals, Inc. and New Custodiol LLC dated as of August 2, 2006, and all amendments, exhibits, attachments, agreements, and schedules thereto, related to the Custodiol Products that have been approved by the Commission to accomplish the requirements of this Order. The Custodiol Product Divestiture Agreements are attached to this Order and contained in non-public Appendix II.B.
- T. “Designee” means any entity other than Respondent or PLIVA that will manufacture a Divestiture Product for a Commission-approved Acquirer.
- U. “Development” means all preclinical and clinical drug development activities (including formulation), including test method development and stability testing, toxicology, formulation, process development, manufacturing scale-up, development-stage manufacturing, quality assurance/quality control development, statistical analysis and report writing, conducting clinical trials for the purpose of obtaining any and all approvals, licenses, registrations or authorizations from any Agency necessary for the manufacture, use, storage, import, export, transport, promotion, marketing, and sale of a Product (including any government price or reimbursement approvals),

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Product approval and registration, and regulatory affairs related to the foregoing. “Develop” means to engage in Development.

- V. “Direct Cost” means a cost not to exceed the cost of labor, material, travel and other expenditures to the extent the costs are directly incurred to provide the relevant assistance or service. “Direct Cost” to the Commission-approved Acquirer for its use of any of Respondent’s employees’ labor shall not exceed the average hourly wage rate for such employee.
- W. “Divestiture Product(s)” means the following Products: the Custodiol Products, the Nimodipine (Barr) Products, the Nimodipine (PLIVA) Products, the Trazodone Hydrochloride Products, the Triamterene and Hydrochlorothiazide Products, and the ViaSpan Products, individually and collectively.
- X. “Divestiture Product Core Employees” means the Product Research and Development Employees and the Product Manufacturing Employees related to each Divestiture Product.
- Y. “Divestiture Product Releasee(s)” means the Commission-approved Acquirer for the assets related to a particular Divestiture Product or any entity controlled by or under common control with such Commission-approved Acquirer, or any licensees, sublicensees, manufacturers, suppliers, distributors, and customers of such Commission-approved Acquirer, or of such Commission-approved Acquirer-affiliated entities.
- Z. “Divestiture Trustee” means the trustee appointed by the Commission pursuant to the relevant provisions of this Order.

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- AA. “Domain Name” means the domain name(s) (universal resource locators), and registration(s) thereof, issued by any entity or authority that issues and maintains the domain name registration. “Domain Name” shall not include any trademark or service mark rights to such domain names other than the rights to the Product Trademarks required to be divested.
- BB. “Drug Master Files” means the information submitted to the FDA as described in 21 C.F.R. Part 314.420 related to a Product.
- CC. “Effective Date” means the date on which the Acquisition occurs.
- DD. “Expiration Date” means the earliest of the following days:
1. the day on which Respondent withdraws its tender offer for the voting securities of PLIVA;
 2. the day on which Respondent’s tender offer for the voting securities of PLIVA expires without extension or amendment by Respondent;
 3. the day on which an entity other than Respondent acquires fifty (50) percent or more of the voting securities of PLIVA; or
 4. the day six (6) months after the day on which this Order becomes final.
- EE. “Generic Divestiture Product Agreement(s)” means the “Asset Purchase Agreement” between Barr Laboratories, Inc. and Apotex Corp. dated as of October 2, 2006, and all amendments, exhibits, attachments, agreements, and schedules thereto and the “Interim Supply Agreement”

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between Barr Laboratories, Inc. and Apotex Corp. dated as of October 2, 2006, and all amendments, exhibits, attachments, agreements, and schedules thereto, related to the Trazodone Hydrochloride Product Assets, and the Triamterene and Hydrochlorothiazide Product Assets that have been approved by the Commission to accomplish the requirements of this Order. The Generic Divestiture Product Agreements are attached to this Order and contained in non-public Appendix II.A.

- FF. “Geographic Territory” shall mean the United States of America (including all of the territories within its jurisdiction or control) unless otherwise specified.
- GG. “Government Entity” means any Federal, state, local or non-U.S. government, or any court, legislature, government agency, or government commission, or any judicial or regulatory authority of any government.
- HH. “High Volume Account(s)” means any retailer, wholesaler or distributor whose annual and/or projected annual aggregate purchase amounts (on a company-wide level), in units or in dollars, of a Divestiture Product in the United States from the Respondent or PLIVA (whichever party is relevant to such Divestiture Product) was, is, or is projected to be among the top twenty highest of such purchase amounts by Respondent’s or PLIVA’s (whichever party is relevant to such Divestiture Product) U.S. customers on any of the following dates: (1) the end of the last quarter that immediately preceded the date of the public announcement of the proposed Acquisition; (2) the end of the last quarter that immediately preceded the Effective Date; (3) the end of the last quarter that immediately preceded the Closing Date for the relevant assets; or 4) the end of the last quarter following the Acquisition and/or the Closing Date.

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- II. “Interim Monitor” means any monitor appointed pursuant to Paragraph V of this Order or Paragraph III of the related Order to Maintain Assets.
- JJ. “Law” means all laws, statutes, rules, regulations, ordinances, and other pronouncements by any Government Entity having the effect of law.
- KK. “NDC Numbers” means the National Drug Code number(s), including both the labeler code assigned by the FDA and the additional numbers assigned by the Application holder as a product code for a specific Product.
- LL. “New Custodiol” means New Custodiol LLC, a limited liability company organized, existing, and doing business under and by virtue of the laws of the State of Delaware, with its headquarters address at c/o Francis X. Wentworth, Jr., 1776 On The Green, 67 Park Place East, 8th Floor, Morristown, NJ 07960.
- MM. “Nimodipine (Barr) Product(s)” means all of the following: all Products in Development, manufactured, marketed or sold by Respondent Barr pursuant to the following of Respondent Barr’s ANDAs:
1. ANDA No. 77-811; and
 2. any supplements, amendments, or revisions thereto.
- NN. “Nimodipine (Barr) Product Assets” means all of Respondent Barr’s rights, title and interest in and to all assets related to Respondent Barr’s business within the Geographic Territory related to the Nimodipine (Barr) Products to the extent legally transferable, including the research, Development, manufacture, distribution, marketing, and sale of the Nimodipine (Barr) Products,

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including, without limitation, the Categorized Assets related to the Nimodipine (Barr) Products.

OO. “Nimodipine (PLIVA) Product(s)” means all of the following: all Products in Development, manufactured, marketed or sold by PLIVA pursuant to the following of PLIVA’s ANDAs:

1. ANDA No. 76-740; and
2. any supplements, amendments, or revisions thereto.

PP. “Nimodipine (PLIVA) Product Agreement” means the “Amended and Restated Joint Venture Agreement” by and between Sidmak Laboratories, Inc. and Banner Pharmacaps, Inc. dated as of May 30, 2002, and all amendments, exhibits, attachments, agreements, and schedules thereto. The Nimodipine (PLIVA) Product Agreement is attached to this Order and contained in non-public Appendix III.1.

QQ. “Nimodipine (PLIVA) Product Assets means all of PLIVA’s rights, title and interest in and to all assets related to PLIVA’s business within the Geographic Territory related to the Nimodipine (PLIVA) Products to the extent legally transferable, including the research, Development, manufacture, distribution, marketing, and sale of the Nimodipine (PLIVA) Products, including, without limitation, the Categorized Assets related to the Nimodipine (PLIVA) Products.

RR. “Nimodipine (PLIVA) Product Divestiture Agreement(s)” means the “Asset Purchase Agreement” by and between PLIVA, Inc. and Banner Pharmacaps Inc., dated as of August 2, 2006, and the “Transition Services Agreement” by and between PLIVA, Inc. f/k/a Sidmak Laboratories, Inc. and Banner Pharmacaps Inc., dated as of August 2,

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2006, and all amendments, exhibits, attachments, agreements, and schedules thereto, related to the Nimodipine (PLIVA) Products that have been approved by the Commission to accomplish the requirements of this Order. The Nimodipine (PLIVA) Product Divestiture Agreements are attached to this Order and contained in non-public Appendix III.1.

SS. "Order to Maintain Assets" means the Order to Maintain Assets incorporated into and made a part of the Agreement Containing Consent Orders. The Order to Maintain Assets is attached to this Order and contained in Appendix I.

TT. "Ownership Interest" means any and all rights, present or contingent, of Respondent to hold any voting or nonvoting stock, share capital, equity or other interests or beneficial ownership in an entity.

UU. "Paragraph II Divestiture Products" means the following Products: (1) the Trazodone Hydrochloride Products; (2) the Triamterene and Hydrochlorothiazide Products; and (3) the Divestiture Products and the assets related to such Divestiture Products that Respondent divests in accordance with and pursuant to Paragraph II.B., *i.e.*, either the Custodiol Products or the ViaSpan Products.

VV. "Paragraph III Divestiture Products" means the Divestiture Products and the assets related to such Divestiture Products that Respondent divests in accordance with and pursuant to Paragraph III.A., *i.e.*, either the Nimodipine (Barr) Products, or the Nimodipine (PLIVA) Products.

WW. "Patents" means all patents, patent applications, including provisional patent applications, and statutory invention registrations, in each case existing as of the Closing Date (*except* where this Order specifies a different time), and includes all reissues, divisions, continuations,

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continuations-in-part, supplementary protection certificates, extensions and reexaminations thereof, all inventions disclosed therein, and all rights therein provided by international treaties and conventions, related to any Product of or owned by Respondent or PLIVA as of the Closing Date (*except* where this Order specifies a different time).

- XX. “Person” means any individual, partnership, joint venture, firm, corporation, association, trust, unincorporated organization, joint venture, or other business or Government Entity, and any subsidiaries, divisions, groups or affiliates thereof.
- YY. “Premarket Approval(s)” means the applications for a Product filed or to be filed with the FDA pursuant to 21 C.F.R. § 814, and all supplements, amendments, and revisions thereto, any preparatory work, drafts and data necessary for the preparation thereof, all information submitted with or incorporated by reference, and all correspondence between Respondent(s) and the FDA related thereto. The term “Premarket Approval(s)” includes all orders of approval and all reports and documents submitted to the FDA under postapproval requirements.
- ZZ. “Premarket Notification(s)” means a premarketing submission for a Product filed or to be filed with the FDA pursuant to 21 C.F.R. § 807, and all supplements, amendments, and revisions thereto, any preparatory work, drafts and data necessary for the preparation thereof, all information submitted with or incorporated by reference, and all correspondence between Respondent(s) and the FDA related thereto, to demonstrate that a device to be marketed is as safe and effective, that is, substantially equivalent, to a legally marketed device that is not subject to Premarket Approval. The term “Premarket

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Notification(s)” includes all notices of registration and all reports and documents required to be submitted to the FDA related to the marketing of such Product.

AAA. “Product” means:

1. any pharmaceutical, biological, or genetic composition containing any formulation or dosage of a compound referenced as its pharmaceutically, biologically, or genetically active ingredient; and/or
2. any medical device, *i.e.*, an instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent, or other similar or related article, including a component part, or accessory which is:
 - a. recognized in the official National Formulary of the United States, or the United States Pharmacopoeia, or any supplement to them,
 - b. intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease, in man or other animals, or
 - c. intended to affect the structure or any function of the body of man, and which does not achieve any of its primary intended purposes through chemical action within or on the body of man and which is not dependent upon being metabolized for the achievement of any of its primary intended purposes.

BBB. “Product Assumed Contracts” means all of the following contracts or agreements (copies of each such contract to be provided to the Commission-approved Acquirer on or before the relevant Closing Date and segregated in a

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manner that clearly identifies the purpose(s) of each such contract):

1. that make specific reference to the Divestiture Product(s) and pursuant to which any Third Party is obligated to purchase, or has the option to purchase without further negotiation of terms, the Divestiture Product(s) from Respondent or PLIVA (whichever party is relevant to such Divestiture Product) unless such contract applies generally to the divesting entity's sales of Products to that Third Party;
2. pursuant to which Respondent or PLIVA (whichever party is relevant to such Divestiture Product) purchases the active pharmaceutical ingredient(s) or other necessary ingredient(s) or had planned to purchase the active pharmaceutical ingredient(s) or other necessary ingredient(s) from any Third Party for use in connection with the manufacture of the Divestiture Product(s);
3. relating to any clinical trials involving the Divestiture Product(s);
4. with universities or other research institutions for the use of the Divestiture Product(s) in scientific research;
5. relating to the particularized marketing of the Divestiture Product(s) or educational matters relating solely to the Divestiture Product(s);
6. pursuant to which a Third Party manufactures the Divestiture Product(s) on behalf of Respondent or PLIVA (whichever party is relevant to such Divestiture Product);

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7. pursuant to which a Third Party provides the Product Manufacturing Technology or related equipment related to the Divestiture Product(s) to Respondent or PLIVA (whichever party is relevant to such Divestiture Product);
8. constituting confidentiality agreements involving the Divestiture Product(s);
9. involving any royalty, licensing, or similar arrangement involving the Divestiture Product(s);
10. pursuant to which a Third Party provides any specialized services necessary to the research, Development, manufacture or distribution of the Divestiture Products to Respondent or PLIVA (whichever party is relevant to such Divestiture Product) including, but not limited to, consultation arrangements; and/or
11. pursuant to which any Third Party collaborates with Respondent or PLIVA (whichever party is relevant to such Divestiture Product) in the performance of research, Development, marketing, distribution or selling of the Divestiture Product(s) or the Divestiture Product(s) business;

provided, however, that where any such contract or agreement also relates to a Retained Product(s), Respondent shall assign the Commission-approved Acquirer all such rights under the contract or agreement as are related to the Divestiture Product(s), but concurrently may retain similar rights for the purposes of the Retained Product(s).

CCC. "Product Copyrights" means rights to all original works of authorship of any kind directly related to the Divestiture

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Product(s) and any registrations and applications for registrations thereof within the Geographic Territory, including, but not limited to, the following: all such rights with respect to all promotional materials for healthcare providers; all promotional materials for patients; educational materials for the sales force; copyrights in all preclinical, clinical and process development data and reports relating to the research and Development of the Divestiture Product(s) or of any materials used in the research, Development, manufacture, marketing or sale of the Divestiture Product(s), including all raw data relating to clinical trials of the Divestiture Product(s), all case report forms relating thereto and all statistical programs developed (or modified in a manner material to the use or function thereof (other than through user references)) to analyze clinical data, all market research data, market intelligence reports and statistical programs (if any) used for marketing and sales research; customer information, promotional and marketing materials, the Divestiture Product(s) sales forecasting models, medical education materials, sales training materials, and advertising and display materials; all records relating to employees who accept employment with the Commission-approved Acquirer (excluding any personnel records the transfer of which is prohibited by applicable Law); all records, including customer lists, sales force call activity reports, vendor lists, sales data, reimbursement data, speaker lists, manufacturing records, manufacturing processes, and supplier lists; all data contained in laboratory notebooks relating to the Divestiture Product(s) or relating to its biology; all adverse experience reports and files related thereto (including source documentation) and all periodic adverse experience reports and all data contained in electronic databases relating to adverse experience reports and periodic adverse experience reports; all analytical and quality control data; and all correspondence with the FDA.

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DDD. "Product Development Reports" means:

1. Pharmacokinetic study reports related to the specified Divestiture Product(s);
2. Bioavailability study reports (including reference listed drug information) related to the specified Divestiture Product(s);
3. Bioequivalence study reports (including reference listed drug information) related to the specified Divestiture Product(s);
4. all correspondence to the Respondent or PLIVA (whichever party is relevant to such Divestiture Product) from the FDA and from the Respondent or PLIVA (whichever party is relevant to such Divestiture Product) to the FDA relating to the Application(s) submitted by, on behalf of, or acquired by, the Respondent or PLIVA (whichever party is relevant to such Divestiture Product) related to the specified Divestiture Product;
5. annual and periodic reports related to the above-described Application(s), including any safety update reports;
6. FDA approved Product labeling related to the specified Divestiture Product(s);
7. currently used product package inserts (including historical change of controls summaries) related to the specified Divestiture Product(s);
8. FDA approved patient circulars and information related to the specified Divestiture Product(s);

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9. adverse event/serious adverse event summaries related to the specified Divestiture Product(s);
 10. summary of Product complaints from physicians related to the specified Divestiture Product(s);
 11. summary of Product complaints from customers related to the specified Divestiture Product(s); and
 12. Product recall reports filed with the FDA related to the specified Divestiture Product(s).
- EEE. “Product Employee Information” means the following, for each Divestiture Product Core Employee, as and to the extent permitted by the Law:
1. a complete and accurate list containing the name of each relevant employee (including former employees who were employed by Respondent within ninety (90) days of the execution date of any Remedial Agreement);
 2. with respect to each such employee, the following information:
 - a. the date of hire and effective service date;
 - b. job title or position held;
 - c. a specific description of the employee’s responsibilities related to the relevant Divestiture Product; *provided, however*, in lieu of this description, Respondent may provide the employee’s most recent performance appraisal;
 - d. the base salary or current wages;

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- e. the most recent bonus paid, aggregate annual compensation for Respondent's last fiscal year and current target or guaranteed bonus, if any;
 - f. employment status (*i.e.*, active or on leave or disability; full-time or part-time); and
 - g. any other material terms and conditions of employment in regard to such employee that are not otherwise generally available to similarly situated employees; and
3. at the Commission-approved Acquirer's option or the Proposed Acquirer's option (as applicable), copies of all employee benefit plans and summary plan descriptions (if any) applicable to the relevant employees.

FFF. "Product Intellectual Property" means all of the following related to a Divestiture Product (other than Product Licensed Intellectual Property):

1. Patents;
2. Product Copyrights;
3. Product Trademarks, Product Trade Dress, trade secrets, know-how, techniques, data, inventions, practices, methods, and other confidential or proprietary technical, business, research, Development and other information; and
4. rights to obtain and file for patents and copyrights and registrations thereof;

provided, however, "Product Intellectual Property" does not include the names or trade dress of "Barr", "PLIVA",

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or the names or trade dress of any other corporations, companies, or brands owned or sold by Respondent or PLIVA or the related logos to the extent used on Respondent's or PLIVA's Retained Products.

GGG. "Product Licensed Intellectual Property" means the following:

1. Patents that are related to a Divestiture Product that Respondent can demonstrate have been routinely used, prior to the Effective Date, by either Respondent or PLIVA (whichever party is relevant to such Divestiture Product) for a Retained Product(s) that:
 - a. has been marketed or sold on an extensive basis by Respondent or PLIVA (whichever party is relevant to such Divestiture Product) within the two-year period immediately preceding the Acquisition; or
 - b. for which, prior to the announcement of the Acquisition, there was an approved marketing plan to market or sell such a Retained Product on an extensive basis by Respondent or PLIVA; and
2. trade secrets, know-how, techniques, data, inventions, practices, methods, and other confidential or proprietary technical, business, research, Development, and other information, and all rights in any jurisdiction to limit the use or disclosure thereof, that are related to a Divestiture Product and that Respondent or PLIVA can demonstrate have been routinely used, prior to the Effective Date, by either Respondent or PLIVA (whichever party is relevant to such Divestiture Product) for a Retained Product(s) that:
 - a. has been marketed or sold on an extensive basis by either Respondent or PLIVA (whichever party is

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relevant to such Divestiture Product) within the two-year period immediately preceding the Acquisition; or

- b. for which, prior to the announcement of the Acquisition, there was an approved marketing plan to market or sell such a Retained Product on an extensive basis by Respondent or PLIVA;

provided however, that, in cases where the aggregate retail sales in dollars within the two-year period immediately preceding the Acquisition of the Retained Product(s) collectively are less than the aggregate retail sales in dollars within the same period of the Divestiture Product(s) collectively, the above-described intellectual property shall be considered, at the Commission-approved Acquirer's option, to be Product Intellectual Property and, thereby, subject to assignment to the Commission-approved Acquirer; *provided further, however*, that in such cases, Respondent may take a license back from the Commission-approved Acquirer for such intellectual property for use in connection with the Retained Products.

HHH. "Product Manufacturing Employees" means all salaried employees of Respondent or PLIVA who have directly participated in the planning, design, implementation or use of the Product Manufacturing Technology of the specified Divestiture Product(s) (irrespective of the portion of working time involved unless such participation consisted solely of oversight of legal, accounting, tax or financial compliance) within the eighteen (18) month period immediately prior to the Closing Date.

III. "Product Manufacturing Technology" means all technology, trade secrets, know-how, and proprietary

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information (whether patented, patentable or otherwise) related to the manufacture of the Divestiture Product(s) (including, for those instances in which the manufacturing equipment is not readily available from a Third Party, at the Commission-approved Acquirer's option, all such equipment used to manufacture the Divestiture Product(s)), including, but not limited to, the following: all product specifications, processes, product designs, plans, trade secrets, ideas, concepts, manufacturing, engineering, and other manuals and drawings, standard operating procedures, flow diagrams, chemical, safety, quality assurance, quality control, research records, clinical data, compositions, annual product reviews, regulatory communications, control history, current and historical information associated with the FDA Application(s) conformance and cGMP compliance, and labeling and all other information related to the manufacturing process, and supplier lists.

JJJ. "Product Marketing Materials" means all marketing materials used specifically in the marketing or sale of a Divestiture Product(s) in the Geographic Territory as of the Closing Date, including, without limitation, all advertising materials, training materials, product data, mailing lists, sales materials (e.g., detailing reports, vendor lists, sales data), marketing information (e.g., competitor information, research data, market intelligence reports, statistical programs (if any) used for marketing and sales research), customer information (including customer net purchases information to be provided on the basis of either dollars and/or units for each month, quarter or year), sales forecasting models, educational materials, and advertising and display materials, speaker lists, promotional and marketing materials, Website content and advertising and display materials, artwork for the production of packaging components, television masters and other similar materials related to the Divestiture Product(s); provided however,

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“Product Marketing Materials” excludes the pricing of each of the Divestiture Products to customers *except* for the Custodiol Products and the ViaSpan Products.

KKK. “Product Registrations” means all registrations, permits, licenses, consents, authorizations, and other approvals, and pending applications and requests therefor, required by applicable Agencies related to the research, Development, manufacture, distribution, finishing, packaging, marketing, or sale of the Product within the Geographic Territory, including all Applications in existence for the Product as of the Closing Date.

LLL. “Product Research and Development Employees” means all salaried employees of Respondent or PLIVA who directly have participated in the research, Development, or regulatory approval process, or clinical studies of the specified Divestiture Product(s) (irrespective of the portion of working time involved, unless such participation consisted solely of oversight of legal, accounting, tax or financial compliance) within the eighteen (18) month period immediately prior to the Closing Date.

MMM. “Product Trade Dress” means the current trade dress of the Divestiture Product, including but not limited to, Product packaging, and the lettering of the Product trade name or brand name.

NNN. “Product Trademark(s)” means all proprietary names or designations, trademarks, service marks, trade names, and brand names, including registrations and applications for registration therefor (and all renewals, modifications, and extensions thereof) and all common law rights, and the goodwill symbolized thereby and associated therewith, for the Product(s).

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OOO. “Proposed Acquirer” means an entity proposed by Respondent (or a Divestiture Trustee) to the Commission and submitted for the approval of the Commission as the acquirer for particular assets required to be assigned, granted, licensed, divested, transferred, delivered or otherwise conveyed by Respondent pursuant to this Order.

PPP. “Remedial Agreement(s)” means the following:

1. any agreement between Respondent and a Commission-approved Acquirer that is specifically referenced and attached to this Order, including all amendments, exhibits, attachments, agreements, and schedules thereto, related to the relevant assets or rights to be assigned, granted, licensed, divested, transferred, delivered, or otherwise conveyed, and that has been approved by the Commission to accomplish the requirements of the Order in connection with the Commission’s determination to make this Order final;
2. any agreement between Respondent and a Third Party to effect the assignment of assets or rights of Respondent related to a Divestiture Product to the benefit of a Commission-approved Acquirer that is specifically referenced and attached to this Order, including all amendments, exhibits, attachments, agreements, and schedules thereto, that has been approved by the Commission to accomplish the requirements of the Order in connection with the Commission’s determination to make this Order final;
3. any agreement between Respondent and a Commission-approved Acquirer (or between a Divestiture Trustee and a Commission-approved Acquirer) that has been approved by the Commission to accomplish the requirements of this Order, including all amendments, exhibits, attachments,

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agreements, and schedules thereto, related to the relevant assets or rights to be assigned, granted, licensed, divested, transferred, delivered, or otherwise conveyed, and that has been approved by the Commission to accomplish the requirements of this Order; and/or

4. any agreement between Respondent and a Third Party to effect the assignment of assets or rights of Respondent related to a Divestiture Product to the benefit of a Commission-approved Acquirer that has been approved by the Commission to accomplish the requirements of this Order, including all amendments, exhibits, attachments, agreements, and schedules thereto.

QQQ. “Retained Product” means any Product(s) other than a Divestiture Product.

RRR. “Right of Reference or Use” means the authority to rely upon, and otherwise use, an investigation for the purpose of obtaining approval of an Application, including the ability to make available the underlying raw data from the investigation for FDA audit.

SSS. “Supply Cost” means a cost not to exceed the manufacturer’s average direct per unit cost of manufacturing the Divestiture Product for the twelve (12) month period immediately preceding the Effective Date. “Supply Cost” shall expressly exclude any intracompany business transfer profit.

TTT. “Third Party(ies)” means any private entity other than the following: (1) Respondent; (2) PLIVA or (3) the relevant Commission-approved Acquirer for the affected assets, rights and Divestiture Product(s).

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UUU. “Trazodone Hydrochloride Product(s)” means all of the following: all Products in Development, manufactured, marketed or sold by Respondent Barr pursuant to the following of Respondent Barr’s ANDAs:

1. ANDA No. 71-196 (Trazodone Hydrochloride Tablets USP 100 mg, 150 mg, 300 mg);
2. ANDA No. 71-258 (Trazodone Hydrochloride Tablets USP 50 mg); and
3. any supplements, amendments, or revisions thereto.

VVV. “Trazodone Hydrochloride Product Assets” means all of Respondent Barr’s rights, title and interest in and to all assets related to Respondent Barr’s business within the Geographic Territory related to the Trazodone Hydrochloride Products to the extent legally transferable, including the research, Development, manufacture, distribution, marketing, and sale of the Trazodone Hydrochloride Products, including, without limitation, the Categorized Assets related to the Trazodone Hydrochloride Products; *provided, however*, Respondent may receive a non-exclusive license from the Commission-approved Acquirer to market Trazodone Hydrochloride Tablets USP 300 mg.

WWW. “Triamterene and Hydrochlorothiazide Product(s)” means all of the following: all Products in Development, manufactured, marketed or sold by Respondent Barr pursuant to the following of Respondent Barr’s ANDAs:

1. ANDA No. 71-251 (Triamterene/Hydrochlorothiazide Tablets USP 37.5 mg/25 mg); and
2. any supplements, amendments, or revisions thereto.

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XXX. “Triamterene and Hydrochlorothiazide Product Assets” means all of Respondent Barr’s rights, title and interest in and to all assets related to Respondent Barr’s business within the Geographic Territory related to the Triamterene and Hydrochlorothiazide Products to the extent legally transferable, including the research, Development, manufacture, distribution, marketing, and sale of the Triamterene and Hydrochlorothiazide Products, including, without limitation, the Categorized Assets related to the Triamterene and Hydrochlorothiazide Products.

YYY. “ViaSpan Product(s)” means all of the Products in Development, manufactured, marketed or sold by Respondent Barr pursuant to the following Premarket Notification:

1. 510(k) No. K944866; and
2. any supplements, amendments, or revisions thereto;

The term “ViaSpan Products” also includes all Products in Development, manufactured, marketed or sold by Barr on or before the Effective Date that are planned to be marketed for use in the preservation of human organs during transplantation and/or for use in cardioplegia.

ZZZ. “ViaSpan Product Assets” means all of Respondent Barr’s rights, title and interest in and to all assets related to Respondent Barr’s business within the Geographic Territory related to the ViaSpan Products to the extent legally transferable, including the research, Development, manufacture, distribution, marketing, and sale of the ViaSpan Products, including, without limitation, the Categorized Assets related to the ViaSpan Products.

AAAA. “Website” means the content of the Website(s) located at the Domain Names, the Domain Names, and all copyrights

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in such Website(s), to the extent owned by Respondent; *provided, however*, “Website” shall not include the following: (1) content owned by Third Parties and other Product Intellectual Property not owned by Respondent that are incorporated in such Website(s), such as stock photographs used in the Website(s), *except* to the extent that Respondent can convey its rights, if any, therein; or (2) content unrelated to the Product(s).

II.**IT IS FURTHER ORDERED** that:

- A. Not later than ten (10) days after the Effective Date, Respondent shall divest the Trazodone Hydrochloride Product Assets, and the Triamterene Product Assets, absolutely and in good faith, to Apotex pursuant to, and in accordance with, the Generic Divestiture Product Agreements (which agreements shall not vary or contradict, or be construed to vary or contradict, the terms of this Order, it being understood that nothing in this Order shall be construed to reduce any rights or benefits of Apotex or to reduce any obligations of Respondent under such agreements), and each such agreement, if it becomes the Remedial Agreement related to the Trazodone Hydrochloride Product Assets, and the Triamterene Product Assets, respectively, is incorporated by reference into this Order and made a part hereof;

provided, however, that if Respondent has divested the Trazodone Hydrochloride Product Assets, and the Triamterene Product Assets to Apotex prior to the date this Order becomes final, and if, at the time the Commission determines to make this Order final, the Commission notifies Respondent that Apotex is not an acceptable purchaser of the Trazodone Hydrochloride Product Assets, or the Triamterene Product Assets then Respondent shall

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immediately rescind the transaction with Apotex, in whole or in part, as directed by the Commission, and shall divest the Trazodone Hydrochloride Product Assets, and the Triamterene Product Assets, as is relevant, within one hundred eighty (180) days from the date the Order becomes final, absolutely and in good faith, at no minimum price, to a Commission-approved Acquirer(s) and only in a manner that receives the prior approval of the Commission;

provided further that if Respondent has divested the Trazodone Hydrochloride Product Assets, and the Triamterene Product Assets to Apotex prior to the date this Order becomes final, and if, at the time the Commission determines to make this Order final, the Commission notifies Respondent that the manner in which the divestiture was accomplished is not acceptable, the Commission may direct Respondent, or appoint a Divestiture Trustee, to effect such modifications to the manner of divestiture of the Trazodone Hydrochloride Product Assets, and the Triamterene Product Assets to Apotex (including, but not limited to, entering into additional agreements or arrangements) as the Commission may determine are necessary to satisfy the requirements of this Order.

B. Respondent either:

1. not later than ten (10) days after the Effective Date, shall divest the Custodiol Product Assets, absolutely and in good faith, to New Custodiol pursuant to, and in accordance with, the Custodiol Product Divestiture Agreements (which agreements shall not vary or contradict, or be construed to vary or contradict, the terms of this Order, it being understood that nothing in this Order shall be construed to reduce any rights or benefits of New Custodiol or to reduce any obligations of Respondent under such agreements), and each such

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agreement, if it becomes the Remedial Agreement related to the Custodiol Product Assets, is incorporated by reference into this Order and made a part hereof;

provided, however, that if Respondent has divested the Custodiol Product Assets to New Custodiol prior to the date this Order becomes final, and if, at the time the Commission determines to make this Order final, the Commission notifies Respondent that New Custodiol is not an acceptable purchaser of the Custodiol Product Assets then Respondent shall immediately rescind the transaction with New Custodiol, in whole or in part, as directed by the Commission, and shall divest either the Custodiol Product Assets or the ViaSpan Product Assets within one hundred eighty (180) days from the date the Order becomes final, absolutely and in good faith, at no minimum price, to a Commission-approved Acquirer and only in a manner that receives the prior approval of the Commission;

provided further that if Respondent has divested the Custodiol Product Assets to New Custodiol prior to the date this Order becomes final, and if, at the time the Commission determines to make this Order final, the Commission notifies Respondent that the manner in which the divestiture was accomplished is not acceptable, the Commission may direct Respondent, or appoint a Divestiture Trustee, to effect such modifications to the manner of divestiture of the Custodiol Product Assets to New Custodiol (including, but not limited to, entering into additional agreements or arrangements) as the Commission may determine are necessary to satisfy the requirements of this Order; or

2. not later than ninety (90) days from the date on which this Order becomes final, shall divest the ViaSpan Product Assets, absolutely and in good faith, at no

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minimum price, to a Commission-approved Acquirer and only in a manner that receives the prior approval of the Commission.

- C. Any Remedial Agreement related to the Paragraph II Divestiture Products shall be deemed incorporated into this Order, and any failure by Respondent to comply with any term of such Remedial Agreement shall constitute a failure to comply with this Order. Respondent shall include in each Remedial Agreement related to each of the Paragraph II Divestiture Products a specific reference to this Order, and the remedial purpose thereof.
- D. Respondent shall do the following and, in addition, include the following among the provisions in the Remedial Agreement(s) related to each of the Paragraph II Divestiture Products:
 - 1. upon reasonable notice and request from the Commission-approved Acquirer to Respondent, Respondent shall provide in a timely manner at no greater than Direct Cost the following:
 - a. assistance and advice to enable the Commission-approved Acquirer (or the Designee of the Commission-approved Acquirer) to obtain all necessary permits and approvals from any Agency or Government Entity to manufacture and sell the relevant Divestiture Products;
 - b. assistance to the Commission-approved Acquirer (or the Designee of the Commission-approved Acquirer) to manufacture the relevant Divestiture Product(s) in substantially the same manner, quality, and quantity(ies) employed or achieved by either Respondent or PLIVA for the relevant Divestiture Product(s); and

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- c. consultation with knowledgeable employees of Respondent and training, at the request of the Commission-approved Acquirer and at a facility chosen by the Commission-approved Acquirer, until the Commission-approved Acquirer (or the Designee of the Commission-approved Acquirer) obtains all FDA approvals necessary to manufacture in commercial quantities, and in a manner consistent with cGMP, the relevant Divestiture Product(s) independently of Respondent and PLIVA and sufficient to satisfy management of the Commission-approved Acquirer that its personnel (or the Designee's personnel) are adequately trained in the manufacture of the relevant Divestiture Product(s);
 - d. personnel, assistance and training as the Commission-approved Acquirer might reasonably need to transfer the assets related to the Divestiture Products;
 - e. the foregoing provisions, II.D.1.a. - e., shall remain in effect until the relevant Commission-approved Acquirer (or the Designee(s) of such Commission-approved Acquirer) is: (1) approved by the FDA to manufacture each of the relevant Divestiture Products, and (2) able to manufacture such Divestiture Products in commercial quantities, in a manner consistent with cGMP, independently of Respondent and PLIVA;
2. provide an organized, comprehensive, complete, useful, timely, and meaningful transfer of information related to the Product Manufacturing Technology, and, as a part of such transfer, shall designate employees of Respondent knowledgeable with respect to such

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Product Manufacturing Technology and experienced in such transfers to a committee for the purposes of communicating directly with the Commission-approved Acquirer and the Interim Monitor (if applicable) for the purposes of effecting such transfer;

3. include in the Remedial Agreement a representation from the relevant Commission-approved Acquirer that such Commission-approved Acquirer shall use commercially reasonable efforts to secure the FDA approval(s) necessary to manufacture, or to have manufactured by a Third Party, in commercial quantities, each such Divestiture Product and to have any such manufacture to be independent of Respondent and PLIVA, all as soon as reasonably practicable;
4. upon reasonable notice and request from the Commission-approved Acquirer to Respondent, Respondent shall provide, in a timely manner, at no greater than Direct Cost, assistance of knowledgeable employees of Respondent to assist the Commission-approved Acquirer to defend against, respond to, or otherwise participate in any litigation related to the Product Intellectual Property related to the relevant Divestiture Product(s);
5. for any patent infringement suit in which Respondent or PLIVA is a party prior to the Closing Date or for which Respondent or PLIVA has prepared or is preparing as of the Closing Date to be a party, and where such a suit would have the potential to interfere with the Commission-approved Acquirer's freedom to practice in the research, Development, manufacture, use, import, export, distribution or sale of the relevant Divestiture Product(s), Respondent shall:

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- a. cooperate with the Commission-approved Acquirer and provide any and all necessary technical and legal assistance, documentation and witnesses from Respondent in connection with obtaining resolution of any pending patent litigation involving a Divestiture Product;
 - b. waive conflicts of interest, if any, to allow Respondent's or PLIVA's outside legal counsel to represent the Commission-approved Acquirer in any ongoing patent litigation involving a Divestiture Product; and
 - c. permit the transfer to the Commission-approved Acquirer of all of the litigation files and any related attorney work-product in the possession of Respondent's or PLIVA's outside counsel relating to such Divestiture; and
6. Respondent shall not seek pursuant to any dispute resolution mechanism incorporated in any Remedial Agreement a decision the result of which would be inconsistent with the terms of this Order and/or the remedial purposes thereof.
- E. Respondent shall do the following and, in addition, shall include the following among the provisions in the Remedial Agreement(s) related to each of the following Divestiture Products: Trazodone Hydrochloride Product(s) and Triamterene and Hydrochlorothiazide Product(s):
1. upon reasonable notice and request from the Commission-approved Acquirer to Respondent, Respondent shall Contract Manufacture and deliver to the Commission-approved Acquirer, in a timely manner and under reasonable terms and conditions, a

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supply of each of the relevant Divestiture Products at Respondent's Supply Cost, for a period of time sufficient to allow the Commission-approved Acquirer (or the Designee of the Commission-approved Acquirer) to obtain all of the relevant Agency approvals necessary to manufacture in commercial quantities, and in a manner consistent with cGMP, the relevant finished drug product independently of Respondent and PLIVA and to secure sources of supply of the relevant active pharmaceutical ingredients, excipients, other ingredients, and/or necessary components specified in the Respondent's Application(s) for the Product from entities other than Respondent or PLIVA; *provided, however*, that in each instance where: (1) an agreement to Contract Manufacture is specifically referenced and attached to this Order, and (2) such agreement becomes a Remedial Agreement for a Divestiture Product, Supply Cost shall be determined as specified in such Remedial Agreement;

2. Respondent shall make representations and warranties to the Commission-approved Acquirer that the Product(s) supplied through Contract Manufacture pursuant to the Remedial Agreement meet the relevant Agency-approved specifications. For the Product(s) to be marketed or sold in the Geographic Territory, Respondent shall agree to indemnify, defend and hold the Commission-approved Acquirer harmless from any and all suits, claims, actions, demands, liabilities, expenses or losses alleged to result from the failure of the Product(s) supplied to the Commission-approved Acquirer pursuant to the Remedial Agreement by Respondent to meet cGMP. This obligation may be made contingent upon the Commission-approved Acquirer giving Respondent prompt, adequate notice of such claim and cooperating fully in the defense of

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such claim. The Remedial Agreement shall be consistent with the obligations assumed by Respondent under this Order; *provided, however*, that Respondent may reserve the right to control the defense of any such litigation, including the right to settle the litigation, so long as such settlement is consistent with Respondent's responsibilities to supply the ingredients and/or components in the manner required by this Order; *provided further* that this obligation shall not require Respondent to be liable for any negligent act or omission of the Commission-approved Acquirer or for any representations and warranties, express or implied, made by the Commission-approved Acquirer that exceed the representations and warranties made by Respondent to the Commission-approved Acquirer; *provided further* that in each instance where: (1) an agreement to divest relevant assets is specifically referenced and attached to this Order, and (2) such agreement becomes a Remedial Agreement for a Divestiture Product, each such agreement may contain limits on Respondent's aggregate liability resulting from the failure of the Products supplied to the Commission-approved Acquirer pursuant to such Remedial Agreement by Respondent to meet cGMP;

3. Respondent shall make representations and warranties to the Commission-approved Acquirer that Respondent shall hold harmless and indemnify the Commission-approved Acquirer for any liabilities or loss of profits resulting from the failure by Respondent to deliver the Products in a timely manner as required by the Remedial Agreement unless Respondent can demonstrate that its failure was entirely beyond the control of Respondent and in no part the result of negligence or willful misconduct by Respondent; *provided, however*, that in each instance where: (1) an agreement to divest relevant assets is specifically

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referenced and attached to this Order, and (2) such agreement becomes a Remedial Agreement for a Divestiture Product, each such agreement may contain limits on Respondent's aggregate liability for such a breach; and

4. during the term of the Contract Manufacture between Respondent and the Commission-approved Acquirer, upon request of the Commission-approved Acquirer or Interim Monitor (if any has been appointed), Respondent shall make available to the Commission-approved Acquirer and the Interim Monitor (if any has been appointed) all records that relate to the manufacture of the relevant Divestiture Products that are generated or created after the Closing Date.

The foregoing provisions, II.E.1. - 4., shall remain in effect until the relevant Commission-approved Acquirer (or the Designee(s) of such Commission-approved Acquirer) is: (1) approved by the FDA to manufacture each of the relevant Divestiture Products, and (2) able to manufacture such Divestiture Products in commercial quantities, in a manner consistent with cGMP, independently of Respondent and PLIVA.

F. Respondent shall:

1. submit to the Commission-approved Acquirer, at Respondent's expense, all Confidential Business Information related to the relevant Divestiture Product(s);
2. deliver such Confidential Business Information as follows:
 - a. in good faith;

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- b. as soon as practicable, avoiding any delays in transmission of the respective information; and
 - c. in a manner that ensures its completeness and accuracy and that fully preserves its usefulness;
 3. pending complete delivery of all such Confidential Business Information to the Commission-approved Acquirer, provide the Commission-approved Acquirer and the Interim Monitor (if any has been appointed) with access to all such Confidential Business Information and employees who possess or are able to locate such information for the purposes of identifying the books, records, and files directly related to the relevant Divestiture Product(s) that contain such Confidential Business Information and facilitating the delivery in a manner consistent with this Order;
 4. not use, directly or indirectly, any such Confidential Business Information related to the research, Development, manufacturing, marketing, or sale of the relevant Divestiture Product(s) other than as necessary to comply with the following:
 - a. the requirements of this Order;
 - b. Respondent's obligations to the Commission-approved Acquirer under the terms of any Remedial Agreement related to relevant Divestiture Product(s); or
 - c. applicable Law;
 5. not disclose or convey any such Confidential Business Information, directly or indirectly, to any person except the Commission-approved Acquirer; and

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6. not provide, disclose or otherwise make available, directly or indirectly, any such Confidential Business Information related to the marketing or sales of the relevant Divestiture Products to the employees associated with business related to those Retained Products that are approved by the FDA for the same or similar indications or purposes as the relevant Divestiture Products.
- G. Respondent shall not enforce any agreement against a Third Party or the Commission-approved Acquirer to the extent that such agreement may limit or otherwise impair the ability of the Commission-approved Acquirer to acquire the Product Manufacturing Technology related to the relevant Divestiture Product(s) or related equipment from the Third Party. Such agreements include, but are not limited to, agreements with respect to the disclosure of Confidential Business Information related to such Product Manufacturing Technology.
- H. Not later than ten (10) days after the Closing Date, Respondent shall grant a release to each Third Party that is subject to an agreement as described in Paragraph II.G. that allows the Third Party to provide the relevant Product Manufacturing Technology or related equipment to the Commission-approved Acquirer. Within five (5) days of the execution of each such release, Respondent shall provide a copy of the release to the Commission-approved Acquirer for the relevant assets.
- I. Respondent shall:
1. for each Paragraph II Divestiture Product, for a period of at least twelve (12) months from the relevant Closing Date or upon the hiring of ten (10) Divestiture Product Core Employees by the relevant Commission-approved Acquirer, whichever occurs earlier, provide

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the relevant Commission-approved Acquirer with the opportunity to enter into employment contracts with the Divestiture Product Core Employees related to the Paragraph II Divestiture Products and assets acquired by such Commission-approved Acquirer. Each of these periods is hereinafter referred to as the “Divestiture Product Employee Access Period(s)”; and

2. not later than the earlier of the following dates: (1) ten (10) days after notice by staff of the Commission to Respondent to provide the Product Employee Information; or (2) ten (10) days after the relevant Closing Date, provide the relevant Commission-approved Acquirer or the relevant Proposed Acquirer with the Product Employee Information related to the relevant Divestiture Product Core Employees. Failure by Respondent to provide the Product Employee Information for any Divestiture Product Core Employee within the time provided herein shall extend the Divestiture Product Employee Access Period(s) with respect to that employee in an amount equal to the delay.

J. Respondent shall:

1. during the Divestiture Product Employee Access Period(s), not interfere with the hiring or employing by the relevant Commission-approved Acquirer of the Divestiture Product Core Employees related to the particular Divestiture Products and assets acquired by such Commission-approved Acquirer, and remove any impediments within the control of Respondent that may deter these employees from accepting employment with the relevant Commission-approved Acquirer, including, but not limited to, any noncompete or nondisclosure provision of employment with respect to a Divestiture Product or other contracts

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with Respondent or PLIVA (whichever party is relevant to such Divestiture Product) that would affect the ability or incentive of those individuals to be employed by the relevant Commission-approved Acquirer. In addition, Respondent shall not make any counteroffer to such a Divestiture Product Core Employee who has received a written offer of employment from the relevant Commission-approved Acquirer;

provided, however, that this Paragraph II.J.1 shall not prohibit Respondent or PLIVA from continuing to employ any Divestiture Product Core Employee during the Divestiture Product Employee Access Period (subject to the conditions of continued employment prescribed in this Order);

2. until the Closing Date, provide all Divestiture Product Core Employees with reasonable financial incentives to continue in their positions and to research, Develop, and manufacture the Divestiture Product(s) consistent with past practices and/or as may be necessary to preserve the marketability, viability and competitiveness of the Divestiture Product(s) and to ensure successful execution of the pre-Acquisition plans for such Divestiture Product(s). Such incentives shall include a continuation of all employee compensation and benefits offered by Respondent or PLIVA (whichever party is relevant to such Divestiture Product) until the Closing Date(s) for the divestiture of the assets related to the Divestiture Product(s) has occurred, including regularly scheduled raises, bonuses, and vesting of pension benefits (as permitted by Law);

provided, however, that nothing in this Order requires or shall be construed to require Respondent to terminate the

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employment of any employee or prevent Respondent from continuing to employ the Divestiture Product Core Employees (other than those conditions of continued employment prescribed in this Order) in connection with the Acquisition; and

3. for a period of one (1) year from the relevant Closing Date, not:
 - a. directly or indirectly, solicit or otherwise attempt to induce any employee of the Commission-approved Acquirer with any amount of responsibility related to a Divestiture Product (“Divestiture Product Employee”) to terminate his or her employment relationship with the relevant Commission-approved Acquirer; or
 - b. hire any Divestiture Product Employee; *provided, however,* Respondent may hire any former Divestiture Product Employee whose employment has been terminated by the relevant Commission-approved Acquirer or who independently applies for employment with Respondent, as long as such employee was not solicited in violation of the nonsolicitation requirements contained herein;

provided, however, Respondent may do the following: (1) advertise for employees in newspapers, trade publications or other media not targeted specifically at the Divestiture Product Employees; or (2) hire a Divestiture Product Employee who contacts Respondent on his or her own initiative without any direct or indirect solicitation or encouragement from Respondent.

- K. Prior to the Closing Date, Respondent shall secure all consents and waivers from all Third Parties that are necessary to permit Respondent to divest the assets

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required to be divested pursuant to this Order to the relevant Commission-approved Acquirer(s), and/or to permit such Commission-approved Acquirer to continue the research, Development, manufacture, sale, marketing or distribution of the Paragraph II Divestiture Products;

provided, however, Respondent may satisfy this requirement by certifying that the relevant Commission-approved Acquirer has executed all such agreements directly with each of the relevant Third Parties.

- L. Respondent shall require, as a condition of continued employment post-divestiture of the assets required to be divested pursuant to this Order, that each Divestiture Product Core Employee retained by Respondent, the direct supervisor(s) of any such employee, and any other employee retained by Respondent and designated by the Interim Monitor (if applicable) sign a confidentiality agreement pursuant to which such employee shall be required to maintain all Confidential Business Information related to the Paragraph II Divestiture Products as strictly confidential, including the nondisclosure of such information to all other employees, executives or other personnel of Respondent (other than as necessary to comply with the requirements of this Order).
- M. Not later than thirty (30) days after the Effective Date, Respondent shall provide written notification of the restrictions on the use of the Confidential Business Information related to the Paragraph II Divestiture Products by Respondent's personnel to all of Respondent's employees who:
 - 1. are or were directly involved in the research, Development, manufacturing, distribution, sale or marketing of each of the relevant Divestiture Products;

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2. are directly involved in the research, Development, manufacturing, distribution, sale or marketing of Retained Products that are approved by the FDA for the same or similar indications as each of the relevant Divestiture Products prior to the Acquisition; and/or
3. may have Confidential Business Information related to the Divestiture Products.

Respondent shall give such notification by e-mail with return receipt requested or similar transmission, and keep a file of such receipts for one (1) year after the relevant Closing Date. Respondent shall provide a copy of such notification to the Commission-approved Acquirer. Respondent shall maintain complete records of all such agreements at Respondent's corporate headquarters and shall provide an officer's certification to the Commission stating that such acknowledgment program has been implemented and is being complied with. Respondent shall provide the Commission-approved Acquirer with copies of all certifications, notifications and reminders sent to Respondent's personnel.

- N. Upon reasonable notice and request by the Commission-approved Acquirer(s), Respondent shall make available to the Commission-approved Acquirer(s), at no greater than Direct Cost (or, in each instance where: (1) an agreement to divest relevant assets is specifically referenced and attached to this Order, and (2) such agreement becomes a Remedial Agreement for a Divestiture Product, then at such cost as may be provided therein) such personnel, assistance and training as the Commission-approved Acquirer(s) might reasonably need to transfer the assets related to the Divestiture Product(s) and shall continue providing such personnel, assistance and training, at the request of the Commission-approved Acquirer(s), until the relevant Commission-approved Acquirer(s) (or the

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Designee(s) of such Commission-approved Acquirer(s)) is: (1) approved by the FDA to manufacture each of the relevant Divestiture Products, and (2) able to manufacture such Divestiture Products in commercial quantities, in a manner consistent with cGMP, independently of Respondent and PLIVA.

- O. Pending divestiture of the assets required to be divested pursuant to Paragraphs II.A. and II.B. of this Order, Respondent shall take such actions as are necessary to maintain the full economic viability and marketability of the business associated with such assets, to minimize any risk of loss of competitive potential for such business, and to prevent the destruction, removal, wasting, deterioration, or impairment of any of these assets until after their respective transfer to the relevant Commission-approved Acquirer in a manner that ensures that there is no disruption, delay, or impairment of the regulatory approval processes related to such assets. Respondent shall not sell, transfer, encumber or otherwise impair such assets (other than in the manner prescribed in this Order) nor take any action that lessens the full economic viability, marketability, or competitiveness of the above-described businesses.
- P. Respondent shall maintain manufacturing facilities necessary to manufacture the Trazodone Hydrochloride Product(s) and Triamterene and Hydrochlorothiazide Product(s) in finished form (suitable for sale to the ultimate consumer/patient) until the relevant Commission-approved Acquirer (or the Designee of the Commission-approved Acquirer) is: (1) approved by the FDA to manufacture each of the relevant Divestiture Products, and (2) able to manufacture such Divestiture Products in commercial quantities, in a manner consistent with cGMP, independently of Respondent and PLIVA;

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provided, however, the Commission may eliminate, or limit the duration of, Respondent's obligation under this provision if the Commission determines that the relevant Commission-approved Acquirer is not using commercially reasonable efforts to secure the FDA approvals necessary to manufacture in commercial quantities each such Divestiture Product in finished form in a facility that is independent of Respondent and PLIVA and to enable itself to manufacture such quantities of each such Divestiture Product independently of Respondent and PLIVA.

- Q. Respondent shall not join, file, prosecute or maintain any suit, in law or equity, against the relevant Commission-approved Acquirer(s) or the Divestiture Product Releasee(s) for the research, Development, manufacture, use, import, export, distribution, or sale of the relevant Paragraph II Divestiture Product(s) under the following:
1. any Patent owned or licensed by Respondent or PLIVA as of the Effective Date that claims a method of making, using, or administering, or a composition of matter, relating to the respective Divestiture Product, or that claims a device relating to the use thereof;
 2. any Patents owned or licensed at any time after the Effective Date by Respondent that claim any aspect of the research, Development, manufacture, use, import, export, distribution, or sale of the respective Divestiture Products, other than such Patents that claim inventions conceived by and reduced to practice after the Effective Date;

if such suit would have the potential to interfere with the relevant Commission-approved Acquirer's freedom to practice the research, Development, manufacture, use, import, export, distribution, or sale of the relevant

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Paragraph II Divestiture Products. Respondent shall also covenant to the relevant Commission-approved Acquirer that as a condition of any assignment, transfer, or license to a Third Party of the above-described Patents, the Third Party shall agree to provide a covenant whereby the Third Party covenants not to sue the relevant Commission-approved Acquirer or the related Divestiture Product Releasee(s) under such Patents, if the suit would have the potential to interfere with the relevant Commission-approved Acquirer's freedom to practice in the research, Development, manufacture, use, import, export, distribution, or sale of the relevant Paragraph II Divestiture Products.

Respondent shall include the above-described covenants in the Remedial Agreement(s) with the relevant Commission-approved Acquirer.

- R. Respondent shall not, in the Geographic Territory:
1. use the Product Trademarks related to the Divestiture Products or any mark confusingly similar to such Product Trademarks, as a trademark, trade name, or service mark;
 2. attempt to register such Product Trademarks;
 3. attempt to register any mark confusingly similar to such Product Trademarks;
 4. challenge or interfere with the Commission-approved Acquirer(s)'s use and registration of such Product Trademarks; or
 5. challenge or interfere with the Commission-approved Acquirer(s)'s efforts to enforce its trademark registrations for and trademark rights in such Product Trademarks against Third Parties;

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provided however, that nothing in this Order shall preclude Respondent from continuing to use those trademarks, tradenames, or service marks related to the Retained Products as of the Effective Date.

- S. The purpose of the divestiture of either the Custodiol Product Assets or the ViaSpan Product Assets is: (1) to ensure the continued use of such assets in the research, Development, manufacture, distribution, sale and marketing of the Custodiol Product or the ViaSpan Products, respectively; (2) to create a viable and effective competitor in the relevant markets alleged in the Commission's Complaint who is independent of the Respondent and PLIVA; and, (3) to remedy the lessening of competition resulting from the Acquisition as alleged in the Commission's Complaint in a timely and sufficient manner.
- T. The purpose of the divestiture of the Trazodone Hydrochloride Product Assets, and the Triamterene Product Assets is: (1) to ensure the continued use of such assets in the research, Development, manufacture, distribution, sale and marketing of the Trazodone Hydrochloride Products and the Triamterene Products, respectively; (2) to create a viable and effective competitor in the relevant markets alleged in the Complaint who is independent of Respondent and PLIVA; and, (3) to remedy the lessening of competition resulting from the Acquisition as alleged in the Commission's Complaint in a timely and sufficient manner.

III.

IT IS FURTHER ORDERED that:

- A. Respondent either:

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1. Not later than ten (10) days after the Effective Date, shall divest the Nimodipine (PLIVA) Product Assets (to the extent such assets are not already owned, controlled, or in the possession of Banner), absolutely and in good faith, to Banner pursuant to and in accordance with the Nimodipine (PLIVA) Product Divestiture Agreements (which agreements shall not vary or contradict, or be construed to vary or contradict, the terms of this Order, it being understood that nothing in this Order shall be construed to reduce any rights or benefits of Banner or to reduce any obligations of Respondent under such agreements), and such agreement, if it becomes the Remedial Agreement related to the Nimodipine (PLIVA) Products is incorporated by reference into this Order and made a part hereof;

provided however, that if Respondent has divested the Nimodipine (PLIVA) Product Assets to Banner prior to the date this Order becomes final, and if, at the time the Commission determines to make this Order final, the Commission notifies Respondent that the manner in which the divestiture was accomplished is not acceptable, the Commission may direct Respondent, or appoint a Divestiture Trustee, to effect such modifications to the manner of the divestiture to Banner (including, but not limited to, entering into additional agreements or arrangements) as the Commission may determine are necessary to satisfy the requirements of this Order; or

2. Not later than sixty (60) days from the Effective Date, shall divest the Nimodipine (Barr) Product Assets (to the extent that such assets are not already owned, controlled, or in the possession of Cardinal), absolutely and in good faith, at no minimum price, to Cardinal

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and only in a manner that receives the prior approval of the Commission.

- B. Any Remedial Agreement related to the Paragraph III Divestiture Products shall be deemed incorporated into this Order, and any failure by Respondent to comply with any term of such Remedial Agreement shall constitute a failure to comply with this Order. Respondent shall include in each such Remedial Agreement a specific reference to this Order, and the remedial purpose thereof.
- C. Upon reasonable notice and request from the Commission-approved Acquirer of assets pursuant to Paragraph III.A. (“Paragraph III.A. Commission-approved Acquirer”), Respondent shall provide, in a timely manner at no greater than Direct Cost, assistance and advice of knowledgeable employees of Respondent as such Commission-approved Acquirer might reasonably need to transfer the assets divested pursuant to Paragraph III.A., and shall continue providing such personnel, assistance and training, at the request of such Commission-approved Acquirer, until such assets are fully transferred to such Commission-approved Acquirer.
- D. At the Paragraph III.A. Commission-approved Acquirer’s request, Respondent shall provide, in a timely manner, at no greater than Direct Cost or Supply Cost (whichever is relevant), such assistance and services as may be necessary for such Commission-approved Acquirer to obtain any approvals that were planned or pending prior to the Acquisition related to any Application or planned or pending Application related to the Paragraph III Divestiture Products.
- E. After the Closing Date for the divestiture required pursuant to Paragraph III.A., Respondent shall not receive

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any payment or other compensation from the Paragraph III.A. Commission-approved Acquirer that is:

1. based on the actual amount of sales or profits of the Paragraph III Divestiture Products realized at any time after the Closing Date, or
2. due upon the realization of any aggregate amount of sales or profits of such Divestiture Products.

F. Respondent shall:

1. submit to the Paragraph III.A. Commission-approved Acquirer, at Respondent's expense, all Confidential Business Information related to the Paragraph III Divestiture Products;
2. deliver such Confidential Business Information as follows:
 - a. in good faith;
 - b. as soon as practicable, avoiding any delays in transmission of the respective information; and
 - c. in a manner that ensures its completeness and accuracy and that fully preserves its usefulness;
3. pending complete delivery of all such Confidential Business Information to the Paragraph III.A. Commission-approved Acquirer, provide such Commission Approved Acquirer and the Interim Monitor (if any has been appointed) with access to all such Confidential Business Information and employees who possess or are able to locate such information for the purposes of identifying the books, records, and files directly related to the Paragraph III Divestiture Products that contain such Confidential Business

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Information and facilitating the delivery in a manner consistent with this Order;

4. not use, directly or indirectly, any such Confidential Business Information related to the research, Development, manufacturing, marketing, or sale of the Paragraph III Divestiture Products other than as necessary to comply with the following:
 - a. the requirements of this Order;
 - b. Respondent's obligations to the Paragraph III.A. Commission-approved Acquirer under the terms of any Remedial Agreement related to the Paragraph III Divestiture Products; or
 - c. applicable Law;
 5. not disclose or convey any such Confidential Business Information, directly or indirectly, to any person except the Paragraph III.A. Commission-approved Acquirer; and
 6. not provide, disclose or otherwise make available, directly or indirectly, any such Confidential Business Information related to the marketing or sales related to the Paragraph III Divestiture Products to the employees associated with business related to those Retained Products that are approved by the FDA for the same or similar indications as the Paragraph III Divestiture Products.
- G. Respondent shall not enforce any agreement against a Third Party or the Paragraph III.A. Commission-approved Acquirer to the extent that such agreement may limit or otherwise impair the ability of such Commission-approved Acquirer to acquire all Confidential Business Information

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related to the Paragraph III Divestiture Products. Not later than ten (10) days after the Closing Date, Respondent shall grant a release to each such Third Party that allows the Third Party to provide all such Confidential Business Information within the Third Party's possession or control to such Commission-approved Acquirer. This includes, but is not limited to, such releases as may be necessary to permit the transfer to such Commission-approved Acquirer of any attorney work-product related to the Product Intellectual Property related to the Paragraph III Divestiture Products in the possession of Respondent's outside counsel. Within five (5) days of the execution of each such release, Respondent shall provide a copy of the release to such Commission-approved Acquirer.

- H. Until all of Respondent's rights to enforce restrictions on the use, disclosure, conveyance or provision of Confidential Business Information related to the Paragraph III Divestiture Products are fully assigned or conveyed to the Paragraph III.A. Commission-approved Acquirer, Respondent shall enforce any agreement against a Third Party to the extent that such agreement prevents or limits the ability of the Third Party to provide any such Confidential Business Information to any person or entity other than: (1) such Commission-approved Acquirer or (2) any Third Party Consultant authorized by such Commission-approved Acquirer to receive such information.
- I. Respondent shall not join, file, prosecute or maintain any suit, in law or equity, against the Paragraph III.A. Commission-approved Acquirer(s) or the related Divestiture Product Releasee(s) for the research, Development, manufacture, use, import, export, distribution, or sale of the Paragraph III Divestiture Product(s) under the following:

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1. any Patent owned or licensed by Respondent or PLIVA as of the Effective Date that claims a method of making, using, or administering, or a composition of matter, relating to the respective Divestiture Product, or that claims a device relating to the use thereof;
2. any Patents owned or licensed at any time after the Effective Date by Respondent that claim any aspect of the research, Development, manufacture, use, import, export, distribution, or sale of the respective Divestiture Products, other than such Patents that claim inventions conceived by and reduced to practice after the Effective Date;

if such suit would have the potential to interfere with the Paragraph III.A. Commission-approved Acquirer's freedom to practice the research, Development, manufacture, use, import, export, distribution, or sale of the Paragraph III Divestiture Products. Respondent shall also covenant to the Paragraph III.A. Commission-approved Acquirer that as a condition of any assignment, transfer, or license to a Third Party of the above-described Patents, the Third Party shall agree to provide a covenant whereby the Third Party covenants not to sue the Paragraph III.A. Commission-approved Acquirer or the related Divestiture Product Releasee(s) under such Patents, if the suit would have the potential to interfere with the Paragraph III.A. Commission-approved Acquirer's freedom to practice in the research, Development, manufacture, use, import, export, distribution, or sale of the Paragraph III Divestiture Products.

Respondent shall include the above-described covenants in the Remedial Agreement(s) with the Paragraph III.A. Commission-approved Acquirer.

- J. Pending divestiture of the assets required to be divested pursuant to Paragraph III.A. of this Order, Respondent

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shall take such actions as are necessary to maintain the full economic viability and marketability of the business associated with such assets, to minimize any risk of loss of competitive potential for such business, and to prevent the destruction, removal, wasting, deterioration, or impairment of any of these assets until after their respective transfer to the Paragraph III.A. Commission-approved Acquirer in a manner that ensures that there is no disruption, delay, or impairment of the regulatory approval processes related to such assets. Respondent shall not sell, transfer, encumber or otherwise impair such assets (other than in the manner prescribed in this Order) nor take any action that lessens the full economic viability, marketability, or competitiveness of the above-described businesses.

- K. The purpose of the divestiture required by Paragraph III is: (1) to ensure the continued use of such assets in the research, Development, manufacture, distribution, sale and marketing of the Paragraph III Divestiture Products; (2) to create a viable and effective competitor in the relevant markets alleged in the Complaint who is independent of Respondent and PLIVA; and, (3) to remedy the lessening of competition resulting from the Acquisition as alleged in the Commission's Complaint in a timely and sufficient manner.

IV.

IT IS FURTHER ORDERED that:

- A. If Respondent does not acquire fifty (50) percent or more of the voting securities of PLIVA on or before the Expiration Date, then Respondent shall divest, absolutely and in good faith, all of its Ownership Interest in PLIVA on the Croatian Stock Exchange, or such other securities exchange as the voting securities of PLIVA are registered to be traded on, within one (1) year of the Expiration Date.

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- B. Pending the divestiture described in Paragraph IV.A., Respondent shall not, directly or indirectly:
1. exercise dominion or control over, or otherwise seek to influence, the management, direction or supervision of the business of PLIVA including, but not limited to, any participation in the formulation, determination or direction of any business decisions of PLIVA;
 2. propose corporate action requiring the approval of PLIVA shareholders;
 3. nominate, or any other way seek to or obtain representation on the Board of Directors of PLIVA;
 4. have any of its directors, officers or employees serve simultaneously as an officer or director of PLIVA;
 5. exercise any voting rights attached to any Ownership Interest in PLIVA, *provided, however*, that in any matter to be voted on by the shareholders of PLIVA, Respondent shall cast the votes related to its Ownership Interest in each class of PLIVA stock in an amount and manner proportional to the vote of all other votes cast by other PLIVA shareholders entitled to vote on such matter;
 6. seek or obtain access to any confidential, proprietary, or other non-public information of PLIVA relating to the research, Development, manufacture, distribution, sale, and marketing of Products that are approved by the FDA for the same or similar indications as Products researched, Developed, manufactured, distributed, sold, or marketed by Respondent, *provided however*, that this shall not be construed to prohibit Respondent from seeking or obtaining discovery in

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any litigation or other proceeding to resolve a claim between Respondent and PLIVA in accordance with the procedures of the forum before which the dispute is pending. With respect to any such discovery, Respondent shall enter into a protective order to prevent any information from being used for any purpose other than providing legal representation or evidence as to the particular dispute and to prevent any information from being disclosed to any person(s) not necessary to the resolution of such dispute; or

7. take any action or omit to take any action in a manner that would be incompatible with the status of Respondent as a passive investor in PLIVA.

The requirements of this Paragraph IV.B. shall continue and remain in effect so long as Respondent retains any Ownership Interest in PLIVA.

- C. The purpose of the requirements of Paragraph IV is to ensure that, if the Acquisition does not occur, Respondent will not seek to exert, or exert influence upon, the business operations of PLIVA and shall divest itself of all of its Ownership Interest in PLIVA.

V.

IT IS FURTHER ORDERED that:

- A. At any time after Respondent signs the Consent Agreement in this matter, the Commission may appoint a monitor (“Interim Monitor”) to assure that Respondent expeditiously complies with all of its obligations and performs all of its responsibilities as required by this Order, the Order to Maintain Assets and the Remedial Agreements.

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- B. The Commission shall select the Interim Monitor, subject to the consent of Respondent, which consent shall not be unreasonably withheld. If Respondent has not opposed, in writing, including the reasons for opposing, the selection of a proposed Interim Monitor within ten (10) days after notice by the staff of the Commission to Respondent of the identity of any proposed Interim Monitor, Respondent shall be deemed to have consented to the selection of the proposed Interim Monitor.
- C. Not later than ten (10) days after the appointment of the Interim Monitor, Respondent shall execute an agreement that, subject to the prior approval of the Commission, confers on the Interim Monitor all the rights and powers necessary to permit the Interim Monitor to monitor Respondent's compliance with the relevant requirements of the Order in a manner consistent with the purposes of the Order.
- D. If an Interim Monitor is appointed, Respondent shall consent to the following terms and conditions regarding the powers, duties, authorities, and responsibilities of the Interim Monitor:
1. The Interim Monitor shall have the power and authority to monitor Respondent's compliance with the divestiture and asset maintenance obligations and related requirements of the Order, and shall exercise such power and authority and carry out the duties and responsibilities of the Interim Monitor in a manner consistent with the purposes of the Order and in consultation with the Commission.
 2. The Interim Monitor shall act in a fiduciary capacity for the benefit of the Commission.
 3. The Interim Monitor shall serve until the later of:

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- a. the completion by Respondent of:
 - (1) the divestiture of all Divestiture Assets in a manner that fully satisfies the requirements of this Order; and
 - (2) notification by each of the relevant Commission-approved Acquirers to the Interim Monitor that such Commission-approved Acquirer is: (1) approved by the FDA to manufacture the Trazodone Hydrochloride Products and the Triamterene Products, and (2) able to manufacture such Divestiture Products in commercial quantities, in a manner consistent with cGMP, independently of Respondent and PLIVA; and
- b. the completion by Respondent of the last obligation under the Orders pertaining to the Interim Monitor's service;

provided, however, that the Commission may extend or modify this period as may be necessary or appropriate to accomplish the purposes of the Orders.

4. Subject to any demonstrated legally recognized privilege, the Interim Monitor shall have full and complete access to Respondent's personnel, books, documents, records kept in the normal course of business, facilities and technical information, and such other relevant information as the Interim Monitor may reasonably request, related to Respondent's compliance with its obligations under the Order, including, but not limited to, its obligations related to the relevant assets. Respondent shall cooperate with any reasonable request of the Interim Monitor and

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shall take no action to interfere with or impede the Interim Monitor's ability to monitor Respondent's compliance with the Order.

5. The Interim Monitor shall serve, without bond or other security, at the expense of Respondent, on such reasonable and customary terms and conditions as the Commission may set. The Interim Monitor shall have authority to employ, at the expense of Respondent, such consultants, accountants, attorneys and other representatives and assistants as are reasonably necessary to carry out the Interim Monitor's duties and responsibilities.
6. Respondent shall indemnify the Interim Monitor and hold the Interim Monitor harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Interim Monitor's duties, including all reasonable fees of counsel and other reasonable expenses incurred in connection with the preparations for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Interim Monitor.
7. Respondent shall report to the Interim Monitor in accordance with the requirements of this Order and/or as otherwise provided in any agreement approved by the Commission. The Interim Monitor shall evaluate the reports submitted to the Interim Monitor by Respondent, and any reports submitted by the Commission-approved Acquirer with respect to the performance of Respondent's obligations under the Order or the Remedial Agreement. Within thirty (30) days from the date the Interim Monitor receives these

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reports, the Interim Monitor shall report in writing to the Commission concerning performance by Respondent of its obligations under the Order.

8. Respondent may require the Interim Monitor and each of the Interim Monitor's consultants, accountants, attorneys and other representatives and assistants to sign a customary confidentiality agreement; *provided, however,* that such agreement shall not restrict the Interim Monitor from providing any information to the Commission.
- E. The Commission may, among other things, require the Interim Monitor and each of the Interim Monitor's consultants, accountants, attorneys and other representatives and assistants to sign an appropriate confidentiality agreement related to Commission materials and information received in connection with the performance of the Interim Monitor's duties.
 - F. If the Commission determines that the Interim Monitor has ceased to act or failed to act diligently, the Commission may appoint a substitute Interim Monitor in the same manner as provided in this Paragraph.
 - G. The Commission may on its own initiative, or at the request of the Interim Monitor, issue such additional orders or directions as may be necessary or appropriate to assure compliance with the requirements of the Order.
 - H. The Interim Monitor appointed pursuant to this Order may be the same person appointed as a Divestiture Trustee pursuant to the relevant provisions of this Order.

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VI.**IT IS FURTHER ORDERED** that:

- A. If Respondent has not fully complied with the obligations to assign, grant, license, divest, transfer, deliver or otherwise convey relevant assets as required by this Order, the Commission may appoint a trustee (“Divestiture Trustee”) to assign, grant, license, divest, transfer, deliver or otherwise convey the assets required to be assigned, granted, licensed, divested, transferred, delivered or otherwise conveyed pursuant to each of the relevant Paragraphs in a manner that satisfies the requirements of each such Paragraph. In the event that the Commission or the Attorney General brings an action pursuant to § 5(*l*) of the Federal Trade Commission Act, 15 U.S.C. § 45(*l*), or any other statute enforced by the Commission, Respondent shall consent to the appointment of a Divestiture Trustee in such action to assign, grant, license, divest, transfer, deliver or otherwise convey the relevant assets. Neither the appointment of a Divestiture Trustee nor a decision not to appoint a Divestiture Trustee under this Paragraph shall preclude the Commission or the Attorney General from seeking civil penalties or any other relief available to it, including a court-appointed Divestiture Trustee, pursuant to § 5(*l*) of the Federal Trade Commission Act, or any other statute enforced by the Commission, for any failure by Respondent to comply with this Order.
- B. The Commission shall select the Divestiture Trustee, subject to the consent of Respondent, which consent shall not be unreasonably withheld. The Divestiture Trustee shall be a person with experience and expertise in acquisitions and divestitures. If Respondent has not opposed, in writing, including the reasons for opposing, the selection of any proposed Divestiture Trustee within ten (10) days after notice by the staff of the Commission to

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Respondent of the identity of any proposed Divestiture Trustee, Respondent shall be deemed to have consented to the selection of the proposed Divestiture Trustee.

- C. Not later than ten (10) days after the appointment of a Divestiture Trustee, Respondent shall execute a trust agreement that, subject to the prior approval of the Commission, transfers to the Divestiture Trustee all rights and powers necessary to permit the Divestiture Trustee to effect the divestiture required by this Order.
- D. If a Divestiture Trustee is appointed by the Commission or a court pursuant to this Paragraph, Respondent shall consent to the following terms and conditions regarding the Divestiture Trustee's powers, duties, authority, and responsibilities:
 1. Subject to the prior approval of the Commission, the Divestiture Trustee shall have the exclusive power and authority to assign, grant, license, divest, transfer, deliver or otherwise convey the assets that are required by this Order to be assigned, granted, licensed, divested, transferred, delivered or otherwise conveyed.
 2. The Divestiture Trustee shall have one (1) year after the date the Commission approves the trust agreement described herein to accomplish the divestiture, which shall be subject to the prior approval of the Commission. If, however, at the end of the one (1) year period, the Divestiture Trustee has submitted a plan of divestiture or believes that the divestiture can be achieved within a reasonable time, the divestiture period may be extended by the Commission; *provided, however,* the Commission may extend the divestiture period only two (2) times.

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3. Subject to any demonstrated legally recognized privilege, the Divestiture Trustee shall have full and complete access to the personnel, books, records and facilities related to the relevant assets that are required to be assigned, granted, licensed, divested, delivered or otherwise conveyed by this Order and to any other relevant information, as the Divestiture Trustee may request. Respondent shall develop such financial or other information as the Divestiture Trustee may request and shall cooperate with the Divestiture Trustee. Respondent shall take no action to interfere with or impede the Divestiture Trustee's accomplishment of the divestiture. Any delays in divestiture caused by Respondent shall extend the time for divestiture under this Paragraph in an amount equal to the delay, as determined by the Commission or, for a court-appointed Divestiture Trustee, by the court.
4. The Divestiture Trustee shall use commercially reasonable efforts to negotiate the most favorable price and terms available in each contract that is submitted to the Commission, subject to Respondent's absolute and unconditional obligation to divest expeditiously and at no minimum price. The divestiture shall be made in the manner and to an acquirer as required by this Order; *provided, however*, if the Divestiture Trustee receives bona fide offers from more than one acquiring entity, and if the Commission determines to approve more than one such acquiring entity, the Divestiture Trustee shall divest to the acquiring entity selected by Respondent from among those approved by the Commission; and, *provided further, however*, that Respondent shall select such entity within five (5) days after receiving notification of the Commission's approval.

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5. The Divestiture Trustee shall serve, without bond or other security, at the cost and expense of Respondent, on such reasonable and customary terms and conditions as the Commission or a court may set. The Divestiture Trustee shall have the authority to employ, at the cost and expense of Respondent, such consultants, accountants, attorneys, investment bankers, business brokers, appraisers, and other representatives and assistants as are necessary to carry out the Divestiture Trustee's duties and responsibilities. The Divestiture Trustee shall account for all monies derived from the divestiture and all expenses incurred. After approval by the Commission of the account of the Divestiture Trustee, including fees for the Divestiture Trustee's services, all remaining monies shall be paid at the direction of Respondent, and the Divestiture Trustee's power shall be terminated. The compensation of the Divestiture Trustee shall be based at least in significant part on a commission arrangement contingent on the divestiture of all of the relevant assets that are required to be divested by this Order.

6. Respondent shall indemnify the Divestiture Trustee and hold the Divestiture Trustee harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Divestiture Trustee's duties, including all reasonable fees of counsel and other expenses incurred in connection with the preparation for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Divestiture Trustee.

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7. The Divestiture Trustee shall have no obligation or authority to operate or maintain the relevant assets required to be divested by this Order; *provided, however,* that the Divestiture Trustee appointed pursuant to this Paragraph may be the same Person appointed as Interim Monitor pursuant to the relevant provisions of the Order to Maintain Assets in this matter.
 8. The Divestiture Trustee shall report in writing to Respondent and to the Commission every sixty (60) days concerning the Divestiture Trustee's efforts to accomplish the divestiture.
 9. Respondent may require the Divestiture Trustee and each of the Divestiture Trustee's consultants, accountants, attorneys and other representatives and assistants to sign a customary confidentiality agreement; *provided, however,* such agreement shall not restrict the Divestiture Trustee from providing any information to the Commission.
- E. If the Commission determines that a Divestiture Trustee has ceased to act or failed to act diligently, the Commission may appoint a substitute Divestiture Trustee in the same manner as provided in this Paragraph.
- F. The Commission or, in the case of a court-appointed Divestiture Trustee, the court, may on its own initiative or at the request of the Divestiture Trustee issue such additional orders or directions as may be necessary or appropriate to accomplish the divestiture required by this Order.

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VII.**IT IS FURTHER ORDERED** that:

Respondent shall assure that, in any instance wherein its counsel (including in-house counsel under appropriate confidentiality arrangements) either retains unredacted copies of documents or other materials provided to the Commission-approved Acquirer(s) or accesses original documents (under circumstances where copies of documents are insufficient or otherwise unavailable) provided to the Commission-approved Acquirer(s), that Respondent's counsel does so only in order to do the following:

- A. comply with any Remedial Agreement, this Order, any Law (including, without limitation, any requirement to obtain regulatory licenses or approvals), any data retention requirement of any applicable Government Entity, or any taxation requirements; or
- B. defend against, respond to, or otherwise participate in any litigation, investigation, audit, process, subpoena or other proceeding relating to the divestiture or any other aspect of the Divestiture Products or assets and businesses associated with those Products; *provided, however*, that Respondent may disclose such information as necessary for the purposes set forth in this Paragraph pursuant to an appropriate confidentiality order, agreement or arrangement;

provided, however, that pursuant to this Paragraph VII, Respondent shall: (1) require those who view such unredacted documents or other materials to enter into confidentiality agreements with the relevant Commission-approved Acquirer (but shall not be deemed to have violated this requirement if the relevant Commission-approved Acquirer withholds such agreement

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unreasonably); and (2) use its best efforts to obtain a protective order to protect the confidentiality of such information during any adjudication.

VIII.**IT IS FURTHER ORDERED** that:

- A. Within five (5) days of the Acquisition, Respondent shall submit to the Commission a letter certifying the date on which the Acquisition occurred.
- B. Within five (5) days of the Expiration Date, Respondent shall submit to the Commission a letter certifying the date on which the Expiration Date occurred.
- C. Within five (5) days of the completion of the divestiture described in Paragraph IV.A., Respondent shall submit to the Commission a letter certifying the date on which Respondent completed such divestiture and describing the manner in which Respondent completed such divestiture.
- D. Within thirty (30) days after the date this Order becomes final, and every sixty (60) days thereafter until Respondent has fully complied with the following:
 1. Paragraphs II.A , II.B., III.A. (*i.e.*, has assigned, licensed, divested, transferred, delivered or otherwise conveyed all relevant assets to the relevant Commission-approved Acquirer in a manner that fully satisfies the requirements of the Order);
 2. Paragraph IV.A. (if the Acquisition does not occur);
 3. Paragraphs II.F., II.H., II.J., II.K., and III.D.; and

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4. and all of its responsibilities to render transitional services to the relevant Commission-approved Acquirer as provided by this Order and the Remedial Agreement(s),

Respondent shall submit to the Commission a verified written report setting forth in detail the manner and form in which its intends to comply, is complying, and has complied with this Order. Respondent shall submit at the same time a copy of its report concerning compliance with this Order to the Interim Monitor, if any Interim Monitor has been appointed. Respondent shall include in its reports, among other things that are required from time to time, a full description of the efforts being made to comply with the relevant Paragraphs of the Order, including a full description of all substantive contacts or negotiations related to the divestiture of the relevant assets and the identity of all Persons contacted, including copies of all written communications to and from such Persons, all internal memoranda, and all reports and recommendations concerning completing the obligations.

- E. One (1) year after the date this Order becomes final, annually for the next nine years on the anniversary of the date this Order becomes final, and at other times as the Commission may require, Respondent shall file a verified written report with the Commission setting forth in detail the manner and form in which it has complied and is complying with the Order.

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IX.

IT IS FURTHER ORDERED that Respondent shall notify the Commission at least thirty (30) days prior to any proposed (1) dissolution of such Respondent, (2) acquisition, merger or consolidation of Respondent, or (3) any other change in Respondent that may affect compliance obligations arising out of the Order, including, but not limited to, assignment and the creation or dissolution of subsidiaries.

X.

IT IS FURTHER ORDERED that, for purposes of determining or securing compliance with this Order, and subject to any legally recognized privilege, and upon written request and upon five (5) days notice to Respondent made to its principal United States offices or its headquarters address, Respondent shall, without restraint or interference, permit any duly authorized representative of the Commission:

- A. access, during business office hours of Respondent and in the presence of counsel, to all facilities and access to inspect and copy all books, ledgers, accounts, correspondence, memoranda and all other records and documents in the possession or under the control of Respondent related to compliance with this Order, which copying services shall be provided by Respondent at the request of the authorized representative(s) of the Commission; and
- B. to interview officers, directors, or employees of Respondent, who may have counsel present, regarding such matters.

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XI.

IT IS FURTHER ORDERED that this Order shall terminate on November 22, 2016.

By the Commission.

**PUBLIC
APPENDIX I
ORDER TO MAINTAIN ASSETS
NON-PUBLIC APPENDIX
II.A.
GENERIC DIVESTITURE PRODUCT AGREEMENTS**

**[Redacted From the Public Record
But Incorporated By Reference]**

**NON-PUBLIC APPENDIX II.B.
AGREEMENTS RELATED TO THE
CUSTODIOL PRODUCTS**

**[Redacted From the Public Record
But Incorporated By Reference]**

Analysis to Aid Public Comment

**NON-PUBLIC APPENDIX III.1
AGREEMENTS RELATED TO THE
NIMODIPINE (PLIVA) PRODUCTS**

**[Redacted From the Public Record
But Incorporated By Reference]**

**NON-PUBLIC APPENDIX III.2.
AGREEMENTS RELATED TO THE
NIMODIPINE (BARR) PRODUCTS**

**[Redacted From the Public Record
But Incorporated By Reference]**

**ANALYSIS OF CONSENT ORDER TO AID PUBLIC
COMMENT**

I. Introduction

The Federal Trade Commission (“Commission”) has accepted, subject to final approval, an Agreement Containing Consent Orders (“Consent Agreement”) from Barr Pharmaceuticals, Inc. (“Barr”), which is designed to remedy the anticompetitive effects of its proposed acquisition of Pliva d.d. (“Pliva”). Under the terms of the Consent Agreement, Barr is required to divest to Apotex, Inc. (“Apotex”) Barr’s generic trazodone and generic triamterene with hydrochlorothiazide (“triamterene/HCTZ”)

Analysis to Aid Public Comment

businesses. Further, the Consent Agreement requires Barr to return marketing rights to Pliva's generic nimodipine product in development to its joint venture partner, Banner Pharmacaps, Inc. ("Banner"), or in the alternative, that Barr return marketing rights to its nimodipine product in development to its development partner, Cardinal Health, Inc. ("Cardinal"). Lastly, the Consent Agreement requires Barr to divest Pliva's branded organ preservation solution, Custodiol, to New Custodiol LLC, a company formed for the purpose of marketing and selling Custodiol. The assets for each of the divestitures includes all of the relevant intellectual property, customer lists, research and development information, and regulatory materials. With these divestitures the competition that would otherwise be eliminated through the proposed acquisition of Pliva by Barr will be fully preserved.

The proposed Consent Agreement has been placed on the public record for thirty days for receipt of comments by interested persons. Comments received during this period will become part of the public record. After thirty days, the Commission will again review the proposed Consent Agreement and the comments received, and will decide whether it should withdraw from the proposed Consent Agreement, modify it, or make final the Decision and Order ("Order").

Pursuant to an announcement dated June 27, 2006, Barr intends to acquire all of the outstanding shares of Pliva by cash tender offer for approximately \$2.5 billion. Both parties manufacture and sell generic pharmaceuticals in the United States. The Commission's Complaint alleges that the proposed acquisition, if consummated, would violate Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45, in the markets for the manufacture and sale of: (1) generic trazodone hydrochloride tablets; (2) generic triamterene/HCTZ tablets; (3) generic nimodipine soft-gel capsules; and (4) organ preservation solutions. The proposed Consent Agreement remedies the alleged

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violations by replacing in each of these markets the lost competition that would result from the acquisition.

II. The Products and Structure of the Markets

Barr's acquisition of Pliva would reduce the number of current or future competing generic suppliers in the following three pharmaceutical products: trazodone hydrochloride tablets, triamterene/HCTZ tablets and nimodipine soft-gel capsules. The number of generic suppliers has a direct and substantial effect on generic pricing, as each additional generic supplier can have a competitive impact on the market. Because there are (or will be) multiple generic equivalents for the three products at issue here, the branded versions do not (or will not) significantly constrain the generics' pricing.

For each of the three generic products at issue here, Barr and Pliva currently are two of a small number of suppliers offering the product or are the only two future competitors.

Trazodone hydrochloride is an antidepressant. The branded product, Desyrel, is manufactured and sold by Apothecan, Inc., and typically sells for fifty times the generic price. Thus, Desyrel does not have a significant effect on pricing for generic trazodone. Sales of generic trazodone were over \$53 million in 2005. Currently, Barr, Pliva, Watson Pharmaceuticals, Inc. ("Watson"), Teva Pharmaceutical Industries Ltd. ("Teva"), and United Research Laboratories/Mutual Pharmaceutical Company ("URL/Mutual") are the only active suppliers of generic trazodone in the United States, although not all five suppliers are capable of supplying all formulations. For instance, Barr and Pliva are two of only three suppliers of the 150 mg formulation. Because many customers prefer to purchase the 50 mg, 100 mg and 150 mg formulations of generic trazodone from one supplier, the competitive significance of the other two suppliers who do not sell these formulations is limited. Moreover, the acquisition would reduce the number of suppliers of generic trazodone from

Analysis to Aid Public Comment

five to four, and significantly increase Barr's market share to over 64 percent in all formulations.

Triamterene/HCTZ is a combination product used to treat high blood pressure. The branded triamterene/HCTZ product, Maxzide, is manufactured and sold by Mylan Laboratories, Inc. ("Mylan") and is priced more than five times higher than its generic equivalent. Maxzide does not have a significant effect on the pricing of generic triamterene/HCTZ, while the competition between generic producers has a direct and substantial effect on generic triamterene/HCTZ pricing. Currently, Barr, Pliva, Watson, Mylan and Sandoz, Inc. ("Sandoz") are the only active suppliers of various formulations of generic triamterene/HCTZ tablets in the United States. Furthermore, there is evidence that several of these suppliers may have a more limited competitive significance in the market than Barr and Pliva. The proposed acquisition would reduce the number of suppliers from five to four, and would increase Barr's market share to about 35 percent.

Nimodipine is used to treat symptoms resulting from a ruptured blood vessel in the brain. The branded version of this product, Nimotop, is manufactured and sold by Bayer. Although the patent for the branded version of the drug has already expired, there are no generic suppliers of nimodipine on the market. Barr, in conjunction with Cardinal, plans to introduce generic nimodipine in the Fall of 2006. Pliva also has plans to introduce generic nimodipine with its partner, Banner in the same time frame. Pliva and Barr are the only firms in the process of entering this market. The acquisition would, therefore, eliminate future competition between Barr and Pliva and result in a monopoly in the generic nimodipine market.

Barr's acquisition of Pliva would also have an impact in one additional market, organ preservation solutions. These solutions are used during the harvesting of donor organs to flush and preserve the viability of the donor organ prior to transplantation. The market for organ preservation solutions in the United States is

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highly concentrated. Barr and Pliva have market shares of approximately 60 and 30 percent, respectively, in this \$17 million market. The rest of the market is divided among several smaller, niche players. The acquisition would significantly increase concentration in this market with Barr achieving near monopoly share with approximately 90 percent of the organ preservation solution market.

III. Entry

Entry into manufacture and sale of generic trazodone, generic triamterene/HCTZ, generic nimodipine, and organ preservation solutions would not be timely, likely, or sufficient in its magnitude, character, and scope to deter or counteract the anticompetitive effects of the acquisition. Developing and obtaining FDA approval for the manufacture and sale of each of the relevant products takes at least two years due to substantial regulatory, technological, and intellectual property barriers. In addition to regulatory barriers, penetrating the organ preservation solution market is further hindered by the reluctance of transplant surgeons to switch to a new organ preservation product.

IV. Effects of the Acquisition

The proposed acquisition would cause significant competitive harm to consumers in the U.S. markets for generic trazodone, generic triamterene/HCTZ, and organ preservation solutions by eliminating actual, direct, and substantial competition between Barr and Pliva, by increasing the likelihood that Barr will be able to unilaterally exercise market power, by increasing the likelihood and degree of coordinated interaction between the few remaining competitors, and by increasing the likelihood that consumers will pay higher prices. In these markets, the evidence shows that consumers have obtained lower prices due to the competitive rivalry that exists between market participants. The evidence also shows that as new rivals have entered the markets, consumers have obtained lower prices. The acquisition would also cause

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significant competitive harm to consumers in the U.S. market for generic nimodipine by eliminating future competition between Barr and Pliva.

V. The Consent Agreement

The proposed Consent Agreement preserves competition in the generic trazodone and triamterene/HCTZ markets by requiring that Barr divest all of the Barr assets for these two products to Apotex within ten days after the acquisition. The proposed Consent Agreement contains several provisions designed to ensure these divestitures are successful. Barr must provide various transitional services to enable Apotex to compete against Barr immediately following the divestiture. These services include providing Apotex with existing inventory of generic trazodone and triamterene/HCTZ, supplying Apotex with generic trazodone and triamterene/HCTZ until Apotex secures FDA approval to manufacture the products for itself in its own facility, and providing Apotex with all technical assistance necessary to obtain any FDA approvals. Apotex is a reputable generic manufacturer and is well-positioned to manufacture and market the acquired products and to compete effectively in those markets. In the United States, Apotex is roughly the tenth-largest generic pharmaceutical company with over 50 products. Moreover, the acquisition by Apotex does not present competitive problems in either the generic trazodone market or the generic triamterene/HCTZ market because it does not currently compete in those markets.

The proposed Consent Agreement preserves the actual and potential competition in the generic nimodipine market by requiring Barr to divest the Pliva nimodipine assets to Banner no later than ten days after the acquisition, or to divest its own nimodipine assets to Cardinal no later than sixty days after the acquisition. Banner and Cardinal are both reputable soft-gel capsule manufacturers and particularly well-positioned to manufacture and market generic nimodipine because they are

Analysis to Aid Public Comment

already manufacturing generic nimodipine soft-gel capsules pursuant to their respective joint ventures with Pliva and Barr.

The proposed Consent Agreement preserves the competition in the organ preservation solution market by requiring Barr to divest the Pliva organ preservation solution business to New Custodiol LLC no later than ten days after the acquisition. The Custodiol product is currently manufactured by a third party, Dr. Franz Kohler Chemie GmbH, who will continue to supply the product to new New Custodiol LLC. New Custodiol LLC is a company that was formed by Pliva's current head of marketing for organ preservation solutions, Mr. Allen Weber, for the purpose of acquiring, marketing and selling Custodiol in the United States. New Custodiol LLC has obtained funding from venture capitalists sufficient to allow it to manufacture and sell Custodiol effectively. The combination of Mr. Allen Weber's industry experience and venture capital backing makes New Custodiol LLC well positioned to acquire Custodiol and to restore the competition that would be lost if the proposed acquisition were to proceed unremedied. If the sale of Pliva's Custodiol is not successful, the Consent Agreement requires that Barr divest its organ preservation solution, ViaSpan, to a Commission-approved acquirer.

If the Commission determines that any of the divestitures or divestees are not acceptable, Barr must rescind the transaction(s) and divest the assets to Commission-approved buyer(s) not later than six months from the date the Order becomes final. If Barr fails to divest within the six months, the Commission may appoint a trustee to divest the assets.

The proposed remedy also allows for the appointment of an Interim Trustee, experienced in obtaining regulatory approval and the manufacture of pharmaceuticals, to oversee the technology transfer and to assist the divestees in the event of difficulties. As part of the proposed remedy, Barr is required to execute an agreement conferring all rights and powers necessary for the

Analysis to Aid Public Comment

Interim Trustee to satisfy his responsibilities under the Order to assure successful divestitures. The Commission has appointed Mr. William Rahe to be the Interim Monitor and the divestees have consented to his selection. The monitor will ensure that the Commission remains informed about the status of the proposed divestitures and asset transfers.

The purpose of this analysis is to facilitate public comment on the proposed Consent Agreement, and it is not intended to constitute an official interpretation of the proposed Consent Agreement or to modify its terms in any way.

Complaint

IN THE MATTER OF

**NORTHERN NEW ENGLAND REAL ESTATE
NETWORK, INC.**CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS
OF SEC. 5 OF THE FEDERAL TRADE COMMISSION ACT*Docket C-4175; File No. 051 0065**Complaint, November 22, 2006 – Decision, November 22, 2006*

This consent order addresses charges that the Northern New England Real Estate Network, Inc., which operates a real estate multiple listing service, adopted a rule that limits the publication of certain listing agreements on popular real estate websites, in a manner that limits the ability of real estate brokers to use Exclusive Agency Listings to offer unbundled brokerage services at a lower price than the full-service package. Specifically, information about properties would not be made available on the websites unless the listing contracts were Exclusive Right to Sell Listings. The order prohibits the respondent from adopting or enforcing any rules or policies that deny or limit the ability of its multiple listing service participants to enter into Exclusive Agency Listings, or any other lawful listing agreements, with sellers of properties. In addition, the order requires the respondent to conform its rules to the substantive provisions of the order within 30 days and to notify its participants of the order through its usual business communications and its website. The respondent is also required to notify the Commission of changes in its structure and to file periodic written reports concerning compliance with the terms of the order.

Participants

For the *Commission*: Peggy Bayer Femenella, Joel Christie, Alan Loughnan, Jonathan Platt, Jan Tran, and Theodore Zang.

For the *Respondent*: Robert R. Lucic, Sheehan Phinney Bass & Green.

Complaint

COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act, and by virtue of the authority vested in it by said Act, the Federal Trade Commission, having reason to believe that the Northern New England Real Estate Network, Inc. (“Respondent” or “NNEREN”), a corporation, also trading and doing business as the NNEREN Multiple Listing Service, has violated and is violating Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues this complaint stating its charges as follows:

NATURE OF THE CASE

This case involves a local corporation that operates a Multiple Listing Service (“MLS”), which is a joint venture among its participants designed to foster real estate brokerage services. NNEREN adopted a rule that limited the publication of certain listing agreements on popular internet real estate web sites, in a manner that injured real estate brokers that use such listing agreements to offer lesser services at a lower price compared to the full service package. This rule deprived such brokers and the home sellers they represent of a significant benefit afforded by the MLS. The rule discriminated on the basis of lawful contractual terms between the listing real estate broker and the seller of the property, and lacked any justification that such a rule improved competitive efficiency. Consumers would be harmed by this rule because it denies a lower cost option to sellers and increases search costs to buyers. As such, this rule constituted a concerted refusal to deal except on specified terms with respect to a key input for the provision of real estate services.

Complaint

RESPONDENT AND ITS PARTICIPANTS

1. Respondent Northern New England Real Estate Network, Inc. (“NNEREN”) is a for profit corporation organized, existing and doing business under and by virtue of the laws of the State of New Hampshire. Respondent’s principal place of business is at 5 Chenell Drive, P.O. Box 1748, Concord, New Hampshire 03302. NNEREN operates for the benefit of its participants.

2. NNEREN has several thousand real estate professionals as participants, and is affiliated with the National Association of Realtors (“NAR”). The majority of NNEREN’s participants hold an active real estate license and are active in the real estate profession.

3. The large majority of residential real estate brokerage professionals in New Hampshire are participants in NNEREN. These professionals compete with one another to provide residential real estate brokerage services to consumers.

4. NNEREN provides an MLS for participants doing business in New Hampshire and surrounding areas. An MLS is a clearinghouse through which participant real estate brokerage firms regularly and systematically exchange information on listings of real estate properties and share commissions with participants who locate purchasers.

5. The NNEREN MLS is owned by NNEREN and is titled the NNEREN Multiple Listing Service. The NNEREN Multiple Listing Service’s rules and policies, and any amendments thereto, must be approved by the NNEREN Board of Directors.

6. When a property is listed on the NNEREN Multiple Listing Service, it is made available to all participants of the MLS for the purpose of trying to match a buyer with a seller. Information about the property, including the asking price,

Complaint

address and property details, are made available to participants of the MLS so that a suitable buyer can be found.

7. The NNEREN Multiple Listing Service services the territory within the State of New Hampshire and surrounding areas (“NNEREN Multiple Listing Service Area”).

8. The NNEREN Multiple Listing Service is the dominant MLS in the State of New Hampshire.

JURISDICTION

9. NNEREN is and has been at all times relevant to this complaint a corporation organized for its own profit or for the profit of its shareholders or participants within the meaning of Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

10. The acts and practices of NNEREN, including the acts and practices alleged herein, have been or are in or affecting commerce within the meaning of Section 4 of the Federal Trade Commission Act.

NNEREN CONDUCT

11. In April 2005, NNEREN’s Board of Directors adopted a rule, which was then implemented in May 2005, that stated: “Exclusive Agency listings will not be included in NNEREN datafeeds to any website accessed by the general public such as nneren.com, REALTOR.com, third party feeds, IDX, etc.” (the “Web Site Policy”). This rule was rescinded by the Board of Directors on November 9, 2005 and participants were notified of the change on November 10, 2005 by posting in the “Bulletin” on the NNEREN web site, on November 13, 2005 by posting the NNEREN “Board of Directors’ Talking Points” on the NNEREN web site, and on November 21, 2005 by e-mail to participants of “NNEREN Nuggets,” an e-mail newsletter service.

Complaint

12. The Web Site Policy prevented certain lawful residential property listings provided to NNEREN, called “Exclusive Agency Listings,” from being transmitted to real estate web sites, based on the contractual relationship between the home seller and the real estate agent the seller employs to promote the property.

13. An Exclusive Agency Listing is a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but reserves to the property owner or principal a right to sell the property without assistance of a broker, in which case the listing broker is paid a reduced or no commission when the property is sold.

14. Exclusive Agency Listings are used by participants of NNEREN to offer lower-cost real estate services to consumers, including lawful arrangements pursuant to which a real estate broker or agent provides that a property offered for sale shall be listed on the MLS, but the listing broker or agent will not provide some or all of the services offered by other real estate brokers or will only offer such additional services on an _ la carte basis.

15. Brokers offering real estate brokerage services pursuant to Exclusive Agency Listings, are able to provide home sellers with exposure of their listing through the MLS for a flat fee that is very small compared to the commission prices traditionally charged. Exclusive Agency Listings often reserve to the home seller the right to sell the property without owing more to the listing broker.

16. The Web Site Policy specifically prevented Exclusive Agency Listings from being published on web sites approved by NNEREN and the NNEREN Multiple Listing Service, including (1) NNEREN-participant web sites; (2) the NNEREN-owned “NNEREN.com” web site; and (3) the NAR-operated “Realtor.com” web site (collectively, “Approved Web Sites”).

Complaint

17. The Web Site Policy had the effect of discouraging participants of NNEREN and participants in the NNEREN Multiple Listing Service from accepting Exclusive Agency Listings.

NNEREN MARKET POWER

18. The provision of residential real estate brokerage services to sellers and buyers of real property in the State of New Hampshire and/or the NNEREN Multiple Listing Service Area is a relevant service market.

19. The publication and sharing of information relating to residential real estate listings for the purpose of brokering residential real estate transactions is a key input to the provision of real estate brokerage services, and represents a relevant input market. Publication of listings through the NNEREN Multiple Listing Service is generally considered by sellers, buyers and their brokers to be the fastest and most effective means of obtaining the broadest market exposure for property in the State of New Hampshire.

20. By virtue of industry-wide participation and control over a key input, NNEREN and the NNEREN Multiple Listing Service, have market power in the State of New Hampshire.

21. Participation in the NNEREN Multiple Listing Service is necessary to a broker providing effective residential real estate brokerage services to sellers and buyers of real property in the NNEREN Multiple Listing Service Area. Participation significantly increases the opportunities of brokerage firms to enter into listing agreements with residential property owners, and significantly reduces the costs of obtaining up-to-date and comprehensive information on listings and sales. The realization of these opportunities and efficiencies is important for brokers to compete effectively in the provision of residential real estate brokerage services in the State of New Hampshire.

Complaint

APPROVED WEB SITES ARE KEY INPUTS

22. Access to the Approved Web Sites is a key input in the brokerage of residential real estate sales in the State of New Hampshire. Home buyers regularly use the Approved Web Sites to assist in their search for homes. The Approved Web Sites are the web sites most commonly used by home buyers in their home search. Many home buyers find the home that they ultimately purchased by searching on Approved Web Sites.

23. The most efficient, and at least in some cases the only, means for NNEREN participants to have their properties listed on the Approved Web Sites is by having the NNEREN Multiple Listing Service transmit those listings.

24. Property owners and their brokers in the NNEREN Multiple Listing Service Area generally consider publication of listings on Approved Web Sites, in conjunction with publication of listings on the NNEREN Multiple Listing System, to be the most effective means of obtaining the broadest market exposure for residential property in the State of New Hampshire.

EFFECTS OF WEB SITE POLICY

25. The Web Site Policy restricted competition by inhibiting the use of Exclusive Agency Listings in the State of New Hampshire and the NNEREN Multiple Listing Service Area.

26. The Web Site Policy may have reduced consumer choices regarding both the purchase and sale of homes and caused consumers to pay for real estate brokerage services that they would not otherwise buy.

Complaint

**THE WEB SITE POLICY OFFERS NO EFFICIENCY
BENEFIT**

27. There is no cognizable and plausible efficiency justification for the Web Site Policy. The Web Site Policy is not reasonably ancillary to the legitimate and beneficial objectives of NNEREN.

VIOLATION

28. In adopting the policies and engaging in the Acts and Practices described herein, NNEREN had been and was acting as a combination of its participants, or in conspiracy with some of its participants, to restrain trade in the provision of residential real estate brokerage services within the State of New Hampshire and/or the NNEREN Multiple Listing Service Area.

29. The purposes, capacities, tendencies, or effects of the policies, acts, or practices of NNEREN and its participants as described herein had been and were unreasonably to restrain competition among brokers, and to injure consumers.

30. The policies, acts, practices, and combinations or conspiracies described herein constituted unfair methods of competition in or affecting interstate commerce in violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this twenty-second day of November, 2006, issues its Complaint against Respondent Northern New England Real Estate Network, Incorporated.

By the Commission.

Decision and Order

DECISION AND ORDER

The Federal Trade Commission (“Commission”) having initiated an investigation of certain acts and practices of the Northern New England Real Estate Network, Inc., hereinafter sometimes referred to as “Respondent” or “NNEREN,” and Respondent having been furnished thereafter with a copy of the draft Complaint that the Bureau of Competition presented to the Commission for its consideration and which, if issued by the Commission, would charge Respondent with violations of Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondent, its attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Order (“Consent Agreement”), containing an admission by Respondent of all the jurisdictional facts set forth in the aforesaid draft Complaint, a statement that the signing of the Consent Agreement is for settlement purposes only and does not constitute an admission by Respondent that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondent has violated the said Act, and that a Complaint should issue stating its charges in that respect, and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34 (2004), the Commission hereby makes the following jurisdictional findings and issues the following Order:

1. Respondent NNEREN is a for-profit business corporation organized, existing and doing business under and by virtue of the

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laws of the State of New Hampshire, with its office and principal place of business at 5 Chenell Drive, P.O. Box 1748, Concord, New Hampshire 03302.

2. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the Respondent, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that for the purposes of this Order, the following definitions shall apply:

- A. “Respondent” or “NNEREN” means the Northern New England Real Estate Network, Inc. its predecessors, divisions and wholly or partially owned subsidiaries, affiliates, partnerships, and joint ventures; and all the directors, officers, employees, consultants, agents, and representatives of the foregoing. The terms “subsidiary,” “affiliate” and “joint venture” refer to any person in which there is partial or total ownership or control by NNEREN, and is specifically meant to include the NNEREN Multiple Listing Service and NNEREN.com.
- B. “Multiple Listing Service” or “MLS” means a cooperative venture by which real estate brokers serving a common market area submit their listings to a central service which, in turn, distributes the information for the purpose of fostering cooperation in and facilitating real estate transactions.
- C. “NNEREN Multiple Listing Service” means the Multiple Listing Service owned, operated, or controlled by NNEREN.

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- D. “NNEREN Participant” means any person authorized by NNEREN to access, use or enjoy the benefits of the NNEREN Multiple Listing Service in accordance with NNEREN’s by-laws, policies, rules, and regulations.
- E. “IDX” means the internet data exchange process that converts the MLS listing database to a database that can be integrated within any web site.
- F. “IDX Web Site” means a Web Site that is capable of integrating the MLS listing database within the Web Site.
- G. “NNEREN.com” means the Web Site operated by NNEREN that allows the general public to search information concerning real estate listings from the NNEREN Multiple Listing Service.
- H. “Realtor.com” means the Web Site operated by the National Association of Realtors that allows the general public to search information concerning real estate listings downloaded from a variety of MLSs representing different geographic areas of the country, including but not limited to real estate listings from the NNEREN Multiple Listing Service.
- I. “Approved Web Site” means a Web Site to which NNEREN provides information concerning listings for publication including, but not limited to, NNEREN Participant IDX Web Sites, NNEREN.com, and Realtor.com.
- J. “Exclusive Right to Sell Listing” means a listing agreement under which the property owner or principal appoints a real estate broker as his or her exclusive agent for a designated period of time, to sell the property on the owner’s stated terms, and agrees to pay the listing broker a commission when the property is sold, regardless of

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whether the buyer is found by the listing broker, the owner or another broker.

- K. “Exclusive Agency Listing” means a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but also reserves to the property owner or principal a right to sell the property without assistance from a broker, in which case the listing broker is paid a reduced commission or no commission when the property is sold.
- L. “Services of the NNEREN MLS” means the benefits and services provided by NNEREN to assist NNEREN Participants in selling, leasing and valuing property and/or brokering real estate transactions. With respect to real estate brokers or agents representing home sellers, Services of the NNEREN MLS shall include, but are not limited to:
1. having the property included among the listings in the NNEREN MLS in a manner so that information concerning the listing is easily accessible by cooperating brokers; and
 2. having the property publicized through means available to the NNEREN MLS, including, but not limited to, information concerning the listing being made available on NNEREN.com, Realtor.com and IDX Web Sites.
- M. “Other Lawful Listings” means a listing agreement, other than Exclusive Right to Sell Listings or Exclusive Agency Listing, which is in compliance with applicable state laws and regulations.

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II.

IT IS FURTHER ORDERED that Respondent NNEREN, its successors and assigns, and its directors, officers, committees, agents, representatives, and employees, directly or indirectly, or through any corporation, subsidiary, division, or other device, in connection with the operation of a Multiple Listing Service or Approved Web Sites in or affecting commerce, as “commerce” is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44, shall forthwith cease and desist from adopting or enforcing any policy, rule, practice or agreement to deny, restrict or interfere with the ability of NNEREN Participants to enter into Exclusive Agency Listings or Other Lawful Listings with the sellers of properties, including but not limited to any policy, rule, practice or agreement to:

1. prevent NNEREN Participants from offering or accepting Exclusive Agency Listings;
2. prevent NNEREN Participants from cooperating with listing brokers or agents that offer or accept Exclusive Agency Listings;
3. prevent NNEREN Participants from publishing information concerning listings offered pursuant to Exclusive Agency Listings on Approved Web Sites;
4. deny or restrict the Services of the NNEREN MLS to Exclusive Agency Listings or Other Lawful Listings in any way that such Services of the NNEREN MLS are not denied or restricted to Exclusive Right to Sell Listings; and
5. treat Exclusive Agency Listings, or any Other Lawful Listings, in a less advantageous manner than Exclusive Right to Sell Listings, including but not limited to, any policy, rule or practice pertaining to the transmission,

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downloading, or displaying of information pertaining to such listings.

Provided, however, that nothing herein shall prohibit the Respondent from adopting or enforcing any policy, rule, practice or agreement regarding participant requirements, payment of dues, administrative matters, or any other policy, rule, practice or agreement, that it can show is reasonably ancillary to the legitimate and beneficial objectives of the MLS.

III.

IT IS FURTHER ORDERED that Respondent shall, no later than thirty (30) days after the date this Order becomes final, amend its rules and regulations to conform to the provisions of this Order.

IV.

IT IS FURTHER ORDERED that, within ninety (90) days after the date this Order becomes final, Respondent shall (1) inform each NNEREN Participant of the amendments to its rules and regulations to conform to the provisions of this Order; and (2) provide each NNEREN Participant with a copy of this Order. Respondent shall transmit the rule change and Order by the means it uses to communicate with its participants in the ordinary course of NNEREN's business, which shall include, but not be limited to: (A) sending one or more emails with one or more statements that there has been a change to the rule and an Order, along with a link to the amended rule and the Order, to each NNEREN Participant; and (B) placing on the publicly accessible MLS Rules and Regulations page of the NNEREN Web Site (www.NNEREN.com) a statement that there has been a change to the rule and an Order, along with a link to the amended rule and the Order. Respondent shall modify its Web Site as described above no later than five (5) business days after the date the Order becomes final, and shall display such modifications for no less than ninety (90) days from the date this Order becomes final. The

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Order shall remain accessible through common search terms and archives on the Web Site for five (5) years from the date it becomes final.

V.

IT IS FURTHER ORDERED that Respondent shall notify the Commission at least thirty (30) days prior to any proposed change in Respondent, such as dissolution, assignment or sale resulting in the emergence of a successor corporation or any other proposed changes in the corporation which may affect compliance obligations arising out of the Order.

VI.

IT IS FURTHER ORDERED that Respondent shall file a written report within six (6) months of the date this Order becomes final, and annually on the anniversary date of the original report for each of the five (5) years thereafter, and at such other times as the Commission may require by written notice to Respondent, setting forth in detail the manner and form in which it has complied with this Order.

VII.

IT IS FURTHER ORDERED that this Order shall terminate on November 22, 2016.

By the Commission.

Analysis to Aid Public Comment

ANALYSIS OF CONSENT ORDERS TO AID PUBLIC COMMENT

The Federal Trade Commission has accepted for public comment a series of agreements containing consent orders with five respondent entities. Each of the proposed respondents operates a multiple listing service (“MLS”) that is designed to foster real estate brokerage services by sharing and publicizing information on properties for sale by customers of real estate brokers. The agreements settle charges that each respondent violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, through particular acts and practices of the MLS. The proposed consent orders have been placed on the public record for 30 days to receive comments from interested persons. Comments received during this period will become part of the public record. After 30 days, the Commission will review the agreements and the comments received, and will decide whether it should withdraw from the agreement or make the proposed order final.

The purpose of this analysis is to facilitate comment on the proposed consent orders. This analysis does not constitute an official interpretation of the agreements and proposed orders, and does not modify their terms in any way. Further, the proposed consent orders have been entered into for settlement purposes only, and do not constitute an admission by any proposed respondent that it violated the law or that the facts alleged in the respective complaint against each respondent (other than jurisdictional facts) are true.

I. The Respondents

The agreements are with the following organizations:

- Information and Real Estate Services, LLC (“IRES”) is a limited liability company based in Loveland, Colorado, that is owned by five boards and associations of realtors in Boulder, Fort Collins, Greeley,

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Longmont, and Loveland/Berthoud, Colorado. IRES operates a regional MLS for Northern Colorado that is used by more than 5,000 real estate professionals.

- Northern New England Real Estate Network, Inc. (“NNEREN”) is a corporation based in Concord, New Hampshire, that functions as an association of realtors. NNEREN operates an MLS for New Hampshire and some surrounding areas that is used by several thousand real estate professionals.
- Williamsburg Area Association of Realtors, Inc. (“WAAR”), is a corporation based in Williamsburg, Virginia, that functions as an association of realtors. WAAR operates an MLS for the Williamsburg, Virginia, metropolitan area and surrounding counties that is used by approximately 650 real estate professionals.
- Realtors Association of Northeast Wisconsin, Inc. (“RANW”) is a non-profit corporation based in Appleton, Wisconsin, that functions as an association of realtors. RANW operates an MLS for the Northeast Wisconsin Area, which includes the cities of Green Bay, Appleton, Oshkosh, and Fond du Lac, Wisconsin, and the surrounding counties, that is used by more than 1,500 real estate professionals.
- Monmouth County Association of Realtors, Inc. (“MCAR”) is a corporation based in Tinton Falls, New Jersey, that functions as an association of realtors. MCAR operates an MLS for Monmouth County, Ocean County and the surrounding areas of New Jersey that is used by several thousand real estate professionals.

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II. Industry Background

A Multiple Listing Service, or “MLS,” is a cooperative venture by which real estate brokers serving a common local market area submit their listings to a central service, which in turn distributes the information, for the purpose of fostering cooperation among brokers and agents in real estate transactions. The MLS facilitates transactions by putting together a home seller, who contracts with a broker who is a member of the MLS, with prospective buyers, who may be working with other brokers who are also members of the MLS. Membership in the MLS is largely limited to member brokers who generally must possess a license to engage in real estate brokerage services and meet other criteria set by MLS rules.

Prior to the late 1990s, the listings on an MLS were typically directly accessible only to real estate brokers who were members of a local MLS. The MLS listings typically were made available through books or dedicated computer terminals, and generally could only be accessed by the general public by physically visiting a broker’s office or by receiving a fax or hand delivery of selected listings from a broker.

Information from an MLS is now typically available to the general public not only through the offices of real estate brokers who are MLS members, but also through three principal categories of internet web sites. First, information concerning many MLS listings is available through Realtor.com, a national web site run by the National Association of Realtors (“NAR”). Realtor.com contains listing information from many local MLS systems around the country and is the largest and most-used internet real estate web site. Second, information concerning MLS listings is often made available through a local MLS-affiliated web site. Third, information concerning MLS listings is often made available on the internet sites of various real estate brokers, who choose to provide these web sites as a way of promoting their brokerage services. Most of these various web sites receive information from an MLS pursuant to a procedure

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often known as Internet Data Exchange (“IDX”), which is typically governed by MLS policies. The IDX policies allow operators of approved web sites to display MLS active listing information to the public.

Today the internet plays a crucial role in real estate sales. According to a 2005 survey by the National Association of Realtors (“NAR”), 77 percent of home buyers used the internet to assist in their home search, with 57 percent reporting frequent internet searches. Twenty-four percent of respondents first learned about the home they selected from the internet, the second most common means behind learning about a home from a real estate agent (50 percent).¹ In all, 69 percent of home buyers found the internet to be a “very useful” source of information, and a total of 96 percent found the internet to be either “very useful” or “somewhat useful.”² Moreover, the NAR Survey makes clear that the overwhelming majority of web sites used nationally in searching for homes contain listing information that is provided by local MLS systems.³

A. Types of Real Estate Brokerage Professionals

A typical real estate transaction involves two real estate brokers. These are commonly known as a “listing broker” and a “selling broker.” The listing broker is hired by the seller of the property to locate an appropriate buyer. The seller and the listing broker agree upon compensation, which is determined by written

¹ *E.g.*, PAUL C. BISHOP, THOMAS BEERS AND SHONDA D. HIGHTOWER, THE 2005 NATIONAL ASSOCIATION OF REALTORS PROFILE OF HOME BUYERS AND SELLERS (hereinafter, “NAR Study”) at 3-3, 3-4.

² *Id.* See *Home Buyer & Seller Survey Shows Rising Use of Internet, Reliance on Agents* (Jan. 17, 2006), available at <http://www.realtor.org/PublicAffairsWeb.nsf/Pages/HmBuyerSellerSurvey06?OpenDocument>.

³ NAR Study at 3-19.

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agreement negotiated between the seller and the listing broker. In a common traditional listing agreement, the listing broker receives compensation in the form of a commission, which is typically a percentage of the sales price of the property, payable if and when the property is sold. In such a traditional listing agreement, the listing broker agrees to provide a package of real estate brokerage services, including promoting the listing through the MLS and on the internet, providing advice to the seller regarding pricing and presentation, fielding all calls and requests to show the property, supplying a lock-box so that potential buyers can see the house with their agents, running open houses to show the house to potential buyers, negotiating with buyers or their agents on offers, assisting with home inspections and other arrangements once a contract for sale is executed, and attending the closing of the transaction.

The other broker involved in a typical transaction is commonly known as the selling broker. In a typical transaction, a prospective buyer will seek out a selling broker to identify properties that may be available. This selling broker will discuss the properties that may be of interest to the buyer, accompany the buyer to see various properties, try to arrange a transaction between buyer and seller, assist the buyer in negotiating the contract, and help in further steps necessary to close the transaction. In a traditional transaction, the listing broker offers the selling broker a fixed commission, to be paid from the listing broker's commission when and if the property is sold. Real estate brokers typically do not specialize as only listing brokers or selling brokers, but often function in either role depending on the particular transaction.

B. Types of Real Estate Listings

The relationship between the listing broker and the seller of the property is established by agreement. The two most common types of agreements governing listings are Exclusive Right to Sell Listings and Exclusive Agency Listings. An Exclusive Right to Sell Listing is the traditional listing agreement, under which the

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property owner appoints a real estate broker as his or her exclusive agent for a designated period of time, to sell the property on the owner's stated terms, and agrees to pay the listing broker a commission if and when the property is sold, whether the buyer of the property is secured by the listing broker, the owner or another broker.

An Exclusive Agency Listing is a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but under which the property owner or principal reserves a right to sell the property without assistance of the listing broker, in which case the listing broker is paid a reduced or no commission when the property is sold.

Some real estate brokers have attempted to offer services to home sellers on something other than the traditional full-service basis. Many of these brokers, often for a flat fee, will offer sellers access to the MLS's information-sharing function, as well as a promise that the listing will appear on the most popular real estate web sites. Under such arrangements, the listing broker does not offer additional real estate brokerage services as part of the flat fee package, but allows sellers to purchase additional services if sellers so desire. These non-traditional arrangements often are structured using Exclusive Agency Listing contracts.

There is a third type of real estate listing that does not involve a real estate broker, which is a "For Sale By Owner" or "FSBO" listing. With a FSBO listing, a home owner will attempt to sell a house without the involvement of any real estate broker and without paying any compensation to such a broker, by advertising the availability of the home through traditional advertising mechanisms (such as a newspaper) or FSBO-specific web sites.

There are two critical distinctions between an Exclusive Agency Listing and a FSBO for the purpose of this analysis. First, the Exclusive Agency Listing employs a listing broker for

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access to the MLS and web sites open to the public; a FSBO listing does not. Second, an Exclusive Agency Listing sets terms of compensation to be paid to a selling broker, while a FSBO listing often does not.

III. The Conduct Addressed by the Proposed Consent Orders

Each of the proposed consent orders is accompanied by a complaint setting forth the conduct by the respondent that is the reason for the proposed consent order. In general, the conduct at issue in these matters is largely the same as the conduct addressed by the Commission in its recent consent order involving the Austin Board of Realtors (“ABOR”).⁴

The complaints accompanying the proposed consent orders allege that respondents have violated Section 5 of the FTC Act by adopting rules or policies that limit the publication and marketing on the internet of certain sellers’ properties, but not others, based solely on the terms of their respective listing contracts. The rules or policies challenged in the complaints state that information about properties will not be made available on popular real estate web sites unless the listing contracts are Exclusive Right to Sell Listings. When implemented, these “Web Site Policies” prevented properties with non-traditional listing contracts from being displayed on a broad range of public web sites.

The respondents adopted the challenged rules or policies at various times between 2001 and 2005. Each respondent, prior to the Commission’s acceptance of the consent orders and proposed complaints for public comment, rescinded or modified its rules to discontinue the challenged practices. The members of each

⁴ *In the Matter of Austin Bd. of Realtors*, Docket No. C-4167 (Final Approval, Aug. 29, 2006). The ABOR consent order was published with an accompanying Analysis To Aid Public Comment at 71 Fed. Reg. 41023 (July 19, 2006).

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respective MLS affected by these rules have been notified of the recent changes.

The complaints allege that the respondents violated Section 5 of the FTC Act by unlawfully restraining competition among real estate brokers in their respective service areas by adopting the Web Site Policies.

A. The Respondents Have Market Power

Each of the respondents serves the great majority of the residential real estate brokers in its respective service area. These professionals compete with one another to provide residential real estate brokerage services to consumers.

Each of the respondents also is the sole or dominant MLS serving its respective service area. Membership in each of the respondents' MLS systems is necessary for a broker to provide effective residential real estate brokerage services to sellers and buyers of real property in the respective service area.⁵ Each respondent, through the MLS that it operates, controls key inputs needed for a listing broker to provide effective real estate brokerage services, including: (1) a means to publicize to all brokers the residential real estate listings in the service area; and (2) a means to distribute listing information to web sites for the general public. By virtue of industry-wide participation and control over a key input, each of the respondents has market power in the provision of residential real estate brokerage services to sellers and buyers of real property in its respective service area.

⁵ As noted, the MLS provides valuable services for a broker assisting a seller as a listing broker, by offering a means of publicizing the property to other brokers and the public. For a broker assisting a buyer, it also offers unique and valuable services, including detailed information that is not shown on public web sites, which can help with house showings and otherwise facilitate home selections.

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B. Respondents' Conduct

At various times between 2001 and 2005, each of the respondents adopted a rule that prevented information on listings other than traditional Exclusive Right to Sell Listings from being included in the information available from its respective MLS to be used and published by publicly-accessible web sites.⁶ The effect of these rules, when implemented, was to prevent such information from being available to be displayed on a broad range of web sites, including the NAR-operated "Realtor.com" web site; the web sites operated by several of the respondents; and member web sites.

Non-traditional forms of listing contracts, including Exclusive Agency Listings, are often used by listing brokers to offer lower-cost real estate services to consumers. The Web Site Policies of each of the respondents were joint action by a group of competitors to withhold distribution of listing information to publicly accessible web sites from competitors who did not contract with their brokerage service customers in a way that the group wished. This conduct was a new variation of a type of conduct that the Commission condemned 20 years ago. In the 1980s and 1990s, several local MLS boards banned Exclusive Agency Listings from the MLS entirely. The Commission investigated and issued complaints against these exclusionary practices, obtaining several consent orders.⁷

⁶ For example, MCAR's rule stated: "Listing information downloaded and/or otherwise displayed pursuant to IDX shall be limited to properties listed on an exclusive right to sell basis. (Office exclusive and exclusive agency listings will not be forwarded to IDX sites.)" (MCAR Rules and Regulations (2004)). The NNEREN rule used somewhat different wording: "Exclusive Agency listings will not be included in NNEREN datafeeds to any web site accessed by the general public such as nneren.com, REALTOR.com, third party feeds, IDX, etc." (NNEREN Rules and Regulations (Feb. 2005)).

⁷ See, e.g., *In the Matter of Port Washington Real Estate Bd., Inc.*, 120 F.T.C. 882 (1995); *In the Matter of United Real Estate Brokers of Rockland, Ltd.*, 116 F.T.C. 972 (1993); *In the Matter of Am. Indus. Real Estate Assoc.*,

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C. Competitive Effects of the Web Site Policies

The Web Site Policies have the effect of discouraging members of the respective respondents' MLS systems from offering or accepting Exclusive Agency Listings. Thus, the Web Site Policies substantially impede the provision of unbundled brokerage services, and make it more difficult for home sellers to market their homes. The Web Site Policies have caused some home sellers to switch away from Exclusive Agency Listings to other forms of listing agreements.⁸

When home sellers switch to full service listing agreements from Exclusive Agency Listings that often offer lower-cost real estate services to consumers, the sellers may purchase services that they would not otherwise buy. This, in turn, may increase the commission costs to consumers of real estate brokerage services. By preventing Exclusive Agency Listings from being transmitted to public-access real estate web sites, the Web Site Policies have adverse effects on home sellers and home buyers. In particular, the Web Site Policies deny home sellers choices for marketing their homes and deny home buyers the chance to use the internet to easily see all of the houses listed by real estate brokers in the area, making their search less efficient.

116 F.T.C. 704 (1993); *In the Matter of Puget Sound Multiple Listing Assoc.*, 113 F.T.C. 733 (1990); *In the Matter of Bellingham-Whatcom County Multiple Listing Bureau*, 113 F.T.C. 724 (1990); *In the Matter of Metro MLS, Inc.*, 113 F.T.C. 305 (1990); *In the Matter of Multiple Listing Serv. of the Greater Michigan City Area, Inc.*, 106 F.T.C. 95 (1985); *In the Matter of Orange County Bd. of Realtors, Inc.*, 106 F.T.C. 88 (1985).

⁸ WAAR does not appear to have implemented the Web Site Policies, as Exclusive Agency Listings have been included in IDX feeds before, during and after its policy was in effect. However, its adoption and publication of the policy alone has inhibited the use of such listings in the Williamsburg area by at least one local real estate broker, who chose not to use Exclusive Agency Listings because he did not wish to violate the local rule.

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D. There is No Competitive Efficiency Associated with the Web Site Policies

The respondents' rules at issue here advance no legitimate procompetitive purpose. If, as a theoretical matter, buyers and sellers could avail themselves of an MLS system and carry out real estate transactions without compensating any of its broker members, an MLS might be concerned that those buyers and sellers were free-riding on the investment that brokers have made in the MLS and adopt rules to address that free-riding. But this theoretical concern does not justify the rules or policies adopted by the various respondents here. Exclusive Agency Listings do not enable home buyers or sellers to bypass the use of the brokerage services that the MLS was created to promote, because a listing broker is always involved in an Exclusive Agency Listing, and the MLS rules of each of the respondents already provide protections to ensure that a selling broker – a broker who finds a buyer for the property – is compensated for the brokerage service he or she provides.

It is possible, of course, that a buyer of an Exclusive Agency Listing may make the purchase without using a selling broker, but this is true for traditional Exclusive Right to Sell Listings as well. Under the existing MLS rules of each of the respondents that apply to any form of the listing agreement, the listing broker must ensure that the home seller pays compensation to the cooperating selling broker (if there is one), and the listing broker may be liable himself for a lost commission if the home seller fails to pay a selling broker who was the procuring cause of a completed property sale. The possibility of sellers or buyers using the MLS but bypassing brokerage services is already addressed effectively by the respondents' existing rules that do not distinguish between forms of listing contracts, and does not justify the Web Site Policies.

Analysis to Aid Public Comment

IV. The Proposed Consent Orders

Despite the recent cessation by each of the respondents of the challenged practices, it is appropriate for the Commission to require the prospective relief in the proposed consent orders. Such relief ensures that the respondents cannot revert to the old rules or policies, or engage in future variations of the challenged conduct. The conduct at issue in the current cases is itself a variation of practices that have been the subject of past Commission orders; as noted above, in the 1980s and 1990s, the Commission condemned the practices of several local MLS boards that had banned Exclusive Agency Listings entirely, and several consent orders were imposed.

The proposed orders are designed to ensure that each MLS does not misuse its market power, while preserving the procompetitive incentives of members to contribute to the MLS systems operated by the respondents. The proposed orders prohibit respondents from adopting or enforcing any rules or policies that deny or limit the ability of their respective MLS participants to enter into Exclusive Agency Listings, or any other lawful listing agreements, with sellers of properties. The proposed orders include examples of such practices, but the conduct they enjoin is not limited to those five enumerated examples. In addition, the proposed orders state that, within thirty days after each order becomes final, each respondent shall have conformed its rules to the substantive provisions of the order. Each respondent is further required to notify its participants of the applicable order through its usual business communications and its website. The proposed orders require notification to the Commission of changes in the respondent entities' structures, and periodic filings of written reports concerning compliance with the terms of the orders.

The proposed orders apply to each of the named respondents and entities it owns or controls, including its respective MLS and any affiliated web site it operates. The orders do not prohibit

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participants in the respondents' MLS systems, or other independent persons or entities that receive listing information from a respondent, from making independent decisions concerning the use or display of such listing information on participant or third-party web sites, consistent with any contractual obligations to respondent(s).

The proposed orders will expire in 10 years.

Complaint

IN THE MATTER OF
MONMOUTH COUNTY ASSOCIATION OF
REALTORS, INC.

CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS
OF SEC. 5 OF THE FEDERAL TRADE COMMISSION ACT

Docket No. C-4176; File No. 051 0217
Complaint, November 22, 2006 – Decision, November 22, 2006

This consent order addresses charges that the Monmouth County Association of Realtors, Inc., which operates a real estate multiple listing service, adopted a rule that limits the publication of certain listing agreements on popular real estate websites, in a manner that limits the ability of real estate brokers to use Exclusive Agency Listings to offer unbundled brokerage services at a lower price than the full-service package. Specifically, information about properties would not be made available on the websites unless the listing contracts were Exclusive Right to Sell Listings. The order prohibits the respondent from adopting or enforcing any rules or policies that deny or limit the ability of its multiple listing service participants to enter into Exclusive Agency Listings, or any other lawful listing agreements, with sellers of properties. In addition, the order requires the respondent to conform its rules to the substantive provisions of the order within 30 days and to notify its participants of the order through its usual business communications and its website. The respondent is also required to notify the Commission of changes in its structure and to file periodic written reports concerning compliance with the terms of the order.

Participants

For the *Commission*: *Peggy Bayer Femenella, Joel Christie,*
Alan Loughnan, Jonathan Platt, Jan Tran, and Theodore Zang.

For the *Respondent*: *C. Keith Henderson, C. Keith Henderson*
& Associates, P.C.

Complaint

COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act, and by virtue of the authority vested in it by said Act, the Federal Trade Commission, having reason to believe that the Monmouth County Association of Realtors, Inc. (“Respondent” or “MCAR”), a corporation, also trading and doing business as the Monmouth/Ocean Multiple Listing Service (“MOMLS”), has violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues this complaint stating its charges as follows:

NATURE OF THE CASE

This case involves a local corporation that operates a Multiple Listing Service (“MLS”), which is a joint venture among its participants designed to foster real estate brokerage services. MCAR adopted a rule that limited the publication of certain listing agreements on popular internet real estate web sites, in a manner that injured real estate brokers that use such listing agreements to offer lesser services at a lower price compared to the full service package. This rule deprived such brokers and the home sellers they represent of a significant benefit afforded by the MLS. The rule discriminated on the basis of lawful contractual terms between the listing real estate broker and the seller of the property, and lacked any justification that such a rule improved competitive efficiency. Consumers would be harmed by this rule because it denies a lower cost option to sellers and increases search costs to buyers. As such, this rule constituted a concerted refusal to deal except on specified terms with respect to a key input for the provision of real estate services.

Complaint

RESPONDENT AND ITS PARTICIPANTS

1. Respondent Monmouth County Association of Realtors (“MCAR”) is a corporation organized, existing and doing business under and by virtue of the laws of the State of New Jersey. Respondent’s principal place of business is at One Hovchild Plaza, 400 Route 66, Tinton Falls, New Jersey 07753. MCAR operates for the benefit of its participants.

2. MCAR has several thousand real estate professionals as participants, and is affiliated with the National Association of Realtors (“NAR”). The majority of MCAR’s participants hold an active real estate license and are active in the real estate profession.

3. The large majority of residential real estate brokerage professionals in Monmouth County and Ocean County, New Jersey are participants in MCAR. These professionals compete with one another to provide residential real estate brokerage services to consumers.

4. MCAR provides an MLS for participants doing business in Monmouth County, Ocean County and surrounding areas. An MLS is a clearinghouse through which participant real estate brokerage firms regularly and systematically exchange information on listings of real estate properties and share commissions with participants who locate purchasers.

5. The MCAR MLS is owned by MCAR and is titled the Monmouth/Ocean Multiple Listing Service (“MOMLS”). The MOMLS’s rules and policies, and any amendments thereto, must be approved by the MCAR Board of Directors.

6. When a property is listed on the MOMLS, it is made available to all participants of the MLS for the purpose of trying to match a buyer with a seller. Information about the property, including the asking price, address and property details, are made

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available to participants of the MLS so that a suitable buyer can be found.

7. The MOMLS services the territory within Monmouth County, Ocean County and surrounding areas (“MOMLS Service Area”).

8. The MOMLS is the dominant MLS in Monmouth County and Ocean County, New Jersey.

JURISDICTION

9. MCAR is and has been at all times relevant to this complaint a corporation organized for its own profit or for the profit of its shareholders or participants within the meaning of Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

10. The acts and practices of MCAR, including the acts and practices alleged herein, have been or are in or affecting commerce within the meaning of Section 4 of the Federal Trade Commission Act.

MCAR CONDUCT

11. In October 2004, MCAR’s Board of Directors adopted a rule, which was then implemented, that stated: “Listing information downloaded and/or otherwise displayed pursuant to IDX shall be limited to properties listed on an exclusive right to sell basis. (Office exclusive and exclusive agency listings will not be forwarded to IDX sites.” (the “Web Site Policy”). The term “IDX” refers to the internet data exchange process that converts the MLS listing database to a database that can be integrated within any web site. This rule was rescinded by the Board of Directors on January 25, 2006, and participants were notified of the change on February 1, 2006 by a posting in the “Announcements” of the MCAR web site.

Complaint

12. The Web Site Policy prevented certain lawful residential property listings provided to MCAR, called “Exclusive Agency Listings,” from being transmitted to real estate web sites, based on the contractual relationship between the home seller and the real estate agent the seller employs to promote the property.

13. An Exclusive Agency Listing is a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but reserves to the property owner or principal a right to sell the property without assistance of a broker, in which case the listing broker is paid a reduced or no commission when the property is sold.

14. Exclusive Agency Listings are used by participants of MCAR to offer lower-cost real estate services to consumers, including lawful arrangements pursuant to which a real estate broker or agent provides that a property offered for sale shall be listed on the MLS, but the listing broker or agent will not provide some or all of the services offered by other real estate brokers or will only offer such additional services on an _ la carte basis.

15. Many brokers offering real estate brokerage services pursuant to Exclusive Agency Listings, are able to provide home sellers with exposure of their listing through the MLS for a flat fee that is very small compared to the commission prices traditionally charged. Exclusive Agency Listings often reserve to the home seller the right to sell the property without owing more to the listing broker.

16. The Web Site Policy prevented Exclusive Agency Listings from being published on web sites approved by MCAR and the MOMLS, including: (1) MOMLS-participant web sites; (2) the MOMLS-owned “MOMLS.com” web site; and (3) the NAR-operated “Realtor.com” web site (collectively, “Approved Web Sites”).

Complaint

17. The Web Site Policy had the effect of discouraging participants of MCAR and participants in the MOMLS from accepting Exclusive Agency Listings.

MCAR MARKET POWER

18. The provision of residential real estate brokerage services to sellers and buyers of real property in Monmouth County and Ocean County, New Jersey and/or the MOMLS Service Area is a relevant service market.

19. The publication and sharing of information relating to residential real estate listings for the purpose of brokering residential real estate transactions is a key input to the provision of real estate brokerage services, and represents a relevant input market. Publication of listings through the MOMLS is generally considered by sellers, buyers and their brokers to be the fastest and most effective means of obtaining the broadest market exposure for property in Monmouth County and Ocean County, New Jersey.

20. By virtue of industry-wide participation and control over a key input, MCAR and the MOMLS, have market power in Monmouth County and Ocean County, New Jersey.

21. Participation in the MOMLS is essential to a broker providing effective residential real estate brokerage services to sellers and buyers of real property in the MOMLS Service Area. Participation significantly increases the opportunities of brokerage firms to enter into listing agreements with residential property owners, and significantly reduces the costs of obtaining up-to-date and comprehensive information on listings and sales. The realization of these opportunities and efficiencies is important for brokers to compete effectively in the provision of residential real estate brokerage services in Monmouth County and Ocean County, New Jersey.

Complaint

APPROVED WEB SITES ARE KEY INPUTS

22. Access to the Approved Web Sites is a key input in the brokerage of residential real estate sales in Monmouth County and Ocean County, New Jersey. Home buyers regularly use the Approved Web Sites to assist in their search for homes. The Approved Web Sites are the web sites most commonly used by home buyers in their home search. Many home buyers find the home that they ultimately purchased by searching on Approved Web Sites.

23. The most efficient, and at least in some cases the only, means for MCAR participants to have their properties listed on the Approved Web Sites is by having the MOMLS transmit those listings.

24. Property owners and their brokers in the MOMLS Service Area generally consider publication of listings on Approved Web Sites, in conjunction with publication of listings on the MOMLS, to be the most effective means of obtaining the broadest market exposure for residential property in Monmouth County and Ocean County, New Jersey.

EFFECTS OF WEB SITE POLICY

25. The Web Site Policy restricted competition by inhibiting the use of Exclusive Agency Listings in Monmouth County and Ocean County, New Jersey and the MOMLS Service Area.

26. The Web Site Policy may have reduced consumer choices regarding both the purchase and sale of homes and caused consumers to pay for real estate brokerage services that they would not otherwise buy.

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**THE WEB SITE POLICY OFFERS NO EFFICIENCY
BENEFIT**

27. There is no cognizable and plausible efficiency justification for the Web Site Policy. The Web Site Policy is not reasonably ancillary to the legitimate and beneficial objectives of MCAR.

VIOLATION

28. In adopting the policies and engaging in the Acts and Practices described herein, MCAR had been and was acting as a combination of its participants, or in conspiracy with some of its participants, to restrain trade in the provision of residential real estate brokerage services within Monmouth County and Ocean County, New Jersey and/or the MOMLS Service Area.

29. The purposes, capacities, tendencies, or effects of the policies, acts, or practices of MCAR and its participants as described herein had been and were unreasonably to restrain competition among brokers, and to injure consumers.

30. The policies, acts, practices, and combinations or conspiracies described herein constituted unfair methods of competition in or affecting interstate commerce in violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this twenty-second day of November, 2006, issues its Complaint against Respondent Monmouth County Association of Realtors.

By the Commission.

Decision and Order

DECISION AND ORDER

The Federal Trade Commission (“Commission”) having initiated an investigation of certain acts and practices of the Monmouth County Association of Realtors, hereinafter sometimes referred to as “Respondent” or “MCAR,” and Respondent having been furnished thereafter with a copy of the draft Complaint that the Bureau of Competition presented to the Commission for its consideration and which, if issued by the Commission, would charge Respondent with violations of Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondent, its attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Order (“Consent Agreement”), containing an admission by Respondent of all the jurisdictional facts set forth in the aforesaid draft Complaint, a statement that the signing of the Consent Agreement is for settlement purposes only and does not constitute an admission by Respondent that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondent has violated the said Act, and that a Complaint should issue stating its charges in that respect, and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34 (2004), the Commission hereby makes the following jurisdictional findings and issues the following Order:

1. Respondent Monmouth County Association of Realtors (“MCAR”) is a corporation organized, existing and doing business under and by virtue of the laws of the State of New

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Jersey. Respondent's principal place of business is at One Hovchild Plaza, 400 Route 66, Tinton Falls, New Jersey 07753.

2. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the Respondent, and the proceeding is in the public interest.

ORDER

I.

IT IS ORDERED that for the purposes of this Order, the following definitions shall apply:

- A. "Respondent" or "MCAR" means the Monmouth County Association of Realtors its predecessors, divisions and wholly or partially owned subsidiaries, affiliates, partnerships, and joint ventures; and all the directors, officers, employees, consultants, agents, and representatives of the foregoing. The terms "subsidiary," "affiliate" and "joint venture" refer to any person in which there is partial or total ownership or control by MCAR, and is specifically meant to include the Monmouth/Ocean Multiple Listing Service and MOMLS.com.
- B. "Multiple Listing Service" or "MLS" means a cooperative venture by which real estate brokers serving a common market area submit their listings to a central service which, in turn, distributes the information for the purpose of fostering cooperation in and facilitating real estate transactions.
- C. "Monmouth/Ocean Multiple Listing Service," "Monmouth/Ocean MLS" or "MOMLS" means the Multiple Listing Service owned, operated, or controlled by MCAR.

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- D. “MCAR Member” means any person that holds any class of membership in MCAR as defined by MCAR’s by-laws, policies, and/or rules.
- E. “MOMLS Participant” means any person authorized by MCAR to access, use or enjoy the benefits of the Monmouth/Ocean Multiple Listing Service in accordance with MCAR’s by-laws, policies, rules, and regulations.
- F. “IDX” means the internet data exchange process that converts the MLS listing database to a database that can be integrated within any web site.
- G. “IDX Web Site” means a Web Site that is capable of integrating the MLS listing database within the Web Site.
- H. “MOMLS.com” means the Web Site operated by MCAR that allows the general public to search information concerning real estate listings from the Monmouth/Ocean Multiple Listing Service.
- I. “Realtor.com” means the Web Site operated by the National Association of Realtors that allows the general public to search information concerning real estate listings downloaded from a variety of MLSs representing different geographic areas of the country, including but not limited to real estate listings from the Monmouth/Ocean Multiple Listing Service.
- J. “Approved Web Site” means a Web Site to which MCAR provides information concerning listings for publication including, but not limited to, MCAR Member or MOMLS Participant IDX Web Sites, MOMLS.com, and Realtor.com.
- K. “Exclusive Right to Sell Listing” means a listing agreement under which the property owner or principal

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appoints a real estate broker as his or her exclusive agent for a designated period of time, to sell the property on the owner's stated terms, and agrees to pay the listing broker a commission when the property is sold, regardless of whether the buyer is found by the listing broker, the owner or another broker.

- L. "Exclusive Agency Listing" means a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but also reserves to the property owner or principal a right to sell the property without assistance from a broker, in which case the listing broker is paid a reduced commission or no commission when the property is sold.
- M. "Services of the Monmouth/Ocean MLS" means the benefits and services provided by MCAR to assist MOMLS Participants in selling, leasing and valuing property and/or brokering real estate transactions. With respect to real estate brokers or agents representing home sellers, Services of the Monmouth/Ocean MLS shall include, but are not limited to:
1. having the property included among the listings in the Monmouth/Ocean MLS in a manner so that information concerning the listing is easily accessible by cooperating brokers; and
 2. having the property publicized through means available to the Monmouth/Ocean MLS, including, but not limited to, information concerning the listing being made available on MOMLS.com, Realtor.com and IDX Web Sites.
- N. "Other Lawful Listing" means any listing agreement, other than Exclusive Right to Sell Listing or Exclusive Agency Listing, which is in compliance with applicable state laws and regulations.

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II.

IT IS FURTHER ORDERED that Respondent MCAR, its successors and assigns, and its directors, officers, committees, members, agents, representatives, and employees, directly or indirectly, or through any corporation, subsidiary, division, or other device, in connection with the operation of a Multiple Listing Service or Approved Web Site in or affecting commerce, as “commerce” is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 45, shall forthwith cease and desist from adopting or enforcing any policy, rule, practice or agreement to deny, restrict or interfere with the ability of MCAR Members or MOMLS Participants to enter into Exclusive Agency Listings or Other Lawful Listings with the sellers of properties, including but not limited to any policy, rule, practice or agreement to:

1. prevent MCAR Members or MOMLS Participants from offering or accepting Exclusive Agency Listings;
2. prevent MCAR Members or MOMLS Participants from cooperating with listing brokers or agents that offer or accept Exclusive Agency Listings;
3. prevent MCAR Members or MOMLS Participants from publishing information concerning listings offered pursuant to Exclusive Agency Listings on Approved Web Sites;
4. deny or restrict the Services of the Monmouth/Ocean MLS to Exclusive Agency Listings or Other Lawful Listings in any way that such Services of the Monmouth/Ocean MLS are not denied or restricted to Exclusive Right to Sell Listings; and
5. treat Exclusive Agency Listings, or any Other Lawful Listings, in a less advantageous manner than Exclusive Right to Sell Listings, including but not limited to, any

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policy, rule or practice pertaining to the transmission, downloading, or displaying of information pertaining to such listings.

Provided, however, that nothing herein shall prohibit the Respondent from adopting or enforcing any policy, rule, practice or agreement regarding participant requirements, payment of dues, administrative matters, or any other policy, rule, practice or agreement, that it can show is reasonably ancillary to the legitimate and beneficial objectives of the Monmouth/Ocean MLS.

III.

IT IS FURTHER ORDERED that, no later than thirty (30) days after the date this Order becomes final, Respondent shall have amended its rules and regulations to conform to the provisions of this Order.

IV.

IT IS FURTHER ORDERED that, within ninety (90) days after the date this Order becomes final, Respondent shall (1) inform each MCAR Member and MOMLS Participant of the amendments to its rules and regulations to conform to the provisions of this Order; and (2) provide each MCAR Member and MOMLS Participant with a copy of this Order. Respondent shall transmit the rule change and Order by the means it uses to communicate with its members and participants in the ordinary course of MCAR's business, which shall include, but not be limited to: (A) sending by mail, fax or email one or more statements that there has been a change to the rule and an Order, along with the amended rule and the Order, to each MCAR Member and MOMLS Participant; and (B) placing on the publicly accessible MCAR Web Site (www.MOMLS.com) a statement that there has been a change to the rule and an Order, along with a link to the amended rule and the Order. Respondent shall modify its Web Site as described above no later than five (5) business

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days after the date the Order becomes final, and shall display such modifications for no less than ninety (90) days from the date this Order becomes final. The Order shall remain accessible through common search terms and archives on the Web Site for five (5) years from the date it becomes final.

V.

IT IS FURTHER ORDERED that Respondent shall file a written report within six (6) months of the date this Order becomes final, and annually on the anniversary date of the original report for each of the five (5) years thereafter, and at such other times as the Commission may require by written notice to Respondent, setting forth in detail the manner and form in which it has complied with this Order.

VI.

IT IS FURTHER ORDERED that Respondent shall notify the Commission at least thirty (30) days prior to any proposed change in Respondent, such as dissolution, assignment or sale resulting in the emergence of a successor corporation or any other proposed changes in the corporation which may affect compliance obligations arising out of the Order.

VII.

IT IS FURTHER ORDERED that this Order shall terminate on November 22, 2016.

By the Commission.

Analysis to Aid Public Comment

ANALYSIS OF CONSENT ORDERS TO AID PUBLIC COMMENT

The Federal Trade Commission has accepted for public comment a series of agreements containing consent orders with five respondent entities. Each of the proposed respondents operates a multiple listing service (“MLS”) that is designed to foster real estate brokerage services by sharing and publicizing information on properties for sale by customers of real estate brokers. The agreements settle charges that each respondent violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, through particular acts and practices of the MLS. The proposed consent orders have been placed on the public record for 30 days to receive comments from interested persons. Comments received during this period will become part of the public record. After 30 days, the Commission will review the agreements and the comments received, and will decide whether it should withdraw from the agreement or make the proposed order final.

The purpose of this analysis is to facilitate comment on the proposed consent orders. This analysis does not constitute an official interpretation of the agreements and proposed orders, and does not modify their terms in any way. Further, the proposed consent orders have been entered into for settlement purposes only, and do not constitute an admission by any proposed respondent that it violated the law or that the facts alleged in the respective complaint against each respondent (other than jurisdictional facts) are true.

I. The Respondents

The agreements are with the following organizations:

- Information and Real Estate Services, LLC (“IRES”) is a limited liability company based in Loveland, Colorado, that is owned by five boards and associations of realtors in Boulder, Fort Collins, Greeley,

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Longmont, and Loveland/Berthoud, Colorado. IRES operates a regional MLS for Northern Colorado that is used by more than 5,000 real estate professionals.

- Northern New England Real Estate Network, Inc. (“NNEREN”) is a corporation based in Concord, New Hampshire, that functions as an association of realtors. NNEREN operates an MLS for New Hampshire and some surrounding areas that is used by several thousand real estate professionals.
- Williamsburg Area Association of Realtors, Inc. (“WAAR”), is a corporation based in Williamsburg, Virginia, that functions as an association of realtors. WAAR operates an MLS for the Williamsburg, Virginia, metropolitan area and surrounding counties that is used by approximately 650 real estate professionals.
- Realtors Association of Northeast Wisconsin, Inc. (“RANW”) is a non-profit corporation based in Appleton, Wisconsin, that functions as an association of realtors. RANW operates an MLS for the Northeast Wisconsin Area, which includes the cities of Green Bay, Appleton, Oshkosh, and Fond du Lac, Wisconsin, and the surrounding counties, that is used by more than 1,500 real estate professionals.
- Monmouth County Association of Realtors, Inc. (“MCAR”) is a corporation based in Tinton Falls, New Jersey, that functions as an association of realtors. MCAR operates an MLS for Monmouth County, Ocean County and the surrounding areas of New Jersey that is used by several thousand real estate professionals.

Analysis to Aid Public Comment

II. Industry Background

A Multiple Listing Service, or “MLS,” is a cooperative venture by which real estate brokers serving a common local market area submit their listings to a central service, which in turn distributes the information, for the purpose of fostering cooperation among brokers and agents in real estate transactions. The MLS facilitates transactions by putting together a home seller, who contracts with a broker who is a member of the MLS, with prospective buyers, who may be working with other brokers who are also members of the MLS. Membership in the MLS is largely limited to member brokers who generally must possess a license to engage in real estate brokerage services and meet other criteria set by MLS rules.

Prior to the late 1990s, the listings on an MLS were typically directly accessible only to real estate brokers who were members of a local MLS. The MLS listings typically were made available through books or dedicated computer terminals, and generally could only be accessed by the general public by physically visiting a broker’s office or by receiving a fax or hand delivery of selected listings from a broker.

Information from an MLS is now typically available to the general public not only through the offices of real estate brokers who are MLS members, but also through three principal categories of internet web sites. First, information concerning many MLS listings is available through Realtor.com, a national web site run by the National Association of Realtors (“NAR”). Realtor.com contains listing information from many local MLS systems around the country and is the largest and most-used internet real estate web site. Second, information concerning MLS listings is often made available through a local MLS-affiliated web site. Third, information concerning MLS listings is often made available on the internet sites of various real estate brokers, who choose to provide these web sites as a way of promoting their brokerage services. Most of these various web sites receive information from an MLS pursuant to a procedure

Analysis to Aid Public Comment

often known as Internet Data Exchange (“IDX”), which is typically governed by MLS policies. The IDX policies allow operators of approved web sites to display MLS active listing information to the public.

Today the internet plays a crucial role in real estate sales. According to a 2005 survey by the National Association of Realtors (“NAR”), 77 percent of home buyers used the internet to assist in their home search, with 57 percent reporting frequent internet searches. Twenty-four percent of respondents first learned about the home they selected from the internet, the second most common means behind learning about a home from a real estate agent (50 percent).¹ In all, 69 percent of home buyers found the internet to be a “very useful” source of information, and a total of 96 percent found the internet to be either “very useful” or “somewhat useful.”² Moreover, the NAR Survey makes clear that the overwhelming majority of web sites used nationally in searching for homes contain listing information that is provided by local MLS systems.³

A. Types of Real Estate Brokerage Professionals

A typical real estate transaction involves two real estate brokers. These are commonly known as a “listing broker” and a “selling broker.” The listing broker is hired by the seller of the property to locate an appropriate buyer. The seller and the listing broker agree upon compensation, which is determined by written

¹ *E.g.*, PAUL C. BISHOP, THOMAS BEERS AND SHONDA D. HIGHTOWER, THE 2005 NATIONAL ASSOCIATION OF REALTORS PROFILE OF HOME BUYERS AND SELLERS (hereinafter, “NAR Study”) at 3-3, 3-4.

² *Id.* See *Home Buyer & Seller Survey Shows Rising Use of Internet, Reliance on Agents* (Jan. 17, 2006), available at <http://www.realtor.org/PublicAffairsWeb.nsf/Pages/HmBuyerSellerSurvey06?OpenDocument>.

³ NAR Study at 3-19.

Analysis to Aid Public Comment

agreement negotiated between the seller and the listing broker. In a common traditional listing agreement, the listing broker receives compensation in the form of a commission, which is typically a percentage of the sales price of the property, payable if and when the property is sold. In such a traditional listing agreement, the listing broker agrees to provide a package of real estate brokerage services, including promoting the listing through the MLS and on the internet, providing advice to the seller regarding pricing and presentation, fielding all calls and requests to show the property, supplying a lock-box so that potential buyers can see the house with their agents, running open houses to show the house to potential buyers, negotiating with buyers or their agents on offers, assisting with home inspections and other arrangements once a contract for sale is executed, and attending the closing of the transaction.

The other broker involved in a typical transaction is commonly known as the selling broker. In a typical transaction, a prospective buyer will seek out a selling broker to identify properties that may be available. This selling broker will discuss the properties that may be of interest to the buyer, accompany the buyer to see various properties, try to arrange a transaction between buyer and seller, assist the buyer in negotiating the contract, and help in further steps necessary to close the transaction. In a traditional transaction, the listing broker offers the selling broker a fixed commission, to be paid from the listing broker's commission when and if the property is sold. Real estate brokers typically do not specialize as only listing brokers or selling brokers, but often function in either role depending on the particular transaction.

B. Types of Real Estate Listings

The relationship between the listing broker and the seller of the property is established by agreement. The two most common types of agreements governing listings are Exclusive Right to Sell Listings and Exclusive Agency Listings. An Exclusive Right to Sell Listing is the traditional listing agreement, under which the

Analysis to Aid Public Comment

property owner appoints a real estate broker as his or her exclusive agent for a designated period of time, to sell the property on the owner's stated terms, and agrees to pay the listing broker a commission if and when the property is sold, whether the buyer of the property is secured by the listing broker, the owner or another broker.

An Exclusive Agency Listing is a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but under which the property owner or principal reserves a right to sell the property without assistance of the listing broker, in which case the listing broker is paid a reduced or no commission when the property is sold.

Some real estate brokers have attempted to offer services to home sellers on something other than the traditional full-service basis. Many of these brokers, often for a flat fee, will offer sellers access to the MLS's information-sharing function, as well as a promise that the listing will appear on the most popular real estate web sites. Under such arrangements, the listing broker does not offer additional real estate brokerage services as part of the flat fee package, but allows sellers to purchase additional services if sellers so desire. These non-traditional arrangements often are structured using Exclusive Agency Listing contracts.

There is a third type of real estate listing that does not involve a real estate broker, which is a "For Sale By Owner" or "FSBO" listing. With a FSBO listing, a home owner will attempt to sell a house without the involvement of any real estate broker and without paying any compensation to such a broker, by advertising the availability of the home through traditional advertising mechanisms (such as a newspaper) or FSBO-specific web sites.

There are two critical distinctions between an Exclusive Agency Listing and a FSBO for the purpose of this analysis. First, the Exclusive Agency Listing employs a listing broker for

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access to the MLS and web sites open to the public; a FSBO listing does not. Second, an Exclusive Agency Listing sets terms of compensation to be paid to a selling broker, while a FSBO listing often does not.

III. The Conduct Addressed by the Proposed Consent Orders

Each of the proposed consent orders is accompanied by a complaint setting forth the conduct by the respondent that is the reason for the proposed consent order. In general, the conduct at issue in these matters is largely the same as the conduct addressed by the Commission in its recent consent order involving the Austin Board of Realtors (“ABOR”).⁴

The complaints accompanying the proposed consent orders allege that respondents have violated Section 5 of the FTC Act by adopting rules or policies that limit the publication and marketing on the internet of certain sellers’ properties, but not others, based solely on the terms of their respective listing contracts. The rules or policies challenged in the complaints state that information about properties will not be made available on popular real estate web sites unless the listing contracts are Exclusive Right to Sell Listings. When implemented, these “Web Site Policies” prevented properties with non-traditional listing contracts from being displayed on a broad range of public web sites.

The respondents adopted the challenged rules or policies at various times between 2001 and 2005. Each respondent, prior to the Commission’s acceptance of the consent orders and proposed complaints for public comment, rescinded or modified its rules to discontinue the challenged practices. The members of each

⁴ *In the Matter of Austin Bd. of Realtors*, Docket No. C-4167 (Final Approval, Aug. 29, 2006). The ABOR consent order was published with an accompanying Analysis To Aid Public Comment at 71 Fed. Reg. 41023 (July 19, 2006).

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respective MLS affected by these rules have been notified of the recent changes.

The complaints allege that the respondents violated Section 5 of the FTC Act by unlawfully restraining competition among real estate brokers in their respective service areas by adopting the Web Site Policies.

A. The Respondents Have Market Power

Each of the respondents serves the great majority of the residential real estate brokers in its respective service area. These professionals compete with one another to provide residential real estate brokerage services to consumers.

Each of the respondents also is the sole or dominant MLS serving its respective service area. Membership in each of the respondents' MLS systems is necessary for a broker to provide effective residential real estate brokerage services to sellers and buyers of real property in the respective service area.⁵ Each respondent, through the MLS that it operates, controls key inputs needed for a listing broker to provide effective real estate brokerage services, including: (1) a means to publicize to all brokers the residential real estate listings in the service area; and (2) a means to distribute listing information to web sites for the general public. By virtue of industry-wide participation and control over a key input, each of the respondents has market power in the provision of residential real estate brokerage services to sellers and buyers of real property in its respective service area.

⁵ As noted, the MLS provides valuable services for a broker assisting a seller as a listing broker, by offering a means of publicizing the property to other brokers and the public. For a broker assisting a buyer, it also offers unique and valuable services, including detailed information that is not shown on public web sites, which can help with house showings and otherwise facilitate home selections.

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B. Respondents' Conduct

At various times between 2001 and 2005, each of the respondents adopted a rule that prevented information on listings other than traditional Exclusive Right to Sell Listings from being included in the information available from its respective MLS to be used and published by publicly-accessible web sites.⁶ The effect of these rules, when implemented, was to prevent such information from being available to be displayed on a broad range of web sites, including the NAR-operated "Realtor.com" web site; the web sites operated by several of the respondents; and member web sites.

Non-traditional forms of listing contracts, including Exclusive Agency Listings, are often used by listing brokers to offer lower-cost real estate services to consumers. The Web Site Policies of each of the respondents were joint action by a group of competitors to withhold distribution of listing information to publicly accessible web sites from competitors who did not contract with their brokerage service customers in a way that the group wished. This conduct was a new variation of a type of conduct that the Commission condemned 20 years ago. In the 1980s and 1990s, several local MLS boards banned Exclusive Agency Listings from the MLS entirely. The Commission investigated and issued complaints against these exclusionary practices, obtaining several consent orders.⁷

⁶ For example, MCAR's rule stated: "Listing information downloaded and/or otherwise displayed pursuant to IDX shall be limited to properties listed on an exclusive right to sell basis. (Office exclusive and exclusive agency listings will not be forwarded to IDX sites.)" (MCAR Rules and Regulations (2004)). The NNEREN rule used somewhat different wording: "Exclusive Agency listings will not be included in NNEREN datafeeds to any web site accessed by the general public such as nneren.com, REALTOR.com, third party feeds, IDX, etc." (NNEREN Rules and Regulations (Feb. 2005)).

⁷ See, e.g., *In the Matter of Port Washington Real Estate Bd., Inc.*, 120 F.T.C. 882 (1995); *In the Matter of United Real Estate Brokers of Rockland, Ltd.*, 116 F.T.C. 972 (1993); *In the Matter of Am. Indus. Real Estate Assoc.*, 116 F.T.C. 704 (1993); *In the Matter of Puget Sound Multiple Listing Assoc.*,

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C. Competitive Effects of the Web Site Policies

The Web Site Policies have the effect of discouraging members of the respective respondents' MLS systems from offering or accepting Exclusive Agency Listings. Thus, the Web Site Policies substantially impede the provision of unbundled brokerage services, and make it more difficult for home sellers to market their homes. The Web Site Policies have caused some home sellers to switch away from Exclusive Agency Listings to other forms of listing agreements.⁸

When home sellers switch to full service listing agreements from Exclusive Agency Listings that often offer lower-cost real estate services to consumers, the sellers may purchase services that they would not otherwise buy. This, in turn, may increase the commission costs to consumers of real estate brokerage services. By preventing Exclusive Agency Listings from being transmitted to public-access real estate web sites, the Web Site Policies have adverse effects on home sellers and home buyers. In particular, the Web Site Policies deny home sellers choices for marketing their homes and deny home buyers the chance to use the internet to easily see all of the houses listed by real estate brokers in the area, making their search less efficient.

113 F.T.C. 733 (1990); *In the Matter of Bellingham-Whatcom County Multiple Listing Bureau*, 113 F.T.C. 724 (1990); *In the Matter of Metro MLS, Inc.*, 113 F.T.C. 305 (1990); *In the Matter of Multiple Listing Serv. of the Greater Michigan City Area, Inc.*, 106 F.T.C. 95 (1985); *In the Matter of Orange County Bd. of Realtors, Inc.*, 106 F.T.C. 88 (1985).

⁸ WAAR does not appear to have implemented the Web Site Policies, as Exclusive Agency Listings have been included in IDX feeds before, during and after its policy was in effect. However, its adoption and publication of the policy alone has inhibited the use of such listings in the Williamsburg area by at least one local real estate broker, who chose not to use Exclusive Agency Listings because he did not wish to violate the local rule.

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D. There is No Competitive Efficiency Associated with the Web Site Policies

The respondents' rules at issue here advance no legitimate procompetitive purpose. If, as a theoretical matter, buyers and sellers could avail themselves of an MLS system and carry out real estate transactions without compensating any of its broker members, an MLS might be concerned that those buyers and sellers were free-riding on the investment that brokers have made in the MLS and adopt rules to address that free-riding. But this theoretical concern does not justify the rules or policies adopted by the various respondents here. Exclusive Agency Listings do not enable home buyers or sellers to bypass the use of the brokerage services that the MLS was created to promote, because a listing broker is always involved in an Exclusive Agency Listing, and the MLS rules of each of the respondents already provide protections to ensure that a selling broker – a broker who finds a buyer for the property – is compensated for the brokerage service he or she provides.

It is possible, of course, that a buyer of an Exclusive Agency Listing may make the purchase without using a selling broker, but this is true for traditional Exclusive Right to Sell Listings as well. Under the existing MLS rules of each of the respondents that apply to any form of the listing agreement, the listing broker must ensure that the home seller pays compensation to the cooperating selling broker (if there is one), and the listing broker may be liable himself for a lost commission if the home seller fails to pay a selling broker who was the procuring cause of a completed property sale. The possibility of sellers or buyers using the MLS but bypassing brokerage services is already addressed effectively by the respondents' existing rules that do not distinguish between forms of listing contracts, and does not justify the Web Site Policies.

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IV. The Proposed Consent Orders

Despite the recent cessation by each of the respondents of the challenged practices, it is appropriate for the Commission to require the prospective relief in the proposed consent orders. Such relief ensures that the respondents cannot revert to the old rules or policies, or engage in future variations of the challenged conduct. The conduct at issue in the current cases is itself a variation of practices that have been the subject of past Commission orders; as noted above, in the 1980s and 1990s, the Commission condemned the practices of several local MLS boards that had banned Exclusive Agency Listings entirely, and several consent orders were imposed.

The proposed orders are designed to ensure that each MLS does not misuse its market power, while preserving the procompetitive incentives of members to contribute to the MLS systems operated by the respondents. The proposed orders prohibit respondents from adopting or enforcing any rules or policies that deny or limit the ability of their respective MLS participants to enter into Exclusive Agency Listings, or any other lawful listing agreements, with sellers of properties. The proposed orders include examples of such practices, but the conduct they enjoin is not limited to those five enumerated examples. In addition, the proposed orders state that, within thirty days after each order becomes final, each respondent shall have conformed its rules to the substantive provisions of the order. Each respondent is further required to notify its participants of the applicable order through its usual business communications and its website. The proposed orders require notification to the Commission of changes in the respondent entities' structures, and periodic filings of written reports concerning compliance with the terms of the orders.

The proposed orders apply to each of the named respondents and entities it owns or controls, including its respective MLS and any affiliated web site it operates. The orders do not prohibit

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participants in the respondents' MLS systems, or other independent persons or entities that receive listing information from a respondent, from making independent decisions concerning the use or display of such listing information on participant or third-party web sites, consistent with any contractual obligations to respondent(s).

The proposed orders will expire in 10 years.

Complaint

IN THE MATTER OF

**INFORMATION AND REAL ESTATE SERVICES,
LLC**CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS
OF SEC. 5 OF THE FEDERAL TRADE COMMISSION ACT*Docket No. C-4179; File No. 061 0087**Complaint, November 22, 2006 – Decision, November 22, 2006*

This consent order addresses charges that the Information and Real Estate Services, LLC, which operates a real estate multiple listing service, adopted a rule that limits the publication of certain listing agreements on popular real estate websites, in a manner that limits the ability of real estate brokers to use Exclusive Agency Listings to offer unbundled brokerage services at a lower price than the full-service package. Specifically, information about properties would not be made available on the websites unless the listing contracts were Exclusive Right to Sell Listings. The order prohibits the respondent from adopting or enforcing any rules or policies that deny or limit the ability of its multiple listing service participants to enter into Exclusive Agency Listings, or any other lawful listing agreements, with sellers of properties. In addition, the order requires the respondent to conform its rules to the substantive provisions of the order within 30 days and to notify its participants of the order through its usual business communications and its website. The respondent is also required to notify the Commission of changes in its structure and to file periodic written reports concerning compliance with the terms of the order.

Participants

For the *Commission*: *Peggy Bayer Femenella, Joel Christie, Alan Loughnan, Jonathan Platt, Jan Tran, and Theodore Zang.*

For the *Respondent*: *James A. Martell, Liley Rogers & Martell LLC.*

Complaint

COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act, and by virtue of the authority vested in it by said Act, the Federal Trade Commission, having reason to believe that the Information and Real Estate Services, LLC (“Respondent” or “IRES”), a Limited Liability Company, has violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues this complaint stating its charges as follows:

NATURE OF THE CASE

This case involves a local, private real estate association that operates a Multiple Listing Service, which is a joint venture among its member Boards of Realtors designed to foster real estate brokerage services. IRES had adopted a rule that limits the publication of certain listing agreements on popular internet real estate web sites, in a manner that limits the ability of real estate brokers to use Exclusive Agency Listings to offer unbundled brokerage services at a lower price compared to the full service package. This rule deprives such brokers and the home sellers they represent of a significant benefit afforded by the MLS. The rule discriminates on the basis of lawful contractual terms between the listing real estate broker and the seller of the property, and lacks any justification that such a rule improves competitive efficiency. Consumers will be harmed by this rule because it denies a lower cost option to sellers and increases search costs to buyers. As such, this rule constitutes a concerted refusal to deal except on specified terms with respect to a key input for the provision of real estate services.

Complaint

RESPONDENT AND ITS PARTICIPANTS

1. Respondent Information and Real Estate Services, LLC, (“IRES”) is a Limited Liability Company organized, existing and doing business under and by virtue of the laws of the State of Colorado. Respondent’s principal place of business is 2725 Rocky Mountain Avenue, Suite 459, Loveland, Colorado 80538. IRES operates for the benefit of its participants .

2. IRES has more than 5,000 real estate professionals as participants, and is affiliated with the National Association of Realtors (“NAR”). The majority of IRES’s participants hold an active real estate license and are active in the real estate profession.

3. The large majority of residential real estate brokerage professionals in Northern Colorado are participants of IRES. These professionals compete with one another to provide residential real estate brokerage services to consumers.

4. IRES is now and has been providing since 1996 a Multiple Listing Service (“MLS”) for participants doing business in Northern Colorado. A MLS is a clearinghouse through which member real estate brokerage firms regularly and systematically exchange information on listings of real estate properties and share commissions with participants who locate purchasers.

5. When a property is listed on IRES, it is made available to all participants of the MLS for the purpose of trying to match a buyer with a seller. Information about the property, including the asking price, address and property details, are made available to participants of the MLS so that a suitable buyer can be found.

6. IRES services the territory within Northern Colorado, specifically Boulder, Broomfield, Fort Collins, Greeley & Weld County, Longmont, Loveland/Berthoud and Morgan Counties. (“IRES Service Area”).

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7. IRES is the only MLS that services Northern Colorado. IRES is the dominant MLS in the IRES Service Area.

JURISDICTION

8. IRES is and has been at all times relevant to this complaint a limited liability company organized for its own profit or for the profit of its participants within the meaning of Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

9. The acts and practices of IRES, including the acts and practices alleged herein, have been or are in or affecting commerce within the meaning of Section 4 of the Federal Trade Commission Act.

IRES CONDUCT

10. In 2003, IRES adopted and approved a rule that stated: "Listing information downloaded and/or otherwise displayed pursuant to I2I [IDX] shall be limited to properties listed on an exclusive right to sell basis" (the "Web Site Policy"). The Web Site Policy was rescinded by IRES in July 2006 and the participants were notified of the change on July 25, 2006.

11. The Web Site Policy prevented certain lawful residential property listings provided to IRES, including "Exclusive Agency Listings," from being transmitted to real estate web sites, based on the contractual relationship between the home seller and the real estate agent the seller employs to promote the property.

12. An Exclusive Agency Listing is a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but reserves to the property owner or principal a right to sell the property without assistance of a broker, in which case the listing broker is paid a reduced or no commission when the property is sold.

Complaint

13. Exclusive Agency Listings provide a means for participants of IRES to offer lower-cost, Unbundled Real Estate Services to consumers. “Unbundled Real Estate Brokerage Services” are lawful arrangements pursuant to which a real estate broker or agent provides that a property offered for sale shall be listed on the MLS, but the listing broker or agent will not provide some or all of the services offered by other real estate brokers or will only offer such additional services on an à la carte basis.

14. Many brokers offering Unbundled Real Estate Brokerage Services are able to provide home sellers with exposure of their listing through the MLS for a flat fee that is very small compared to the commission prices traditionally charged. Exclusive Agency Listings often reserve to the home seller the right to sell the property without owing more to the listing broker.

15. The Web Site Policy specifically prevents Exclusive Agency Listings from being published on web sites approved by IRES, including (1) the NAR-operated “Realtor.com” web site; (2) the IRES-owned “Coloproperty.com” web site; and (3) IRES-member web sites (collectively, “Approved Web Sites”).

16. The Web Site Policy has the effect of discouraging IRES participants from accepting Exclusive Agency Listings.

IRES MARKET POWER

17. The provision of residential real estate brokerage services to sellers and buyers of real property in the Northern Colorado and/or the IRES Service Area is a relevant product market.

18. The publication and sharing of information relating to residential real estate listings for the purpose of brokering residential real estate transactions is a key input to the provision of real estate brokerage services, and represents a relevant input market. Publication of listings through IRES is generally considered by sellers, buyers and their brokers to be the fastest

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and most effective means of obtaining the broadest market exposure for property in the IRES Service Area.

19. By virtue of industry-wide participation and control over a key input, IRES has market power in the IRES Service Area.

20. Participation in IRES is necessary to a broker providing effective residential real estate brokerage services to sellers and buyers of real property in the IRES Service Area. Participation significantly increases the opportunities of brokerage firms to enter into listing agreements with residential property owners, and significantly reduces the costs of obtaining up-to-date and comprehensive information on listings and sales. The realization of these opportunities and efficiencies is important for brokers to compete effectively in the provision of residential real estate brokerage services in the IRES Service Area.

APPROVED WEB SITES ARE KEY INPUTS

21. Access to the Approved Web Sites is a key input in the brokerage of residential real estate sales in the IRES Service Area. Home buyers regularly use the Approved Web Sites to assist in their search for homes. The Approved Web Sites are the web sites most commonly used by home buyers in their home search. Many home buyers find the home that they ultimately purchase by searching on Approved Web Sites.

22. The most efficient, and at least in some cases the only, means for IRES participants to have their properties listed on the Approved Web Sites is by having IRES transmit those listings.

23. Property owners and their brokers in the IRES Service Area generally consider publication of listings on Approved Web Sites, in conjunction with publication of listings on the IRES MLS, to be the most effective means of obtaining the broadest market exposure for residential property in the IRES Service Area.

Complaint

EFFECTS OF WEB SITE POLICY

24. The Web Site Policy restricts competition by inhibiting the use of Exclusive Agency Listings in the IRES Service Area.

25. The Web Site Policy reduces consumer choices regarding both the purchase and sale of homes and induces consumers to pay for real estate brokerage services that they would not otherwise buy.

**THE WEB SITE POLICY OFFERS NO EFFICIENCY
BENEFIT**

26. There is no cognizable and plausible efficiency justification for the Web Site Policy. The Web Site Policy is not reasonably ancillary to the legitimate and beneficial objectives of the MLS.

VIOLATION

27. In adopting the policies and engaging in the Acts and Practices described herein, IRES has been acting as a combination of its participants , or in conspiracy with some of its participants , to restrain trade in the provision of residential real estate brokerage services within Northern Colorado and/or the IRES Service Area.

28. The purposes, capacities, tendencies, or effects of the policies, acts, or practices of IRES and its participants as described herein have been and are unreasonably to restrain competition among brokers, and to injure consumers.

29. The policies, acts, practices, and combinations or conspiracies described herein constitute unfair methods of competition in or affecting interstate commerce in violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45.

Decision and Order

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this twenty-second day of November, 2006, issues its Complaint against Respondent Information and Real Estate Services, LLC.

By the Commission.

DECISION AND ORDER

The Federal Trade Commission (“Commission”) having initiated an investigation of certain acts and practices of the Information and Real Estate Services, LLC, hereinafter sometimes referred to as “Respondent” or “IRES,” and Respondent having been furnished thereafter with a copy of the draft Complaint that the Bureau of Competition presented to the Commission for its consideration and which, if issued by the Commission, would charge Respondent with violations of Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondent, its attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Order (“Consent Agreement”), containing an admission by Respondent of all the jurisdictional facts set forth in the aforesaid draft Complaint, a statement that the signing of the Consent Agreement is for settlement purposes only and does not constitute an admission by Respondent that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondent has violated the said Act, and that a Complaint should issue

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stating its charges in that respect, and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34 (2004), the Commission hereby makes the following jurisdictional findings and issues the following Order:

1. Respondent Information and Real Estate Services, LLC is a limited liability company organized, existing and doing business under and by virtue of the laws of the State of Colorado, with its office and principal place of business at 2725 Rocky Mountain Avenue, Suite 459, Loveland, Colorado 80538.

2. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the Respondent, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that for the purposes of this Order, the following definitions shall apply:

- A. "Respondent" or "IRES" shall mean Information and Real Estate Services, LLC, its Owners, Managers, offices, predecessors, divisions and wholly or partially owned subsidiaries, affiliates, licensees of affiliates, partnerships, and joint ventures; and all the board of directors, owners, managers, directors, officers, employees, consultants, agents, and representatives of the foregoing. The terms "subsidiary," "affiliate" and "joint venture" refer to any person in which there is partial or total ownership or control by IRES, and is specifically meant to include IRES MLS and/or each of the IRES Websites.

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- B. The term “Managers” shall mean the Managers elected by the Owners of IRES.
- C. The term “Owners” shall mean the current and future Boards and Associations of Realtors that are the sole members of IRES, which included Boulder, Fort Collins, Greeley, Longmont and Loveland/Berthoud at the time of entry of this order.
- D. “Multiple Listing Service” or “MLS” means a cooperative venture by which real estate brokers serving a common market area submit their listings to a central service which, in turn, distributes the information for the purpose of fostering cooperation in and facilitating real estate transactions.
- E. The term “IRES MLS” means the IRES MLS or any other MLS owned, operated or controlled, in whole or in part, directly or indirectly, by IRES, and any of its predecessors, divisions and wholly or partially owned subsidiaries, affiliates, licensees of the affiliates, partnerships, and joint ventures, and all the directors, officers, members, participants, employees, consultants, agents, and representatives of the foregoing.
- F. “IRES Participant” means any person authorized by IRES to use or enjoy the benefits of the IRES MLS, including but not limited to Participants and Subscribers as those terms are defined in the IRES Rules and Regulations.
- G. “IDX” means the internet data exchange process that provides a means or mechanism for MLS listings to be integrated within a Website, including but not limited to I2I as defined by IRES.
- H. “IDX Website” means a Website that is capable of integrating the IDX listing information within the Website.

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- I. “Coloproperty.com” means the Website operated by IRES that allows the general public to search information concerning real estate listings from IRES.
- J. “Realtor.com” means the Website operated by the National Association of Realtors that allows the general public to search information concerning real estate listings downloaded from a variety of MLSs representing different geographic areas of the country, including but not limited to real estate listings from IRES.
- K. “Approved Website” means a Website to which IRES or IRES MLS provides information concerning listings for publication including, but not limited to, IRES Member IDX Websites, Coloproperty.com, and Realtor.com.
- L. “Exclusive Right to Sell Listing” means a listing agreement under which the property owner or principal appoints a real estate broker as his or her exclusive agent for a designated period of time, to sell the property on the owner’s stated terms, and agrees to pay the listing broker a commission when the property is sold, regardless of whether the buyer is found by the listing broker, the owner or another broker.
- M. “Exclusive Agency Listing” means a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but also reserves to the property owner or principal a right to sell the property without assistance from a broker, in which case the listing broker is paid a reduced commission or no commission when the property is sold.
- N. “Services of the MLS” means the benefits and services provided by the MLS to assist IRES Participants in selling, leasing and valuing property and/or brokering real estate transactions. With respect to real estate brokers or agents

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representing home sellers, Services of the MLS shall include, but are not limited to:

1. having the property included among the listings in the MLS in a manner so that information concerning the listing is easily accessible by cooperating brokers; and
2. having the property publicized through means available to the MLS, including, but not limited to, information concerning the listing being made available on Coloproperty.com, Realtor.com and IDX Websites.

II.

IT IS FURTHER ORDERED that Respondent IRES, its successors and assigns, and its Owners, Managers, officers, committees, agents, representatives, and employees, directly or indirectly, or through any corporation, subsidiary, division, or other device, in connection with the operation of a Multiple Listing Service or Approved Websites in or affecting commerce, as “commerce” is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44, shall forthwith cease and desist from adopting or enforcing any policy, rule, practice or agreement to deny, restrict or interfere with the ability of IRES Participants to enter into Exclusive Agency Listings or other lawful listing agreements with the sellers of properties, including but not limited to any policy, rule, practice or agreement to:

1. prevent IRES Participants from offering or accepting Exclusive Agency Listings;
2. prevent IRES Participants from cooperating with listing brokers or agents that offer or accept Exclusive Agency Listings;

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3. prevent IRES Participants from publishing information concerning listings offered pursuant to Exclusive Agency Listings on Approved Websites;
4. deny or restrict the Services of the MLS to Exclusive Agency Listings or other lawful listings in any way that such Services of the MLS are not denied or restricted to Exclusive Right to Sell Listings; and
5. treat Exclusive Agency Listings, or any other lawful listings, in a less advantageous manner than Exclusive Right to Sell Listings, including but not limited to, any policy, rule or practice pertaining to the transmission, downloading, or displaying of information pertaining to such listings.

Provided, however, that nothing herein shall prohibit the Respondent from adopting or enforcing any policy, rule, practice or agreement regarding subscription or participation requirements, payment of dues, administrative matters, or any other policy, rule, practice or agreement, that it can show is reasonably ancillary to the legitimate and beneficial objectives of the MLS.

III.

IT IS FURTHER ORDERED that Respondent shall, no later than thirty (30) days after the date this Order becomes final, amend its rules and regulations to conform to the provisions of this Order.

IV.

IT IS FURTHER ORDERED that, within ninety (90) days after the date this Order becomes final, Respondent shall (1) inform each IRES Participant of the amendments to its rules and regulations to conform to the provisions of this Order; and (2) provide each IRES Participant with a copy of this Order.

Decision and Order

Respondent shall transmit the rule change and Order by the means it uses to communicate with its members in the ordinary course of IRES's business, which shall include, but not be limited to: (A) sending one or more emails with one or more statements that there has been a change to the rule and an Order, along with a link to the amended rule and the Order, to each IRES Participant; and (B) placing on the publicly accessible IRES Website (www.IRES-net.com) a statement that there has been a change to the rule and an Order, along with a link to the amended rule and the Order. Respondent shall modify its Website as described above no later than five (5) business days after the date the Order becomes final, and shall display such modifications for no less than ninety (90) days from the date this Order becomes final. The Order shall remain accessible through common search terms and archives on the Website for five (5) years from the date it becomes final.

V.

IT IS FURTHER ORDERED that Respondent shall notify the Commission at least thirty (30) days prior to any proposed change in Respondent, such as dissolution, assignment or sale resulting in the emergence of a successor corporation or any other proposed changes in the corporation which may affect compliance obligations arising out of the Order.

VI.

IT IS FURTHER ORDERED that Respondent shall file a written report within six (6) months of the date this Order becomes final, and annually on the anniversary date of the original report for each of the five (5) years thereafter, and at such other times as the Commission may require by written notice to Respondent, setting forth in detail the manner and form in which it has complied with this Order.

Analysis to Aid Public Comment

VII.

IT IS FURTHER ORDERED that this Order shall terminate on November 22, 2016.

By the Commission.

ANALYSIS OF CONSENT ORDERS TO AID PUBLIC COMMENT

The Federal Trade Commission has accepted for public comment a series of agreements containing consent orders with five respondent entities. Each of the proposed respondents operates a multiple listing service (“MLS”) that is designed to foster real estate brokerage services by sharing and publicizing information on properties for sale by customers of real estate brokers. The agreements settle charges that each respondent violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, through particular acts and practices of the MLS. The proposed consent orders have been placed on the public record for 30 days to receive comments from interested persons. Comments received during this period will become part of the public record. After 30 days, the Commission will review the agreements and the comments received, and will decide whether it should withdraw from the agreement or make the proposed order final.

The purpose of this analysis is to facilitate comment on the proposed consent orders. This analysis does not constitute an official interpretation of the agreements and proposed orders, and does not modify their terms in any way. Further, the proposed consent orders have been entered into for settlement purposes only, and do not constitute an admission by any proposed

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respondent that it violated the law or that the facts alleged in the respective complaint against each respondent (other than jurisdictional facts) are true.

I. The Respondents

The agreements are with the following organizations:

- Information and Real Estate Services, LLC (“IRES”) is a limited liability company based in Loveland, Colorado, that is owned by five boards and associations of realtors in Boulder, Fort Collins, Greeley, Longmont, and Loveland/Berthoud, Colorado. IRES operates a regional MLS for Northern Colorado that is used by more than 5,000 real estate professionals.
- Northern New England Real Estate Network, Inc. (“NNEREN”) is a corporation based in Concord, New Hampshire, that functions as an association of realtors. NNEREN operates an MLS for New Hampshire and some surrounding areas that is used by several thousand real estate professionals.
- Williamsburg Area Association of Realtors, Inc. (“WAAR”), is a corporation based in Williamsburg, Virginia, that functions as an association of realtors. WAAR operates an MLS for the Williamsburg, Virginia, metropolitan area and surrounding counties that is used by approximately 650 real estate professionals.
- Realtors Association of Northeast Wisconsin, Inc. (“RANW”) is a non-profit corporation based in Appleton, Wisconsin, that functions as an association of realtors. RANW operates an MLS for the Northeast Wisconsin Area, which includes the cities of Green Bay, Appleton, Oshkosh, and Fond du Lac, Wisconsin,

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and the surrounding counties, that is used by more than 1,500 real estate professionals.

- Monmouth County Association of Realtors, Inc. (“MCAR”) is a corporation based in Tinton Falls, New Jersey, that functions as an association of realtors. MCAR operates an MLS for Monmouth County, Ocean County and the surrounding areas of New Jersey that is used by several thousand real estate professionals.

II. Industry Background

A Multiple Listing Service, or “MLS,” is a cooperative venture by which real estate brokers serving a common local market area submit their listings to a central service, which in turn distributes the information, for the purpose of fostering cooperation among brokers and agents in real estate transactions. The MLS facilitates transactions by putting together a home seller, who contracts with a broker who is a member of the MLS, with prospective buyers, who may be working with other brokers who are also members of the MLS. Membership in the MLS is largely limited to member brokers who generally must possess a license to engage in real estate brokerage services and meet other criteria set by MLS rules.

Prior to the late 1990s, the listings on an MLS were typically directly accessible only to real estate brokers who were members of a local MLS. The MLS listings typically were made available through books or dedicated computer terminals, and generally could only be accessed by the general public by physically visiting a broker’s office or by receiving a fax or hand delivery of selected listings from a broker.

Information from an MLS is now typically available to the general public not only through the offices of real estate brokers who are MLS members, but also through three principal categories of internet web sites. First, information concerning

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many MLS listings is available through Realtor.com, a national web site run by the National Association of Realtors (“NAR”). Realtor.com contains listing information from many local MLS systems around the country and is the largest and most-used internet real estate web site. Second, information concerning MLS listings is often made available through a local MLS-affiliated web site. Third, information concerning MLS listings is often made available on the internet sites of various real estate brokers, who choose to provide these web sites as a way of promoting their brokerage services. Most of these various web sites receive information from an MLS pursuant to a procedure often known as Internet Data Exchange (“IDX”), which is typically governed by MLS policies. The IDX policies allow operators of approved web sites to display MLS active listing information to the public.

Today the internet plays a crucial role in real estate sales. According to a 2005 survey by the National Association of Realtors (“NAR”), 77 percent of home buyers used the internet to assist in their home search, with 57 percent reporting frequent internet searches. Twenty-four percent of respondents first learned about the home they selected from the internet, the second most common means behind learning about a home from a real estate agent (50 percent).¹ In all, 69 percent of home buyers found the internet to be a “very useful” source of information, and a total of 96 percent found the internet to be either “very useful” or “somewhat useful.”² Moreover, the NAR Survey makes clear that the overwhelming majority of web sites used nationally in

¹ E.g., PAUL C. BISHOP, THOMAS BEERS AND SHONDA D. HIGHTOWER, THE 2005 NATIONAL ASSOCIATION OF REALTORS PROFILE OF HOME BUYERS AND SELLERS (hereinafter, “NAR Study”) at 3-3, 3-4.

² *Id.* See *Home Buyer & Seller Survey Shows Rising Use of Internet, Reliance on Agents* (Jan. 17, 2006), available at <http://www.realtor.org/PublicAffairsWeb.nsf/Pages/HmBuyerSellerSurvey06?OpenDocument>.

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searching for homes contain listing information that is provided by local MLS systems.³

A. Types of Real Estate Brokerage Professionals

A typical real estate transaction involves two real estate brokers. These are commonly known as a “listing broker” and a “selling broker.” The listing broker is hired by the seller of the property to locate an appropriate buyer. The seller and the listing broker agree upon compensation, which is determined by written agreement negotiated between the seller and the listing broker. In a common traditional listing agreement, the listing broker receives compensation in the form of a commission, which is typically a percentage of the sales price of the property, payable if and when the property is sold. In such a traditional listing agreement, the listing broker agrees to provide a package of real estate brokerage services, including promoting the listing through the MLS and on the internet, providing advice to the seller regarding pricing and presentation, fielding all calls and requests to show the property, supplying a lock-box so that potential buyers can see the house with their agents, running open houses to show the house to potential buyers, negotiating with buyers or their agents on offers, assisting with home inspections and other arrangements once a contract for sale is executed, and attending the closing of the transaction.

The other broker involved in a typical transaction is commonly known as the selling broker. In a typical transaction, a prospective buyer will seek out a selling broker to identify properties that may be available. This selling broker will discuss the properties that may be of interest to the buyer, accompany the buyer to see various properties, try to arrange a transaction between buyer and seller, assist the buyer in negotiating the contract, and help in further steps necessary to close the

³ NAR Study at 3-19.

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transaction. In a traditional transaction, the listing broker offers the selling broker a fixed commission, to be paid from the listing broker's commission when and if the property is sold. Real estate brokers typically do not specialize as only listing brokers or selling brokers, but often function in either role depending on the particular transaction.

B. Types of Real Estate Listings

The relationship between the listing broker and the seller of the property is established by agreement. The two most common types of agreements governing listings are Exclusive Right to Sell Listings and Exclusive Agency Listings. An Exclusive Right to Sell Listing is the traditional listing agreement, under which the property owner appoints a real estate broker as his or her exclusive agent for a designated period of time, to sell the property on the owner's stated terms, and agrees to pay the listing broker a commission if and when the property is sold, whether the buyer of the property is secured by the listing broker, the owner or another broker.

An Exclusive Agency Listing is a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but under which the property owner or principal reserves a right to sell the property without assistance of the listing broker, in which case the listing broker is paid a reduced or no commission when the property is sold.

Some real estate brokers have attempted to offer services to home sellers on something other than the traditional full-service basis. Many of these brokers, often for a flat fee, will offer sellers access to the MLS's information-sharing function, as well as a promise that the listing will appear on the most popular real estate web sites. Under such arrangements, the listing broker does not offer additional real estate brokerage services as part of the flat fee package, but allows sellers to purchase additional services if

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sellers so desire. These non-traditional arrangements often are structured using Exclusive Agency Listing contracts.

There is a third type of real estate listing that does not involve a real estate broker, which is a “For Sale By Owner” or “FSBO” listing. With a FSBO listing, a home owner will attempt to sell a house without the involvement of any real estate broker and without paying any compensation to such a broker, by advertising the availability of the home through traditional advertising mechanisms (such as a newspaper) or FSBO-specific web sites.

There are two critical distinctions between an Exclusive Agency Listing and a FSBO for the purpose of this analysis. First, the Exclusive Agency Listing employs a listing broker for access to the MLS and web sites open to the public; a FSBO listing does not. Second, an Exclusive Agency Listing sets terms of compensation to be paid to a selling broker, while a FSBO listing often does not.

III. The Conduct Addressed by the Proposed Consent Orders

Each of the proposed consent orders is accompanied by a complaint setting forth the conduct by the respondent that is the reason for the proposed consent order. In general, the conduct at issue in these matters is largely the same as the conduct addressed by the Commission in its recent consent order involving the Austin Board of Realtors (“ABOR”).⁴

The complaints accompanying the proposed consent orders allege that respondents have violated Section 5 of the FTC Act by adopting rules or policies that limit the publication and marketing

⁴ *In the Matter of Austin Bd. of Realtors*, Docket No. C-4167 (Final Approval, Aug. 29, 2006). The ABOR consent order was published with an accompanying Analysis To Aid Public Comment at 71 Fed. Reg. 41023 (July 19, 2006).

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on the internet of certain sellers' properties, but not others, based solely on the terms of their respective listing contracts. The rules or policies challenged in the complaints state that information about properties will not be made available on popular real estate web sites unless the listing contracts are Exclusive Right to Sell Listings. When implemented, these "Web Site Policies" prevented properties with non-traditional listing contracts from being displayed on a broad range of public web sites.

The respondents adopted the challenged rules or policies at various times between 2001 and 2005. Each respondent, prior to the Commission's acceptance of the consent orders and proposed complaints for public comment, rescinded or modified its rules to discontinue the challenged practices. The members of each respective MLS affected by these rules have been notified of the recent changes.

The complaints allege that the respondents violated Section 5 of the FTC Act by unlawfully restraining competition among real estate brokers in their respective service areas by adopting the Web Site Policies.

A. The Respondents Have Market Power

Each of the respondents serves the great majority of the residential real estate brokers in its respective service area. These professionals compete with one another to provide residential real estate brokerage services to consumers.

Each of the respondents also is the sole or dominant MLS serving its respective service area. Membership in each of the respondents' MLS systems is necessary for a broker to provide effective residential real estate brokerage services to sellers and buyers of real property in the respective service area.⁵ Each

⁵ As noted, the MLS provides valuable services for a broker assisting a seller as a listing broker, by offering a means of publicizing the property to other brokers and the public. For a broker assisting a buyer, it also offers

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respondent, through the MLS that it operates, controls key inputs needed for a listing broker to provide effective real estate brokerage services, including: (1) a means to publicize to all brokers the residential real estate listings in the service area; and (2) a means to distribute listing information to web sites for the general public. By virtue of industry-wide participation and control over a key input, each of the respondents has market power in the provision of residential real estate brokerage services to sellers and buyers of real property in its respective service area.

B. Respondents' Conduct

At various times between 2001 and 2005, each of the respondents adopted a rule that prevented information on listings other than traditional Exclusive Right to Sell Listings from being included in the information available from its respective MLS to be used and published by publicly-accessible web sites.⁶ The effect of these rules, when implemented, was to prevent such information from being available to be displayed on a broad range of web sites, including the NAR-operated "Realtor.com" web site; the web sites operated by several of the respondents; and member web sites.

Non-traditional forms of listing contracts, including Exclusive Agency Listings, are often used by listing brokers to offer lower-

unique and valuable services, including detailed information that is not shown on public web sites, which can help with house showings and otherwise facilitate home selections.

⁶ For example, MCAR's rule stated: "Listing information downloaded and/or otherwise displayed pursuant to IDX shall be limited to properties listed on an exclusive right to sell basis. (Office exclusive and exclusive agency listings will not be forwarded to IDX sites.)." (MCAR Rules and Regulations (2004)). The NNEREN rule used somewhat different wording: "Exclusive Agency listings will not be included in NNEREN datafeeds to any web site accessed by the general public such as nneren.com, REALTOR.com, third party feeds, IDX, etc." (NNEREN Rules and Regulations (Feb. 2005)).

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cost real estate services to consumers. The Web Site Policies of each of the respondents were joint action by a group of competitors to withhold distribution of listing information to publicly accessible web sites from competitors who did not contract with their brokerage service customers in a way that the group wished. This conduct was a new variation of a type of conduct that the Commission condemned 20 years ago. In the 1980s and 1990s, several local MLS boards banned Exclusive Agency Listings from the MLS entirely. The Commission investigated and issued complaints against these exclusionary practices, obtaining several consent orders.⁷

C. Competitive Effects of the Web Site Policies

The Web Site Policies have the effect of discouraging members of the respective respondents' MLS systems from offering or accepting Exclusive Agency Listings. Thus, the Web Site Policies substantially impede the provision of unbundled brokerage services, and make it more difficult for home sellers to market their homes. The Web Site Policies have caused some home sellers to switch away from Exclusive Agency Listings to other forms of listing agreements.⁸

⁷ See, e.g., *In the Matter of Port Washington Real Estate Bd., Inc.*, 120 F.T.C. 882 (1995); *In the Matter of United Real Estate Brokers of Rockland, Ltd.*, 116 F.T.C. 972 (1993); *In the Matter of Am. Indus. Real Estate Assoc.*, 116 F.T.C. 704 (1993); *In the Matter of Puget Sound Multiple Listing Assoc.*, 113 F.T.C. 733 (1990); *In the Matter of Bellingham-Whatcom County Multiple Listing Bureau*, 113 F.T.C. 724 (1990); *In the Matter of Metro MLS, Inc.*, 113 F.T.C. 305 (1990); *In the Matter of Multiple Listing Serv. of the Greater Michigan City Area, Inc.*, 106 F.T.C. 95 (1985); *In the Matter of Orange County Bd. of Realtors, Inc.*, 106 F.T.C. 88 (1985).

⁸ WAAR does not appear to have implemented the Web Site Policies, as Exclusive Agency Listings have been included in IDX feeds before, during and after its policy was in effect. However, its adoption and publication of the policy alone has inhibited the use of such listings in the Williamsburg area by at least one local real estate broker, who chose not to use Exclusive Agency Listings because he did not wish to violate the local rule.

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When home sellers switch to full service listing agreements from Exclusive Agency Listings that often offer lower-cost real estate services to consumers, the sellers may purchase services that they would not otherwise buy. This, in turn, may increase the commission costs to consumers of real estate brokerage services. By preventing Exclusive Agency Listings from being transmitted to public-access real estate web sites, the Web Site Policies have adverse effects on home sellers and home buyers. In particular, the Web Site Policies deny home sellers choices for marketing their homes and deny home buyers the chance to use the internet to easily see all of the houses listed by real estate brokers in the area, making their search less efficient.

D. There is No Competitive Efficiency Associated with the Web Site Policies

The respondents' rules at issue here advance no legitimate procompetitive purpose. If, as a theoretical matter, buyers and sellers could avail themselves of an MLS system and carry out real estate transactions without compensating any of its broker members, an MLS might be concerned that those buyers and sellers were free-riding on the investment that brokers have made in the MLS and adopt rules to address that free-riding. But this theoretical concern does not justify the rules or policies adopted by the various respondents here. Exclusive Agency Listings do not enable home buyers or sellers to bypass the use of the brokerage services that the MLS was created to promote, because a listing broker is always involved in an Exclusive Agency Listing, and the MLS rules of each of the respondents already provide protections to ensure that a selling broker – a broker who finds a buyer for the property – is compensated for the brokerage service he or she provides.

It is possible, of course, that a buyer of an Exclusive Agency Listing may make the purchase without using a selling broker, but this is true for traditional Exclusive Right to Sell Listings as well. Under the existing MLS rules of each of the respondents that

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apply to any form of the listing agreement, the listing broker must ensure that the home seller pays compensation to the cooperating selling broker (if there is one), and the listing broker may be liable himself for a lost commission if the home seller fails to pay a selling broker who was the procuring cause of a completed property sale. The possibility of sellers or buyers using the MLS but bypassing brokerage services is already addressed effectively by the respondents' existing rules that do not distinguish between forms of listing contracts, and does not justify the Web Site Policies.

IV. The Proposed Consent Orders

Despite the recent cessation by each of the respondents of the challenged practices, it is appropriate for the Commission to require the prospective relief in the proposed consent orders. Such relief ensures that the respondents cannot revert to the old rules or policies, or engage in future variations of the challenged conduct. The conduct at issue in the current cases is itself a variation of practices that have been the subject of past Commission orders; as noted above, in the 1980s and 1990s, the Commission condemned the practices of several local MLS boards that had banned Exclusive Agency Listings entirely, and several consent orders were imposed.

The proposed orders are designed to ensure that each MLS does not misuse its market power, while preserving the procompetitive incentives of members to contribute to the MLS systems operated by the respondents. The proposed orders prohibit respondents from adopting or enforcing any rules or policies that deny or limit the ability of their respective MLS participants to enter into Exclusive Agency Listings, or any other lawful listing agreements, with sellers of properties. The proposed orders include examples of such practices, but the conduct they enjoin is not limited to those five enumerated examples. In addition, the proposed orders state that, within thirty days after each order becomes final, each respondent shall have conformed its rules to the substantive provisions of the order.

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Each respondent is further required to notify its participants of the applicable order through its usual business communications and its website. The proposed orders require notification to the Commission of changes in the respondent entities' structures, and periodic filings of written reports concerning compliance with the terms of the orders.

The proposed orders apply to each of the named respondents and entities it owns or controls, including its respective MLS and any affiliated web site it operates. The orders do not prohibit participants in the respondents' MLS systems, or other independent persons or entities that receive listing information from a respondent, from making independent decisions concerning the use or display of such listing information on participant or third-party web sites, consistent with any contractual obligations to respondent(s).

The proposed orders will expire in 10 years.

Complaint

IN THE MATTER OF

**REALTORS ASSOCIATION OF NORTHEAST
WISCONSIN, INC.**

CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS OF
SEC. 5 OF THE FEDERAL TRADE COMMISSION ACT

Docket C-4178; File No. 061 0267

Complaint, November 22, 2006 – Decision, November 22, 2006

This consent order addresses charges that the Realtors Association of Northeast Wisconsin, Inc., which operates a real estate multiple listing service, adopted a rule that limits the publication of certain listing agreements on popular real estate websites, in a manner that limits the ability of real estate brokers to use Exclusive Agency Listings to offer unbundled brokerage services at a lower price than the full-service package. Specifically, information about properties would not be made available on the websites unless the listing contracts were Exclusive Right to Sell Listings. The order prohibits the respondent from adopting or enforcing any rules or policies that deny or limit the ability of its multiple listing service participants to enter into Exclusive Agency Listings, or any other lawful listing agreements, with sellers of properties. In addition, the order requires the respondent to conform its rules to the substantive provisions of the order within 30 days and to notify its participants of the order through its usual business communications and its website. The respondent is also required to notify the Commission of changes in its structure and to file periodic written reports concerning compliance with the terms of the order.

Participants

For the *Commission*: *Peggy Bayer Femenella, Joel Christie, Alan Loughnan, Jonathan Platt, Jan Tran, and Theodore Zang.*

For the *Respondent*: *Kendall Harrison, Kevin O'Connor, and Brady Williamson, Godfrey & Kahn, S.C.*

Complaint

COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act, and by virtue of the authority vested in it by said Act, the Federal Trade Commission, having reason to believe that the Realtors Association of Northeast Wisconsin, Inc. (“Respondent” or “RANW”), a corporation, has violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues this Complaint stating its allegations as follows:

NATURE OF THE CASE

This case involves a local, private real estate association that operates a Multiple Listing Service, which is a joint venture among its participants designed to foster real estate brokerage services. RANW adopted a rule that limits the publication of certain listing agreements on popular internet real estate websites, in a manner that limits the ability of real estate brokers to use Exclusive Agency Listings to offer unbundled brokerage services at a lower price compared to the full service package. This rule deprives such brokers and the home sellers they represent of a significant benefit afforded by the MLS. The rule discriminates on the basis of lawful contractual terms between the listing real estate broker and the seller of the property, and lacks any justification that such a rule improves competitive efficiency. Consumers are harmed by this rule because it inhibits a lower cost option to sellers and increases search costs to buyers. As such, this rule constitutes a concerted refusal to deal except on specified terms with respect to a key input for the provision of real estate services.

RESPONDENT AND ITS PARTICIPANTS

1. Respondent Realtors Association of Northeast Wisconsin, Inc., (“RANW”) is a non-profit corporation organized, existing

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and doing business under and by virtue of the laws of the State of Wisconsin. Respondent's principal place of business is W6124 Aerotech Drive, Appleton, Wisconsin 54912-2637. RANW operates for the benefit of its members.

2. RANW has more than 2000 real estate professionals as members, and is affiliated with the National Association of Realtors ("NAR"). The majority of RANW's members hold an active real estate license and are active in the real estate profession.

3. The large majority of residential real estate brokerage professionals in the Northeast Wisconsin Area are members of RANW. These professionals compete with one another to provide residential real estate brokerage services to consumers.

4. A Multiple Listing Service ("MLS") is a clearinghouse through which participating real estate brokerage firms regularly and systematically exchange information on listings of real estate properties and share commissions with other participants who locate purchasers. RANW is now and has been providing since 1985 a MLS for the use of its members doing business in the Northeast Wisconsin Area, and this service is known as the RANW Multiple Listing Service, Inc. ("RANW MLS"). The RANW MLS is a corporation organized, existing and doing business under and by virtue of the laws of the State of Wisconsin. RANW owns all the stock of RANW MLS and controls its operations.

5. When a property is listed on the RANW MLS, it is made available to all participants of the MLS for the purpose of trying to match a buyer with a seller. Information about the property, including the asking price, address and property details, is made available to participants of the MLS so that a suitable buyer can be found.

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6. RANW MLS services the Northeast Wisconsin Area, which includes the cities of Green Bay, Appleton, Oshkosh and Fond du Lac, Wisconsin, and the surrounding counties.

7. RANW MLS is the only MLS that services the Northeast Wisconsin Area.

JURISDICTION

8. RANW is and has been at all times relevant to this Complaint a corporation organized for its own profit or for the profit of its members within the meaning of Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

9. The acts and practices of RANW, including the acts and practices alleged herein, have been or are in or affecting commerce within the meaning of Section 4 of the Federal Trade Commission Act.

RANW CONDUCT

10. In 2001, RANW adopted and approved a rule that stated: "All active listings of all RANW MLS Participants Y that are subject to an Exclusive Right to Sell contract are eligible for IDX Internet publication" (the "Web Site Policy"). The Web Site Policy was amended by the RANW Board of Directors on August 29, 2006, before the filing of this Complaint, to provide that properties listed on an exclusive agency basis are now eligible to be included in popular internet real estate websites. RANW MLS participants were notified of the change on or about August 31, 2006.

11. The Web Site Policy had prevented certain lawful residential property listings provided to RANW MLS, including "Exclusive Agency Listings," from being transmitted to real estate Web Sites, based on the contractual relationship between the

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home seller and the real estate agent the seller employs to promote the property.

12. An Exclusive Agency Listing is a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but reserves to the property owner or principal a right to sell the property without assistance of a broker, in which case the listing broker is paid a reduced or no commission when the property is sold.

13. Exclusive Agency Listings provide a means for RANW members and RANW MLS participants to offer lower-cost, Unbundled Real Estate Services to consumers. "Unbundled Real Estate Brokerage Services" are lawful arrangements pursuant to which a real estate broker or agent provides that a property offered for sale shall be listed on the MLS, but the listing broker or agent will not provide some or all of the services offered by other real estate brokers or will only offer such additional services on an à la carte basis.

14. Brokers offering Unbundled Real Estate Brokerage Services are able to provide home sellers with exposure of their listing through the MLS for a flat fee that is very small compared to the commission prices traditionally charged. Exclusive Agency Listings can reserve to the home seller the right to sell the property without owing more than an agreed-to amount to the listing broker.

15. The Web Site Policy in effect through August 29, 2006 did not permit the publication of Exclusive Agency Listings on Web Sites approved by RANW, including (1) the NAR-operated "Realtor.com" Web Site; and (2) RANW MLS participant Web Sites (collectively, "Approved Web Sites").

16. The Web Site Policy had the effect of discouraging RANW MLS participants from accepting Exclusive Agency Listings.

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RANW MARKET POWER

17. The provision of residential real estate brokerage services to sellers and buyers of real property in the Northeast Wisconsin Area is a relevant product market.

18. The publication and sharing of information relating to residential real estate listings for the purpose of brokering residential real estate transactions is a key input to the provision of real estate brokerage services, and represents a relevant input market. Publication of listings through RANW MLS is generally considered by sellers, buyers and their brokers to be the fastest and most effective means of obtaining the broadest market exposure for property in the Northeast Wisconsin Area.

19. By virtue of industry-wide participation and control over a key input, RANW has market power in the Northeast Wisconsin Area.

20. Participation in RANW MLS is necessary to a broker providing effective residential real estate brokerage services to sellers and buyers of real property in the Northeast Wisconsin Area. Participation significantly increases the opportunities of brokerage firms to enter into listing agreements with residential property owners, and significantly reduces the costs of obtaining up-to-date and comprehensive information on listings and sales. The realization of these opportunities and efficiencies is important for brokers to compete effectively in the provision of residential real estate brokerage services in the Northeast Wisconsin Area.

APPROVED WEB SITES AND KEY INPUTS

21. Access to the Approved Web Sites is a key input in the brokerage of residential real estate sales in the Northeast Wisconsin Area. Home buyers regularly use the Approved Web Sites to assist in their search for homes. The Approved Web Sites are the Web Sites most commonly used by home buyers in their

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home search. Many home buyers find the home that they ultimately purchase by searching on Approved Web Sites.

22. The most efficient, and at least in some cases the only, means for RANW MLS participants to have their properties listed on the Approved Web Sites is by having RANW MLS transmit those listings.

23. Property owners and their brokers in the Northeast Wisconsin Area generally consider publication of listings on Approved Web Sites, in conjunction with publication of listings on the RANW MLS, to be the most effective means of obtaining the broadest market exposure for residential property in the Northeast Wisconsin Area.

EFFECTS OF WEB SITE POLICY

24. The Web Site Policy restricted competition by inhibiting the use of Exclusive Agency Listings in the Northeast Wisconsin Area.

25. The Web Site Policy reduced consumer choices regarding both the purchase and sale of homes and induced consumers to pay for real estate brokerage services that they would not otherwise have purchased.

THE WEB SITE POLICY OFFERS NO EFFICIENCY BENEFIT

26. There is no cognizable and plausible efficiency justification for the Web Site Policy. The Web Site Policy is not reasonably ancillary to the legitimate and beneficial objectives of the MLS.

Decision and Order

VIOLATION

27. In adopting the policies and engaging in the Acts and Practices described herein, RANW has acted as a combination of its members to restrain trade in the provision of residential real estate brokerage services within the Northeast Wisconsin Area.

28. The purposes, capacities, tendencies, or effects of the policies, acts, or practices of RANW and its members as described herein have been unreasonably to restrain competition among brokers, and to injure consumers.

29. The policies, acts, practices, and combinations or conspiracies described herein constitute unfair methods of competition in or affecting interstate commerce in violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this twenty-second day of November, 2006, issues its Complaint against Respondent Realtors Association of Northeast Wisconsin, Inc.

By the Commission.

DECISION AND ORDER

The Federal Trade Commission (“Commission”) having initiated an investigation of certain acts and practices of the Realtors Association of Northeast Wisconsin, Inc., hereinafter sometimes referred to as “Respondent” or “RANW,” and Respondent having been furnished thereafter with a copy of the draft Complaint that the Bureau of Competition presented to the

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Commission for its consideration and which, if issued by the Commission, would charge Respondent with violations of Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondent, its attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Order (“Consent Agreement”), containing an admission by Respondent of only the jurisdictional facts set forth in the aforesaid draft Complaint and the facts concerning remedial measures it has taken set forth in Paragraph 10 of the aforesaid draft Complaint, a statement that the signing of the Consent Agreement is for settlement purposes only and does not constitute an admission by Respondent that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waives and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondent has violated the said Act, and that a Complaint should issue stating its allegations in that respect, and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34 (2004), the Commission hereby makes the following jurisdictional findings and issues the following Order:

1. Respondent Realtors Association of Northeast Wisconsin, Inc. is a non-profit corporation organized, existing and doing business under and by virtue of the laws of the State of Wisconsin, with its office and principal place of business at W6124 Aerotech Drive, Appleton, Wisconsin 54912-2637.

2. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the Respondent, and the proceeding is in the public interest.

Decision and Order

ORDER**I.**

IT IS ORDERED that for the purposes of this Order, the following definitions shall apply:

- A. “Respondent” or “RANW” means Realtors Association of Northeast Wisconsin, Inc., its Board of Directors, officers, predecessors, divisions and wholly or partially owned subsidiaries, affiliates, licensees of affiliates, partnerships, and joint ventures; and all the boards of directors, owners, managers, directors, officers, employees, consultants, agents, and representatives of the foregoing. The terms “Respondent” or “RANW” do not include directors or officers of RANW in their capacities as individual RANW Participants. The terms “subsidiary,” “affiliate” and “joint venture” refer to any person in which there is partial or total ownership or control by RANW, and are specifically meant to include RANW MLS and/or each of the RANW Websites.
- B. “Multiple Listing Service” or “MLS” means a cooperative venture by which real estate brokers serving a common market area submit their listings to a central service which, in turn, distributes the information for the purpose of fostering cooperation in and facilitating real estate transactions.
- C. The term “RANW MLS” means the RANW MLS or any other MLS owned, operated or controlled, in whole or in part, directly or indirectly, by RANW, and any of its predecessors, divisions and wholly or partially owned subsidiaries, affiliates, licensees of the affiliates, partnerships, and joint ventures, and all the directors, officers, members, participants, employees, consultants, agents, and representatives of the foregoing.

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- D. "RANW Participant" means any person authorized by RANW to access, use or enjoy the benefits of the RANW MLS in accordance with RANW's by-laws, policies, rules, and regulations.
- E. "IDX" means the internet data exchange process that provides a means or mechanism for MLS listings to be integrated within a Website, including but not limited to IDX as defined by RANW.
- F. "IDX Website" means a Website that is capable of integrating the IDX listing information within the Website.
- G. "Realtor.com" means the Website operated by the National Association of Realtors that allows the general public to search information concerning real estate listings downloaded from a variety of MLSs representing different geographic areas of the country, including but not limited to real estate listings from RANW.
- H. "Approved Website" means a Website to which RANW or RANW MLS provides information concerning listings for publication, including but not limited to RANW Participant IDX Websites and Realtor.com.
- I. "Exclusive Right to Sell Listing" means a listing agreement under which the property owner or principal designates a real estate broker as his or her exclusive agent for a specified period of time, to sell the property on the owner's stated terms, and agrees to pay the listing broker a commission when the property is sold, regardless of whether the buyer is found by the listing broker, the owner or another broker.
- J. "Exclusive Agency Listing" means a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property,

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but also reserves to the property owner or principal a right to sell the property without assistance from a broker, in which case the listing broker is paid a reduced commission or, depending on the agreement between the broker and owner, no commission when the property is sold.

- K. “Other Lawful Listing” means a listing agreement, other than an Exclusive Right to Sell Listing or Exclusive Agency Listing, which is in compliance with applicable state laws and regulations.
- L. “Services of the MLS” means the benefits and services provided by the MLS to assist RANW Participants in selling, leasing and valuing property and/or brokering real estate transactions. With respect to real estate brokers or agents representing home sellers, Services of the MLS shall include, but are not limited to:
1. having the property included among the listings in the MLS in a manner so that information concerning the listing is easily accessible by cooperating brokers; and
 2. having the property publicized through means available to the MLS, including, but not limited to, information concerning the listing being made available on Realtor.com and IDX Websites.

II.

IT IS FURTHER ORDERED that Respondent RANW, its successors and assigns, and its Board of Directors, officers, committees, agents, representatives, and employees, directly or indirectly, or through any corporation, subsidiary, division, or other device, in connection with the operation of a Multiple Listing Service or Approved Websites in or affecting commerce, as “commerce” is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44, shall forthwith cease and desist

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from adopting or enforcing any policy, rule, practice or agreement of RANW to deny, restrict or interfere with the ability of RANW Participants to enter into Exclusive Agency Listings or Other Lawful Listings with the sellers of properties, including but not limited to any policy, rule, practice or agreement to:

1. prevent RANW Participants from offering or accepting Exclusive Agency Listings;
2. prevent RANW Participants from cooperating with listing brokers or agents that offer or accept Exclusive Agency Listings;
3. prevent RANW Participants from publishing information concerning listings offered pursuant to Exclusive Agency Listings on Approved Websites;
4. deny or restrict the Services of the MLS to Exclusive Agency Listings or Other Lawful Listings in any way that such Services of the MLS are not denied or restricted to Exclusive Right to Sell Listings; and
5. treat Exclusive Agency Listings, or Other Lawful Listings, in a less advantageous manner than Exclusive Right to Sell Listings, including but not limited to, any policy, rule or practice pertaining to the transmission, downloading, or displaying of information pertaining to such listings.

Provided, however, that nothing herein shall prohibit the Respondent from adopting or enforcing any policy, rule, practice or agreement regarding subscription or participation requirements, payment of dues, administrative matters, or any other policy, rule, practice or agreement, that it can show is reasonably ancillary to the legitimate and beneficial objectives of the MLS.

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III.

IT IS FURTHER ORDERED that, no later than thirty (30) days after the date this Order becomes final, Respondent shall have amended its rules and regulations to conform to the provisions of this Order.

IV.

IT IS FURTHER ORDERED that, within ninety (90) days after the date this Order becomes final, Respondent shall (1) have informed each RANW Participant of the amendments to its rules and regulations to conform to the provisions of this Order; and (2) provide each RANW Participant with a copy of this Order. Respondent shall transmit the rule change and Order by the means it uses to communicate with its members in the ordinary course of RANW's business, which shall include, but not be limited to: (A) sending one or more emails with one or more statements that there has been a change to the rules and an Order, along with a link to the amended rules and the Order, to each RANW Participant; and (B) placing on the publicly accessible MLS News page of the RANW Website (www.ranw.org) a statement that there has been a change to the rules and an Order, along with a link to the amended rules and the Order. Respondent shall modify its Website as described above no later than five (5) business days after the date the Order becomes final, and shall display such modifications for no less than ninety (90) days from the date this Order becomes final. The Order shall remain accessible through common search terms and archives on the Website for five (5) years from the date it becomes final.

V.

IT IS FURTHER ORDERED that Respondent shall notify the Commission at least thirty (30) days prior to any proposed change in Respondent, such as dissolution, assignment or sale resulting in the emergence of a successor corporation or any other

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proposed changes in the corporation which may affect compliance obligations arising out of the Order.

VI.

IT IS FURTHER ORDERED that Respondent shall file a written report within six (6) months of the date this Order becomes final, and annually on the anniversary date of the original report for each of the five (5) years thereafter, and at such other times as the Commission may require by written notice to Respondent, setting forth in detail the manner and form in which it has complied with this Order.

VII.

IT IS FURTHER ORDERED that this Order shall terminate on November 22, 2016.

By the Commission.

ANALYSIS OF CONSENT ORDERS TO AID PUBLIC COMMENT

The Federal Trade Commission has accepted for public comment a series of agreements containing consent orders with five respondent entities. Each of the proposed respondents operates a multiple listing service (“MLS”) that is designed to foster real estate brokerage services by sharing and publicizing information on properties for sale by customers of real estate brokers. The agreements settle charges that each respondent violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, through particular acts and practices of the MLS. The proposed consent orders have been placed on the public

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record for 30 days to receive comments from interested persons. Comments received during this period will become part of the public record. After 30 days, the Commission will review the agreements and the comments received, and will decide whether it should withdraw from the agreement or make the proposed order final.

The purpose of this analysis is to facilitate comment on the proposed consent orders. This analysis does not constitute an official interpretation of the agreements and proposed orders, and does not modify their terms in any way. Further, the proposed consent orders have been entered into for settlement purposes only, and do not constitute an admission by any proposed respondent that it violated the law or that the facts alleged in the respective complaint against each respondent (other than jurisdictional facts) are true.

I. The Respondents

The agreements are with the following organizations:

- Information and Real Estate Services, LLC (“IRES”) is a limited liability company based in Loveland, Colorado, that is owned by five boards and associations of realtors in Boulder, Fort Collins, Greeley, Longmont, and Loveland/Berthoud, Colorado. IRES operates a regional MLS for Northern Colorado that is used by more than 5,000 real estate professionals.
- Northern New England Real Estate Network, Inc. (“NNEREN”) is a corporation based in Concord, New Hampshire, that functions as an association of realtors. NNEREN operates an MLS for New Hampshire and some surrounding areas that is used by several thousand real estate professionals.

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- Williamsburg Area Association of Realtors, Inc. (“WAAR”), is a corporation based in Williamsburg, Virginia, that functions as an association of realtors. WAAR operates an MLS for the Williamsburg, Virginia, metropolitan area and surrounding counties that is used by approximately 650 real estate professionals.
- Realtors Association of Northeast Wisconsin, Inc. (“RANW”) is a non-profit corporation based in Appleton, Wisconsin, that functions as an association of realtors. RANW operates an MLS for the Northeast Wisconsin Area, which includes the cities of Green Bay, Appleton, Oshkosh, and Fond du Lac, Wisconsin, and the surrounding counties, that is used by more than 1,500 real estate professionals.
- Monmouth County Association of Realtors, Inc. (“MCAR”) is a corporation based in Tinton Falls, New Jersey, that functions as an association of realtors. MCAR operates an MLS for Monmouth County, Ocean County and the surrounding areas of New Jersey that is used by several thousand real estate professionals.

II. Industry Background

A Multiple Listing Service, or “MLS,” is a cooperative venture by which real estate brokers serving a common local market area submit their listings to a central service, which in turn distributes the information, for the purpose of fostering cooperation among brokers and agents in real estate transactions. The MLS facilitates transactions by putting together a home seller, who contracts with a broker who is a member of the MLS, with prospective buyers, who may be working with other brokers who are also members of the MLS. Membership in the MLS is largely limited to member brokers who generally must possess a license to engage in real estate brokerage services and meet other criteria set by MLS rules.

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Prior to the late 1990s, the listings on an MLS were typically directly accessible only to real estate brokers who were members of a local MLS. The MLS listings typically were made available through books or dedicated computer terminals, and generally could only be accessed by the general public by physically visiting a broker's office or by receiving a fax or hand delivery of selected listings from a broker.

Information from an MLS is now typically available to the general public not only through the offices of real estate brokers who are MLS members, but also through three principal categories of internet web sites. First, information concerning many MLS listings is available through Realtor.com, a national web site run by the National Association of Realtors ("NAR"). Realtor.com contains listing information from many local MLS systems around the country and is the largest and most-used internet real estate web site. Second, information concerning MLS listings is often made available through a local MLS-affiliated web site. Third, information concerning MLS listings is often made available on the internet sites of various real estate brokers, who choose to provide these web sites as a way of promoting their brokerage services. Most of these various web sites receive information from an MLS pursuant to a procedure often known as Internet Data Exchange ("IDX"), which is typically governed by MLS policies. The IDX policies allow operators of approved web sites to display MLS active listing information to the public.

Today the internet plays a crucial role in real estate sales. According to a 2005 survey by the National Association of Realtors ("NAR"), 77 percent of home buyers used the internet to assist in their home search, with 57 percent reporting frequent internet searches. Twenty-four percent of respondents first learned about the home they selected from the internet, the second most common means behind learning about a home from a real

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estate agent (50 percent).¹ In all, 69 percent of home buyers found the internet to be a “very useful” source of information, and a total of 96 percent found the internet to be either “very useful” or “somewhat useful.”² Moreover, the NAR Survey makes clear that the overwhelming majority of web sites used nationally in searching for homes contain listing information that is provided by local MLS systems.³

A. Types of Real Estate Brokerage Professionals

A typical real estate transaction involves two real estate brokers. These are commonly known as a “listing broker” and a “selling broker.” The listing broker is hired by the seller of the property to locate an appropriate buyer. The seller and the listing broker agree upon compensation, which is determined by written agreement negotiated between the seller and the listing broker. In a common traditional listing agreement, the listing broker receives compensation in the form of a commission, which is typically a percentage of the sales price of the property, payable if and when the property is sold. In such a traditional listing agreement, the listing broker agrees to provide a package of real estate brokerage services, including promoting the listing through the MLS and on the internet, providing advice to the seller regarding pricing and presentation, fielding all calls and requests to show the property, supplying a lock-box so that potential buyers can see the house with their agents, running open houses to show the house to potential buyers, negotiating with buyers or their agents on offers,

¹ E.g., PAUL C. BISHOP, THOMAS BEERS AND SHONDA D. HIGHTOWER, THE 2005 NATIONAL ASSOCIATION OF REALTORS PROFILE OF HOME BUYERS AND SELLERS (hereinafter, “NAR Study”) at 3-3, 3-4.

² *Id.* See *Home Buyer & Seller Survey Shows Rising Use of Internet, Reliance on Agents* (Jan. 17, 2006), available at <http://www.realtor.org/PublicAffairsWeb.nsf/Pages/HmBuyerSellerSurvey06?OpenDocument>.

³ NAR Study at 3-19.

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assisting with home inspections and other arrangements once a contract for sale is executed, and attending the closing of the transaction.

The other broker involved in a typical transaction is commonly known as the selling broker. In a typical transaction, a prospective buyer will seek out a selling broker to identify properties that may be available. This selling broker will discuss the properties that may be of interest to the buyer, accompany the buyer to see various properties, try to arrange a transaction between buyer and seller, assist the buyer in negotiating the contract, and help in further steps necessary to close the transaction. In a traditional transaction, the listing broker offers the selling broker a fixed commission, to be paid from the listing broker's commission when and if the property is sold. Real estate brokers typically do not specialize as only listing brokers or selling brokers, but often function in either role depending on the particular transaction.

B. Types of Real Estate Listings

The relationship between the listing broker and the seller of the property is established by agreement. The two most common types of agreements governing listings are Exclusive Right to Sell Listings and Exclusive Agency Listings. An Exclusive Right to Sell Listing is the traditional listing agreement, under which the property owner appoints a real estate broker as his or her exclusive agent for a designated period of time, to sell the property on the owner's stated terms, and agrees to pay the listing broker a commission if and when the property is sold, whether the buyer of the property is secured by the listing broker, the owner or another broker.

An Exclusive Agency Listing is a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but under which the property owner or principal reserves a right to sell the property

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without assistance of the listing broker, in which case the listing broker is paid a reduced or no commission when the property is sold.

Some real estate brokers have attempted to offer services to home sellers on something other than the traditional full-service basis. Many of these brokers, often for a flat fee, will offer sellers access to the MLS's information-sharing function, as well as a promise that the listing will appear on the most popular real estate web sites. Under such arrangements, the listing broker does not offer additional real estate brokerage services as part of the flat fee package, but allows sellers to purchase additional services if sellers so desire. These non-traditional arrangements often are structured using Exclusive Agency Listing contracts.

There is a third type of real estate listing that does not involve a real estate broker, which is a "For Sale By Owner" or "FSBO" listing. With a FSBO listing, a home owner will attempt to sell a house without the involvement of any real estate broker and without paying any compensation to such a broker, by advertising the availability of the home through traditional advertising mechanisms (such as a newspaper) or FSBO-specific web sites.

There are two critical distinctions between an Exclusive Agency Listing and a FSBO for the purpose of this analysis. First, the Exclusive Agency Listing employs a listing broker for access to the MLS and web sites open to the public; a FSBO listing does not. Second, an Exclusive Agency Listing sets terms of compensation to be paid to a selling broker, while a FSBO listing often does not.

III. The Conduct Addressed by the Proposed Consent Orders

Each of the proposed consent orders is accompanied by a complaint setting forth the conduct by the respondent that is the reason for the proposed consent order. In general, the conduct at issue in these matters is largely the same as the conduct addressed

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by the Commission in its recent consent order involving the Austin Board of Realtors (“ABOR”).⁴

The complaints accompanying the proposed consent orders allege that respondents have violated Section 5 of the FTC Act by adopting rules or policies that limit the publication and marketing on the internet of certain sellers’ properties, but not others, based solely on the terms of their respective listing contracts. The rules or policies challenged in the complaints state that information about properties will not be made available on popular real estate web sites unless the listing contracts are Exclusive Right to Sell Listings. When implemented, these “Web Site Policies” prevented properties with non-traditional listing contracts from being displayed on a broad range of public web sites.

The respondents adopted the challenged rules or policies at various times between 2001 and 2005. Each respondent, prior to the Commission’s acceptance of the consent orders and proposed complaints for public comment, rescinded or modified its rules to discontinue the challenged practices. The members of each respective MLS affected by these rules have been notified of the recent changes.

The complaints allege that the respondents violated Section 5 of the FTC Act by unlawfully restraining competition among real estate brokers in their respective service areas by adopting the Web Site Policies.

⁴ *In the Matter of Austin Bd. of Realtors*, Docket No. C-4167 (Final Approval, Aug. 29, 2006). The ABOR consent order was published with an accompanying Analysis To Aid Public Comment at 71 Fed. Reg. 41023 (July 19, 2006).

Analysis to Aid Public Comment

A. The Respondents Have Market Power

Each of the respondents serves the great majority of the residential real estate brokers in its respective service area. These professionals compete with one another to provide residential real estate brokerage services to consumers.

Each of the respondents also is the sole or dominant MLS serving its respective service area. Membership in each of the respondents' MLS systems is necessary for a broker to provide effective residential real estate brokerage services to sellers and buyers of real property in the respective service area.⁵ Each respondent, through the MLS that it operates, controls key inputs needed for a listing broker to provide effective real estate brokerage services, including: (1) a means to publicize to all brokers the residential real estate listings in the service area; and (2) a means to distribute listing information to web sites for the general public. By virtue of industry-wide participation and control over a key input, each of the respondents has market power in the provision of residential real estate brokerage services to sellers and buyers of real property in its respective service area.

B. Respondents' Conduct

At various times between 2001 and 2005, each of the respondents adopted a rule that prevented information on listings other than traditional Exclusive Right to Sell Listings from being included in the information available from its respective MLS to be used and published by publicly-accessible web sites.⁶ The

⁵ As noted, the MLS provides valuable services for a broker assisting a seller as a listing broker, by offering a means of publicizing the property to other brokers and the public. For a broker assisting a buyer, it also offers unique and valuable services, including detailed information that is not shown on public web sites, which can help with house showings and otherwise facilitate home selections.

⁶ For example, MCAR's rule stated: "Listing information downloaded and/or otherwise displayed pursuant to IDX shall be limited to properties listed

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effect of these rules, when implemented, was to prevent such information from being available to be displayed on a broad range of web sites, including the NAR-operated “Realtor.com” web site; the web sites operated by several of the respondents; and member web sites.

Non-traditional forms of listing contracts, including Exclusive Agency Listings, are often used by listing brokers to offer lower-cost real estate services to consumers. The Web Site Policies of each of the respondents were joint action by a group of competitors to withhold distribution of listing information to publicly accessible web sites from competitors who did not contract with their brokerage service customers in a way that the group wished. This conduct was a new variation of a type of conduct that the Commission condemned 20 years ago. In the 1980s and 1990s, several local MLS boards banned Exclusive Agency Listings from the MLS entirely. The Commission investigated and issued complaints against these exclusionary practices, obtaining several consent orders.⁷

on an exclusive right to sell basis. (Office exclusive and exclusive agency listings will not be forwarded to IDX sites.)” (MCAR Rules and Regulations (2004)). The NNEREN rule used somewhat different wording: “Exclusive Agency listings will not be included in NNEREN datafeeds to any web site accessed by the general public such as nneren.com, REALTOR.com, third party feeds, IDX, etc.” (NNEREN Rules and Regulations (Feb. 2005)).

⁷ See, e.g., *In the Matter of Port Washington Real Estate Bd., Inc.*, 120 F.T.C. 882 (1995); *In the Matter of United Real Estate Brokers of Rockland, Ltd.*, 116 F.T.C. 972 (1993); *In the Matter of Am. Indus. Real Estate Assoc.*, 116 F.T.C. 704 (1993); *In the Matter of Puget Sound Multiple Listing Assoc.*, 113 F.T.C. 733 (1990); *In the Matter of Bellingham-Whatcom County Multiple Listing Bureau*, 113 F.T.C. 724 (1990); *In the Matter of Metro MLS, Inc.*, 113 F.T.C. 305 (1990); *In the Matter of Multiple Listing Serv. of the Greater Michigan City Area, Inc.*, 106 F.T.C. 95 (1985); *In the Matter of Orange County Bd. of Realtors, Inc.*, 106 F.T.C. 88 (1985).

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C. Competitive Effects of the Web Site Policies

The Web Site Policies have the effect of discouraging members of the respective respondents' MLS systems from offering or accepting Exclusive Agency Listings. Thus, the Web Site Policies substantially impede the provision of unbundled brokerage services, and make it more difficult for home sellers to market their homes. The Web Site Policies have caused some home sellers to switch away from Exclusive Agency Listings to other forms of listing agreements.⁸

When home sellers switch to full service listing agreements from Exclusive Agency Listings that often offer lower-cost real estate services to consumers, the sellers may purchase services that they would not otherwise buy. This, in turn, may increase the commission costs to consumers of real estate brokerage services. By preventing Exclusive Agency Listings from being transmitted to public-access real estate web sites, the Web Site Policies have adverse effects on home sellers and home buyers. In particular, the Web Site Policies deny home sellers choices for marketing their homes and deny home buyers the chance to use the internet to easily see all of the houses listed by real estate brokers in the area, making their search less efficient.

D. There is No Competitive Efficiency Associated with the Web Site Policies

The respondents' rules at issue here advance no legitimate procompetitive purpose. If, as a theoretical matter, buyers and sellers could avail themselves of an MLS system and carry out real estate transactions without compensating any of its broker

⁸ WAAR does not appear to have implemented the Web Site Policies, as Exclusive Agency Listings have been included in IDX feeds before, during and after its policy was in effect. However, its adoption and publication of the policy alone has inhibited the use of such listings in the Williamsburg area by at least one local real estate broker, who chose not to use Exclusive Agency Listings because he did not wish to violate the local rule.

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members, an MLS might be concerned that those buyers and sellers were free-riding on the investment that brokers have made in the MLS and adopt rules to address that free-riding. But this theoretical concern does not justify the rules or policies adopted by the various respondents here. Exclusive Agency Listings do not enable home buyers or sellers to bypass the use of the brokerage services that the MLS was created to promote, because a listing broker is always involved in an Exclusive Agency Listing, and the MLS rules of each of the respondents already provide protections to ensure that a selling broker – a broker who finds a buyer for the property – is compensated for the brokerage service he or she provides.

It is possible, of course, that a buyer of an Exclusive Agency Listing may make the purchase without using a selling broker, but this is true for traditional Exclusive Right to Sell Listings as well. Under the existing MLS rules of each of the respondents that apply to any form of the listing agreement, the listing broker must ensure that the home seller pays compensation to the cooperating selling broker (if there is one), and the listing broker may be liable himself for a lost commission if the home seller fails to pay a selling broker who was the procuring cause of a completed property sale. The possibility of sellers or buyers using the MLS but bypassing brokerage services is already addressed effectively by the respondents' existing rules that do not distinguish between forms of listing contracts, and does not justify the Web Site Policies.

IV. The Proposed Consent Orders

Despite the recent cessation by each of the respondents of the challenged practices, it is appropriate for the Commission to require the prospective relief in the proposed consent orders. Such relief ensures that the respondents cannot revert to the old rules or policies, or engage in future variations of the challenged conduct. The conduct at issue in the current cases is itself a variation of practices that have been the subject of past

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Commission orders; as noted above, in the 1980s and 1990s, the Commission condemned the practices of several local MLS boards that had banned Exclusive Agency Listings entirely, and several consent orders were imposed.

The proposed orders are designed to ensure that each MLS does not misuse its market power, while preserving the procompetitive incentives of members to contribute to the MLS systems operated by the respondents. The proposed orders prohibit respondents from adopting or enforcing any rules or policies that deny or limit the ability of their respective MLS participants to enter into Exclusive Agency Listings, or any other lawful listing agreements, with sellers of properties. The proposed orders include examples of such practices, but the conduct they enjoin is not limited to those five enumerated examples. In addition, the proposed orders state that, within thirty days after each order becomes final, each respondent shall have conformed its rules to the substantive provisions of the order. Each respondent is further required to notify its participants of the applicable order through its usual business communications and its website. The proposed orders require notification to the Commission of changes in the respondent entities' structures, and periodic filings of written reports concerning compliance with the terms of the orders.

The proposed orders apply to each of the named respondents and entities it owns or controls, including its respective MLS and any affiliated web site it operates. The orders do not prohibit participants in the respondents' MLS systems, or other independent persons or entities that receive listing information from a respondent, from making independent decisions concerning the use or display of such listing information on participant or third-party web sites, consistent with any contractual obligations to respondent(s).

The proposed orders will expire in 10 years.

Complaint

IN THE MATTER OF

**WILLIAMSBURG AREA ASSOCIATION OF
REALTORS, INC.**CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS OF
SEC. 5 OF THE FEDERAL TRADE COMMISSION ACT*Docket C-4177; File No. 061 0268**Complaint, November 22, 2006 – Decision, November 22, 2006*

This consent order addresses charges that the Williamsburg Area Association of Realtors, Inc., which operates a real estate multiple listing service, adopted a rule that limits the publication of certain listing agreements on popular real estate websites, in a manner that limits the ability of real estate brokers to use Exclusive Agency Listings to offer unbundled brokerage services at a lower price than the full-service package. Specifically, information about properties would not be made available on the websites unless the listing contracts were Exclusive Right to Sell Listings. The order prohibits the respondent from adopting or enforcing any rules or policies that deny or limit the ability of its multiple listing service participants to enter into Exclusive Agency Listings, or any other lawful listing agreements, with sellers of properties. In addition, the order requires the respondent to conform its rules to the substantive provisions of the order within 30 days and to notify its participants of the order through its usual business communications and its website. The respondent is also required to notify the Commission of changes in its structure and to file periodic written reports concerning compliance with the terms of the order.

Participants

For the *Commission*: *Peggy Bayer Femenella, Joel Christie, Alan Loughnan, Jonathan Platt, Jan Tran, and Theodore Zang.*

For the *Respondent*: *Sheldon Franck, Geddy, Harris, Franck & Hickman, LLP.*

Complaint

COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act, and by virtue of the authority vested in it by said Act, the Federal Trade Commission, having reason to believe that the Williamsburg Area Association of Realtors, Inc. (“Respondent” or “WAAR”), a corporation, has violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues this complaint stating its charges as follows:

NATURE OF THE CASE

This case involves a local, private real estate association that operates a Multiple Listing Service designed to foster real estate brokerage services. WAAR had adopted a rule that limits the publication of certain listing agreements on popular internet real estate websites, in a manner that limits the ability of real estate brokers to use Exclusive Agency Listings to offer unbundled brokerage services at a lower price compared to the full service package. This rule deprives such brokers and the home sellers they represent of a significant benefit afforded by the MLS. The rule discriminates on the basis of lawful contractual terms between the listing real estate broker and the seller of the property, and lacks any justification that such a rule improves competitive efficiency. Consumers will be harmed by this rule because it inhibits a lower cost option to sellers and increases search costs to buyers. As such, this rule constitutes a concerted refusal to deal except on specified terms with respect to a key input for the provision of real estate services.

RESPONDENT AND ITS PARTICIPANTS

1. Respondent Williamsburg Area Association of Realtors, Inc., (“WAAR”) is a corporation organized, existing and doing business under and by virtue of the laws of the Commonwealth of Virginia. Respondent’s principal place of business is 5000 New

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Point Road, Suite 1101, Williamsburg, Virginia 23188-9418. WAAR operates for the benefit of its members.

2. WAAR has more than 650 real estate professionals as members, and is affiliated with the National Association of Realtors (“NAR”). The majority of WAAR’s members hold an active real estate license and are active in the real estate profession.

3. The large majority of residential real estate brokerage professionals in the Williamsburg Area are members of WAAR. These professionals compete with one another to provide residential real estate brokerage services to consumers.

4. A Multiple Listing Service (“MLS”) is a clearinghouse through which participating real estate brokerage firms regularly and systematically exchange information on listings of real estate properties and share commissions with other participants who locate purchasers. WAAR is now and has been providing since 1978 a MLS for the use of its members doing business in the Williamsburg Area, and this service is known as the Williamsburg Multiple Listing Service (“WMLS”). WMLS is a corporation organized, existing and doing business under and by virtue of the laws of the Commonwealth of Virginia. WAAR owns all the stock of WMLS and controls its operations.

5. When a property is listed on the WMLS, it is made available to all participants of the MLS for the purpose of trying to match a buyer with a seller. Information about the property, including the asking price, address and property details, is made available to participants of the MLS so that a suitable buyer can be found.

6. WMLS services the Williamsburg Area, which includes the Williamsburg metropolitan area and surrounding counties.

Complaint

7. WMLS is the only MLS that services the Williamsburg Area.

JURISDICTION

8. WAAR is and has been at all times relevant to this complaint a corporation organized for its own profit or for the profit of its members within the meaning of Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

9. The acts and practices of WAAR, including the acts and practices alleged herein, have been or are in or affecting commerce within the meaning of Section 4 of the Federal Trade Commission Act.

WAAR CONDUCT

10. In 2002, WAAR adopted and approved a rule that stated: "Listing information downloaded and/or otherwise displayed pursuant to IDX shall be limited to properties listed on an exclusive right to sell basis" (the "Web Site Policy"). The Web Site Policy was amended by the WMLS Board of Directors in June 2006 to provide that properties listed on an exclusive agency basis are now eligible to be included in IDX listing information. WMLS participants were notified of the rule change on June 23, 2006.

11. If the Web Site Policy had been enforced prior to its amendment, it would have prevented certain lawful residential property listings provided to WMLS, including "Exclusive Agency Listings," from being transmitted to real estate Web Sites, based on the contractual relationship between the home seller and the real estate agent the seller employs to promote the property.

12. An Exclusive Agency Listing is a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but reserves to the property owner or principal a right to sell the property without

Complaint

assistance of a broker, in which case the listing broker is paid a reduced or no commission when the property is sold.

13. Exclusive Agency Listings provide a means for WAAR members and WMLS participants to offer lower-cost, Unbundled Real Estate Services to consumers. “Unbundled Real Estate Brokerage Services” are lawful arrangements pursuant to which a real estate broker or agent provides that a property offered for sale shall be listed on the MLS, but the listing broker or agent will not provide some or all of the services offered by other real estate brokers or will only offer such additional services on an _ la carte basis.

14. Brokers offering Unbundled Real Estate Brokerage Services are able to provide home sellers with exposure of their listing through the MLS for a flat fee that is very small compared to the commission prices traditionally charged. Exclusive Agency Listings often reserve to the home seller the right to sell the property without owing more to the listing broker.

15. The Web Site Policy did not permit the publication of Exclusive Agency Listings on Web Sites approved by WAAR, including (1) the NAR-operated “Realtor.com” Web Site; (2) the WAAR-owned “waarealtor.com” Web Site; and (3) WMLS participant Web Sites (collectively, “Approved Web Sites”).

16. Adoption and publication of the Web Site Policy alone had the effect of discouraging WMLS participants from accepting Exclusive Agency Listings.

WAAR MARKET POWER

17. The provision of residential real estate brokerage services to sellers and buyers of real property in the Williamsburg Area is a relevant product market.

Complaint

18. The publication and sharing of information relating to residential real estate listings for the purpose of brokering residential real estate transactions is a key input to the provision of real estate brokerage services, and represents a relevant input market. Publication of listings through WMLS is generally considered by sellers, buyers and their brokers to be the fastest and most effective means of obtaining the broadest market exposure for property in the Williamsburg Area.

19. By virtue of industry-wide participation and control over a key input, WAAR has market power in the Williamsburg Area.

20. Participation in WMLS is necessary to a broker providing effective residential real estate brokerage services to sellers and buyers of real property in the Williamsburg Area. Participation significantly increases the opportunities of brokerage firms to enter into listing agreements with residential property owners, and significantly reduces the costs of obtaining up-to-date and comprehensive information on listings and sales. The realization of these opportunities and efficiencies is important for brokers to compete effectively in the provision of residential real estate brokerage services in the Williamsburg Area.

APPROVED WEB SITES ARE KEY INPUTS

21. Access to the Approved Web Sites is a key input in the brokerage of residential real estate sales in the Williamsburg Area. Home buyers regularly use the Approved Web Sites to assist in their search for homes. The Approved Web Sites are the Web Sites most commonly used by home buyers in their home search. Many home buyers find the home that they ultimately purchase by searching on Approved Web Sites.

22. The most efficient, and at least in some cases the only, means for WMLS participants to have their properties listed on the Approved Web Sites is by having WMLS transmit those listings.

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23. Property owners and their brokers in the Williamsburg Area generally consider publication of listings on Approved Web Sites, in conjunction with publication of listings on the broker-to-broker WMLS, to be the most effective means of obtaining the broadest market exposure for residential property in the Williamsburg Area.

EFFECTS OF WEB SITE POLICY

24. Adoption and publication of the Web Site Policy restricted competition by inhibiting the use of Exclusive Agency Listings in the Williamsburg Area.

25. Adoption and publication of the Web Site Policy reduced consumer choices regarding both the purchase and sale of homes and induced consumers to pay for real estate brokerage services that they would not otherwise have purchased.

**THE WEB SITE POLICY OFFERS NO EFFICIENCY
BENEFIT**

26. There is no cognizable and plausible efficiency justification for the Web Site Policy. The Web Site Policy is not reasonably ancillary to the legitimate and beneficial objectives of the MLS.

VIOLATION

27. In adopting the policies and engaging in the Acts and Practices described herein, WAAR has acted as a combination of its members to restrain trade in the provision of residential real estate brokerage services within the Williamsburg Area.

28. The purposes, capacities, tendencies, or effects of the policies, acts, or practices of WAAR and its members as described herein have been unreasonably to restrain competition among brokers, and to injure consumers.

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29. The policies, acts, practices, and combinations or conspiracies described herein constitute unfair methods of competition in or affecting interstate commerce in violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this twenty-second day of November, 2006, issues its Complaint against Respondent Williamsburg Area Association of Realtors, Inc.

By the Commission.

DECISION AND ORDER

The Federal Trade Commission (“Commission”) having initiated an investigation of certain acts and practices of the Williamsburg Area Association of Realtors, Inc., hereinafter sometimes referred to as “Respondent” or “WAAR,” and Respondent having been furnished thereafter with a copy of the draft Complaint that the Bureau of Competition presented to the Commission for its consideration and which, if issued by the Commission, would charge Respondent with violations of Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondent, its attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Order (“Consent Agreement”), containing an admission by Respondent of all the jurisdictional facts set forth in the aforesaid draft Complaint, a statement that the signing of the Consent Agreement is for settlement purposes only and does not constitute an admission by Respondent that the law has been violated as

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alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission's Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondent has violated the said Act, and that a Complaint should issue stating its charges in that respect, and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34 (2004), the Commission hereby makes the following jurisdictional findings and issues the following Order:

1. Respondent Williamsburg Area Association of Realtors, Inc. is a corporation organized, existing and doing business under and by virtue of the laws of the State of Virginia, with its office and principal place of business at 5000 New Point Road, Suite 1101, Williamsburg, Virginia 23188-9418.

2. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the Respondent, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that for the purposes of this Order, the following definitions shall apply:

- A. "Respondent" or "WAAR" means Williamsburg Area Association of Realtors, Inc., its Board of Directors, officers, predecessors, divisions and wholly or partially owned subsidiaries, affiliates, and licensees of affiliates; and all the boards of directors, owners, managers,

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directors, officers, employees, consultants, agents, and representatives of the foregoing. The terms “subsidiary” and “affiliate” refer to any person in which there is partial or total ownership or control by WAAR, and are specifically meant to include WMLS and/or the WAAR Website (www.waarealtor.com).

- B. “Multiple Listing Service” or “MLS” means a cooperative venture by which real estate brokers serving a common market area submit their listings to a central service which, in turn, distributes the information for the purpose of fostering cooperation in and facilitating real estate transactions.
- C. The term “WMLS” means the Williamsburg Multiple Listing Service, Inc. or any other MLS owned, operated or controlled, in whole or in part, directly or indirectly, by WAAR, and any of its predecessors, divisions and wholly or partially owned subsidiaries, affiliates, and licensees of the affiliates, and all the directors, officers, employees, consultants, agents, and representatives of the foregoing.
- D. “WMLS Participant” means any person authorized by WAAR to access, use or enjoy the benefits of the WMLS in accordance with WAAR’s bylaws, policies, rules and regulations.
- E. “IDX” means the internet data exchange process that provides a means or mechanism for MLS listings to be integrated within a Website, including but not limited to IDX as defined by WMLS.
- F. “IDX Website” means a Website that is capable of integrating the IDX listing information within the Website.
- G. “waarealtor.com” means the Website operated by WAAR that allows the general public to search information concerning real estate listings from WAAR.

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- H. “Realtor.com” means the Website operated by the National Association of Realtors that allows the general public to search information concerning real estate listings downloaded from a variety of MLSs representing different geographic areas of the country, including but not limited to real estate listings from WAAR.
- I. “Approved Website” means a Website to which WAAR or WMLS provides information concerning listings for publication, including but not limited to WMLS Participant IDX Websites, waarealtor.com, and Realtor.com.
- J. “Exclusive Right to Sell Listing” means a listing agreement under which the property owner or principal appoints a real estate broker as his or her exclusive agent for a designated period of time, to sell the property on the owner’s stated terms, and agrees to pay the listing broker a commission when the property is sold, regardless of whether the buyer is found by the listing broker, the owner or another broker.
- K. “Exclusive Agency Listing” means a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but also reserves to the property owner or principal a right to sell the property without assistance from a broker, in which case the listing broker is paid a reduced commission or no commission when the property is sold.
- L. “Other Lawful Listing” means a listing agreement, other than an Exclusive Right to Sell Listing or an Exclusive Agency Listing, which is in compliance with applicable state laws and regulations.
- M. “Services of the MLS” means the benefits and services provided by the MLS to assist WMLS Participants in

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selling, leasing and valuing property and/or brokering real estate transactions. With respect to real estate brokers or agents representing home sellers, Services of the MLS shall include, but are not limited to:

1. having the property included among the listings in the MLS in a manner so that information concerning the listing is easily accessible by cooperating brokers; and
2. having the property publicized through means available to the MLS, including, but not limited to, information concerning the listing being made available on waarealtor.com, Realtor.com and IDX Websites.

II.

IT IS FURTHER ORDERED that Respondent WAAR, its successors and assigns, and its Board of Directors, officers, committees, agents, representatives, and employees, directly or indirectly, or through any corporation, subsidiary, division, or other device, in connection with the operation of a Multiple Listing Service or Approved Websites in or affecting commerce, as “commerce” is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44, shall forthwith cease and desist from adopting or enforcing any policy, rule, practice or agreement to deny, restrict or interfere with the ability of WMLS Participants to enter into Exclusive Agency Listings or other lawful listing agreements with the sellers of properties, including but not limited to any policy, rule, practice or agreement to:

1. prevent WMLS Participants from offering or accepting Exclusive Agency Listings;
2. prevent WMLS Participants from cooperating with listing brokers or agents that offer or accept Exclusive Agency Listings;

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3. prevent WMLS Participants from publishing information concerning listings offered pursuant to Exclusive Agency Listings on Approved Websites;
4. deny or restrict the Services of the MLS to Exclusive Agency Listings or other lawful listings in any way that such Services of the MLS are not denied or restricted to Exclusive Right to Sell Listings; and
5. treat Exclusive Agency Listings, or any other lawful listings, in a less advantageous manner than Exclusive Right to Sell Listings, including but not limited to, any policy, rule or practice pertaining to the transmission, downloading, or displaying of information pertaining to such listings.

Provided, however, that nothing herein shall prohibit the Respondent from adopting or enforcing any policy, rule, practice or agreement regarding subscription or participation requirements, payment of dues, administrative matters, or any other policy, rule, practice or agreement, that it can show is reasonably ancillary to the legitimate and beneficial objectives of the MLS.

III.

IT IS FURTHER ORDERED that, no later than thirty (30) days after the date this Order becomes final, Respondent shall have amended its rules and regulations to conform to the provisions of this Order.

IV.

IT IS FURTHER ORDERED that, within ninety (90) days after the date this Order becomes final, Respondent shall (1) have informed each WMLS Participant of the amendments to its rules and regulations to conform to the provisions of this Order; and (2) provide each WMLS Participant with a copy of this Order.

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Respondent shall transmit the rule change and Order by the means it uses to communicate with its members in the ordinary course of WAAR's business, which shall include, but not be limited to: (A) sending one or more emails with one or more statements that there has been a change to the rule and an Order, along with a link to the amended rule and the Order, to each WMLS Participant; and (B) placing on the WMLS Breaking News page of the publicly accessible WAAR Website (www.waarealtor.com) a statement that there has been a change to the rule and an Order, along with a link to the amended rule and the Order. Respondent shall modify its Website as described above no later than five (5) business days after the date the Order becomes final, and shall display such modifications for no less than ninety (90) days from the date this Order becomes final. The Order shall remain accessible through common search terms and archives on the Website for five (5) years from the date it becomes final.

V.

IT IS FURTHER ORDERED that Respondent shall notify the Commission at least thirty (30) days prior to any proposed change in Respondent, such as dissolution, assignment or sale resulting in the emergence of a successor corporation or any other proposed changes in the corporation which may affect compliance obligations arising out of the Order.

VI.

IT IS FURTHER ORDERED that Respondent shall file a written report within six (6) months of the date this Order becomes final, and annually on the anniversary date of the original report for each of the five (5) years thereafter, and at such other times as the Commission may require by written notice to Respondent, setting forth in detail the manner and form in which it has complied with this Order.

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VII.

IT IS FURTHER ORDERED that this Order shall terminate ten (10) years from the date the Order is issued.

By the Commission.

**ANALYSIS OF CONSENT ORDERS TO AID PUBLIC
COMMENT**

The Federal Trade Commission has accepted for public comment a series of agreements containing consent orders with five respondent entities. Each of the proposed respondents operates a multiple listing service (“MLS”) that is designed to foster real estate brokerage services by sharing and publicizing information on properties for sale by customers of real estate brokers. The agreements settle charges that each respondent violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, through particular acts and practices of the MLS. The proposed consent orders have been placed on the public record for 30 days to receive comments from interested persons. Comments received during this period will become part of the public record. After 30 days, the Commission will review the agreements and the comments received, and will decide whether it should withdraw from the agreement or make the proposed order final.

The purpose of this analysis is to facilitate comment on the proposed consent orders. This analysis does not constitute an official interpretation of the agreements and proposed orders, and does not modify their terms in any way. Further, the proposed consent orders have been entered into for settlement purposes

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only, and do not constitute an admission by any proposed respondent that it violated the law or that the facts alleged in the respective complaint against each respondent (other than jurisdictional facts) are true.

I. The Respondents

The agreements are with the following organizations:

- Information and Real Estate Services, LLC (“IRES”) is a limited liability company based in Loveland, Colorado, that is owned by five boards and associations of realtors in Boulder, Fort Collins, Greeley, Longmont, and Loveland/Berthoud, Colorado. IRES operates a regional MLS for Northern Colorado that is used by more than 5,000 real estate professionals.
- Northern New England Real Estate Network, Inc. (“NNEREN”) is a corporation based in Concord, New Hampshire, that functions as an association of realtors. NNEREN operates an MLS for New Hampshire and some surrounding areas that is used by several thousand real estate professionals.
- Williamsburg Area Association of Realtors, Inc. (“WAAR”), is a corporation based in Williamsburg, Virginia, that functions as an association of realtors. WAAR operates an MLS for the Williamsburg, Virginia, metropolitan area and surrounding counties that is used by approximately 650 real estate professionals.
- Realtors Association of Northeast Wisconsin, Inc. (“RANW”) is a non-profit corporation based in Appleton, Wisconsin, that functions as an association of realtors. RANW operates an MLS for the Northeast Wisconsin Area, which includes the cities of Green Bay, Appleton, Oshkosh, and Fond du Lac, Wisconsin,

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and the surrounding counties, that is used by more than 1,500 real estate professionals.

- Monmouth County Association of Realtors, Inc. (“MCAR”) is a corporation based in Tinton Falls, New Jersey, that functions as an association of realtors. MCAR operates an MLS for Monmouth County, Ocean County and the surrounding areas of New Jersey that is used by several thousand real estate professionals.

II. Industry Background

A Multiple Listing Service, or “MLS,” is a cooperative venture by which real estate brokers serving a common local market area submit their listings to a central service, which in turn distributes the information, for the purpose of fostering cooperation among brokers and agents in real estate transactions. The MLS facilitates transactions by putting together a home seller, who contracts with a broker who is a member of the MLS, with prospective buyers, who may be working with other brokers who are also members of the MLS. Membership in the MLS is largely limited to member brokers who generally must possess a license to engage in real estate brokerage services and meet other criteria set by MLS rules.

Prior to the late 1990s, the listings on an MLS were typically directly accessible only to real estate brokers who were members of a local MLS. The MLS listings typically were made available through books or dedicated computer terminals, and generally could only be accessed by the general public by physically visiting a broker’s office or by receiving a fax or hand delivery of selected listings from a broker.

Information from an MLS is now typically available to the general public not only through the offices of real estate brokers who are MLS members, but also through three principal categories of internet web sites. First, information concerning

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many MLS listings is available through Realtor.com, a national web site run by the National Association of Realtors (“NAR”). Realtor.com contains listing information from many local MLS systems around the country and is the largest and most-used internet real estate web site. Second, information concerning MLS listings is often made available through a local MLS-affiliated web site. Third, information concerning MLS listings is often made available on the internet sites of various real estate brokers, who choose to provide these web sites as a way of promoting their brokerage services. Most of these various web sites receive information from an MLS pursuant to a procedure often known as Internet Data Exchange (“IDX”), which is typically governed by MLS policies. The IDX policies allow operators of approved web sites to display MLS active listing information to the public.

Today the internet plays a crucial role in real estate sales. According to a 2005 survey by the National Association of Realtors (“NAR”), 77 percent of home buyers used the internet to assist in their home search, with 57 percent reporting frequent internet searches. Twenty-four percent of respondents first learned about the home they selected from the internet, the second most common means behind learning about a home from a real estate agent (50 percent).¹ In all, 69 percent of home buyers found the internet to be a “very useful” source of information, and a total of 96 percent found the internet to be either “very useful” or “somewhat useful.”² Moreover, the NAR Survey makes clear that the overwhelming majority of web sites used nationally in

¹ *E.g.*, PAUL C. BISHOP, THOMAS BEERS AND SHONDA D. HIGHTOWER, THE 2005 NATIONAL ASSOCIATION OF REALTORS PROFILE OF HOME BUYERS AND SELLERS (hereinafter, “NAR Study”) at 3-3, 3-4.

² *Id.* See *Home Buyer & Seller Survey Shows Rising Use of Internet, Reliance on Agents* (Jan. 17, 2006), available at <http://www.realtor.org/PublicAffairsWeb.nsf/Pages/HmBuyerSellerSurvey06?OpenDocument>.

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searching for homes contain listing information that is provided by local MLS systems.³

A. Types of Real Estate Brokerage Professionals

A typical real estate transaction involves two real estate brokers. These are commonly known as a “listing broker” and a “selling broker.” The listing broker is hired by the seller of the property to locate an appropriate buyer. The seller and the listing broker agree upon compensation, which is determined by written agreement negotiated between the seller and the listing broker. In a common traditional listing agreement, the listing broker receives compensation in the form of a commission, which is typically a percentage of the sales price of the property, payable if and when the property is sold. In such a traditional listing agreement, the listing broker agrees to provide a package of real estate brokerage services, including promoting the listing through the MLS and on the internet, providing advice to the seller regarding pricing and presentation, fielding all calls and requests to show the property, supplying a lock-box so that potential buyers can see the house with their agents, running open houses to show the house to potential buyers, negotiating with buyers or their agents on offers, assisting with home inspections and other arrangements once a contract for sale is executed, and attending the closing of the transaction.

The other broker involved in a typical transaction is commonly known as the selling broker. In a typical transaction, a prospective buyer will seek out a selling broker to identify properties that may be available. This selling broker will discuss the properties that may be of interest to the buyer, accompany the buyer to see various properties, try to arrange a transaction between buyer and seller, assist the buyer in negotiating the contract, and help in further steps necessary to close the

³ NAR Study at 3-19.

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transaction. In a traditional transaction, the listing broker offers the selling broker a fixed commission, to be paid from the listing broker's commission when and if the property is sold. Real estate brokers typically do not specialize as only listing brokers or selling brokers, but often function in either role depending on the particular transaction.

B. Types of Real Estate Listings

The relationship between the listing broker and the seller of the property is established by agreement. The two most common types of agreements governing listings are Exclusive Right to Sell Listings and Exclusive Agency Listings. An Exclusive Right to Sell Listing is the traditional listing agreement, under which the property owner appoints a real estate broker as his or her exclusive agent for a designated period of time, to sell the property on the owner's stated terms, and agrees to pay the listing broker a commission if and when the property is sold, whether the buyer of the property is secured by the listing broker, the owner or another broker.

An Exclusive Agency Listing is a listing agreement under which the listing broker acts as an exclusive agent of the property owner or principal in the sale of a property, but under which the property owner or principal reserves a right to sell the property without assistance of the listing broker, in which case the listing broker is paid a reduced or no commission when the property is sold.

Some real estate brokers have attempted to offer services to home sellers on something other than the traditional full-service basis. Many of these brokers, often for a flat fee, will offer sellers access to the MLS's information-sharing function, as well as a promise that the listing will appear on the most popular real estate web sites. Under such arrangements, the listing broker does not offer additional real estate brokerage services as part of the flat fee package, but allows sellers to purchase additional services if

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sellers so desire. These non-traditional arrangements often are structured using Exclusive Agency Listing contracts.

There is a third type of real estate listing that does not involve a real estate broker, which is a “For Sale By Owner” or “FSBO” listing. With a FSBO listing, a home owner will attempt to sell a house without the involvement of any real estate broker and without paying any compensation to such a broker, by advertising the availability of the home through traditional advertising mechanisms (such as a newspaper) or FSBO-specific web sites.

There are two critical distinctions between an Exclusive Agency Listing and a FSBO for the purpose of this analysis. First, the Exclusive Agency Listing employs a listing broker for access to the MLS and web sites open to the public; a FSBO listing does not. Second, an Exclusive Agency Listing sets terms of compensation to be paid to a selling broker, while a FSBO listing often does not.

III. The Conduct Addressed by the Proposed Consent Orders

Each of the proposed consent orders is accompanied by a complaint setting forth the conduct by the respondent that is the reason for the proposed consent order. In general, the conduct at issue in these matters is largely the same as the conduct addressed by the Commission in its recent consent order involving the Austin Board of Realtors (“ABOR”).⁴

The complaints accompanying the proposed consent orders allege that respondents have violated Section 5 of the FTC Act by adopting rules or policies that limit the publication and marketing

⁴ *In the Matter of Austin Bd. of Realtors*, Docket No. C-4167 (Final Approval, Aug. 29, 2006). The ABOR consent order was published with an accompanying Analysis To Aid Public Comment at 71 Fed. Reg. 41023 (July 19, 2006).

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on the internet of certain sellers' properties, but not others, based solely on the terms of their respective listing contracts. The rules or policies challenged in the complaints state that information about properties will not be made available on popular real estate web sites unless the listing contracts are Exclusive Right to Sell Listings. When implemented, these "Web Site Policies" prevented properties with non-traditional listing contracts from being displayed on a broad range of public web sites.

The respondents adopted the challenged rules or policies at various times between 2001 and 2005. Each respondent, prior to the Commission's acceptance of the consent orders and proposed complaints for public comment, rescinded or modified its rules to discontinue the challenged practices. The members of each respective MLS affected by these rules have been notified of the recent changes.

The complaints allege that the respondents violated Section 5 of the FTC Act by unlawfully restraining competition among real estate brokers in their respective service areas by adopting the Web Site Policies.

A. The Respondents Have Market Power

Each of the respondents serves the great majority of the residential real estate brokers in its respective service area. These professionals compete with one another to provide residential real estate brokerage services to consumers.

Each of the respondents also is the sole or dominant MLS serving its respective service area. Membership in each of the respondents' MLS systems is necessary for a broker to provide effective residential real estate brokerage services to sellers and buyers of real property in the respective service area.⁵ Each

⁵ As noted, the MLS provides valuable services for a broker assisting a seller as a listing broker, by offering a means of publicizing the property to other brokers and the public. For a broker assisting a buyer, it also offers

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respondent, through the MLS that it operates, controls key inputs needed for a listing broker to provide effective real estate brokerage services, including: (1) a means to publicize to all brokers the residential real estate listings in the service area; and (2) a means to distribute listing information to web sites for the general public. By virtue of industry-wide participation and control over a key input, each of the respondents has market power in the provision of residential real estate brokerage services to sellers and buyers of real property in its respective service area.

B. Respondents' Conduct

At various times between 2001 and 2005, each of the respondents adopted a rule that prevented information on listings other than traditional Exclusive Right to Sell Listings from being included in the information available from its respective MLS to be used and published by publicly-accessible web sites.⁶ The effect of these rules, when implemented, was to prevent such information from being available to be displayed on a broad range of web sites, including the NAR-operated "Realtor.com" web site; the web sites operated by several of the respondents; and member web sites.

Non-traditional forms of listing contracts, including Exclusive Agency Listings, are often used by listing brokers to offer lower-

unique and valuable services, including detailed information that is not shown on public web sites, which can help with house showings and otherwise facilitate home selections.

⁶ For example, MCAR's rule stated: "Listing information downloaded and/or otherwise displayed pursuant to IDX shall be limited to properties listed on an exclusive right to sell basis. (Office exclusive and exclusive agency listings will not be forwarded to IDX sites.)" (MCAR Rules and Regulations (2004)). The NNEREN rule used somewhat different wording: "Exclusive Agency listings will not be included in NNEREN datafeeds to any web site accessed by the general public such as nneren.com, REALTOR.com, third party feeds, IDX, etc." (NNEREN Rules and Regulations (Feb. 2005)).

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cost real estate services to consumers. The Web Site Policies of each of the respondents were joint action by a group of competitors to withhold distribution of listing information to publicly accessible web sites from competitors who did not contract with their brokerage service customers in a way that the group wished. This conduct was a new variation of a type of conduct that the Commission condemned 20 years ago. In the 1980s and 1990s, several local MLS boards banned Exclusive Agency Listings from the MLS entirely. The Commission investigated and issued complaints against these exclusionary practices, obtaining several consent orders.⁷

C. Competitive Effects of the Web Site Policies

The Web Site Policies have the effect of discouraging members of the respective respondents' MLS systems from offering or accepting Exclusive Agency Listings. Thus, the Web Site Policies substantially impede the provision of unbundled brokerage services, and make it more difficult for home sellers to market their homes. The Web Site Policies have caused some home sellers to switch away from Exclusive Agency Listings to other forms of listing agreements.⁸

⁷ See, e.g., *In the Matter of Port Washington Real Estate Bd., Inc.*, 120 F.T.C. 882 (1995); *In the Matter of United Real Estate Brokers of Rockland, Ltd.*, 116 F.T.C. 972 (1993); *In the Matter of Am. Indus. Real Estate Assoc.*, 116 F.T.C. 704 (1993); *In the Matter of Puget Sound Multiple Listing Assoc.*, 113 F.T.C. 733 (1990); *In the Matter of Bellingham-Whatcom County Multiple Listing Bureau*, 113 F.T.C. 724 (1990); *In the Matter of Metro MLS, Inc.*, 113 F.T.C. 305 (1990); *In the Matter of Multiple Listing Serv. of the Greater Michigan City Area, Inc.*, 106 F.T.C. 95 (1985); *In the Matter of Orange County Bd. of Realtors, Inc.*, 106 F.T.C. 88 (1985).

⁸ WAAR does not appear to have implemented the Web Site Policies, as Exclusive Agency Listings have been included in IDX feeds before, during and after its policy was in effect. However, its adoption and publication of the policy alone has inhibited the use of such listings in the Williamsburg area by at least one local real estate broker, who chose not to use Exclusive Agency Listings because he did not wish to violate the local rule.

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When home sellers switch to full service listing agreements from Exclusive Agency Listings that often offer lower-cost real estate services to consumers, the sellers may purchase services that they would not otherwise buy. This, in turn, may increase the commission costs to consumers of real estate brokerage services. By preventing Exclusive Agency Listings from being transmitted to public-access real estate web sites, the Web Site Policies have adverse effects on home sellers and home buyers. In particular, the Web Site Policies deny home sellers choices for marketing their homes and deny home buyers the chance to use the internet to easily see all of the houses listed by real estate brokers in the area, making their search less efficient.

D. There is No Competitive Efficiency Associated with the Web Site Policies

The respondents' rules at issue here advance no legitimate procompetitive purpose. If, as a theoretical matter, buyers and sellers could avail themselves of an MLS system and carry out real estate transactions without compensating any of its broker members, an MLS might be concerned that those buyers and sellers were free-riding on the investment that brokers have made in the MLS and adopt rules to address that free-riding. But this theoretical concern does not justify the rules or policies adopted by the various respondents here. Exclusive Agency Listings do not enable home buyers or sellers to bypass the use of the brokerage services that the MLS was created to promote, because a listing broker is always involved in an Exclusive Agency Listing, and the MLS rules of each of the respondents already provide protections to ensure that a selling broker – a broker who finds a buyer for the property – is compensated for the brokerage service he or she provides.

It is possible, of course, that a buyer of an Exclusive Agency Listing may make the purchase without using a selling broker, but this is true for traditional Exclusive Right to Sell Listings as well. Under the existing MLS rules of each of the respondents that

Analysis to Aid Public Comment

apply to any form of the listing agreement, the listing broker must ensure that the home seller pays compensation to the cooperating selling broker (if there is one), and the listing broker may be liable himself for a lost commission if the home seller fails to pay a selling broker who was the procuring cause of a completed property sale. The possibility of sellers or buyers using the MLS but bypassing brokerage services is already addressed effectively by the respondents' existing rules that do not distinguish between forms of listing contracts, and does not justify the Web Site Policies.

IV. The Proposed Consent Orders

Despite the recent cessation by each of the respondents of the challenged practices, it is appropriate for the Commission to require the prospective relief in the proposed consent orders. Such relief ensures that the respondents cannot revert to the old rules or policies, or engage in future variations of the challenged conduct. The conduct at issue in the current cases is itself a variation of practices that have been the subject of past Commission orders; as noted above, in the 1980s and 1990s, the Commission condemned the practices of several local MLS boards that had banned Exclusive Agency Listings entirely, and several consent orders were imposed.

The proposed orders are designed to ensure that each MLS does not misuse its market power, while preserving the procompetitive incentives of members to contribute to the MLS systems operated by the respondents. The proposed orders prohibit respondents from adopting or enforcing any rules or policies that deny or limit the ability of their respective MLS participants to enter into Exclusive Agency Listings, or any other lawful listing agreements, with sellers of properties. The proposed orders include examples of such practices, but the conduct they enjoin is not limited to those five enumerated examples. In addition, the proposed orders state that, within thirty days after each order becomes final, each respondent shall have conformed its rules to the substantive provisions of the order.

Analysis to Aid Public Comment

Each respondent is further required to notify its participants of the applicable order through its usual business communications and its website. The proposed orders require notification to the Commission of changes in the respondent entities' structures, and periodic filings of written reports concerning compliance with the terms of the orders.

The proposed orders apply to each of the named respondents and entities it owns or controls, including its respective MLS and any affiliated web site it operates. The orders do not prohibit participants in the respondents' MLS systems, or other independent persons or entities that receive listing information from a respondent, from making independent decisions concerning the use or display of such listing information on participant or third-party web sites, consistent with any contractual obligations to respondent(s).

The proposed orders will expire in 10 years.

Complaint

IN THE MATTER OF

THERMO ELECTRON CORPORATIONCONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS
OF SEC. 7 OF THE CLAYTON ACT AND SEC. 5 OF THE FEDERAL
TRADE COMMISSION ACT*Docket C-4170, File No. 061 0187**Complaint, October 17, 2006 – Decision, November 30, 2006*

This consent order addresses the acquisition of Fisher Scientific International, Inc., by respondent Thermo Electron Corporation. Both companies supply analytical laboratory equipment and are the only two significant suppliers in the U.S. market for high-performance centrifugal vacuum evaporators. Under the terms of the order, Thermo is required to divest Fisher's centrifugal vacuum evaporator business (Genevac) to a Commission-approved buyer. Should Thermo fail to accomplish the divestiture within the time and in the manner required, the Commission may appoint a trustee to divest the assets. The order requires Thermo, at the acquirer's option, to enter into a distribution agreement with the acquirer so that Genevac's products can continue to be sold through the Fisher catalog. The order also requires Thermo to implement and fund a retention plan for key Genevac employees and prohibits Thermo from soliciting Genevac employees for at least a year after the divestiture. In addition, Thermo is required to file periodic reports with the Commission until the divestiture is accomplished.

Participants

For the *Commission*: *Roberta S. Baruch, Richard H. Cunningham, and David L. Inglefield.*

For the *Respondent*: *David S. Neill, Wachtell, Lipton, Rosen & Katz LLP.*

COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act and the Clayton Act, and by virtue of the authority vested in it by said Acts, the Federal Trade Commission (hereinafter "Commission"), having reason to believe that Respondent

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Thermo Electron Corporation, a corporation subject to the jurisdiction of the Commission, has agreed to acquire Fisher Scientific International, Inc., a corporation subject to the jurisdiction of the Commission, in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding in respect thereof would be in the public interest, hereby issues its Complaint, stating its charges as follows:

I. RESPONDENT

1. Respondent Thermo Electron Corporation (“Thermo”) is a for-profit corporation organized, existing and doing business under and by virtue of the laws of the state of Delaware, with its offices and principal place of business located at 81 Wyman Street, Waltham, Massachusetts 02454.

2. Thermo, among other things, is engaged in the development, manufacture, and marketing of a broad range of analytical equipment and laboratory instrumentation. Thermo employs approximately 11,000 persons and it achieved revenues of \$2.63 billion in 2005.

3. Thermo is, and at all times relevant herein has been, engaged in commerce as “commerce” is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. § 12, and is a corporation whose business is in or affects commerce as “commerce” is defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

II. THE ACQUIRED COMPANY

4. Fisher Scientific International, Inc. (“Fisher”) is a for-profit corporation organized, existing and doing business under and by the virtue of the laws of the State of Delaware, with its

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principal place of business located at Liberty Lane, Hampton, New Hampshire, 03842.

5. Fisher, among other things, is engaged in the manufacture, development, marketing, and distribution of laboratory equipment and health care products. Fisher also provides a variety of services to laboratories and health care providers. Fisher currently has approximately 19,500 employees and its 2005 revenues were \$5.6 billion.

III. THE PROPOSED ACQUISITION

6. On May 7, 2006, Thermo entered into an Agreement and Plan of Merger with Fisher to acquire Fisher, for approximately \$12.8 billion in stock and assumed debt (the "Acquisition").

IV. THE RELEVANT MARKET

7. For the purposes of this Complaint, the relevant product market in which to analyze the effects of the Acquisition is the research, development, production, sale, and service of high-performance centrifugal vacuum evaporators ("CVEs"). CVEs apply a combination of heat, vacuum, and centrifugal force to remove solvents from laboratory samples, evaporating off the solvents while preserving and drying the samples for storage, further analysis, characterization, or experimentation. High-performance CVEs offer advanced features, including high-throughput capability, compatibility with corrosive and aggressive solvents, and sophisticated control, programming, and monitoring capabilities, that are considered useful and necessary by high-performance CVE purchasers. Other types of laboratory evaporation equipment, such as low-performance CVEs, lyophilizers (*i.e.* freeze drying equipment), and nitrogen blowdown systems, do not offer these capabilities. A small but significant and non-transitory price increase would not significantly reduce the demand for high-performance CVEs.

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V. RELEVANT GEOGRAPHIC MARKET

8. For the purposes of this Complaint, the relevant geographic market in which to assess the effects of the Acquisition is the United States. To compete in the United States high-performance CVE market, a firm must establish a local sales force, service infrastructure, and reputation among high-performance CVE purchasers. In addition, the firm's product offering must not infringe any valid U.S. high-performance CVE patents.

VI. MARKET STRUCTURE

9. If consummated, the Acquisition would consolidate the only two significant suppliers of high-performance CVEs in the United States, leaving Thermo as a virtual monopolist in the approximately \$10 million market. Thermo and Fisher account for approximately 30 percent and 70 percent of the market, respectively, and directly compete on price, service, and product innovation. The only other firm that sells high-performance CVEs, Martin Christ GmbH ("Martin Christ"), has had minimal sales in the United States during the last three years and its sales are unlikely to increase sufficiently to restore the lost competition. As a result, the proposed Acquisition would significantly increase concentration and result in a highly concentrated market.

VII. EFFECTS OF THE ACQUISITION

10. As the only significant suppliers of high-performance CVEs in the United States, Thermo and Fisher compete head-to-head. The Acquisition, if consummated, will have the effect of substantially lessening competition and tending to create a monopoly in the relevant market in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45, in the following ways, among others:

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- a. eliminating Fisher as the only other significant competitor in the market for high-performance CVEs;
- b. eliminating actual, direct, and substantial competition between Thermo and Fisher, which currently compete directly on price, service, and product innovation as next-best substitutes;
- c. increasing the ability of Thermo to raise prices unilaterally of high-performance CVEs in the United States; and
- d. reducing Thermo's incentive to invest in high-performance CVE innovations and service improvements, thereby adversely affecting product innovation and service.

VIII. ENTRY CONDITIONS

11. To enter the high-performance CVE market and achieve significant market impact, a firm must first develop a product offering comparable functionality and performance to the high-performance CVEs offered by the incumbent firms without violating any existing patents. After developing a viable product line, an entrant would face the difficult tasks of developing manufacturing capabilities, gaining market acceptance without a proven product or track record, recruiting and training a sales force, and establishing the infrastructure necessary to provide service for the life of the product. In addition, the small size of the high-performance CVE market, and correspondingly limited profit opportunities available to a potential entrant, lessen the likelihood of entry into the high-performance CVE market.

12. New entry into the market for the production and sale of high-performance CVEs sufficient to deter or counteract the anticompetitive effects described in Paragraph 10 is unlikely to occur, and would not occur in a timely manner because it would take over two years to enter and achieve significant market impact.

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IX. VIOLATIONS CHARGED

13. The allegations contained in paragraphs 1 through 12 are repeated and realleged as though fully set forth here.

14. The Agreement and Plan of Merger described in paragraph 6 constitutes a violation of Section 5 of the FTC Act, as amended, 15 U.S.C. ‘ 45.

15. The Acquisition, if consummated, would constitute a violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. ‘ 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. ‘ 45.

IN WITNESS WHEREOF, the Federal Trade Commission has caused this complaint to be signed by its Secretary and its official seal to be hereto affixed, at Washington, D.C. this seventeenth day of October, 2006.

By the Commission.

ORDER TO HOLD SEPARATE AND MAINTAIN ASSETS

The Federal Trade Commission (“Commission”) having initiated an investigation of the proposed merger of Respondent Thermo Electron Corporation (hereinafter “Thermo Electron”, “Respondent”, or “Respondent Thermo Electron”) and Fisher Scientific International Inc., and Respondent having been furnished thereafter with a copy of a draft of Complaint that the Bureau of Competition proposed to present to the Commission for its consideration and which, if issued by the Commission, would charge Respondent with violations of Section 7 of the

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Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondent, its attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Order (“Consent Agreement”), containing an admission by Respondent of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondent that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondent has violated the said Acts and that a Complaint should issue stating its charges in that respect, and having determined to accept the executed Consent Agreement and to place such Consent Agreement containing the Decision and Order on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby issues its Complaint, makes the following jurisdictional findings and issues this Order to Hold Separate and Maintain Assets (“Hold Separate”):

1. Respondent Thermo Electron is a corporation organized, existing and doing business under and by virtue of the laws of the state of Delaware, with its offices and principal place of business located at 81 Wyman Street, Waltham, Massachusetts 02454.

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2. The Federal Trade Commission has jurisdiction over the subject matter of this proceeding and of Respondent, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that, as used in the Order, the following definitions shall apply:

- A. “Thermo Electron” or “Respondent” means Thermo Electron Corporation, its directors, officers, employees, agents, representatives, predecessors, successors, and assigns; and its parents, joint ventures, subsidiaries, divisions, groups and affiliates controlled by Thermo Electron Corporation, and the respective directors, officers, employees, agents, representatives, predecessors, successors, and assigns of each.
- B. “Fisher Scientific” means, Fisher Scientific International Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its offices and principal place of business located at Liberty Lane, Hampton, New Hampshire 03842; and its joint ventures, subsidiaries, divisions, groups, and affiliates controlled by Fisher Scientific International Inc.
- C. “Genevac” means Genevac Limited, a corporation organized, existing and doing business under and by virtue of the laws of the United Kingdom, with its offices and principal place of business located at The Sovereign Center, Farthing Road, Ipswich IP1 5AP, United Kingdom; and Genevac Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of New York, with its offices and principal place of business located at 707

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Executive Boulevard, Suite D, Valley Cottage, New York 10989, and their joint ventures, subsidiaries, divisions, groups, and affiliates controlled by either Genevac Limited or Genevac Inc.

- D. “Commission” means the Federal Trade Commission.
- E. “Acquirer” means any Person who receives the prior approval of the Commission to acquire the CVE Business pursuant to the Decision and Order.
- F. “Acquisition” means the proposed acquisition of Fisher Scientific by Thermo Electron pursuant to the Agreement and Plan of Merger, dated as of May 7, 2006, by and among Thermo Electron and Trumpet Merger Corporation, a wholly owned subsidiary of Thermo Electron, and Fisher Scientific.
- G. “Acquisition Date” means the date the Acquisition is consummated.
- H. “Confidential Business Information” means any information relating to the CVE Business before the Effective Date of Divestiture that is not in the public domain, including, but not limited to:
 - 1. All contracts, agreements, bids, purchase orders, or other documents or information relating to any acquisition of goods or services related to the CVE Business;
 - 2. All marketing studies, marketing plans, data, or other documents or information relating to the CVE Business;
 - 3. All files and documents relating to Genevac’s suppliers to the extent relating to Genevac;

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4. All customer files, customer payment records, price information, service records, and purchase history; and,
 5. All trade secrets, information about products or processes under development, and other intellectual property that is not in the public domain.
- I. “CVEs” means centrifugal vacuum evaporators, which use a combination of heat, vacuum, and centrifugal force to remove solvents from laboratory samples, evaporating off the solvents while preserving and drying the samples for storage, further analysis, characterization, or experimentation.
- J. “CVE Business” means all of Respondent’s right, title, and interest in Genevac acquired in the Acquisition, including, but not limited to, all of Genevac’s outstanding capital stock, tangible and intangible assets, properties, business and goodwill, *provided, however*, that cash, receivables or other non-unique assets may be excluded from the sale of the CVE Business at the request of the Acquirer and subject to the prior approval of the Commission.
- K. “Divestiture Agreement” means any agreement or contract that receives the prior approval of the Commission that is related to the divestiture required by Paragraph II. or IV. of the Decision and Order.
- L. “Divestiture Trustee” means the trustee appointed by the Commission pursuant to Paragraph IV of the Decision and Order.
- M. “Effective Date of Divestiture” means the date on which Respondent (or a Divestiture Trustee) divests to a Commission-approved Acquirer the CVE Business

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completely and as required by Paragraph II or IV of the Decision and Order.

- N. “Key Employees” means the persons listed in Confidential Appendix 1.
- O. “Knowledgeable Employees” means any person employed by or under contract to Genevac at any time between May 7, 2006, and the Effective Date of Divestiture, including but not limited to, Key Employees, *provided, however*, that such person is still employed by Fisher Scientific or Genevac at the time Respondent’s obligations under Paragraph II.C. of the Decision and Order arise.
- P. “Retention Bonus” means the retention bonus and compensation described in Confidential Appendix 2.
- Q. “Governmental Entity” means any Federal, state, local or non-U.S. government or any court, legislature, governmental agency or governmental commission or any judicial or regulatory authority of any government.
- R. “Person” means any individual, partnership, joint venture, firm, corporation, association, trust, unincorporated organization, joint venture, or other business or governmental entity, and any subsidiaries, divisions, groups or affiliates thereof.
- S. “Hold Separate Period” means the time period during which the Hold Separate is in effect, which shall begin on the date that the Acquisition is consummated and terminate pursuant to Paragraph VII. hereof.
- T. “Hold Separate” means this Order to Hold Separate and Maintain Assets.

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- U. “Hold Separate Trustee” means the person appointed as the Hold Separate Trustee pursuant to this Hold Separate.
- V. “CVE Business Manager” means an individual with experience in the management, sales, marketing, and financial operations of the CVE Business, who is appointed by the Respondent and approved by the Hold Separate Trustee to manage the CVE Business during the Hold Separate Period.

II.**IT IS FURTHER ORDERED** that:

- A. During the Hold Separate Period, Respondent shall (i) hold the CVE Business as a separate and independent business as required by this Hold Separate, except to the extent that Respondent must exercise direction and control over the CVE Business to assure compliance with this Hold Separate, or with the Decision and Order contained in the Consent Agreement, and except as otherwise provided in this Hold Separate, and (ii) shall vest the CVE Business and Hold Separate Trustee with all powers and authorities necessary to conduct its business.
- B. Until the Effective Date of Divestiture, Respondent shall take such actions as are necessary to maintain the viability and marketability of the CVE Business to prevent the destruction, removal, wasting, deterioration, or impairment of any of the assets, except for ordinary wear and tear, including, but not limited to, continuing in effect and maintaining intellectual property, contracts, proprietary trademarks, trade names, logos, trade dress, identification signs, and renewing or extending any

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leases or licenses that expire or terminate prior to the Effective Date of Divestiture.

- C. The purpose of this Hold Separate is to: (i) preserve the CVE Business as a viable, competitive, and ongoing business, independent of Respondent, until the Effective Date of Divestiture of the CVE Business; (ii) assure that no Confidential Business information is exchanged between Respondent and the CVE Business, except as otherwise provided in this Hold Separate; and (iii) prevent interim harm to competition pending divestiture of the CVE Business.
- D. Respondent shall comply with all terms of the Divestiture Agreement, Hold Separate Trustee Agreement, and Management Agreement, and any breach by Respondent of any term of the Divestiture Agreement, Hold Separate Trustee Agreement, or Management Agreement shall constitute a violation of this Order. If any term of the Divestiture Agreement, Hold Separate Trustee Agreement, or Management Agreement varies from the terms of this Order (“Order Term”), then to the extent that Respondent cannot fully comply with both terms, the Order Term shall determine Respondent’s obligations under this Order. Notwithstanding any paragraph, section, or other provision of the Divestiture Agreement, any failure to meet any condition precedent to closing (whether waived or not) or any modification of the Divestiture Agreement, without the prior approval of the Commission, shall constitute a failure to comply with this Order.

III.

IT IS FURTHER ORDERED that:

- A. Harry Cole is hereby appointed to serve as the Hold Separate Trustee. The Hold Separate Trustee may be the same Person as the Divestiture Trustee.

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- B. The Hold Separate Trustee shall monitor Respondent's compliance with this Hold Separate, and shall have all powers and authority necessary to effectuate his or her responsibilities pursuant to this Hold Separate and shall have the rights, duties and responsibilities described below:
1. No later than ten (10) days after the execution of the Consent Agreement, Respondent shall execute a Hold Separate Trustee Agreement that, subject to the approval of the Commission, transfers to the Hold Separate Trustee all rights, powers and authorities contained in the Hold Separate and consistent with the Decision and Order or necessary to permit the Hold Separate Trustee to perform his or her duties and obligations pursuant to this Hold Separate and the Decision and Order.
 2. No later than one (1) day after the commencement of the Hold Separate Period, Respondent shall transfer to the Hold Separate Trustee all rights, powers, and authorities necessary to permit the Hold Separate Trustee to perform his or her duties and responsibilities, pursuant to this Hold Separate and consistent with the purposes of the Decision and Order contained in the Consent Agreement.
 3. The Hold Separate Trustee shall have the responsibility, consistent with the terms of this Hold Separate and the Decision and Order, for monitoring the organization of the CVE Business; for managing the CVE Business through the CVE Business Manager; for maintaining the independence of the CVE Business; and for assuring Respondent's compliance with its obligations pursuant to this Hold Separate and the Decision and Order.

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4. The Hold Separate Trustee shall have full and complete access to all personnel, books, records, documents and facilities of the CVE Business, or to any other relevant information of the Respondent relating to the CVE Business, or (subject to any legally recognizable privilege of Respondent) to any other relevant information relating to Respondents' obligations under the Decision and Order and/or under this Hold Separate, as the Hold Separate Trustee may reasonably request. During the Hold Separate Period, Respondent shall develop such financial or other information relating to the CVE Business as the Hold Separate Trustee may reasonably request and shall cooperate with the Hold Separate Trustee. Respondent shall take no action to interfere with or impede the Hold Separate Trustee's ability to perform his or her responsibilities consistent with the terms of this Hold Separate or to monitor Respondent's compliance with this Hold Separate or the Decision and Order.
5. The Hold Separate Trustee shall have the authority to employ, at the cost and expense of Respondent, such consultants, accountants, attorneys, and other representatives and assistants as are reasonable and necessary to carry out the Hold Separate Trustee's duties and responsibilities. The Hold Separate Trustee shall account for all expenses incurred, including fees for his or her services, subject to the approval of the Commission.
6. The Commission may require the Hold Separate Trustee to sign an appropriate confidentiality agreement relating to materials and information received from the Commission, and Confidential Business Information received from Respondent, in

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connection with the performance of the Hold Separate Trustee's duties.

7. The Respondent may require the Hold Separate Trustee to sign a confidentiality agreement prohibiting the disclosure of any Confidential Business Information relating to the CVE Business, to anyone other than the Commission. However, nothing herein shall be construed to inhibit the communication of any Confidential Business Information between and among the Hold Separate Trustee, the Commission, and the individuals contemplated for the employment relationships provided for in this Hold Separate.
 8. If the Hold Separate Trustee ceases to act or fails to act diligently and consistent with the purposes of this Hold Separate, the Commission may appoint a substitute Hold Separate Trustee. If Respondent has not opposed, in writing, including the reasons for opposing, the selection of any proposed Hold Separate Trustee within ten (10) business days after receipt of written notice from the Commission's staff to Respondents of the identity of any proposed Hold Separate Trustee, Respondent shall be deemed to have consented to the selection of the proposed Hold Separate Trustee.
- C. No later than ten (10) days after the execution of the Hold Separate Trustee Agreement, Respondent shall, subject to the approval of the Hold Separate Trustee, enter into a management agreement ("Management Agreement") with, and transfer to the CVE Business Manager all rights, powers, and authorities necessary to permit the CVE Business Manager to perform his or her duties and responsibilities, pursuant to the Hold Separate and consistent with the purposes of the Decision and

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Order. The Management Agreement shall be effective on the Acquisition Date.

1. The CVE Business Manager, in his or her capacity as such, shall report directly and exclusively to the Hold Separate Trustee, and shall manage the CVE Business independently of the management of Respondent. The CVE Business Manager shall not be involved in any way in the operations of the Respondent's businesses (other than the CVE Business) during the Hold Separate Period.
2. The CVE Business Manager shall sign a confidentiality agreement prohibiting the disclosure of any Confidential Business Information relating to the CVE Business to anyone other than the Commission and to the Hold Separate Trustee; *provided, however,* as authorized by the Hold Separate Trustee and consistent with this Hold Separate and the Decision and Order, the CVE Business Manager may disclose Confidential Business Information pursuant to Paragraph III.D. of this Hold Separate directly to Respondent's employees and agents.
3. In the event the CVE Business Manager ceases to act in his or her capacity as such, then Respondent shall select a substitute CVE Business Manager, subject to the approval of the Hold Separate Trustee, and transfer to the substitute CVE Business Manager all rights, powers and authorities necessary to permit the substitute CVE Business Manager to perform his or her duties and responsibilities, pursuant to this Hold Separate.
4. Respondent shall not change the composition of the management of the CVE Business except that the CVE Business Manager shall be permitted to remove

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management employees for cause subject to approval of the Hold Separate Trustee. The Hold Separate Trustee shall have the power to remove the CVE Business Manager for cause. Within fifteen (15) days after such removal, Respondent shall appoint a replacement for the CVE Business Manager, subject to the approval of the Hold Separate Trustee in the same manner as provided in Paragraph III. of this Hold Separate.

5. The CVE Business Manager shall have no financial interests affected by Respondent's revenues, profits or profit margins, except that the CVE Business Manager's compensation for managing the CVE Business may include economic incentives dependent on the financial performance of the CVE Business if there are also sufficient incentives for the CVE Business Manager to operate the CVE Business at no less than current rates of operations (including, but not limited to, current rates of production and sales) and to achieve the objectives of this Hold Separate. For a period of two (2) years beginning after the termination of this Hold Separate, Respondent shall not retain the services of the CVE Business Manager.
 6. The CVE Business Manager shall make no material changes in the present operation of the CVE Business except with the approval of or at the instruction of the Hold Separate Trustee.
 7. The CVE Business Manager shall employ such employees as are reasonably necessary to assist the CVE Business Manager in managing the CVE Business.
- D. Respondent's employees (excluding support services employees involved in providing support to the CVE

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Business pursuant to this Hold Separate) shall not receive, or have access to, or use or continue to use any Confidential Business Information of the CVE Business not in the public domain except:

1. as required by law;
2. to the extent that necessary information is exchanged in the course of consummating the Acquisition;
3. in negotiating agreements to divest the CVE Business pursuant to the Consent Agreement and engaging in related due diligence;
4. in complying with this Hold Separate or the Consent Agreement;
5. in overseeing compliance with policies and standards concerning the safety, health and environmental aspects of the operations of the CVE Business and the integrity of the CVE Business's financial controls;
6. in defending legal claims, investigations or enforcement actions threatened or brought against or related to the CVE Business; or
7. in obtaining legal advice.

Nor shall the CVE Business Manager or employees of the CVE Business receive or have access to, or use or continue to use, any Confidential Business Information not in the public domain about Respondent and relating to Respondent's businesses, except such information as is necessary to maintain and operate the CVE Business. Respondent may receive aggregate financial and operational information relating to the CVE Business only to the extent necessary to allow Respondent to comply with the requirements and obligations of the laws of the United States

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and other countries, and to prepare consolidated financial reports, tax returns, reports required by securities laws, and personnel reports. Any such information that is obtained pursuant to this subparagraph shall be used only for the purposes set forth in this subparagraph.

- E. Respondent shall assure that the CVE Business is staffed with employees sufficient to maintain the marketability, viability, and competitiveness of the CVE Business. During the Hold Separate Period, the CVE Business Manager, with the approval of the Hold Separate Trustee, shall have the authority to replace employees who have otherwise left their positions with the CVE Business since May 7, 2006. To the extent that Knowledgeable Employees or Key Employees leave the CVE Business during the Hold Separate Period, the CVE Business Manager, with the approval of the Hold Separate Trustee, shall use reasonable efforts to replace the departing employees with persons who have similar experience and expertise.
 - 1. No later than five (5) days after the Acquisition Date, Respondent shall cause the CVE Business Manager and each Knowledgeable Employee and Key Employee with managerial responsibilities having access to Confidential Business Information relating to the CVE Business to sign an agreement to maintain the confidentiality required by the terms and conditions of this Hold Separate. These individuals must retain and maintain all Confidential Business Information relating to the CVE Business on a confidential basis and, except as is permitted by this Hold Separate, such persons shall be prohibited from providing, discussing, exchanging, circulating, or otherwise furnishing any such information to or with any other person whose employment involves any of Respondent's businesses other than the CVE

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Business. These persons shall not be involved in any way in the management, sales, marketing, and financial operations of products of Respondent that compete with the products of the CVE Business. This agreement shall provide that it may be enforced by the Acquirer.

2. No later than ten (10) days after the execution of the Hold Separate Trustee Agreement, Respondent shall establish written procedures, subject to the approval of the Hold Separate Trustee, covering the management, maintenance, and independence of the CVE Business consistent with the provisions of this Hold Separate. These procedures shall be effective on the Acquisition Date.
 3. No later than five (5) days after the Acquisition Date, Respondent shall circulate to the Knowledgeable Employees and Key Employees and to Respondent's employees who are responsible for the operation of the CVE Business, or the research, development, manufacture, distribution, marketing or sale of Respondent's CVEs, a notice of this Hold Separate and Consent Agreement, in the form attached as Attachment A.
- F. The Hold Separate Trustee and the CVE Business Manager shall serve, without bond or other security, at the cost and expense of Respondent, on reasonable and customary terms and conditions commensurate with the person's experience and responsibilities.
- G. Respondent shall indemnify the Hold Separate Trustee and the CVE Business Manager, and hold the Hold Separate Trustee and the CVE Business Manager harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Hold Separate Trustee's or the CVE

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Business Manager's duties under this Hold Separate, the Hold Separate Trustee Agreement, and the Management Agreement, including all reasonable fees of counsel and other expenses reasonably incurred in connection with the preparation for or defense of any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Hold Separate Trustee or the CVE Business Manager.

- H. During the Hold Separate Period, Respondent shall provide the CVE Business with sufficient financial resources:
1. as are appropriate in the judgment of the Hold Separate Trustee to operate the CVE Business, and at no less than current rates of operation (including, but not limited to, current rates of the CVE Business production and sales) and at no less than the rates of operation projected in the business plans and annual operating budget of the CVE Business as of May 7, 2006, (including, but not limited to, the rates of operation projected in the business plans); provided that the failure to achieve production or sales goals projected in Genevac's business plans and annual operating budget shall not, by itself, be deemed to be a violation of this Hold Separate;
 2. to continue, at least at their scheduled pace, any additional expenditures for the CVE Business authorized prior to the date the Consent Agreement is executed;
 3. to perform all ordinary and necessary maintenance to, and replacements of, assets of the CVE Business;

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4. to maintain the viability, competitiveness, and marketability of the CVE Business until the Effective Date of Divestiture, provided the CVE Business may not assume any new long-term debt, except as necessary to meet a competitive threat and as approved by the Hold Separate Trustee; and,
 5. such financial resources to be provided to the CVE Business shall include, but shall not be limited to, (i) general funds, (ii) capital, (iii) working capital, and (iv) reimbursement for any operating losses, capital losses, or other losses; provided, however, that consistent with the purposes of the Decision and Order, the Hold Separate Trustee may reduce the scale or pace of any capital or research and development project, or substitute any capital or research and development project for another of the same cost.
- I. During the Hold Separate Period, Respondent shall, at the option of the CVE Business Manager, and with the approval of the Hold Separate Trustee, continue to provide the same support services to the CVE Business as are being provided to such assets and business as of the date Respondent executes the Consent Agreement; provided:
1. Respondent may charge the CVE Business the same fees, if any, charged by Fisher Scientific for such support services as of the date Respondent executes the Consent Agreement; and,
 2. Respondent shall ensure that all personnel providing such support services retain and maintain all Confidential Business Information relating to the CVE Business on a confidential basis, and, except as is permitted by this Hold Separate, such persons shall be prohibited from providing, discussing,

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exchanging, circulating, or otherwise furnishing any such information to or with any person whose employment involves any of Respondent's businesses (other than the CVE Business). Such personnel shall also be required to execute confidentiality agreements prohibiting the disclosure of any Confidential Business Information relating to the CVE Business.

3. Respondent shall not exercise direction or control over, or influence directly or indirectly, the CVE Business, the Hold Separate Trustee, the CVE Business Manager, or any of its operations; provided, however, that Respondent may exercise only such direction and control over the CVE Business as are necessary to assure compliance with this Hold Separate or the Consent Agreement, or with all applicable laws including, in consultation with the Hold Separate Trustee, continued oversight of the CVE Business compliance with policies and standards concerning the safety, health, and environmental aspects of their operations and the integrity of their financial controls; and Respondent shall have the right to defend any legal claims, investigations or enforcement actions threatened or brought against the CVE Business.
4. Except for the CVE Business Manager, the Hold Separate Trustee and except to the extent provided in this Paragraph TIL, Respondent shall not permit any Person who is not an employee, officer or director of the CVE Business to be involved in the operations of the CVE Business.

J. During the Hold Separate Period:

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1. Respondent shall not employ or make offers of employment to any Knowledgeable Employee or Key Employee; and,
 2. Respondent shall: (i) not directly or indirectly interfere with the Acquirer's offer of employment to any one or more of the Knowledgeable Employees, directly or indirectly attempt to persuade any one or more of the Knowledgeable Employees to decline any offer of employment from the Acquirer, or offer any incentive to any Knowledgeable Employee to decline employment with the Acquirer; (ii) irrevocably waive any legal or equitable right to deter any Knowledgeable Employee from accepting employment with the Acquirer, including, but not limited to, any non-compete or confidentiality provisions of employment or other contracts with Respondent that directly or indirectly relate to CVEs or Genevac; and, (iii) continue to extend to any Knowledgeable Employees, during their employment by Genevac prior to the Effective Date of Divestiture, all employee benefits offered by Respondent, including regularly scheduled or merit raises and bonuses, and regularly scheduled vesting of all pension benefits.
- K. Respondent shall not solicit, negotiate, hire or enter into any arrangement for the services of all or any of the Key Employees for two (2) years from Effective Date of Divestiture.
- L. Respondent shall pay a Retention Bonus to any and all Key Employees.
- M. For a period of one year from the Effective Date of Divestiture, Respondent shall not, directly or indirectly, solicit, negotiate, hire or enter into any arrangement for the services of all or any of the Knowledgeable

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Employees employed by the Acquirer, unless such employee's employment has been terminated by the Acquirer.

IV.**IT IS FURTHER ORDERED** that:

- A. Respondent shall maintain the viability, marketability, and competitiveness of the CVE Business, and shall not cause the wasting or deterioration of the CVE Business, nor shall they cause the CVE Business to be operated in a manner inconsistent with applicable laws, nor shall they sell, transfer, encumber or otherwise impair the viability, marketability or competitiveness of the CVE Business. Respondent shall comply with the terms of this subparagraph IV.A. until such time as Respondent or the Divestiture Trustee has divested the CVE Business pursuant to the terms of the Decision and Order. Respondent shall conduct the business of the CVE Business in the regular and ordinary course of business and in accordance with past practice (including regular repair and maintenance efforts) and shall use their best efforts to preserve the existing relationships with suppliers, customers, employees, and others having business relationships with the CVE Business, in the ordinary course of business and in accordance with past practice. Respondent shall use its best efforts to keep the organization and properties of the CVE Business intact, including current business operations, physical facilities and working conditions, and a work force of equivalent size, training, and expertise associated with the CVE Business.
- B. During the Hold Separate Period, Respondent shall ensure that the Knowledgeable Employees and the Key Employees continue to be paid their salaries, all current

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and accrued bonuses, pensions and other current and accrued benefits to which such employees would otherwise have been entitled.

- C. Except as required by law, and except to the extent that necessary information is exchanged in the course of consummating the Acquisition, defending investigations, defending or prosecuting litigation, obtaining legal advice, negotiating and meeting obligations under agreements to divest assets pursuant to the Decision and Order contained in the Consent Agreement and engaging in related due diligence, or complying with this Hold Separate or the Decision and Order contained in the Consent Agreement, or as permitted by Paragraph III.B. of the Decision and Order, Respondent shall not receive or have access to, or use or continue to use, any Confidential Business Information. Respondent may receive, on a regular basis, aggregate financial and operating information relating to the CVE Business necessary to allow Respondents to prepare consolidated financial reports and tax returns. Any such information that is obtained pursuant to this subparagraph shall be used only for the purposes set forth in this subparagraph and Paragraph III.B. of the Decision and Order.
- D. Within thirty (30) days after commencement of the Hold Separate Period and every sixty (60) days thereafter until the Hold Separate terminates, the Hold Separate Trustee shall report in writing to the Commission concerning the efforts to accomplish the purposes of this Hold Separate. Included within that report shall be the Hold Separate Trustee's assessment of the extent to which the CVE Business is meeting (or exceeding) projected goals as reflected in operating plans, budgets, projections or any other regularly prepared financial statements.

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V.

IT IS FURTHER ORDERED that Respondent shall notify the Commission at least thirty (30) days prior to any proposed change in the corporate structure of Respondent such as dissolution, assignment, sale resulting in the emergence of a successor corporation, or the creation or dissolution of subsidiaries or any other change in the corporation that may affect compliance obligations arising out of this Hold Separate.

VI.

IT IS FURTHER ORDERED that for the purpose of determining or securing compliance with this Order, and subject to any legally recognized privilege, and upon written request, Respondent shall permit any duly authorized representative of the Commission:

- A. Access, during office hours and in the presence of counsel, to all facilities and access to inspect and copy all books, ledgers, accounts, correspondence, memoranda and other records and documents in the possession or under the control of Respondent relating to compliance with this Order; and,
- B. Upon five (5) days' notice to Respondent and without restraint or interference from it, to interview officers, directors, employees, agents or independent contractors of Respondent, who may have counsel present, regarding such matters.

VII.

IT IS FURTHER ORDERED that this Hold Separate shall terminate on the earlier of:

Order to Maintain Assets

- A. Three (3) business days after the Commission withdraws its acceptance of the Consent Agreement pursuant to the provisions of Commission Rule 2.34, 16 C.F.R. § 2.34; or,
- B. the Effective Date of Divestiture of the CVE Business, as required by the Decision and Order contained in the Consent Agreement.

By the Commission.

Attachment A**NOTICE OF DIVESTITURE and REQUIREMENT FOR CONFIDENTIALITY**

Thermo Electron Corporation (hereinafter, “Thermo Electron”) has entered into an Agreement Containing Consent Order (hereinafter, “Consent Agreement”) with the Federal Trade Commission relating to the divestiture of Genevac Limited (“Genevac”). Additional information about the Consent Agreement, as well as a copy of the Consent Agreement and a proposed Decision and Order that requires the divestiture, can be found on the web site of the Federal Trade Commission at www.ftc.gov.

Under the terms of the Consent Agreement, Thermo Electron must divest Genevac within one hundred and fifty (150) days after Thermo Electron closes the acquisition of Fisher Scientific International, Inc. Thermo Electron may only divest Genevac to an acquirer, approved by the Federal Trade Commission, who is financially sound and who will maintain Genevac as a viable competitor in the centrifugal vacuum evaporator market.

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Until Thermo Electron divests Genevac, Thermo Electron must manage and maintain Genevac as a separate, ongoing business, independent of all of Thermo Electron's other businesses. Harry Cole has been appointed by the Federal Trade Commission to supervise the operation of Genevac until it is divested. All confidential competitive information about Genevac must be retained and maintained by the people operating Genevac on a confidential basis. The people operating Genevac are prohibited from discussing, exchanging, circulating, or providing any confidential competitive information about Genevac with anyone, other than Mr. Cole, outside of Genevac. Similarly, people working for Thermo Electron with duties relating to centrifugal vacuum evaporators are prohibited from discussing, exchanging, circulating, or providing any confidential competitive information about Thermo Electron's products with anyone at Genevac.

We invite you to ask any questions about the divestiture of Genevac and the prohibition against discussing or disclosing confidential competitive information. Employees of Genevac should contact either James Roche at jim.roche@genevac.co.uk or +44 (0) 1473 243011, or Caron McLure at caron.mclure@genevac.co.uk or +44 (0) 1473 243015. All other employees should contact Jonathan Wilk at jonathan.wilk@thermo.com or 781-622-1281.

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Confidential Appendix 1 and Confidential Appendix 2

**[Redacted From Public Record Version But
Incorporated By Reference]**

DECISION AND ORDER

The Federal Trade Commission (“Commission”) having initiated an investigation of the proposed merger of Respondent Thermo Electron Corporation (hereinafter “Thermo Electron”, “Respondent”, or “Respondent Thermo Electron”) and Fisher Scientific International Inc., and Respondent having been furnished thereafter with a copy of a draft of Complaint that the Bureau of Competition proposed to present to the Commission for its consideration and which, if issued by the Commission, would charge Respondent with violations of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondent, its attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Order (“Consent Agreement”), containing an admission by Respondent of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondent that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

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The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondent has violated the said Acts, and that a Complaint should issue stating its charges in that respect, and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby makes the following jurisdictional findings and issues the following Decision and Order (“Order”):

1. Respondent Thermo Electron is a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its offices and principal place of business located at 81 Wyman Street, Waltham, Massachusetts 02454.

2. The Federal Trade Commission has jurisdiction over the subject matter of this proceeding and of Respondent, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that, as used in the Order, the following definitions shall apply:

- A. “Thermo Electron” or “Respondent” means Thermo Electron Corporation, its directors, officers, employees, agents, representatives, predecessors, successors, and assigns; and its parents, joint ventures, subsidiaries, divisions, groups and affiliates controlled by Thermo Electron Corporation, and the respective directors, officers, employees, agents, representatives, predecessors, successors, and assigns of each.

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- B. “Fisher Scientific” means, Fisher Scientific International Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its offices and principal place of business located at Liberty Lane, Hampton, New Hampshire 03842; and its joint ventures, subsidiaries, divisions, groups, and affiliates controlled by Fisher Scientific International Inc.
- C. “Genevac” means Genevac Limited, a corporation organized, existing and doing business under and by virtue of the laws of the United Kingdom, with its offices and principal place of business located at The Sovereign Center, Farthing Road, Ipswich IP1 5AP, United Kingdom; and Genevac Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of New York, with its offices and principal place of business located at 707 Executive Boulevard, Suite D, Valley Cottage, New York 10989, and their joint ventures, subsidiaries, divisions, groups, and affiliates controlled by either Genevac Limited or Genevac Inc.
- D. “Commission” means the Federal Trade Commission.
- E. “Acquirer” means any Person who receives the prior approval of the Commission to acquire the CVE Business pursuant to this Order.
- F. “Acquisition” means the proposed acquisition of Fisher Scientific by Thermo Electron pursuant to the Agreement and Plan of Merger, dated as of May 7, 2006, by and among Thermo Electron and Trumpet Merger Corporation, a wholly owned subsidiary of Thermo Electron, and Fisher Scientific.
- G. “Acquisition Date” means the date the Acquisition is consummated.

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- H. “Confidential Business Information” means any information relating to the CVE Business before the Effective Date of Divestiture that is not in the public domain, including, but not limited to:
1. All contracts, agreements, bids, purchase orders, or other documents or information relating to any acquisition of goods or services related to the CVE Business;
 2. All marketing studies, marketing plans, data, or other documents or information relating to the CVE Business;
 3. All files and documents relating to Genevac’s suppliers to the extent relating to Genevac;
 4. All customer files, customer payment records, price information, service records, and purchase history; and,
 5. All trade secrets, information about products or processes under development, and other intellectual property that is not in the public domain.
- I. “CVEs” means centrifugal vacuum evaporators, which use a combination of heat, vacuum, and centrifugal force to remove solvents from laboratory samples, evaporating off the solvents while preserving and drying the samples for storage, further analysis, characterization, or experimentation.
- J. “CVE Business” means all of Respondent’s right, title, and interest in Genevac acquired in the Acquisition, including, but not limited to, all of Genevac’s outstanding capital stock, tangible and intangible assets, properties, business and goodwill, *provided, however*, that cash,

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receivables or other non-unique assets may be excluded from the sale of the CVE Business at the request of the Acquirer and subject to the prior approval of the Commission.

- K. “Divestiture Agreement” means any agreement or contract that receives the prior approval of the Commission that is related to the divestiture required by Paragraph II. or IV. of this Order.
- L. “Divestiture Trustee” means the trustee appointed by the Commission pursuant to Paragraph IV of this Order.
- M. “Effective Date of Divestiture” means the date on which Respondent (or a Divestiture Trustee) divests to a Commission-approved Acquirer the CVE Business completely and as required by Paragraph II or IV of this Order.
- N. “Fisher Catalogue” means the 2,500 plus page standard paper and internet catalogue published by Fisher Scientific International Inc., containing 200,000 plus items, including any foreign-language, industry-specific, country-specific, or region-specific version(s).
- O. “Key Employees” means the persons listed in Confidential Appendix 1.
- P. “Knowledgeable Employees” means any person employed by or under contract to Genevac at any time between May 7, 2006, and the Effective Date of Divestiture, including but not limited to, Key Employees, *provided, however*, that such person is still employed by Fisher Scientific or Genevac at the time Respondent’s obligations under Paragraph II.C. of this Order arise.
- Q. “Retention Bonus” means the retention bonus and compensation described in Confidential Appendix 2.

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- R. “Hold Separate” means the Order to Hold Separate and Maintain Assets incorporated into and made a part of the Agreement Containing Consent Orders.
- S. “Governmental Entity” means any Federal, state, local or non-U.S. government or any court, legislature, governmental agency or governmental commission or any judicial or regulatory authority of any government.
- T. “Person” means any individual, partnership, joint venture, firm, corporation, association, trust, unincorporated organization, joint venture, or other business or governmental entity, and any subsidiaries, divisions, groups or affiliates thereof.

II.**IT IS FURTHER ORDERED** that:

- A. Respondent shall divest, absolutely and in good faith and at no minimum price, the CVE Business to an Acquirer pursuant to and in accordance with the Divestiture Agreement within one hundred and fifty (150) days from the Acquisition Date.
- B. At the option of the Acquirer, and subject to the prior approval of the Commission, the Respondent, prior to or as of the Effective Date of Divestiture, shall enter into a non-exclusive, commercially reasonable agreement with the Acquirer for the distribution of Genevac’s CVE products through the Fisher Catalogue. Respondent shall not permit or provide, and the agreement shall prohibit, access by any of Respondent’s employees with duties primarily relating to the research, development, manufacture, marketing, sales or service of Respondent’s CVEs to Confidential Business Information or to information relating to the Acquirer’s sales of CVEs

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through the Fisher Catalogue (except to the extent agreed to by the Acquirer).

- C. Unless otherwise agreed with the Acquirer, and subject to the prior approval of the Commission:
1. Not later than forty five days before the Effective Date of Divestiture, Respondent shall to the extent permitted by applicable law: (i) provide to the Acquirer a list of all Knowledgeable Employees; (ii) allow the Acquirer an opportunity to interview any Knowledgeable Employees; and, (iii) allow the Acquirer to inspect the personnel files and other documentation relating to such Knowledgeable Employees; and,
 2. Not later than thirty days before the Effective Date of Divestiture, Respondent shall provide an opportunity for the Acquirer: (i) to meet personally, and outside the presence or hearing of any employee or agent of Respondent, with any one or more of the Knowledgeable Employees; and, (ii) to make offers of employment to any one or more of the Knowledgeable Employees; and,
 3. Respondent shall: (i) not directly or indirectly interfere with the Acquirer's offer of employment to any one or more of the Knowledgeable Employees, directly or indirectly attempt to persuade any one or more of the Knowledgeable Employees to decline any offer of employment from the Acquirer, or offer any incentive to any Knowledgeable Employee to decline employment with the Acquirer; (ii) irrevocably waive any legal or equitable right to deter any Knowledgeable Employee from accepting employment with the Acquirer, including, but not limited to, any non-compete or confidentiality provisions of employment or other contracts with Respondent that

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directly or indirectly relate to CVEs or Genevac; and, (iii) continue to extend to any Knowledgeable Employees, during their employment by Genevac prior to the Effective Date of Divestiture, all employee benefits offered by Respondent, including regularly scheduled or merit raises and bonuses, and regularly scheduled vesting of all pension benefits;

4. Respondent shall pay a Retention Bonus to any and all Key Employees; and,
 5. Respondent shall not solicit, negotiate, hire or enter into any arrangement for the services of all or any of the Key Employees for two (2) years from Effective Date of Divestiture.
- D. For a period of one year from the Effective Date of Divestiture, Respondent shall not, directly or indirectly, solicit, negotiate, hire or enter into any arrangement for the services of all or any of the Knowledgeable Employees employed by the Acquirer, unless such employee's employment has been terminated by the Acquirer.
- E. Respondent shall comply with all terms of the Divestiture Agreement, and any breach by Respondent of any term of the Divestiture Agreement shall constitute a violation of this Order. If any term of the Divestiture Agreement varies from the terms of this Order ("Order Term"), then to the extent that Respondent cannot fully comply with both terms, the Order Term shall determine Respondent's obligations under this Order. Notwithstanding any paragraph, section, or other provision of the Divestiture Agreement, any failure to meet any condition precedent to closing (whether waived or not) or any modification of the Divestiture Agreement, without the prior approval of the Commission, shall constitute a failure to comply with this Order.

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- F. The purpose of the divestiture of the CVE Business to the Acquirer is to create an independent, viable and effective competitor in the relevant markets in which the CVE Business was engaged at the time of the announcement of the Acquisition, and to remedy the lessening of competition resulting from the Acquisition as alleged in the Commission's Complaint.

III.**IT IS FURTHER ORDERED** that:

- A. Respondent shall:
1. not provide, disclose or otherwise make available any Confidential Business Information to any Person except as set forth in Paragraph III.B. of this Order; and,
 2. not use any Confidential Business Information for any reason or purpose other than as otherwise required or permitted by this Order.
- B. Notwithstanding Paragraph III.A. of this Order and subject to the Hold Separate, Respondent may use Confidential Business Information only (i) for the purpose of performing Respondent's obligations under this Order, the Hold Separate, or the Divestiture Agreements; or, (ii) to ensure compliance with legal and regulatory requirements; to perform required auditing functions; to provide accounting, information technology and credit-underwriting services, to provide legal services associated with actual or potential litigation and transactions; and to monitor and ensure compliance with financial, tax reporting, governmental environmental, health, and safety requirements; or, (iii) for inclusion within the periodic financial reports that Genevac may provide Respondent but only to the extent that any Confidential Business

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Information is aggregated so that data as to individual customers are not disclosed.

IV.**IT IS FURTHER ORDERED** that:

- A. If Respondent fails to complete the divestitures required by Paragraph II. of this Order within the time periods specified therein, then the Commission may appoint a Divestiture Trustee to divest the CVE Business to an Acquirer and to execute Divestiture Agreements that satisfy the requirements of Paragraph II of this Order.
- B. Neither the decision of the Commission to appoint a Divestiture Trustee, nor the decision of the Commission not to appoint a Divestiture Trustee, to divest any of the assets under this Paragraph IV. shall preclude the Commission or the Attorney General from seeking civil penalties or any other relief available to it, including a court-appointed trustee, pursuant to § 5(l) of the Federal Trade Commission Act, 15 U.S.C. § 45(l), or any other statute enforced by the Commission, for any failure by the Respondent to comply with this Order.
- C. If a Divestiture Trustee is appointed by the Commission or a court pursuant to Paragraph IV. of this Order to divest the CVE Business to an Acquirer, Respondent shall consent to the following terms and conditions regarding the Divestiture Trustee's powers, duties, authority, and responsibilities:
 1. The Commission shall select the Divestiture Trustee, subject to the consent of Respondent, which consent shall not be unreasonably withheld. If Respondent has not opposed, in writing, including the reasons for opposing, the selection of any proposed Divestiture

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Trustee within ten (10) days after notice by the staff of the Commission to Respondent of the identity of any proposed Divestiture Trustee, Respondent shall be deemed to have consented to the selection of the proposed Divestiture Trustee.

2. Subject to the prior approval of the Commission, the Divestiture Trustee shall have the exclusive power and authority to divest the CVE Business to an Acquirer pursuant to the terms of this Order and to enter into Divestiture Agreements with the Acquirer pursuant to the terms of this Order, which Divestiture Agreements shall be subject to the prior approval of the Commission.
3. Within ten (10) days after appointment of the Divestiture Trustee, Respondent shall execute a (or amend the existing) trust agreement (“Divestiture Trustee Agreement”) that, subject to the prior approval of the Commission and, in the case of a court-appointed trustee, of the court, transfers to the Divestiture Trustee all rights and powers necessary to permit the Divestiture Trustee to divest the CVE Business to an Acquirer and to enter into Divestiture Agreements with the Acquirer. The Divestiture Trustee Agreement shall prohibit the Divestiture Trustee, and each of the Divestiture Trustee’s consultants, accountants, attorneys, and other representatives and assistants from disclosing, except to the Commission (and in the case of a court-appointed trustee, to the court) Confidential Business Information; *provided, however*, Confidential Business Information may be disclosed to potential acquirers and to the Acquirer as may be reasonably necessary to achieve the divestiture required by this Order. The Divestiture Trustee Agreement shall terminate when the divestiture required by this Order is consummated.

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4. The Divestiture Trustee shall have six (6) months from the date the Commission approves the Divestiture Trustee Agreement described in Paragraph IV. of this Order to divest the CVE Business and to enter into Divestiture Agreements with an Acquirer that satisfies the requirements of Paragraph II. of this Order. If, however, at the end of the applicable six-month period, the Divestiture Trustee has submitted to the Commission a plan of divestiture or believes that divestiture can be achieved within a reasonable time, such divestiture period may be extended by the Commission, or, in the case of a court-appointed trustee, by the court; provided, however, the Commission may extend such divestiture period only two (2) times.
5. The Divestiture Trustee shall have full and complete access to the personnel, books, records and facilities of Respondent related to Genevac's manufacture, distribution, or sale of CVEs, related to the CVE Business, or related to any other relevant information, as the Divestiture Trustee may request. Respondent shall develop such financial or other information as the Divestiture Trustee may request and shall cooperate with the Divestiture Trustee. Respondent shall take no action to interfere with or impede the Divestiture Trustee's accomplishment of his or her responsibilities.
6. The Divestiture Trustee shall use reasonable efforts to negotiate the most favorable price and terms available in each contract that is submitted to the Commission, subject to Respondent's absolute and unconditional obligation to divest at no minimum price and the Divestiture Trustee's obligation to expeditiously accomplish the remedial purpose of this Order; to assure that Respondent enters into Divestiture

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Agreements that comply with the provisions of Paragraph II. of this Order; to assure that Respondent complies with the remaining provisions of this Order; and to assure that the Acquirer obtains the assets required to research, develop, manufacture, sell and distribute CVEs and to operate the CVE Business in a manner to achieve the purposes of this Order. The divestiture shall be made to, and the Divestiture Agreements executed with, an Acquirer in the manner set forth in Paragraph II. of this Order; *provided, however,* if the Divestiture Trustee receives bona fide offers from more than one acquiring entity, and if the Commission determines to approve more than one acquiring entity, the Divestiture Trustee shall divest to the acquiring entity or entities selected by Respondent from among those approved by the Commission, *provided, further, however,* that Respondent shall select such entity within five (5) days of receiving notification of the Commission's approval.

7. The Divestiture Trustee shall serve, without bond or other security, at the expense of Respondent, on such reasonable and customary terms and conditions as the Commission or a court may set. The Divestiture Trustee shall have the authority to employ, at the expense of Respondent, such consultants, accountants, attorneys, investment bankers, business brokers, appraisers, and other representatives and assistants as are necessary to carry out the Divestiture Trustee's duties and responsibilities. The Divestiture Trustee shall account for all monies derived from the divestiture and all expenses incurred. After approval by the Commission and, in the case of a court-appointed trustee, by the court, of the account of the trustee, including fees for his or her services, all remaining monies shall be paid at the direction of Respondent. The Divestiture Trustee's compensation shall be based at least in significant part on a

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commission arrangement contingent on the Divestiture Trustee's locating an Acquirer and assuring compliance with this Order. The powers, duties, and responsibilities of the Divestiture Trustee (including, but not limited to, the right to incur fees or other expenses) shall terminate when the divestiture required by this Order is consummated.

8. Respondent shall indemnify the Divestiture Trustee and hold the Divestiture Trustee harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Divestiture Trustee's duties, including all reasonable fees of counsel and other expenses incurred in connection with the preparation for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Divestiture Trustee.
9. If the Commission determines that the Divestiture Trustee has ceased to act or failed to act diligently, the Commission may appoint a substitute trustee in the same manner as provided in Paragraph IV. of this Order.
10. The Commission or, in the case of a court-appointed trustee, the court, may on its own initiative or at the request of the Divestiture Trustee issue such additional orders or directions as may be necessary or appropriate to comply with the terms of this Order.
11. The Divestiture Trustee shall have no obligation or authority to operate or maintain the CVE Business.

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12. The Divestiture Trustee shall report in writing to Respondent and to the Commission every two (2) months concerning his or her efforts to divest the CVE Business and Respondent's compliance with the terms of this Order.

D. Respondent shall comply with all terms of the Divestiture Trustee Agreement, and any breach by Respondent of any term of the Trustee Agreement shall constitute a violation of this Order. Notwithstanding any paragraph, section, or other provision of the Divestiture Trustee Agreement, any modification of the Divestiture Trustee Agreement, without the prior approval of the Commission, shall constitute a failure to comply with this Order.

V.

IT IS FURTHER ORDERED that Respondent shall notify the Commission at least thirty (30) days prior to any proposed change in the corporate Respondent such as dissolution, assignment, sale resulting in the emergence of a successor corporation, or the creation or dissolution of subsidiaries or any other change in the corporation that may affect compliance obligations arising out of this Order.

VI.

IT IS FURTHER ORDERED that:

A. Within thirty (30) days after the date this Order becomes final and every thirty (30) days thereafter until the Respondent has fully complied with the provisions of Paragraphs II. and IV. of this Order, Respondent shall submit to the Commission (with simultaneous copies to the Divestiture Trustee(s), as appropriate) verified written reports setting forth in detail the manner and form in which they intend to comply, are complying, and have complied with Paragraphs II. and IV. of this Order.

Decision and Order

Respondent shall include in the reports, among other things that are required from time to time, a full description of the efforts being made to comply with Paragraph II.A. of this Order, including a description of all substantive contacts or negotiations for the divestitures and the identity of all parties contacted. Respondent shall include in the reports copies of all material written communications to and from such parties, all internal memoranda, and all reports and recommendations concerning completing the obligations; and,

- B. One (1) year from the date this Order becomes final on the anniversary of the date this Order becomes final, and at other times as the Commission may require, Respondent shall file verified written reports with the Commission setting forth in detail the manner and form in which it has complied and is complying with this Order.

VII.

IT IS FURTHER ORDERED that for the purpose of determining or securing compliance with this Order, and subject to any legally recognized privilege, and upon written request, Respondent shall permit any duly authorized representative of the Commission:

- A. Access, during office hours and in the presence of counsel, to all facilities and access to inspect and copy all books, ledgers, accounts, correspondence, memoranda and other records and documents in the possession or under the control of Respondent relating to compliance with this Order; and,
- B. Upon five (5) days' notice to Respondent and without restraint or interference from it, to interview officers, directors, employees, agents or independent contractors of Respondent, who may have counsel present.

Analysis to Aid Public Comment

VIII.

IT IS FURTHER ORDERED that this Order shall terminate on November 30, 2016.

By the Commission.

CONFIDENTIAL APPENDIX 1 AND CONFIDENTIAL APPENDIX 2

**[Redacted From Public Record
But Incorporated By Reference]**

ANALYSIS OF CONSENT ORDER TO AID PUBLIC COMMENT

I. Introduction

The Federal Trade Commission (“Commission”) has accepted, subject to final approval, an Agreement Containing Consent Orders (“Consent Agreement”) from Thermo Electron Corporation (“Thermo”). The purpose of the Consent Agreement is to remedy the anticompetitive effects resulting from Thermo’s acquisition of Fisher Scientific International Inc. (“Fisher”). Under the terms of the Consent Agreement, Thermo is required to divest Genevac Limited and Genevac, Inc. (hereinafter referred to together as “Genevac”), which together comprise the entirety of

Analysis to Aid Public Comment

Fisher's centrifugal vacuum evaporator ("CVE") business, within five months after the date Thermo signed the Consent Agreement.

The Consent Agreement has been placed on the public record for thirty days to solicit comments from interested persons. Comments received during this period will become part of the public record. After thirty days, the Commission will again review the Consent Agreement and the comments received, and will decide whether it should withdraw from the Consent Agreement or make it final.

Pursuant to an Agreement and Plan of Merger dated May 7, 2006, Thermo proposes to acquire Fisher in a transaction valued at approximately \$12.8 billion. The Commission's complaint alleges that the proposed acquisition, if consummated, would violate Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45, by lessening competition in the market for high-performance CVEs.

II. The Parties

Headquartered in Waltham, Massachusetts, Thermo is one of the largest and most diversified suppliers of analytical instruments in the world. Founded in 1956, the company now employs 11,000 people worldwide with offices in thirty countries. Thermo owns many well-known laboratory equipment brands and sells high-performance CVEs under its Savant Speedvac brand. Thermo's 2005 worldwide revenue was \$2.6 billion and its North American sales were approximately \$1.2 billion.

Fisher is headquartered in Hampton, New Hampshire. Founded in 1902 to supply equipment and consumables to laboratories, Fisher today employs 19,500 people worldwide, 13,000 of those in the United States. The company is divided into three segments: biopharma services, scientific equipment and products, and distribution. Fisher has many well-known

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laboratory equipment and instrument brands and sells its CVE products under the Genevac brand. Through its distribution operations, Fisher sells approximately 600,000 scientific and laboratory products and serves over 350,000 customers worldwide. Fisher's 2005 worldwide revenue was \$5.6 billion, of which \$4.1 billion was achieved in the United States.

III. High-Performance CVEs

High-performance CVEs apply heat, vacuum, and centrifugal force to rapidly remove solvents from samples suspended in solution in the wells of microtiter plates or test tubes, while preventing any molecular degradation or cross-contamination of the samples. High-performance CVEs are used primarily in combinatorial chemistry laboratories, which develop processes to simultaneously synthesize large collections of potentially biologically-active molecules, a process called parallel synthesis. The collections of molecules then can be tested for activity against identified targets as potential drug candidates during the early stages of the drug discovery process. In academic laboratories, high-performance CVEs are used to aid in the creation of chemical libraries of potentially biologically-active molecules for research purposes. High-performance CVEs typically cost between \$25,000 and \$100,000, depending on features and throughput capabilities.

CVEs are available in both high-performance and lower-performance models. High-performance CVEs differ from their lower-performance counterparts in a number of significant respects. High-performance CVEs can process hundreds of samples at a time and include advanced control and monitoring capabilities to prevent cross contamination between samples or degradation of the molecules as they are evaporated. They also are compatible with corrosive and environmentally sensitive solvents, such as hydrochloric acid and acetonitrile. In addition, high-performance models offer sophisticated programming capabilities. All of these features are considered useful and necessary by high-performance CVE purchasers because they

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enhance the efficiency of their work and reduce the likelihood of sample loss, degradation, and contamination. High-performance CVE purchasers do not consider lower-performance CVEs to be viable alternatives because of the high value of the samples, which in many cases take a week or more to synthesize and can represent the entire quantity of the compound that the scientist has developed. The repercussions of a sample loss or degradation resulting from a failure of the CVE are simply too great to justify the use of lower performance CVEs in these applications.

Besides the use of CVEs, there are also other methods available for removing solvents and drying samples, such as freeze drying and nitrogen blowdown. These technologies, however, have many limitations as compared to high-performance CVEs. Freeze drying, also called lyophilisation, is an effective technique for drying samples suspended in aqueous solvents. Lyophilisation is far less effective, however, with solvents that are not water-based and can be significantly more time consuming than high-performance CVEs when evaporating a large number of samples. Nitrogen blowdown equipment, which circulates nitrogen – a very dry gas – across the samples' surface to evaporate the solvent, does not capture the evaporated solvent and does not maintain a constant temperature during evaporation. These drawbacks, among others, prevent the alternative technologies from being viable alternatives to high-performance CVEs.

The United States is the relevant geographic market in which to analyze the effects of Thermo's proposed acquisition of Fisher in the market for high-performance CVEs. Firms that lack significant U.S. business operations cannot compete meaningfully in the United States. Successful participation in the U.S. high-performance CVE market requires substantial domestic, even local service and support. Because many purchasers use their high-performance CVEs daily, breakdowns may halt work in the lab. Such delay is costly, so customers demand reliable equipment and, in the event of a breakdown, that required service,

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support, and replacement parts be readily available. Thus, establishing a reputation for high quality products and strong after-sales support is necessary to gain acceptance among customers and succeed in the U.S. high-performance CVE market.

IV. Competitive Effects and Entry Conditions

Thermo and Fisher are the only two significant suppliers in the approximately \$10 million U.S. high-performance CVE market. Thermo and Fisher account for approximately 30 percent and 70 percent of the market, respectively, and compete directly on price, service, and product innovations. The evidence gathered in the Commission's investigation demonstrates that customers receive lower prices and other economic benefits, such as favorable service or payment terms, as a result of the competition between Thermo and Fisher. Indeed, many customers fear that the proposed transaction would allow the merged entity to increase prices of high-performance CVE's considerably, as they would have no alternative but to go along with a price increase imposed by the combined Thermo/Fisher. The evidence also shows that the parties compete on the basis of product performance, features, and innovation resulting in product improvements, such as enhanced vacuum and monitoring capabilities. If the proposed transaction were consummated, Thermo would obtain a virtual monopoly in the U.S. high-performance CVE market.

Martin Christ GmbH ("Martin Christ"), which is based in Germany, also offers high-performance CVEs. Martin Christ currently is not a significant competitor in the United States, however, and is not expected to be in the future. Martin Christ has had minimal sales of its high-performance CVE products in the United States during the last three years, and its sales are not likely to increase sufficiently to restore the lost competition.

Entry into the relevant market that would be sufficient to deter or counteract the anticompetitive effects of proposed transaction is unlikely to occur in a timely manner, as there are significant

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impediments to entry and expansion. First, a firm would have to design, develop, and test a product with functionality and reliability nearly equivalent to the products offered by incumbent models, while designing around, or obtaining licenses to, any intellectual property protecting the features and design of the incumbent high-performance CVEs. Second, if a prospective entrant does not have a pre-existing sales force directly selling related products, it also would have to establish a distribution channel by building a sales force and initiating a marketing effort sufficient to convince customers to buy its new high-performance CVE. Third, because high-performance CVEs are used regularly to perform critical laboratory functions, a new entrant must build a reputation for product quality and reliability and for responsive service in order to succeed. Finally, even if an entrant could overcome these barriers to entry, the relatively small high-performance CVE market, and correspondingly limited profit opportunities available to a new entrant, likely are insufficient to justify the investment necessary to enter the high-performance CVE market.

V. The Consent Agreement

The Consent Agreement effectively remedies the anticompetitive effects that are likely to occur as a result of the proposed transaction on the high-performance CVE market by requiring Thermo to divest Genevac, Fisher's stand alone CVE subsidiary. Pursuant to the Consent Agreement, Thermo is required to divest Genevac to a Commission-approved buyer, at no minimum price, within five months after the date Thermo signed the Consent Agreement. The Commission's goal in evaluating and approving purchasers of divested assets is to ensure that the competitive environment that existed prior to the acquisition is maintained. A proposed acquirer of divested assets must not itself present competitive problems.

Should Thermo fail to accomplish the divestiture within the time and in the manner required by the Consent Agreement, the

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Commission may appoint a trustee to divest the assets. If approved, the trustee would have the exclusive power and authority to accomplish the divestiture within six months of being appointed, subject to any necessary extensions by the Commission. The Consent Agreement requires Thermo to provide the trustee with access to information related to the Genevac business as necessary to fulfill his or her obligations.

The Order to Hold Separate and Maintain Assets (“Hold Separate Order”) that is included in the Consent Agreement requires that Thermo hold separate and maintain the viability of Genevac as a competitive operation until the business is transferred to the Commission-approved acquirer. Furthermore, it contains measures designed to ensure that no material confidential information is exchanged between Thermo and Genevac (except as otherwise provided in the Consent Agreement) and provisions designed to prevent interim harm to competition in the high-performance CVE market.

The Hold Separate Order provides that the Commission may appoint a Hold Separate Trustee who is charged with the duty of monitoring Thermo’s compliance with the Consent Agreement. Pursuant to that order, the Commission has appointed Harry Cole as Hold Separate Trustee to oversee Genevac prior to its divestiture and to ensure that Thermo complies with its obligations under the Consent Agreement. Mr. Cole was employed by Genevac from its incorporation in 1990 until 2005 and held numerous production, service, sales, and management positions, including serving as General Manager of Genevac with plenary responsibility for Genevac’s performance. Mr. Cole’s extensive background in the CVE market and intimate knowledge of Genevac uniquely qualify him to serve as the Hold Separate Trustee. The Hold Separate Order will become effective upon the date the Commission accepts the Consent Agreement for placement on the public record and will remain in effect until Thermo divests Genevac to a Commission-approved buyer. In the event that Thermo does not divest Genevac within the five-month

Analysis to Aid Public Comment

time period, the Consent Agreement allows the Commission to appoint a trustee to divest Genevac.

The Consent Agreement contains several further provisions designed to help ensure that the divestiture of Genevac is successful. First, because a few of Genevac's lower-performance CVEs are currently sold through Fisher's catalog, the Consent Agreement requires Thermo, at the acquirer's option, to enter into a distribution agreement with the acquirer for Genevac's products to continue to be sold via the Fisher catalog, ensuring that Thermo cannot diminish Genevac's competitiveness by disrupting Genevac's distribution channels. Second, so that key Genevac employees stay with Genevac through the divestiture process, the Consent Agreement requires Thermo to implement and fund a retention plan for key employees. Third, the Consent Agreement prohibits Thermo from soliciting Genevac employees for at least a year after the divestiture of Genevac. For key Genevac employees, including its management and head of research and development, this prohibition is extended to two years.

In order to ensure that the Commission remains informed about the status of the Genevac business pending divestiture, and about the efforts being made to accomplish the divestiture, the Consent Agreement requires Thermo to file periodic reports with the Commission until the divestiture is accomplished.

The purpose of this analysis is to facilitate public comment on the Consent Agreement, and it is not intended to constitute an official interpretation of the Decision and Order or the Hold Separate Order, or to modify their terms in any way.

Complaint

IN THE MATTER OF

**WATSON PHARMACEUTICALS, INC.
AND
ANDRX CORPORATION**

CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS
OF SEC. 7 OF THE CLAYTON ACT AND SEC. 5 OF THE FEDERAL
TRADE COMMISSION ACT

*Docket C-4172, File No. 061 0139
Complaint, October 31, 2006 – Decision, December 6, 2006*

This consent order addresses the acquisition of Andrx Corporation by Watson Pharmaceuticals, Inc. Both companies are suppliers of generic pharmaceutical products. Under the terms of the order, the companies would be required to (1) terminate Watson's marketing agreement with Interpharm Holdings, Inc., and return all of the Watson rights and assets necessary to market generic hydrocodone bitartrate/ibuprofen tablets to Interpharm, (2) assign and divest the Andrx rights and assets necessary to develop, manufacture, and market generic extended release glipizide tablets to Actavis Elizabeth LLC, and (3) divest the Andrx rights and assets necessary to develop, manufacture, and market eleven generic oral contraceptive products to Teva Pharmaceutical Industries, Inc. The acquirers of the divested assets must receive the prior approval of the Commission. If the parties fail to divest within the allotted time, the Commission may appoint a trustee to divest the assets. The order requires Watson and Andrx to provide transitional services to enable the acquirers to obtain all of the necessary approvals from the FDA, including technology transfer assistance to manufacture the products in substantially the same manner and quality employed or achieved by Watson and Andrx. In addition, Watson and Andrx must file reports with the Commission periodically until the divestitures and transfers are accomplished.

Participants

For the *Commission*: *Michael R. Barnett, Daniel P. Ducore, Christine Naglieri, and Kari A. Wallace.*

For the *Respondents*: *Maria A. Raptis and Steven C. Sunshine, Cadwalader, Wickersham & Taft LLP; and Rhett R. Krulla and Michael S. Lazaroff, Proskauer Rose LLP.*

Complaint

COMPLAINT

Pursuant to the Clayton Act and the Federal Trade Commission Act, and its authority thereunder, the Federal Trade Commission (“Commission”), having reason to believe that Respondent Watson Pharmaceuticals, Inc. (“Watson”), a corporation subject to the jurisdiction of the Commission, has agreed to acquire Andrx Corporation (“Andrx”), a corporation subject to the jurisdiction of the Commission, in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act (“FTC Act”), as amended, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding in respect thereof would be in the public interest, hereby issues its Complaint, stating its charges as follows:

I. DEFINITIONS

1. “Commission” means the Federal Trade Commission.
2. “FDA” means the United States Food and Drug Administration.
3. “Respondents” means Watson and Andrx individually and collectively.
4. “ER” means extended-release formulation.

II. RESPONDENTS

5. Respondent Watson is a corporation organized, existing, and doing business under and by virtue of the laws of the State of Nevada, with its headquarters address at 311 Bonnie Circle, Corona, California 92880. Watson is engaged in the development, manufacture, marketing, sale, and distribution of generic pharmaceutical products.

6. Respondent Andrx is a corporation organized, existing,

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and doing business under and by virtue of the laws of the State of Delaware, with its headquarters address at 4955 Orange Drive, Davie, Florida 33314. Andrx is engaged in the development, manufacture, marketing, sale, and distribution of generic pharmaceutical products.

7. Respondents are, and at all times relevant herein have been, engaged in commerce, as “commerce” is defined in Section 1 of the Clayton Act as amended, 15 U.S.C. § 12, and are corporations whose business is in or affects commerce, as “commerce” is defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

III. THE PROPOSED ACQUISITION

8. On March 12, 2006, Watson and Andrx entered into an Agreement and Plan of Merger (the “Merger Agreement”) whereby Watson proposes to acquire all of the outstanding shares of Andrx in a transaction valued at approximately \$1.9 billion (the “Acquisition”).

IV. THE RELEVANT MARKETS

9. For the purposes of this Complaint, the relevant lines of commerce in which to analyze the effects of the Acquisition are the manufacture and sale of the following generic pharmaceutical products:

- a. hydrocodone bitartrate/ibuprofen tablets;
- b. glipizide ER tablets;
- c. norgestimate/ethinyl estradiol 0.25 mg/0.035 mg (“generic Ortho-Cyclen”) tablets;
- d. norgestimate/ethinyl estradiol 0.18 mg/0.035 mg, 0.215 mg/0.035 mg, 0.25 mg/0.035 mg (“generic Ortho Tri-Cyclen”) tablets;

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e. desogestrel/ethinyl estradiol 0.15mg/0.03 mg (“generic Ortho-cept”) tablets;

f. desogestrel/ethinyl estradiol and ethinyl estradiol 0.15mg/0.02 mg and 0.01 mg (“generic Mircette”) tablets;

g. levonorgestrel/ethinyl estradiol 0.05 mg/0.03 mg, 0.075 mg/0.04 mg, and 0.125 mg/0.03 mg (“generic Triphasil 28”) tablets;

h. levonorgestrel and ethinyl estradiol 0.1 mg/0.02 mg (“generic Alesse”) tablets;

i. norethindrone/ethinyl estradiol 0.5 mg/0.035 mg, 0.75 mg/0.035 mg, 1 mg/0.035 mg (“generic Ortho-Novum 7/7/7”) tablets;

j. norethindrone/ethinyl estradiol 1 mg/0.035 mg (“generic Ortho-Novum 1/35”) tablets;

k. norethindrone acetate/ethinyl estradiol and ferrous fumarate 1.5 mg/0.030 mg/75 mg (“generic Loestrin FE (1.5 mg/0.030 mg)”) tablets;

l. norethindrone acetate/ethinyl estradiol and ferrous fumarate 1 mg/0.020 mg/75 mg (“generic Loestrin FE (1 mg/0.020 mg)”) tablets; and

m. norethindrone/ethinyl estradiol 0.4 mg/0.035 mg (“generic Ovcon-35”) tablets.

10. For the purposes of this Complaint, the United States is the relevant geographic area in which to analyze the effects of the Acquisition in the relevant lines of commerce.

V. THE STRUCTURE OF THE MARKETS

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11. Hydrocodone bitartrate/ibuprofen tablets are a combination of an opioid analgesic agent, hydrocodone bitartrate, and a nonsteroidal anti-inflammatory drug, ibuprofen, used for the short-term management of acute pain. Currently, Watson, Andrx, and Teva Pharmaceuticals, Inc. (“Teva”) are the only suppliers of generic hydrocodone bitartrate/ibuprofen tablets in the United States. The Acquisition would leave only Watson and Teva in this market, and increase Watson’s market share to over 38 percent. The Herfindahl-Hirschman Index (“HHI”) would increase by 630 points, resulting in a post-acquisition HHI of 5,264 points.

12. Glipizide ER tablets correct the effects of type 2 diabetes by stimulating the release of insulin in the pancreas, thereby reducing blood sugar levels in the body. Watson is the leading supplier in the market for the manufacture and sale of generic glipizide ER tablets in the United States, with over 45 percent of the market. Andrx and Greenstone Ltd. are the only other suppliers of this generic product in the United States. The Acquisition would create a duopoly, with Watson accounting for approximately 80 percent of the generic glipizide ER market. The HHI would increase by 3,162 points, resulting in a post-acquisition HHI of 6,824 points.

13. Oral contraceptives are forms of birth control that contain varying ratios of synthetic estrogen and synthetic progestin to prevent ovulation and pregnancy. In each of the eleven relevant oral contraceptive markets, Watson and Andrx/Teva are two of a limited number of suppliers or potential entrants. Andrx and Teva have an agreement whereby Andrx develops and manufactures these oral contraceptives and Teva markets the products. Andrx also receives a royalty payment on Teva’s sales of the products.

14. The U.S. market for the manufacture and sale of generic Ortho-Cyclen tablets is already highly concentrated, with a pre-acquisition HHI of 5,818 points. Watson, Andrx/Teva, and Barr Pharmaceuticals, Inc. (“Barr”) are the only suppliers of this generic oral contraceptive in the United States. After the

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Acquisition, the HHI would increase by 150 points, resulting in a post-acquisition HHI of 5,968 points, and Watson would account for 28 percent of the market.

15. Watson is the leading supplier in the U.S. market for the manufacture and sale of generic Ortho Tri-Cyclen tablets. Andrx/Teva and Barr are the only other suppliers of this generic oral contraceptive in the United States. The market for generic Ortho Tri-Cyclen is already highly concentrated, with a pre-acquisition HHI of 4,856 points. After the Acquisition, the HHI would increase by 216 points, resulting in a post-acquisition HHI of 5,072 points, and Watson would account for 56 percent of the market.

16. Watson currently competes in seven additional oral contraceptive markets where Andrx/Teva is developing competitive products. These seven markets represent generic products that are equivalent to Ortho-cept, Triphasil 28, Alesse, Ortho-Novum 1/35, Ortho-Novum 7/7/7, Loestrin FE (1 mg/0.020 mg), and Loestrin FE (1.5 mg/0.030 mg). In each of these highly concentrated markets, Watson is one of only two or three suppliers. Andrx/Teva is one of a limited number of firms developing generic oral contraceptives that would compete in each of these markets, and is well-positioned to enter the markets in a timely manner.

17. Both Watson and Andrx are developing generic Mircette tablets and generic Ovcon-35 tablets. They are two of a limited number of suppliers capable of entering these future generic markets in a timely manner.

VI. ENTRY CONDITIONS

18. Entry into each of the relevant product markets described in Paragraph 9 would not be timely, likely, or sufficient in its magnitude, character, and scope to deter or counteract the anticompetitive effects of the Acquisition. Developing and

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obtaining FDA approval for the manufacture and sale of each of these products takes at least two years due to substantial regulatory, technological, and intellectual property barriers.

VII. EFFECTS OF THE ACQUISITION

19. The effects of the Acquisition, if consummated, may be to substantially lessen competition and to tend to create a monopoly in the relevant markets in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45, in the following ways, among others:

a. by eliminating actual, direct, and substantial competition between Watson and Andrx, and reducing the number of competitors in the markets for the manufacture and sale of generic hydrocodone bitartrate/ibuprofen tablets, generic glipizide ER tablets, generic Ortho-Cyclen tablets, and generic Ortho Tri-Cyclen tablets thereby: (1) increasing the likelihood that Watson will be able to unilaterally exercise market power in these markets, (2) increasing the likelihood and degree of coordinated interaction between or among the remaining competitors, and (3) increasing the likelihood that customers would be forced to pay higher prices;

b. by eliminating potential competition between Watson and Andrx in the markets for the manufacture and sale of generic Ortho-Cept tablets, generic Triphasil 28 tablets, generic Alesse tablets, generic OrthoNovum 1/35 tablets, generic OrthoNovum 7/7/7 tablets, generic Loestrin FE (1 mg/0.020 mg) tablets, and generic Loestrin FE (1.5 mg/0.030 mg) tablets, thereby: (1) increasing the likelihood that the combined entity would forego or delay the launch of Andrx's products in these markets, and (2) increasing the likelihood that the combined entity would delay or eliminate the substantial additional price competition that would have resulted from Andrx's independent entry into the markets; and

c. by eliminating future competition between Watson and

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Andrx in the market for the manufacture and sale of generic Mircette tablets and generic Ovcon-35 tablets, thereby: (1) increasing the likelihood that the combined entity would forego or delay the launch of Watson's or Andrx's products in these markets, and (2) increasing the likelihood that the combined entity would delay or eliminate the substantial additional price competition that would have resulted from Watson's and Andrx's independent entry into the markets.

VIII. VIOLATIONS CHARGED

20. The Merger Agreement described in Paragraph 8 constitutes a violation of Section 5 of the FTC Act, as amended, 15 U.S.C. § 45.

21. The Acquisition described in Paragraph 8, if consummated, would constitute a violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this thirty-first day of October, 2006, issues its Complaint against said Respondents.

By the Commission, Commissioner Rosch recused.

Order to Maintain Assets

ORDER TO MAINTAIN ASSETS

The Federal Trade Commission (“Commission”), having initiated an investigation of the proposed acquisition by Respondent Watson Pharmaceuticals, Inc. (“Watson”) of Respondent Andrx Corporation (“Andrx”), hereinafter referred to as “Respondents,” and Respondents having been furnished thereafter with a copy of a draft Complaint that the Bureau of Competition proposed to present to the Commission for its consideration and that, if issued by the Commission, would charge Respondents with violations of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondents, their attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Orders (“Consent Agreement”), containing an admission by Respondents of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondents that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined to accept the executed Consent Agreement and to place such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby issues its Complaint, makes the following jurisdictional findings and issues this Order to Maintain Assets:

1. Respondent Watson is a corporation organized, existing and doing business under and by virtue of the laws of the State of Nevada, with its headquarters address at 311 Bonnie Circle, Corona, California 92880.

Order to Maintain Assets

2. Respondent Andrx is a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its headquarters address at 8151 Peters Road, Plantation, Florida 33324.

3. The Commission has jurisdiction of the subject matter of this proceeding and of Respondents, and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that, as used in the Order to Maintain Assets, the following definitions shall apply:

- A. “Watson” means Watson Pharmaceuticals, Inc., its directors, officers, employees, agents, representatives, successors, and assigns; and its joint ventures, subsidiaries, divisions, groups and affiliates in each case controlled by Watson (including, but not limited to, Watson Laboratories, Inc. and Water Delaware, Inc.), and the respective directors, officers, employees, agents, representatives, successors, and assigns of each. After the Acquisition, Watson shall include Andrx.
- B. “Andrx” means Andrx Corporation, its directors, officers, employees, agents, representatives, successors, and assigns; and its joint ventures, subsidiaries, divisions, groups and affiliates in each case controlled by Andrx (including, but not limited to, Andrx Pharmaceuticals, Inc., and Andrx Pharmaceuticals, LLC), and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.

Order to Maintain Assets

- C. “Respondents” means Watson and Andrx, individually and collectively.
- D. “Commission” means the Federal Trade Commission.
- E. “Acquirer” means:
1. An entity identified by name in the Decision and Order to acquire particular assets or rights that Respondents are required to assign, grant, license, divest, transfer, deliver, terminate, or otherwise convey pursuant to the Decision and Order and that has been approved by the Commission to accomplish the requirements of the Decision and Order in connection with the Commission’s determination to make the Decision and Order final; or
 2. An entity approved by the Commission to acquire particular assets or rights that Respondents are required to assign, grant, license, divest, transfer, deliver, terminate, or otherwise convey pursuant to the Decision and Order.
- F. “Acquirer Employees” means any of an Acquirer’s employees with any amount of responsibility related to the Divestiture Products.
- G. “Acquisition” means the acquisition contemplated by The Agreement and Plan of Merger dated March 12, 2006, by and among Watson Pharmaceuticals, Inc., Water Delaware, Inc., and Andrx Corporation, and all amendments, exhibits, attachments, agreements, and schedules thereto.
- H. “Acquisition Date” means the earlier of the following dates:
1. The date Respondents close on the Acquisition; or

Order to Maintain Assets

2. The date the merger contemplated by the Acquisition is consummated by filing the certificate of merger related to the Acquisition with the Secretary of State of the State of Delaware.
- I. “Actavis” means Actavis Elizabeth LLC, a limited liability company, organized, existing and doing business under and by virtue of the law of the State of Delaware, with its headquarters address at 990 Riverview Drive, Totowa, New Jersey 07512.
 - J. “Agency(ies)” means any government regulatory authority or authorities in the world responsible for granting approvals, clearances, qualifications, licenses, or permits for any aspect of the research, Development, manufacture, marketing, distribution, or sale of a Product. This term includes, but is not limited to, the United States Food and Drug Administration (“FDA”).
 - K. “Anda” means Anda, Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of Florida, with its headquarters address at 2915 Weston Road, Weston, Florida 33331.
 - L. “Anda Pharmaceuticals” means Anda Pharmaceuticals, Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of Florida, with its headquarters address at 6500 Adelaide Court Groveport, OH 43125.
 - M. “Andrx Manufactured Generic Oral Contraceptive Products” means:
 1. norgestimate/ethinyl estradiol 0.25 mg/0.035 mg tablets;

Order to Maintain Assets

2. norgestimate/ethinyl estradiol 0.18 mg/0.035 mg, 0.215 mg/0.035 mg, 0.25 mg/0.035 mg tablets;
 3. norethindrone/ethinyl estradiol 1 mg/0.035 mg tablets;
and
 4. norethindrone/ethinyl estradiol 0.5 mg/0.035 mg, 0.75 mg/0.035 mg, 1 mg/0.035 mg tablets.
- N. “Andrx-Pfizer Agreement” means the Supply Agreement by and between Andrx Pharmaceuticals, Inc., and Pfizer, Inc., dated September 4, 2003, and all amendments, exhibits, attachments, agreements, and schedules related thereto. The Andrx-Pfizer Agreement is attached to the Decision and Order and contained in non-public Appendix II.
- O. “Andrx-Teva Agreement” means the Marketing and Distribution Agreement by and among Teva Pharmaceuticals USA, Inc., Novopharm Limited, Andrx Pharmaceuticals, Inc. and Andrx Pharmaceuticals, LLC, dated March 10, 2003, and all amendments, exhibits, attachments, agreements, and schedules thereto. The Andrx-Teva Agreement is attached to the Decision and Order and contained in non-public Appendix III.
- P. “Andrx-Teva Amendments” means Amendments No. 1 and 2 to the Andrx-Teva Agreement by and among Teva Pharmaceuticals USA, Inc., Novopharm Limited, and Andrx Pharmaceuticals, LLC, dated March 12, 2006, and October 3, 2006, respectively, and all amendments, exhibits, attachments, agreements, and schedules thereto. The Andrx-Teva Amendments are attached to the Decision and Order and contained in non-public Appendix IV.
- Q. “Applications” means the applications for a Product filed or to be filed with the FDA pursuant to 21 C.F.R. Parts 312 and 314, and all supplements, amendments, and

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revisions thereto, any preparatory work, drafts and data necessary for the preparation thereof, and all related correspondence between Respondents and the FDA. This term includes, but is not limited to, Investigational New Drug Application (“IND”), New Drug Application (“NDA”), Abbreviated New Drug Application (“ANDA”), Supplemental New Drug Application (“SNDA”), and Marketing Authorization Application (“MAA”) for a Product filed or to be filed with the FDA and all supplements, amendments, and revisions thereto, any preparatory work, drafts, and data necessary for the preparation thereof, and all related correspondence between Respondents and the FDA.

- R. “Assumed Contracts” means all of the following contracts or agreements:
1. That make specific reference to the Divestiture Products and pursuant to which any Third Party is obligated to purchase, or has the option to purchase with no further negotiation on price, the Divestiture Products from Respondents unless such contracts apply generally to the divesting Respondents’ sales of generic Products to that Third Party;
 2. Pursuant to which Respondents purchase the active pharmaceutical ingredients or had planned to purchase the active pharmaceutical ingredients from any Third Party for use in connection with the manufacture of the Divestiture Products;
 3. Relating to any clinical trial involving the Divestiture Products;
 4. With universities or other research institutions for the use of the Divestiture Products in scientific research;

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5. Relating to the particularized marketing of the Divestiture Products or educational matters relating solely to the Divestiture Products;
6. Pursuant to which a Third Party manufactures the Divestiture Products on behalf of the Respondents except for the Andrx-Pfizer Agreement;
7. Pursuant to which a Third Party provides the Manufacturing Technology or related equipment to the Respondents;
8. Constituting confidentiality agreements involving the Divestiture Products;
9. Involving any royalty, licensing, or similar arrangement involving the Divestiture Products to which Respondents are party, except for any agreement relating to the Generic Oral Contraceptive Royalties;
10. Pursuant to which a Third Party provides any specialized services necessary to the research, Development, or manufacture of the Divestiture Products to Respondents, including consultation arrangements; and
11. Pursuant to which any Third Party collaborates with the Respondents in the performance of research, Development, marketing, distribution or selling of the Divestiture Products or the Divestiture Products business;

Provided, however, that where any such contract or agreement also relates to Retained Products, Respondents shall assign to an Acquirer all such rights under the contract or agreement as are related to the Divestiture

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Products, but concurrently may retain similar rights for the purposes of the Retained Products;

Provided, further, however, that Respondents shall provide copies of each contract or agreement to an Acquirer on or before the related Closing Date and segregated in a manner that clearly identifies the purpose of each contract or agreement.

- S. “Categorized Assets” means the following assets related to the Divestiture Products:
1. All Intellectual Property;
 2. A perpetual, fully paid-up and royalty-free license with rights to sublicense to all Licensed Intellectual Property solely within the field of use to use, make, distribute, offer for sale, promote, advertise, sell, import, export, or have used, made, distributed, offered for sale, promoted, advertised, sold, imported, or exported the Divestiture Products within the specified Geographic Territory;
 3. All Product Registrations;
 4. All Manufacturing Technology;
 5. All Marketing Materials;
 6. A list of all NDC Numbers and rights, to the extent permitted by Law, related to the Divestiture Products:
 - a. To require Respondents to discontinue the use of those NDC Numbers in the sale or marketing of Products other than with respect to returns, rebates, allowances, and adjustment for Divestiture Products sold prior to the Acquisition Date;

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- b. To prohibit Respondents from seeking from any customer any type of cross-referencing of those NDC Numbers with any Retained Products;
 - c. To seek to change any cross-referencing by a customer of those NDC Numbers with the Retained Products (including the right to receive notification from Respondents of any such cross-referencing that is discovered by Respondents);
 - d. To seek cross-referencing from a customer of those NDC Numbers with the relevant Acquirer's NDC Numbers related to the Divestiture Products;
 - e. To approve the timing of Respondents' discontinued use of those NDC Numbers in the sale or marketing of Products other than with respect to returns, rebates, allowances, and adjustments for Divestiture Products sold prior to the Acquisition Date, provided that Respondents may provide the minimum notice required by contract or law;
 - f. To approve any notification from Respondents to any customer regarding the use or discontinued use of such numbers by Respondents prior to such notification being disseminated to the customer, provided that Respondents may provide the minimum notice required by contract or law;
7. All rights to all of Respondents' relevant Applications;
8. Rights of Reference or Use to the Drug Master Files related to the Applications including, but not limited to, the pharmacology and toxicology data contained in all Applications;

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9. All Development Reports;
10. At an Acquirer's option, all Assumed Contracts;
11. All strategic safety programs submitted to the FDA that are designed to decrease product risk by using one or more interventions or tools beyond the package insert;
12. All patient registries, and any other systematic active post-marketing surveillance program to collect patient data, laboratory data and identification information required to be maintained by the FDA to facilitate the investigation of adverse effects;
13. Lists of all customers and/or targeted customers, net sales (in either units or dollars) to such customers on either an annual, quarterly, or monthly basis including, but not limited to, a separate list specifying the above-described information for the High Volume Accounts and including the names of employees for the High Volume Accounts that are or have been responsible for the purchase of such Divestiture Products on behalf of the High Volume Accounts and their business contact information;
14. At an Acquirer's option, all inventory in existence as of the Closing Date including, but not limited to, raw materials, packaging materials, work-in-process and finished goods;
15. Copies of all unfulfilled customer purchase orders as of the Closing Date, to be provided to the relevant Acquirer not later than two (2) days after the Closing Date;

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16. At an Acquirer's option, subject to any rights of the customer, all unfulfilled customer purchase orders; and
17. All of the Respondents' books, records, and files directly related to the foregoing or to the Divestiture Products;

Provided, however, that this term shall not include (1) documents relating to Respondents' general business strategies or practices relating to research, development, manufacture, marketing or sale of generic pharmaceutical Products, where such documents do not discuss with particularity the Divestiture Products, and (2) administrative, financial and accounting records;

Provided, further, however, Respondents may exclude from this term quality control records that are determined by the Interim Monitor or the Acquirer not to be material to the manufacture of the Divestiture Products;

Provided, further, however, that in cases in which documents or other materials included in the relevant assets to be divested contain information: (1) that relate to both the Divestiture Products and other Products or businesses of Respondents and cannot be segregated in a manner that preserves the usefulness of the information related to the Divestiture Products; or (2) for which the Respondents have a legal obligation to retain the original copies, the Respondents shall be required to provide only copies or relevant excerpts of the documents and materials containing this information. In instances where such copies are provided to an Acquirer, the Respondents shall provide such Acquirer access to original documents under circumstances where copies of documents are insufficient for evidentiary or regulatory purposes. The purpose of this proviso is to ensure that the Respondents provide an Acquirer with the above-described information without requiring the Respondents to completely divest themselves

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of information that, in content, also relates to Products and businesses other than the Divestiture Products.

- T. “cGMP” means current Good Manufacturing Practice as set forth in the United States Federal, Food, Drug, and Cosmetic Act, as amended, and includes all rules and regulations promulgated by the FDA thereunder.
- U. “Closing Date” means the date on which the Respondents (or a Divestiture Trustee) consummate a transaction to assign, grant, license, divest, transfer, deliver, terminate or otherwise convey assets or rights related to the Divestiture Products or the Interpharm Product to an Acquirer pursuant to the Decision and Order.
- V. “Confidential Business Information” means all information owned by, or in the possession or control of, Respondents that is not in the public domain and that is directly related to the research, Development, manufacture, marketing, commercialization, importation, exportation, cost, supply, sales, sales support or use of the Divestiture Products or Interpharm Product; *provided, however,* that the restrictions contained in this Order and the Decision and Order regarding the use, conveyance, provision or disclosure of “Confidential Business Information” shall not apply to the following:
1. Information that subsequently falls within the public domain through no violation of this order or breach of confidentiality or non-disclosure agreement with respect to such information by Respondents;
 2. Information related to the Interpharm Product that Respondent Andrx can demonstrate it obtained without the assistance of Respondent Watson prior to the Acquisition;

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3. Information related to the Divestiture Products that Respondent Watson can demonstrate it obtained without the assistance of Respondent Andrx prior to the Acquisition;
 4. Information that is required by law to be publicly disclosed;
 5. Information that does not directly relate to the Divestiture Products or the Interpharm Product;
 6. Information relating to Respondents' general business strategies or practices relating to research, Development, manufacture, marketing or sale of generic pharmaceutical Products that does not discuss with particularity the Divestiture Products or the Interpharm Product; and
 7. Information specifically excluded from the Categorized Assets.
- W. "Copyrights" means rights to all original works of authorship of any kind directly related to the Divestiture Products and any registrations and applications for registrations thereof within the Geographic Territory, including, but not limited to, all the following:
1. Promotional materials for healthcare providers;
 2. Promotional materials for patients;
 3. Educational materials for the sales force;
 4. Copyrights in all preclinical, clinical and process development data and reports relating to research and Development, including raw data relating to clinical trials, case report forms relating thereto, statistical programs developed (or modified in a manner material to use or function thereof) to analyze clinical data,

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- market research data, market intelligence reports and statistical programs (if any) used for marketing and sales research;
5. Customer information, promotional and marketing materials, sales forecasting models, medical education materials, sales training materials, and advertising and display materials;
 6. Records relating to employees who accept employment with an Acquirer (excluding any personnel records transfer of which is prohibited by law);
 7. Records, including customer lists, sales force call activity reports, vendor lists, sales data, reimbursement data, speaker lists, manufacturing records, manufacturing processes, and supplier lists;
 8. Data contained in laboratory notebooks;
 9. Adverse experience reports and files related thereto (including source documentation), periodic adverse experience reports, and data contained in electronic databases relating thereto;
 10. Analytical and quality control data; and
 11. All correspondence with the FDA.
- X. "Development" means all preclinical and clinical drug development activities, including formulation, test method development and stability testing, toxicology, process development, manufacturing scale-up, development-stage manufacturing, quality assurance/quality control development, statistical analysis and report writing, conducting clinical trials for the purpose of obtaining any and all approvals, licenses, registrations or authorizations

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from any Agency necessary for the manufacture, use, storage, import, export, transport, promotion, marketing, and sale of a Product (including any government price or reimbursement approvals), Product approval and registration, and regulatory affairs related to the foregoing.

- Y. "Development Reports" means the following documents related to the Divestiture Products in Respondents' possession or in which Respondents have a right to access:
1. Pharmacokinetic study reports;
 2. Bioavailability study reports (including reference listed drug information);
 3. Bioequivalence study reports (including reference listed drug information);
 4. All correspondence between Respondents and the FDA relating to the Applications submitted by, on behalf of, or acquired by Respondents;
 5. Annual and periodic reports related to the Applications, including any safety update reports;
 6. FDA approved Product labeling;
 7. Currently used product package inserts (including historical change of controls summaries);
 8. FDA approved patient circulars and information;
 9. Adverse event/serious adverse event summaries;
 10. Summary of Product complaints from physicians;
 11. Summary of Product complaints from customers; and
 12. Product recall reports filed with the FDA.

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- Z. “Direct Cost” means a cost not to exceed the cost of labor, material, travel and other expenditures to the extent they are directly incurred to provide the relevant assistance or service; *provided, however*, that Direct Cost shall not exceed the average hourly wage rate of Respondents’ employees used by an Acquirer.
- AA. “Divestiture Products” means the Glipizide ER Products and the Generic Oral Contraceptive Products, individually and collectively.
- BB. “Divestiture Products Core Employees” means the Research and Development Employees and the Manufacturing Employees.
- CC. “Divestiture Trustee” means the trustee appointed by the Commission pursuant to Paragraph VII. of the Decision and Order.
- DD. “Domain Name” means the domain names (universe resource locators), and registrations thereof, issued by any entity or authority that issues and maintains the domain name registration; *provided, however*, this term shall not include any trademark or service mark rights to such domain names other than the rights to the Trademarks required to be divested.
- EE. “Drug Master Files” means the information submitted to the FDA as described in 21 C.F.R. Part 314.420 related to a Product.
- FF. “Employee Information” means, as related to the Divestiture Products Core Employees, and to the extent permitted by law:

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1. A complete and accurate list containing the name of each relevant employee (including former employees who were employed by Respondents within ninety (90) days of the execution of any Remedial Agreements);
2. The following information for each such employee:
 - a. The date of hire and effective service date;
 - b. Job title or position held;
 - c. A specific job description of the employee's responsibilities related to the Divestiture Products; *provided, however*, in lieu of this description, Respondents may provide the employee's most recent performance appraisal;
 - d. The base salary and current wages;
 - e. The most recent bonus paid, aggregate annual compensation for the Respondents' last fiscal year and current target or guaranteed bonus, if any;
 - f. Employment status (*i.e.*, active, on leave, on disability, and full or part time);
 - g. Any other material terms and conditions of employment in regard to such employee that are not otherwise generally available to similarly situated employees; and
3. At the Acquirer's option, copies of all applicable employee benefit plans and summary plan descriptions.

GG. "Generic Oral Contraceptive Assets" means, within the Geographic Territory and to the extent legally

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transferrable, all of Respondent Andrx's rights, title and interest in all assets related to:

1. The Generic Oral Contraceptive Products;
2. Respondent Andrx's business related to the Generic Oral Contraceptive Products;
3. The research, Development, manufacture, distribution, marketing and sale of the Generic Oral Contraceptive Products;
4. The Categorized Assets related to the Generic Oral Contraceptive Products; and
5. The Generic Oral Contraceptive Royalties.

Provided, however, Respondents may retain any asset necessary to fulfill their obligations under the Generic Oral Contraceptive Supply Agreement.

HH. "Generic Oral Contraceptive Products" means:

1. All Products in Development, manufactured, marketed or sold by Respondent Andrx pursuant to the following of Respondent Andrx's ANDAs:
 - a. ANDA No. 76-334 (norgestimate/ethinyl estradiol 0.25 mg/0.035 mg tablets);
 - b. ANDA No. 76-335 (norgestimate/ethinyl estradiol 0.18 mg/0.035 mg, 0.215 mg/0.035 mg, 0.25 mg/0.035 mg tablets);
 - c. ANDA No. 76-337 (norethindrone/ethinyl estradiol 1 mg/0.035 mg tablets);

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- d. ANDA No. 76-338 (norethindrone/ethinyl estradiol 0.5 mg/0.035 mg, 0.75 mg/0.035 mg, 1 mg/0.035 mg tablets);
 - e. ANDA No. 76-675 (desogestrel/ethinyl estradiol 0.15mg/0.03 mg tablets);
 - f. ANDA No. 76-681 (desogestrel/ethinyl estradiol and ethinyl estradiol 0.15mg/0.02 mg and 0.01 mg tablets);
 - g. ANDA No. 77-075 (norethindrone acetate/ethinyl estradiol and ferrous fumarate 1.5 mg/0.030 mg/75 mg tablets);
 - h. ANDA No. 77-077 (norethindrone acetate/ethinyl estradiol and ferrous fumarate 1 mg/0.020 mg/75 mg tablets);
 - i. ANDA No. 77-099 (levonorgestrel and ethinyl estradiol 0.1 mg/0.02 mg tablets);
 - j. ANDA No. 77-502 (levonorgestrel/ethinyl estradiol 0.05 mg/0.03 mg, 0.075 mg/0.04 mg, and 0.125 mg/0.03 mg tablets); and
- any supplements, amendments, or revisions thereto; and
2. All Products in Development, manufactured, marketed or sold by Respondent Andrx related to norethindrone/ethinyl estradiol 0.4 mg/0.035 mg tablets.

Provided, however, this term excludes any Products that are bought or sold by Anda, Anda Pharmaceuticals or Valmed.

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II. “Generic Oral Contraceptive Divestiture Agreement” means:

1. The Andrx-Teva Amendments; or
2. Any agreement that receives the prior approval of the Commission between Respondents and an Acquirer for the divestiture of the Generic Oral Contraceptive Assets entered into pursuant to Paragraph II.A. of the Decision and Order, and any attachments, agreements, and schedules related thereto.

JJ. “Generic Oral Contraceptive Royalties” means any financial payment or other consideration from Teva related to the Andrx-Teva Amendments that is either of the following:

1. Based on the actual amount of sales or profits of the Generic Oral Contraceptive Products realized at any time after the Acquisition Date; or
2. Due upon the realization of any aggregate amount of sales or profits on the Generic Oral Contraceptive Products at any time after the Acquisition Date.

KK. “Generic Oral Contraceptive Supply Agreement” means:

1. The Andrx-Teva Amendments; or
2. Any agreement that receives the prior approval of the Commission between Respondents and an Acquirer for the supply of Andrx Manufactured Generic Oral Contraceptive Products entered pursuant to Paragraph II.B. of the Decision and Order, and any attachments, agreements, and schedules related thereto.

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- LL. “Geographic Territory” means the United States of America, including all of the territories within its jurisdiction or control unless otherwise specified.
- MM. “Glipizide ER Assets” means, within the Geographic Territory and to the extent legally transferrable, all of Respondent Andrx’s rights, title and interest in all assets related to:
1. The Glipizide ER Products;
 2. Respondent Andrx’s business related to the Glipizide ER Products;
 3. The research, Development, manufacture, distribution, marketing and sale of the Glipizide ER Products; and
 4. The Categorized Assets related to the Glipizide ER Products.
- NN. “Glipizide ER Divestiture Agreement” means:
1. The Asset Purchase Agreement by and between Andrx Corporation, Andrx Pharmaceuticals, LLC, Andrx Pharmaceuticals, Inc., and Actavis, Inc., dated October 3, 2006, and all amendments, exhibits, attachments, agreements, and schedules related thereto. This agreement is attached to the Decision and Order and contained in non-public Appendix V.; or
 2. Any agreement that receives the prior approval of the Commission between Respondents and an Acquirer for the divestiture of the Glipizide ER Assets entered into pursuant to Paragraph III.A. of the Decision and Order, and any attachments, agreements, and schedules related thereto

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OO. “Glipizide ER Products” means all Products in Development, manufactured, marketed or sold by Respondent Andrx pursuant to the following of Respondent Andrx’s ANDAs:

1. ANDA No. 76-159;
2. ANDA No. 76-621; and

any supplements, amendments, or revisions thereto.

Provided, however, this term excludes any Products that are bought or sold by Anda, Anda Pharmaceuticals or Valmed.

PP. “Glipizide ER Supply Agreement” means:

1. The Andrx-Pfizer Agreement; or
2. Any agreement entered into by Respondents and an Acquirer for the supply of Glipizide ER Products entered pursuant to Paragraph III.B. of the Decision and Order, and any attachments, agreements, and schedules related thereto.

QQ. “High Volume Accounts” means any of Respondents’ customers whose annual and/or projected annual aggregate purchase amounts, in units or in dollars, on a company-wide level of the Divestiture Products in the United States was, is, or is projected to be among the top twenty highest of such purchase amounts by Respondents’ U.S. customers on any of the following dates: (1) the end of the last quarter that immediately preceded the date of the public announcement of the proposed Acquisition; (2) the end of the last quarter that immediately preceded the Acquisition Date; (3) the end of the last quarter that immediately preceded the Closing Date for the relevant assets; or (4)

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the end of the last quarter following the Acquisition Date and/or the Closing Date.

RR. “Intellectual Property” means all of the following related to the Divestiture Products:

1. Patents;
2. Copyrights;
3. Trademarks, Trade Dress, trade secrets, know-how, techniques, data, inventions, practices, methods, and other confidential or proprietary technical, business, research, Development and other information; and
4. Rights to obtain and file for patents and copyrights and registrations thereof;

Provided, however, this term does not include the names or trade dress of “Watson,” “Andrx,” or the names or trade dress of any other corporation, companies, or brands owned or sold by Respondents or related logos to the extent used on Respondents’ Retained Products.

SS. “Interim Monitor” means any monitor appointed pursuant to Paragraph III. of this Order to Maintain Assets or Paragraph VI. of the Decision and Order.

TT. “Interpharm” means Interpharm Holdings, Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its headquarters address at 75 Adams Avenue, Hauppauge, New York 11788.

UU. “Interpharm Product” means the Product that is subject to the Watson-Interpharm Agreement. *Provided, however,* this term *excludes* any Products that are bought or sold by Anda, Anda Pharmaceuticals or Valmed.

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VV. “Interpharm Product Termination Agreement” means:

1. The Termination and Release Agreement by and between Interpharm, Inc. and Watson Laboratories, Inc., dated October 4, 2006, and all amendments, exhibits, attachments, agreements, and schedules related thereto. This agreement is attached to the Decision and Order and contained in non-public Appendix VI.; or
2. Any agreement that receives the prior approval of the Commission between Respondents and Interpharm to terminate the Watson-Interpharm Agreement pursuant to Paragraph IV. of the Decision and Order.

WW. “Licensed Intellectual Property” means:

1. Patents that are related to the Divestiture Products that Respondents can demonstrate have been routinely used, prior to the Acquisition Date, for Retained Products:
 - a. That have been marketed or sold on an extensive basis by the Respondents within the two-year period immediately preceding the Acquisition; or
 - b. For which, prior to the announcement of the Acquisition, there was an approved marketing plan to market or sell Retained Products on an extensive basis by Respondents; and
2. Trade secrets, know-how, techniques, data, inventions, practices, methods, and other confidential or proprietary technical, business, research, Development, and other information, and all rights in any jurisdiction to limit the use or disclosure thereof,

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that are related to the Divestiture Products and that Respondents can demonstrate have been routinely used, prior to the Acquisition Date, by Respondents for Retained Products:

- a. That have been marketed or sold on an extensive basis by the Respondents within the two-year period immediately preceding the Acquisition; or
- b. For which, prior to the announcement of the Acquisition, there was an approved marketing plan to market or sell Retained Products on an extensive basis by Respondents;

Provided, however, that, Respondents may take a paid-up, royalty-free, irrevocable, non-exclusive, with a right to sublicense, license back from the Acquirer for such intellectual property for use in connection with Retained Products;

Provided, further, however, that, in cases where the aggregate retail sales in dollars within the two-year period immediately preceding the Acquisition of the Retained Products collectively are less than the aggregate retail sales in dollars within the same period of the Divestiture Products collectively, the above described intellectual property shall be considered, at the Acquirer's option, to be Intellectual Property and, thereby, subject to assignment to the Acquirer.

XX. "Manufacturing Employees" means all Respondents' salaried employees who have directly participated in the planning, design, implementation or use of the Manufacturing Technology of the Divestiture Products (irrespective of the portion of working time involved unless such participation consisted solely of oversight of legal, accounting, tax or financial compliance) within the

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eighteen (18) month period immediately prior to the Closing Date;

Provided, however, Respondents may exclude from this term those employees that are determined by the Interim Monitor or an Acquirer not to be material to the planning, design, implementation or use of the Manufacturing Technology of the Divestiture Products.

YY. “Manufacturing Technology” means all technology, trade secrets, know-how, and proprietary information (whether patented, patentable or otherwise) related to the manufacture of the Divestiture Products (including, for those instances in which the manufacturing equipment is not readily available from a Third Party, at the Acquirer’s option, all such equipment used to manufacture the Divestiture Products), including, but not limited to, all product specifications, processes, product designs, plans, trade secrets, ideas, concepts, manufacturing, engineering, and other manuals and drawings, standard operating procedures, flow diagrams, chemical, safety, quality assurance, quality control, research records, clinical data, compositions, annual product reviews, regulatory communications, control history, current and historical information associated with the FDA Applications conformance and cGMP compliance, labeling, all other information related to the manufacturing process, and supplier lists.

ZZ. “Marketing Materials” means all marketing materials used specifically in the marketing or sale of the Divestiture Products in the Geographic Territory as of the Closing Date, including, without limitation, all advertising materials, training materials, product data, mailing lists, sales materials (*e.g.*, detailing reports, vendor lists, sales data), marketing information (*e.g.*, competitor information, research data, market intelligence reports, statistical

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programs, if any, used for marketing and sales research), customer information (including customer net purchases information to be provided on the basis of either dollars and/or units for each month, quarter or year), sales forecasting models, educational materials, advertising and display materials, speaker lists, promotional and marketing materials, Website content and advertising and display materials, artwork for the production of packaging components, television masters and other similar materials related to the Divestiture Products; *provided, however*, this term *excludes* the pricing information of the Divestiture Products.

AAA. “NDC Numbers” means the National Drug Codes numbers, including both the labeler codes assigned by the FDA and the additional numbers assigned by the Application holder as a product code for a specific Product.

BBB. “Patents” means all patents, patent applications, including provisional patent applications, and statutory invention registrations, in each case existing as of the Closing Date (*except* where the Decision and Order specifies a different time), and includes all reissues, divisions, continuations, continuations-in-part, supplementary protection certificates, extensions and reexaminations thereof, all inventions disclosed therein, and all rights therein provided by international treaties and conventions, related to any Product of or owned by Respondents as of the Closing Date (*except* where the Decision and Order specifies a different time).

CCC. “Pfizer” means Pfizer, Inc. a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its headquarters address at 235 East 42nd Street, New York, New York 10017.

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DDD. “Product” means any pharmaceutical, biological, or genetic composition containing any formulation or dosage of a compound referenced as its pharmaceutically, biologically, or genetically active ingredient.

EEE. “Product Registrations” means all registrations, permits, licenses, consents, authorizations, and other approvals, and pending applications and requests therefor, required by applicable Agencies related to the research, Development, manufacture, distribution, finishing, packaging, marketing, or sale of the Product within the Geographic Territory, including all Applications in existence for the Product as of the Closing Date.

FFF. “Remedial Agreements” means:

1. Any agreement related to the Generic Oral Contraceptive Assets entered into pursuant to Paragraph II. of the Decision and Order;
2. Any agreement related to the Glipizide ER Assets entered into pursuant to Paragraph III. of the Decision and Order;
3. The Interpharm Product Termination Agreement entered into pursuant to Paragraph IV. of the Decision and Order; and
4. Any agreement entered into by a Divestiture Trustee pursuant to Paragraph VII. of the Decision and Order.

GGG. “Research and Development Employees” means all Respondents’ salaried employees who directly have participated in the research, Development, or regulatory approval process, or clinical studies of the Divestiture Products (irrespective of the portion of working time involved, unless such participation consisted primarily of

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oversight of legal, accounting, tax or financial compliance) within the eighteen (18) month period immediately prior to the Closing Date;

Provided, however, Respondents *may exclude* from this term those employees who are determined by the Interim Monitor or an Acquirer, in consultation with Commission staff, not to be material to the research, Development, or regulatory approval process, or clinical studies of the Divestiture Products.

- HHH. “Retained Products” means any Product other than the Divestiture Products or the Interpharm Product.
- III. “Rights of Reference or Use” means the authority to rely upon, and otherwise use, an investigation for the purpose of obtaining approval of Applications, including the ability to make available the underlying raw data from the investigation for FDA audit.
- JJJ. “Supply Cost” means a cost not to exceed the manufacturer’s average direct per unit cost of manufacturing the Divestiture Products for the twelve (12) month period immediately preceding the Acquisition Date; *provided, however,* that the Supply Cost for the Glipizide ER Products shall be the transfer price as determined under the Andrx-Pfizer Agreement; *provided, further, however,* this term shall *exclude* any intracompany business transfer profit.
- KKK. “Teva” means Teva Pharmaceutical Industries Limited, a corporation organized, existing and doing business under and by virtue of the laws of the State of Israel, with its headquarters address at 5 Basel Street, P.O. Box 3190, Petach Tikva 49131 Israel.
- LLL. “Third Party” means any private entity other than the following: (1) Respondents; or (2) an Acquirer.

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MMM. "Trade Dress" means the current trade dress of the Divestiture Products, including but not limited to, Product packaging, and the lettering of the Product trade name or brand name.

NNN. "Trademarks" means all proprietary names or designations, trademarks, service marks, trade names, and brand names, including registrations and applications for registration therefor (and all renewals, modifications, and extensions thereof) and all common law rights, and the goodwill symbolized thereby and associated therewith, for the Product.

OOO. "Valmed" means Valmed Pharmaceutical, Inc., a/k/a VIP, a corporation organized, existing and doing business under and by virtue of the laws of the State of New York, with its headquarters address at 3000 Alt Boulevard, Grand Island, New York 14072.

PPP. "Watson-Interpharm Agreement" means the Manufacturing and Supply Agreement by and between Interpharm, Inc. and Watson Laboratories, Inc., dated October 14, 2003, and all amendments, exhibits, attachments, agreements, and schedules related thereto. The Watson-Interpharm Agreement is attached to the Decision and Order and contained in non-public Appendix VII.

QQQ. "Website" means the content of the Website(s) located at the Domain Names, the Domain Names, and all copyrights in such Website(s), to the extent owned by Respondents; *provided, however*, this term shall not include the following: (1) content owned by Third Parties and other Intellectual Property not owned by Respondents that are incorporated in such Website(s), such as stock photographs used in the Website(s), *except* to the extent

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that Respondents can convey their rights, if any, therein; or (2) content unrelated to the Divestiture Products.

II.

IT IS FURTHER ORDERED that from the date this Order to Maintain Assets becomes final:

- A. Respondents shall take such actions as are necessary to maintain the full economic viability, marketability, and competitiveness of the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product, and shall prevent the destruction, removal, wasting, deterioration, sale, disposition, transfer, or impairment of the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product except for ordinary wear and tear.
- B. Respondents shall not solicit any current customer of the Interpharm Product for the supply of Products similar to the Interpharm Product for a period of six (6) months after the Closing Date.
- C. Respondents shall maintain the operations of the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product in the regular and ordinary course of business and in accordance with past practice (including regular repair and maintenance of the assets of such businesses) and shall use their best efforts to preserve the existing relationships with the following: suppliers; vendors and distributors, including, but not limited to, the High Volume Accounts; customers; Agencies; employees; and others having business relations with the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product. Respondents' responsibilities shall include, but are not limited to, the following:
 1. Providing the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product with

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sufficient capital to operate at least at current rates of operation, to meet all capital calls with respect to such businesses and to carry on, at least at their scheduled pace, all capital projects, business plans and promotional activities for the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product;

2. Continuing, at least at their scheduled pace, any additional expenditures for Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product authorized prior to the date the Consent Agreement was signed by Respondents including, but not limited to, all research, Development, manufacture, distribution, marketing and sales expenditures;
3. Provide such resources as may be necessary to respond to competition against the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product and/or prevent any diminution of sales of the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product, prior to divestiture;
4. Provide such resources as may be necessary to maintain the competitive strength and positioning of the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product at the High Volume Accounts;
5. Making available for use by the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product funds sufficient to perform all routine maintenance and all other maintenance as may be necessary to, and all replacements of, the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product;

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6. Providing the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product with such funds as are necessary to maintain the viability, marketability, and competitiveness of the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product;
 7. Providing such support services to the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product as were being provided to these businesses by Respondents as of the date of the Consent Agreement; and
 8. Cooperate with the Interim Monitor in the performance of his or her obligations pursuant to Paragraph III. of this Order to Maintain Assets.
- D. Pending divestiture of the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the execution of the Interpharm Product Termination Agreement, Respondents shall:
1. Not use, directly or indirectly, any Confidential Business Information related to the research, development, manufacturing, marketing, or sale of the Divestiture Products or the Interpharm Product other than to comply with (1) the requirements of the Orders, (2) Respondents' obligations under the Remedial Agreements, or (3) applicable law;
 2. Not disclose or convey any Confidential Business Information, directly or indirectly, to any person except an Acquirer;
 3. Not provide, disclose or otherwise make available, directly or indirectly, any Confidential Business Information related to the marketing or sales of the

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- Divestiture Products or the Interpharm Product to the employees associated with business related to those Retained Products that are approved by the FDA for the same or similar indications; and
4. Promptly after the date the Agreement Containing Consent Orders is signed, develop and implement procedures to ensure that Respondents' employees, associated with the Retained Products that are approved by the FDA for the same or similar indications to the Divestiture Products or the Interpharm Product, do not:
 - a. Provide, disclose or otherwise make available, directly or indirectly, any Confidential Business Information in contravention of this Order; and
 - b. Solicit, access or use any Confidential Business Information that they are prohibited under this Order from receiving for any reason or purpose.
- E. Not later than thirty (30) days after the Acquisition Date, Respondents shall, with respect to all of Respondents' employees who have access to Confidential Business Information:
1. Provide written notification of the restrictions on the use of the Confidential Business Information by Respondents' personnel. At the same time, if not earlier, Respondents shall give such notification by e-mail with return receipt requested or similar transmission, and keep a file of such receipts for one (1) year after the relevant Closing Date. *Provided, however,* Respondents shall provide a copy of the form of such notification to an Acquirer, the Interim Monitor, and the Commission; and

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2. Obtain from each employee an agreement to abide by the applicable restrictions;

Provided, however, Respondents shall maintain complete records of all such agreements at Respondents' corporate headquarters, and provide an officer's certification to the Commission stating that such acknowledgment program has been implemented and is being complied with. Respondents shall provide an Acquirer with copies of all certifications, notifications and reminders sent to Respondents' personnel.

F. Respondents shall:

1. For a period of at least six (6) months after the Closing Date ("Employee Access Period"), provide an Acquirer with the opportunity to enter into employment contracts with the Divestiture Product Core Employees; and
2. Provide an Acquirer with the Employee Information no later than the earlier of the following dates:
 - a. Ten (10) days after notice by staff of the Commission to Respondents to provide the Employee Information; or
 - b. Ten (10) days after the Closing Date.

Provided, however, failure by Respondents to provide the Employee Information within the time provided herein shall extend the Employee Access Period with respect to any such employee in an amount equal to the delay.

G. Respondents shall:

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1. During the Employee Access Period, not interfere with the hiring or employing of the Divestiture Product Core Employees by an Acquirer, and remove any impediments within the control of Respondents that may deter these employees from accepting employment with an Acquirer, including, but not limited to, any non-compete or non-disclosure provision of employment that would affect the ability or incentive of those individuals to be employed by an Acquirer. In addition, Respondents shall not make any counteroffer to such a Divestiture Product Core Employee who has received a written offer of employment from an Acquirer;

Provided, however, that this paragraph shall not prohibit Respondents from continuing to employ any Divestiture Product Core Employee during the Employee Access Period (subject to the condition of continued employment prescribed in this Order);

2. Until the Closing Date, provide all Divestiture Product Core Employees with reasonable financial incentives to continue in their positions and to research, develop, and manufacture the Divestiture Products consistent with past practices and/or as may be necessary to preserve the marketability, viability and competitiveness of the Divestiture Products and to ensure successful execution of the pre-Acquisition plans for such Divestiture Products. Such incentives shall include a continuation of all employee compensation and benefits offered by Respondents until the Closing Date for the divestiture of the Divestiture Products has occurred, including regularly scheduled raises, bonuses, and vesting of pension benefits (as permitted by Law);

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Provided, however, that nothing in this Order requires or shall be construed to require Respondents to terminate the employment of any employee or prevents Respondents from continuing the employment of the Divestiture Product Core Employees (other than those conditions of continued employment prescribed in this Order) in connection with the Acquisition; and

3. For a period of one (1) year from the Closing Date, not:
 - a. Directly or indirectly, solicit or otherwise attempt to induce any Acquirer Employees to terminate his or her employment relationship with an Acquirer; or
 - b. Hire any Acquirer Employee; *provided, however,* Respondents may hire any Acquirer Employee whose employment has been terminated by an Acquirer, or who independently applies for employment with Respondents, as long as such employee was not solicited in violation of the non-solicitation requirements contained herein;

Provided, however, Respondents may do the following: (1) Advertise for employees in newspapers, trade publications or other media not targeted specifically at the Acquirer Employees; or (2) hire a Acquirer Employee who contacts Respondents on his or her own initiative without any direct or indirect solicitation or encouragement from Respondents.

- H. Respondents shall adhere to and abide by the Remedial Agreements incorporated by reference into this Order to Maintain Assets and made a part hereof.
- I. The purpose of this Order to Maintain Assets is to maintain the full economic viability, marketability and

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competitiveness of the Generic Oral Contraceptive Assets, the Glipizide Assets, and the Interpharm Product, to minimize any risk of loss of competitive potential for the Generic Oral Contraceptive Assets, the Glipizide ER Assets, and the Interpharm Product, and to prevent the destruction, removal, wasting, deterioration, or impairment of the assets to be divested except for ordinary wear and tear.

III.**IT IS FURTHER ORDERED** that:

- A. Francis J. Civile of Califon, New Jersey, shall serve as the monitor (“Interim Monitor”) in this matter to assure that Respondents expeditiously comply with all of their obligations and perform all of their responsibilities as required by this Order to Maintain Assets, the Decision and Order (collectively, “Orders”), and the Remedial Agreements.
- B. If Mr. Civile fails to serve, or if a new Interim Monitor must be selected, the Commission shall select the Interim Monitor, subject to the consent of Respondent Watson, which consent shall not be unreasonably withheld. If Respondent Watson has not opposed, in writing, including the reasons for opposing, the selection of a proposed Interim Monitor within ten (10) days after notice by the staff of the Commission to Respondent Watson of the identity of any proposed Interim Monitor, Respondents shall be deemed to have consented to the selection of the proposed Interim Monitor.
- C. Not later than ten (10) days after the appointment of the Interim Monitor, Respondents shall execute an agreement that, subject to the prior approval of the Commission, confers on the Interim Monitor all the rights and powers

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necessary to permit the Interim Monitor to monitor Respondents' compliance with the relevant requirements of the Orders and in a manner consistent with the purposes of the Orders.

- D. If an Interim Monitor is appointed, Respondents shall consent to the following terms and conditions regarding the powers, duties, authorities, and responsibilities of the Interim Monitor:
1. The Interim Monitor shall have the power and authority to monitor Respondents' compliance with the divestiture and asset maintenance obligations and related requirements of the Orders, and shall exercise such power and authority and carry out the duties and responsibilities of the Interim Monitor in a manner consistent with the purposes of the Orders and in consultation with the Commission;
 2. The Interim Monitor shall act in a fiduciary capacity for the benefit of the Commission;
 3. The Interim Monitor shall serve until the later of:
 - a. The completion by Respondents of:
 - (1) The divestiture of all Divestiture Assets in a manner that fully satisfies the requirements of the Decision and Order; and
 - (2) Notification by each Acquirer to the Interim Monitor that such Acquirer is: (1) approved by the FDA to manufacture each of the relevant Divestiture Products, and (2) able to manufacture such Divestiture Products in commercial quantities, in a manner consistent with cGMP, independently of Respondent; or

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- b. The completion by Respondents of the last obligation under the Orders pertaining to the Interim Monitor's service;

Provided, however, that the Commission may extend or modify this period as may be necessary or appropriate to accomplish the purposes of the Orders;

4. Subject to any demonstrated legally recognized privilege, the Interim Monitor shall have full and complete access to Respondents' personnel, books, documents, records kept in the normal course of business, facilities and technical information, and such other relevant information as the Interim Monitor may reasonably request, related to Respondents' compliance with their obligations under the Orders, including, but not limited to, their obligations related to the relevant assets. Respondents shall cooperate with any reasonable request of the Interim Monitor and shall take no action to interfere with or impede the Interim Monitor's ability to monitor Respondents' compliance with the Orders;
5. The Interim Monitor shall serve, without bond or other security, at the expense of Respondents on such reasonable and customary terms and conditions as the Commission may set. The Interim Monitor shall have authority to employ, at the expense of Respondents, such consultants, accountants, attorneys and other representatives and assistants as are reasonably necessary to carry out the Interim Monitor's duties and responsibilities;
6. Respondents shall indemnify the Interim Monitor and hold the Interim Monitor harmless against any losses, claims, damages, liabilities, or expenses arising out of,

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or in connection with, the performance of the Interim Monitor's duties, including all reasonable fees of counsel and other reasonable expenses incurred in connection with the preparations for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Interim Monitor;

7. Respondents shall report to the Interim Monitor in accordance with the requirements of the Orders and/or as otherwise provided in any agreement approved by the Commission. The Interim Monitor shall evaluate the reports submitted to the Interim Monitor by Respondents, and any reports submitted by the Commission-approved Acquirer with respect to the performance of Respondents' obligations under the Orders or the Remedial Agreement. Within thirty (30) days from the date the Interim Monitor receives these reports, the Interim Monitor shall report in writing to the Commission concerning performance by Respondents of their obligations under the Orders; and
 8. Respondents may require the Interim Monitor and each of the Interim Monitor's consultants, accountants, attorneys and other representatives and assistants to sign a customary confidentiality agreement; *provided, however,* that such agreement shall not restrict the Interim Monitor from providing any information to the Commission.
- E. The Commission may, among other things, require the Interim Monitor and each of the Interim Monitor's consultants, accountants, attorneys and other representatives and assistants to sign an appropriate confidentiality agreement related to Commission materials

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and information received in connection with the performance of the Interim Monitor's duties.

- F. If the Commission determines that the Interim Monitor has ceased to act or failed to act diligently, the Commission may appoint a substitute Interim Monitor in the same manner as provided in this Paragraph.
- G. The Commission may on its own initiative, or at the request of the Interim Monitor, issue such additional orders or directions as may be necessary or appropriate to assure compliance with the requirements of the Orders.
- H. The Interim Monitor appointed pursuant to this Order to Maintain Assets may be the same person appointed as a Divestiture Trustee pursuant to the relevant provisions of the Decision and Order.

IV.

IT IS FURTHER ORDERED that within thirty (30) days after the date this Order to Maintain Assets becomes final, and every thirty (30) days thereafter until Respondents have fully complied with Paragraphs II., III., IV., and V. of the Decision and Order (*i.e.*, have assigned, licensed, divested, transferred, delivered, terminated or otherwise conveyed all relevant assets or rights to an Acquirer in a manner that fully satisfies the requirements of the Decision and Order), Respondents shall submit to the Commission a verified written report setting forth in detail the manner and form in which they intend to comply, are complying, and have complied with this Order to Maintain Assets and the Decision and Order; *provided, however*, that, after the Decision and Order in this matter becomes final, the reports due under this Order to Maintain Assets may be consolidated with, and submitted to the Commission at the same time as, the reports required to be submitted by Respondents pursuant to Paragraph IX. of the Decision and Order.

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V.

IT IS FURTHER ORDERED that Respondents shall notify the Commission at least thirty (30) days prior to any proposed (1) dissolution of such Respondents; (2) acquisition, merger or consolidation of Respondents; or (3) any other change in the Respondents, including, but not limited to, assignment and the creation or dissolution of subsidiaries, if such change might affect compliance obligations arising out of the Order.

VI.

IT IS FURTHER ORDERED that, for purposes of determining or securing compliance with this Order, and subject to any legally recognized privilege, and upon written request and upon five (5) days notice to Respondents made to their principal United States offices or headquarters address, Respondents shall, without restraint or interference, permit any duly authorized representative of the Commission:

- A. Access, during business office hours of Respondents and in the presence of counsel, to all facilities and access to inspect and copy all books, ledgers, accounts, correspondence, memoranda and all other records and documents in the possession or under the control of Respondents related to compliance with this Order, which copying services shall be provided by Respondents at the request of authorized representative(s) of the Commission; and
- B. To interview officers, directors, or employees of Respondents, who may have counsel present, regarding such matters.

VII.

IT IS FURTHER ORDERED that this Order to Maintain Assets shall terminate on the earlier of:

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- A. Three (3) business days after the Commission withdraws its acceptance of the Consent Agreement pursuant to the provisions of Commission Rule 2.34, 16 C.F.R. § 2.34; or
- B. The day after the divestiture and transfer of the Generic Oral Contraceptive Assets, the Generic Oral Contraceptive Royalties, the Glipizide ER Assets, and the Interpharm Product, as described in and required by the attached Decision and Order, is completed and the Interim Monitor, in consultation with Commission staff and an Acquirer, notifies the Commission that an Acquirer's transition is complete.

By the Commission, Commissioner Rosch recused.

DECISION AND ORDER

The Federal Trade Commission ("Commission"), having initiated an investigation of the proposed acquisition by Respondent Watson Pharmaceuticals, Inc. ("Watson") of Respondent Andrx Corporation ("Andrx"), hereinafter referred to as "Respondents," and Respondents having been furnished thereafter with a copy of a draft Complaint ("Complaint") that the Bureau of Competition proposed to present to the Commission for its consideration and that, if issued by the Commission, would charge Respondents with violations of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondents, their attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent

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Orders (“Consent Agreement”), containing an admission by Respondents of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondents that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondents have violated the said Acts, and that a Complaint should issue stating its charges in that respect, and having thereupon issued its Complaint and an Order to Maintain Assets, attached to this Order as Appendix I, and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby makes the following jurisdictional findings and issues the following Decision and Order (“Order”):

1. Respondent Watson is a corporation organized, existing and doing business under and by virtue of the laws of the State of Nevada, with its headquarters address at 311 Bonnie Circle, Corona, California 92880.

2. Respondent Andrx is a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its headquarters address at 8151 Peters Road, Plantation, Florida 33324.

3. The Commission has jurisdiction of the subject matter of this proceeding and of Respondents, and the proceeding is in the public interest.

ORDER

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I.

IT IS ORDERED that, as used in the Order, the following definitions shall apply:

- A. “Watson” means Watson Pharmaceuticals, Inc., its directors, officers, employees, agents, representatives, successors, and assigns; and its joint ventures, subsidiaries, divisions, groups and affiliates in each case controlled by Watson (including, but not limited to, Watson Laboratories, Inc. and Water Delaware, Inc.), and the respective directors, officers, employees, agents, representatives, successors, and assigns of each. After the Acquisition, Watson shall include Andrx.
- B. “Andrx” means Andrx Corporation, its directors, officers, employees, agents, representatives, successors, and assigns; and its joint ventures, subsidiaries, divisions, groups and affiliates in each case controlled by Andrx (including, but not limited to, Andrx Pharmaceuticals, Inc., and Andrx Pharmaceuticals, LLC), and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.
- C. “Respondents” means Watson and Andrx, individually and collectively.
- D. “Commission” means the Federal Trade Commission.
- E. “Acquirer” means:
 - 1. An entity identified by name in this Order to acquire particular assets or rights that Respondents are required to assign, grant, license, divest, transfer, deliver, terminate, or otherwise convey pursuant to this Order and that has been approved by the Commission to accomplish the requirements of this Order in connection with the Commission’s determination to

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make this Order final; or

2. An entity approved by the Commission to acquire particular assets or rights that Respondents are required to assign, grant, license, divest, transfer, deliver, terminate, or otherwise convey pursuant to this Order.
- F. “Acquirer Employees” means any of an Acquirer’s employees with any amount of responsibility related to the Divestiture Products.
- G. “Acquisition” means the acquisition contemplated by The Agreement and Plan of Merger dated March 12, 2006, by and among Watson Pharmaceuticals, Inc., Water Delaware, Inc., and Andrx Corporation, and all amendments, exhibits, attachments, agreements, and schedules thereto.
- H. “Acquisition Date” means the earlier of the following dates:
1. The date Respondents close on the Acquisition; or
 2. The date the merger contemplated by the Acquisition is consummated by filing the certificate of merger related to the Acquisition with the Secretary of State of the State of Delaware.
- I. “Actavis” means Actavis Elizabeth LLC, a limited liability company, organized, existing and doing business under and by virtue of the law of the State of Delaware, with its headquarters address at 990 Riverview Drive, Totowa, New Jersey 07512.
- J. “Agency(ies)” means any government regulatory authority or authorities in the world responsible for granting approvals, clearances, qualifications, licenses, or permits

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for any aspect of the research, Development, manufacture, marketing, distribution, or sale of a Product. This term includes, but is not limited to, the United States Food and Drug Administration (“FDA”).

- K. “Anda” means Anda, Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of Florida, with its headquarters address at 2915 Weston Road, Weston, Florida 33331.
- L. “Anda Pharmaceuticals” means Anda Pharmaceuticals, Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of Florida, with its headquarters address at 6500 Adelaide Court Groveport, OH 43125.
- M. “Andrx Manufactured Generic Oral Contraceptive Products” means:
1. norgestimate/ethinyl estradiol 0.25 mg/0.035 mg tablets;
 2. norgestimate/ethinyl estradiol 0.18 mg/0.035 mg, 0.215 mg/0.035 mg, 0.25 mg/0.035 mg tablets;
 3. norethindrone/ethinyl estradiol 1 mg/0.035 mg tablets; and
 4. norethindrone/ethinyl estradiol 0.5 mg/0.035 mg, 0.75 mg/0.035 mg, 1 mg/0.035 mg tablets.
- N. “Andrx-Pfizer Agreement” means the Supply Agreement by and between Andrx Pharmaceuticals, Inc., and Pfizer, Inc., dated September 4, 2003, and all amendments, exhibits, attachments, agreements, and schedules related thereto. The Andrx-Pfizer Agreement is attached to this Order and contained in non-public Appendix II.

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- O. “Andrx-Teva Agreement” means the Marketing and Distribution Agreement by and among Teva Pharmaceuticals USA, Inc., Novapharm Limited, Andrx Pharmaceuticals, Inc. and Andrx Pharmaceuticals, LLC, dated March 10, 2003, and all amendments, exhibits, attachments, agreements, and schedules thereto. The Andrx-Teva Agreement is attached to this Order and contained in non-public Appendix III.
- P. “Andrx-Teva Amendments” means Amendments No. 1 and 2 to the Andrx-Teva Agreement by and among Teva Pharmaceuticals USA, Inc., Novopharm Limited, and Andrx Pharmaceuticals, LLC, dated March 12, 2006, and October 3, 2006, respectively, and all amendments, exhibits, attachments, agreements, and schedules thereto. The Andrx-Teva Amendments are attached to this Order and contained in non-public Appendix IV.
- Q. “Applications” means the applications for a Product filed or to be filed with the FDA pursuant to 21 C.F.R. Parts 312 and 314, and all supplements, amendments, and revisions thereto, any preparatory work, drafts and data necessary for the preparation thereof, and all related correspondence between Respondents and the FDA. This term includes, but is not limited to, Investigational New Drug Application (“IND”), New Drug Application (“NDA”), Abbreviated New Drug Application (“ANDA”), Supplemental New Drug Application (“SNDAs”), and Marketing Authorization Application (“MAA”) for a Product filed or to be filed with the FDA and all supplements, amendments, and revisions thereto, any preparatory work, drafts, and data necessary for the preparation thereof, and all related correspondence between Respondents and the FDA.
- R. “Assumed Contracts” means all of the following contracts or agreements:

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1. That make specific reference to the Divestiture Products and pursuant to which any Third Party is obligated to purchase, or has the option to purchase with no further negotiation on price, the Divestiture Products from Respondents unless such contracts apply generally to the divesting Respondents' sales of generic Products to that Third Party;
2. Pursuant to which Respondents purchase the active pharmaceutical ingredients or had planned to purchase the active pharmaceutical ingredients from any Third Party for use in connection with the manufacture of the Divestiture Products;
3. Relating to any clinical trial involving the Divestiture Products;
4. With universities or other research institutions for the use of the Divestiture Products in scientific research;
5. Relating to the particularized marketing of the Divestiture Products or educational matters relating solely to the Divestiture Products;
6. Pursuant to which a Third Party manufactures the Divestiture Products on behalf of the Respondents except for the Andrx-Pfizer Agreement;
7. Pursuant to which a Third Party provides the Manufacturing Technology or related equipment to the Respondents;
8. Constituting confidentiality agreements involving the Divestiture Products;
9. Involving any royalty, licensing, or similar arrangement involving the Divestiture Products to

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which Respondents are party, except for any agreement relating to the Generic Oral Contraceptive Royalties;

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10. Pursuant to which a Third Party provides any specialized services necessary to the research, Development, or manufacture of the Divestiture Products to Respondents, including consultation arrangements; and
11. Pursuant to which any Third Party collaborates with the Respondents in the performance of research, Development, marketing, distribution or selling of the Divestiture Products or the Divestiture Products business;

Provided, however, that where any such contract or agreement also relates to Retained Products, Respondents shall assign to an Acquirer all such rights under the contract or agreement as are related to the Divestiture Products, but concurrently may retain similar rights for the purposes of the Retained Products;

Provided, further, however, that Respondents shall provide copies of each contract or agreement to an Acquirer on or before the related Closing Date and segregated in a manner that clearly identifies the purpose of each contract or agreement.

- S. “Categorized Assets” means the following assets related to the Divestiture Products:
 1. All Intellectual Property;
 2. A perpetual, fully paid-up and royalty-free license with rights to sublicense to all Licensed Intellectual Property solely within the field of use to use, make, distribute, offer for sale, promote, advertise, sell, import, export, or have used, made, distributed, offered for sale, promoted, advertised, sold, imported, or exported the Divestiture Products within the specified

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Geographic Territory;

3. All Product Registrations;
4. All Manufacturing Technology;
5. All Marketing Materials;
6. A list of all NDC Numbers and rights, to the extent permitted by Law, related to the Divestiture Products:
 - a. To require Respondents to discontinue the use of those NDC Numbers in the sale or marketing of Products other than with respect to returns, rebates, allowances, and adjustment for Divestiture Products sold prior to the Acquisition Date;
 - b. To prohibit Respondents from seeking from any customer any type of cross-referencing of those NDC Numbers with any Retained Products;
 - c. To seek to change any cross-referencing by a customer of those NDC Numbers with the Retained Products (including the right to receive notification from Respondents of any such cross-referencing that is discovered by Respondents);
 - d. To seek cross-referencing from a customer of those NDC Numbers with the relevant Acquirer's NDC Numbers related to the Divestiture Products;
 - e. To approve the timing of Respondents' discontinued use of those NDC Numbers in the sale or marketing of Products other than with respect to returns, rebates, allowances, and adjustments for Divestiture Products sold prior to the Acquisition Date, provided that Respondents may provide the minimum notice required by

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contract or law;

- f. To approve any notification from Respondents to any customer regarding the use or discontinued use of such numbers by Respondents prior to such notification being disseminated to the customer, provided that Respondents may provide the minimum notice required by contract or law;
7. All rights to all of Respondents' relevant Applications;
8. Rights of Reference or Use to the Drug Master Files related to the Applications including, but not limited to, the pharmacology and toxicology data contained in all Applications;
9. All Development Reports;
10. At an Acquirer's option, all Assumed Contracts;
11. All strategic safety programs submitted to the FDA that are designed to decrease product risk by using one or more interventions or tools beyond the package insert;
12. All patient registries, and any other systematic active post-marketing surveillance program to collect patient data, laboratory data and identification information required to be maintained by the FDA to facilitate the investigation of adverse effects;
13. Lists of all customers and/or targeted customers, net sales (in either units or dollars) to such customers on either an annual, quarterly, or monthly basis including, but not limited to, a separate list specifying the above-described information for the High Volume Accounts and including the names of employees for the High

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Volume Accounts that are or have been responsible for the purchase of such Divestiture Products on behalf of the High Volume Accounts and their business contact information;

14. At an Acquirer's option, all inventory in existence as of the Closing Date including, but not limited to, raw materials, packaging materials, work-in-process and finished goods;
15. Copies of all unfulfilled customer purchase orders as of the Closing Date, to be provided to the relevant Acquirer not later than two (2) days after the Closing Date;
16. At an Acquirer's option, subject to any rights of the customer, all unfulfilled customer purchase orders; and
17. All of the Respondents' books, records, and files directly related to the foregoing or to the Divestiture Products;

Provided, however, that this term shall not include (1) documents relating to Respondents' general business strategies or practices relating to research, development, manufacture, marketing or sale of generic pharmaceutical Products, where such documents do not discuss with particularity the Divestiture Products, and (2) administrative, financial and accounting records;

Provided, further, however, Respondents may exclude from this term quality control records that are determined by the Interim Monitor or the Acquirer not to be material to the manufacture of the Divestiture Products;

Provided, further, however, that in cases in which documents or other materials included in the relevant assets to be divested contain information: (1) that relate to

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both the Divestiture Products and other Products or businesses of Respondents and cannot be segregated in a manner that preserves the usefulness of the information related to the Divestiture Products; or (2) for which the Respondents have a legal obligation to retain the original copies, the Respondents shall be required to provide only copies or relevant excerpts of the documents and materials containing this information. In instances where such copies are provided to an Acquirer, the Respondents shall provide such Acquirer access to original documents under circumstances where copies of documents are insufficient for evidentiary or regulatory purposes. The purpose of this proviso is to ensure that the Respondents provide an Acquirer with the above-described information without requiring the Respondents to completely divest themselves of information that, in content, also relates to Products and businesses other than the Divestiture Products.

- T. “cGMP” means current Good Manufacturing Practice as set forth in the United States Federal, Food, Drug, and Cosmetic Act, as amended, and includes all rules and regulations promulgated by the FDA thereunder.
- U. “Closing Date” means the date on which the Respondents (or a Divestiture Trustee) consummate a transaction to assign, grant, license, divest, transfer, deliver, terminate or otherwise convey assets or rights related to the Divestiture Products or the Interpharm Product to an Acquirer pursuant to this Order.
- V. “Confidential Business Information” means all information owned by, or in the possession or control of, Respondents that is not in the public domain and that is directly related to the research, Development, manufacture, marketing, commercialization, importation, exportation, cost, supply, sales, sales support or use of the Divestiture Products or Interpharm Product; *provided,*

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however, that the restrictions contained in this Order regarding the use, conveyance, provision or disclosure of “Confidential Business Information” shall not apply to the following:

1. Information that subsequently falls within the public domain through no violation of this order or breach of confidentiality or non-disclosure agreement with respect to such information by Respondents;
 2. Information related to the Interpharm Product that Respondent Andrx can demonstrate it obtained without the assistance of Respondent Watson prior to the Acquisition;
 3. Information related to the Divestiture Products that Respondent Watson can demonstrate it obtained without the assistance of Respondent Andrx prior to the Acquisition;
 4. Information that is required by law to be publicly disclosed;
 5. Information that does not directly relate to the Divestiture Products or the Interpharm Product;
 6. Information relating to Respondents’ general business strategies or practices relating to research, Development, manufacture, marketing or sale of generic pharmaceutical Products that does not discuss with particularity the Divestiture Products or the Interpharm Product; and
 7. Information specifically excluded from the Categorized Assets.
- W. “Copyrights” means rights to all original works of authorship of any kind directly related to the Divestiture

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Products and any registrations and applications for registrations thereof within the Geographic Territory, including, but not limited to, all the following:

1. Promotional materials for healthcare providers;
2. Promotional materials for patients;
3. Educational materials for the sales force;
4. Copyrights in all preclinical, clinical and process development data and reports relating to research and Development, including raw data relating to clinical trials, case report forms relating thereto, statistical programs developed (or modified in a manner material to use or function thereof) to analyze clinical data, market research data, market intelligence reports and statistical programs (if any) used for marketing and sales research;
5. Customer information, promotional and marketing materials, sales forecasting models, medical education materials, sales training materials, and advertising and display materials;
6. Records relating to employees who accept employment with an Acquirer (excluding any personnel records transfer of which is prohibited by law);
7. Records, including customer lists, sales force call activity reports, vendor lists, sales data, reimbursement data, speaker lists, manufacturing records, manufacturing processes, and supplier lists;
8. Data contained in laboratory notebooks;

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9. Adverse experience reports and files related thereto (including source documentation), periodic adverse experience reports, and data contained in electronic databases relating thereto;
 10. Analytical and quality control data; and
 11. All correspondence with the FDA.
- X. "Development" means all preclinical and clinical drug development activities, including formulation, test method development and stability testing, toxicology, process development, manufacturing scale-up, development-stage manufacturing, quality assurance/quality control development, statistical analysis and report writing, conducting clinical trials for the purpose of obtaining any and all approvals, licenses, registrations or authorizations from any Agency necessary for the manufacture, use, storage, import, export, transport, promotion, marketing, and sale of a Product (including any government price or reimbursement approvals), Product approval and registration, and regulatory affairs related to the foregoing.
- Y. "Development Reports" means the following documents related to the Divestiture Products in Respondents' possession or in which Respondents have a right to access:
1. Pharmacokinetic study reports;
 2. Bioavailability study reports (including reference listed drug information);
 3. Bioequivalence study reports (including reference listed drug information);
 4. All correspondence between Respondents and the FDA relating to the Applications submitted by, on behalf of, or acquired by Respondents;

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5. Annual and periodic reports related to the Applications, including any safety update reports;
 6. FDA approved Product labeling;
 7. Currently used product package inserts (including historical change of controls summaries);
 8. FDA approved patient circulars and information;
 9. Adverse event/serious adverse event summaries;
 10. Summary of Product complaints from physicians;
 11. Summary of Product complaints from customers; and
 12. Product recall reports filed with the FDA.
- Z. “Direct Cost” means a cost not to exceed the cost of labor, material, travel and other expenditures to the extent they are directly incurred to provide the relevant assistance or service; *provided, however*, that Direct Cost shall not exceed the average hourly wage rate of Respondents’ employees used by an Acquirer.
- AA. “Divestiture Products” means the Glipizide ER Products and the Generic Oral Contraceptive Products, individually and collectively.
- BB. “Divestiture Products Core Employees” means the Research and Development Employees and the Manufacturing Employees.
- CC. “Divestiture Trustee” means the trustee appointed by the Commission pursuant to Paragraph VII. of this Order.
- DD. “Domain Name” means the domain names (universe resource locators), and registrations thereof, issued by any

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entity or authority that issues and maintains the domain name registration; *provided, however*, this term shall not include any trademark or service mark rights to such domain names other than the rights to the Trademarks required to be divested.

EE. “Drug Master Files” means the information submitted to the FDA as described in 21 C.F.R. Part 314.420 related to a Product.

FF. “Employee Information” means, as related to the Divestiture Products Core Employees, and to the extent permitted by law:

1. A complete and accurate list containing the name of each relevant employee (including former employees who were employed by Respondents within ninety (90) days of the execution of any Remedial Agreements);
2. The following information for each such employee:
 - a. The date of hire and effective service date;
 - b. Job title or position held;
 - c. A specific job description of the employee’s responsibilities related to the Divestiture Products; *provided, however*, in lieu of this description, Respondents may provide the employee’s most recent performance appraisal;
 - d. The base salary and current wages;
 - e. The most recent bonus paid, aggregate annual compensation for the Respondents’ last fiscal year and current target or guaranteed bonus, if any;

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- f. Employment status (*i.e.*, active, on leave, on disability, and full or part time);
 - g. Any other material terms and conditions of employment in regard to such employee that are not otherwise generally available to similarly situated employees; and
3. At the Acquirer's option, copies of all applicable employee benefit plans and summary plan descriptions.

GG. "Generic Oral Contraceptive Assets" means, within the Geographic Territory and to the extent legally transferrable, all of Respondent Andrx's rights, title and interest in all assets related to:

1. The Generic Oral Contraceptive Products;
2. Respondent Andrx's business related to the Generic Oral Contraceptive Products;
3. The research, Development, manufacture, distribution, marketing and sale of the Generic Oral Contraceptive Products;
4. The Categorized Assets related to the Generic Oral Contraceptive Products; and
5. The Generic Oral Contraceptive Royalties.

Provided, however, Respondents may retain any asset necessary to fulfill their obligations under the Generic Oral Contraceptive Supply Agreement.

HH. "Generic Oral Contraceptive Products" means:

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1. All Products in Development, manufactured, marketed or sold by Respondent Andrx pursuant to the following of Respondent Andrx's ANDAs:
 - a. ANDA No. 76-334 (norgestimate/ethinyl estradiol 0.25 mg/0.035 mg tablets);
 - b. ANDA No. 76-335 (norgestimate/ethinyl estradiol 0.18 mg/0.035 mg, 0.215 mg/0.035 mg, 0.25 mg/0.035 mg tablets);
 - c. ANDA No. 76-337 (norethindrone/ethinyl estradiol 1 mg/0.035 mg tablets);
 - d. ANDA No. 76-338 (norethindrone/ethinyl estradiol 0.5 mg/0.035 mg, 0.75 mg/0.035 mg, 1 mg/0.035 mg tablets);
 - e. ANDA No. 76-675 (desogestrel/ethinyl estradiol 0.15mg/0.03 mg tablets);
 - f. ANDA No. 76-681 (desogestrel/ethinyl estradiol and ethinyl estradiol 0.15mg/0.02 mg and 0.01 mg tablets);
 - g. ANDA No. 77-075 (norethindrone acetate/ethinyl estradiol and ferrous fumarate 1.5 mg/0.030 mg/75 mg tablets);
 - h. ANDA No. 77-077 (norethindrone acetate/ethinyl estradiol and ferrous fumarate 1 mg/0.020 mg/75 mg tablets);
 - i. ANDA No. 77-099 (levonorgestrel and ethinyl estradiol 0.1 mg/0.02 mg tablets);
 - j. ANDA No. 77-502 (levonorgestrel/ethinyl estradiol 0.05 mg/0.03 mg, 0.075 mg/0.04 mg, and

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0.125 mg/0.03 mg tablets); and

any supplements, amendments, or revisions thereto; and

2. All Products in Development, manufactured, marketed or sold by Respondent Andrx related to norethindrone/ethinyl estradiol 0.4 mg/0.035 mg tablets.

Provided, however, this term excludes any Products that are bought or sold by Anda, Anda Pharmaceuticals or Valmed.

II. “Generic Oral Contraceptive Divestiture Agreement” means:

1. The Andrx-Teva Amendments; or
2. Any agreement that receives the prior approval of the Commission between Respondents and an Acquirer for the divestiture of the Generic Oral Contraceptive Assets entered into pursuant to Paragraph II.A. of this Order, and any attachments, agreements, and schedules related thereto.

JJ. “Generic Oral Contraceptive Royalties” means any financial payment or other consideration from Teva related to the Andrx-Teva Amendments that is either of the following:

1. Based on the actual amount of sales or profits of the Generic Oral Contraceptive Products realized at any time after the Acquisition Date; or
2. Due upon the realization of any aggregate amount of sales or profits on the Generic Oral Contraceptive

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Products at any time after the Acquisition Date.

KK. “Generic Oral Contraceptive Supply Agreement” means:

1. The Andrx-Teva Amendments; or
2. Any agreement that receives the prior approval of the Commission between Respondents and an Acquirer for the supply of Andrx Manufactured Generic Oral Contraceptive Products entered pursuant to Paragraph II.B. of this Order, and any attachments, agreements, and schedules related thereto.

LL. “Geographic Territory” means the United States of America, including all of the territories within its jurisdiction or control unless otherwise specified.

MM. “Glipizide ER Assets” means, within the Geographic Territory and to the extent legally transferrable, all of Respondent Andrx’s rights, title and interest in all assets related to:

1. The Glipizide ER Products;
2. Respondent Andrx’s business related to the Glipizide ER Products;
3. The research, Development, manufacture, distribution, marketing and sale of the Glipizide ER Products; and
4. The Categorized Assets related to the Glipizide ER Products.

NN. “Glipizide ER Divestiture Agreement” means:

1. The Asset Purchase Agreement by and between Andrx Corporation, Andrx Pharmaceuticals, LLC, Andrx Pharmaceuticals, Inc., and Actavis Elizabeth LLC,

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dated October 3, 2006, and all amendments, exhibits, attachments, agreements, and schedules related thereto. This agreement is attached to this Order and contained in non-public Appendix V.; or

2. Any agreement that receives the prior approval of the Commission between Respondents and an Acquirer for the divestiture of the Glipizide ER Assets entered into pursuant to Paragraph III.A. of this Order, and any attachments, agreements, and schedules related thereto

OO. “Glipizide ER Products” means all Products in Development, manufactured, marketed or sold by Respondent Andrx pursuant to the following of Respondent Andrx’s ANDAs:

1. ANDA No. 76-159;
2. ANDA No. 76-621; and

any supplements, amendments, or revisions thereto.

Provided, however, this term *excludes* any Products that are bought or sold by Anda, Anda Pharmaceuticals or Valmed.

PP. “Glipizide ER Supply Agreement” means:

1. The Andrx-Pfizer Agreement; or
2. Any agreement that receives the prior approval of the Commission between Respondents and an Acquirer for the supply of Glipizide ER Products entered pursuant to Paragraph III.B. of this Order, and any attachments, agreements, and schedules related thereto.

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QQ. “High Volume Accounts” means any of Respondents’ customers whose annual and/or projected annual aggregate purchase amounts, in units or in dollars, on a company-wide level of the Divestiture Products in the United States was, is, or is projected to be among the top twenty highest of such purchase amounts by Respondents’ U.S. customers on any of the following dates: (1) the end of the last quarter that immediately preceded the date of the public announcement of the proposed Acquisition; (2) the end of the last quarter that immediately preceded the Acquisition Date; (3) the end of the last quarter that immediately preceded the Closing Date for the relevant assets; or (4) the end of the last quarter following the Acquisition Date and/or the Closing Date.

RR. “Intellectual Property” means all of the following related to the Divestiture Products:

1. Patents;
2. Copyrights;
3. Trademarks, Trade Dress, trade secrets, know-how, techniques, data, inventions, practices, methods, and other confidential or proprietary technical, business, research, Development and other information; and
4. Rights to obtain and file for patents and copyrights and registrations thereof;

Provided, however, this term does not include the names or trade dress of “Watson,” “Andrx,” or the names or trade dress of any other corporation, companies, or brands owned or sold by Respondents or related logos to the extent used on Respondents’ Retained Products.

SS. “Interim Monitor” means any monitor appointed pursuant to Paragraph VI. of this Order or Paragraph III. of the

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Order to Maintain Assets.

TT. “Interpharm” means Interpharm Holdings, Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its headquarters address at 75 Adams Avenue, Hauppauge, New York 11788.

UU. “Interpharm Product” means the Product that is subject to the Watson-Interpharm Agreement. *Provided, however,* this term *excludes* any Products that are bought or sold by Anda, Anda Pharmaceuticals or Valmed.

VV. “Interpharm Product Termination Agreement” means:

1. The Termination and Release Agreement by and between Interpharm, Inc. and Watson Laboratories, Inc., dated October 4, 2006, and all amendments, exhibits, attachments, agreements, and schedules related thereto. This agreement is attached to this Order and contained in non-public Appendix VI.; or
2. Any agreement that receives the prior approval of the Commission between Respondents and Interpharm to terminate the Watson-Interpharm Agreement pursuant to Paragraph IV. of this Order.

WW. “Licensed Intellectual Property” means:

1. Patents that are related to the Divestiture Products that Respondents can demonstrate have been routinely used, prior to the Acquisition Date, for Retained Products:
 - a. That have been marketed or sold on an extensive basis by the Respondents within the two-year period immediately preceding the Acquisition; or

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- b. For which, prior to the announcement of the Acquisition, there was an approved marketing plan to market or sell Retained Products on an extensive basis by Respondents; and
2. Trade secrets, know-how, techniques, data, inventions, practices, methods, and other confidential or proprietary technical, business, research, Development, and other information, and all rights in any jurisdiction to limit the use or disclosure thereof, that are related to the Divestiture Products and that Respondents can demonstrate have been routinely used, prior to the Acquisition Date, by Respondents for Retained Products:
 - a. That have been marketed or sold on an extensive basis by the Respondents within the two-year period immediately preceding the Acquisition; or
 - b. For which, prior to the announcement of the Acquisition, there was an approved marketing plan to market or sell Retained Products on an extensive basis by Respondents;

Provided, however, that, Respondents may take a paid-up, royalty-free, irrevocable, non-exclusive, with a right to sublicense, license back from the Acquirer for such intellectual property for use in connection with Retained Products;

Provided, further, however, that, in cases where the aggregate retail sales in dollars within the two-year period immediately preceding the Acquisition of the Retained Products collectively are less than the aggregate retail sales in dollars within the same period of the Divestiture Products collectively, the above described intellectual property shall be considered, at the Acquirer's option, to

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be Intellectual Property and, thereby, subject to assignment to the Acquirer.

XX. “Manufacturing Employees” means all Respondents’ salaried employees who have directly participated in the planning, design, implementation or use of the Manufacturing Technology of the Divestiture Products (irrespective of the portion of working time involved unless such participation consisted solely of oversight of legal, accounting, tax or financial compliance) within the eighteen (18) month period immediately prior to the Closing Date;

Provided, however, Respondents may exclude from this term those employees that are determined by the Interim Monitor or an Acquirer not to be material to the planning, design, implementation or use of the Manufacturing Technology of the Divestiture Products.

YY. “Manufacturing Technology” means all technology, trade secrets, know-how, and proprietary information (whether patented, patentable or otherwise) related to the manufacture of the Divestiture Products (including, for those instances in which the manufacturing equipment is not readily available from a Third Party, at the Acquirer’s option, all such equipment used to manufacture the Divestiture Products), including, but not limited to, all product specifications, processes, product designs, plans, trade secrets, ideas, concepts, manufacturing, engineering, and other manuals and drawings, standard operating procedures, flow diagrams, chemical, safety, quality assurance, quality control, research records, clinical data, compositions, annual product reviews, regulatory communications, control history, current and historical information associated with the FDA Applications conformance and cGMP compliance, labeling, all other information related to the manufacturing process, and

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supplier lists.

ZZ. “Marketing Materials” means all marketing materials used specifically in the marketing or sale of the Divestiture Products in the Geographic Territory as of the Closing Date, including, without limitation, all advertising materials, training materials, product data, mailing lists, sales materials (*e.g.*, detailing reports, vendor lists, sales data), marketing information (*e.g.*, competitor information, research data, market intelligence reports, statistical programs, if any, used for marketing and sales research), customer information (including customer net purchases information to be provided on the basis of either dollars and/or units for each month, quarter or year), sales forecasting models, educational materials, advertising and display materials, speaker lists, promotional and marketing materials, Website content and advertising and display materials, artwork for the production of packaging components, television masters and other similar materials related to the Divestiture Products; *provided, however*, this term *excludes* the pricing information of the Divestiture Products.

AAA. “NDC Numbers” means the National Drug Codes numbers, including both the labeler codes assigned by the FDA and the additional numbers assigned by the Application holder as a product code for a specific Product.

BBB. “Patents” means all patents, patent applications, including provisional patent applications, and statutory invention registrations, in each case existing as of the Closing Date (*except* where this Order specifies a different time), and includes all reissues, divisions, continuations, continuations-in-part, supplementary protection certificates, extensions and reexaminations thereof, all inventions disclosed therein, and all rights therein provided by international treaties and conventions, related

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to any Product of or owned by Respondents as of the Closing Date (*except* where this Order specifies a different time).

CCC. “Pfizer” means Pfizer, Inc. a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its headquarters address at 235 East 42nd Street, New York, New York 10017.

DDD. “Product” means any pharmaceutical, biological, or genetic composition containing any formulation or dosage of a compound referenced as its pharmaceutically, biologically, or genetically active ingredient.

EEE. “Product Registrations” means all registrations, permits, licenses, consents, authorizations, and other approvals, and pending applications and requests therefor, required by applicable Agencies related to the research, Development, manufacture, distribution, finishing, packaging, marketing, or sale of the Product within the Geographic Territory, including all Applications in existence for the Product as of the Closing Date.

FFF. “Remedial Agreements” means:

1. Any agreement related to the Generic Oral Contraceptive Assets entered into pursuant to Paragraph II. of this Order;
2. Any agreement related to the Glipizide ER Assets entered into pursuant to Paragraph III. of this Order;
3. The Interpharm Product Termination Agreement entered into pursuant to Paragraph IV. of this Order; and

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4. Any agreement entered into by a Divestiture Trustee pursuant to Paragraph VII. of this Order.

GGG. “Research and Development Employees” means all Respondents’ salaried employees who directly have participated in the research, Development, or regulatory approval process, or clinical studies of the Divestiture Products (irrespective of the portion of working time involved, unless such participation consisted primarily of oversight of legal, accounting, tax or financial compliance) within the eighteen (18) month period immediately prior to the Closing Date;

Provided, however, Respondents *may exclude* from this term those employees who are determined by the Interim Monitor or an Acquirer, in consultation with Commission staff, not to be material to the research, Development, or regulatory approval process, or clinical studies of the Divestiture Products.

HHH. “Retained Products” means any Product other than the Divestiture Products or the Interpharm Product.

III. “Rights of Reference or Use” means the authority to rely upon, and otherwise use, an investigation for the purpose of obtaining approval of Applications, including the ability to make available the underlying raw data from the investigation for FDA audit.

JJJ. “Supply Cost” means a cost not to exceed the manufacturer’s average direct per unit cost of manufacturing the Divestiture Products for the twelve (12) month period immediately preceding the Acquisition Date; *provided, however,* that the Supply Cost for the Glipizide ER Products shall be the transfer price as determined under the Andrx-Pfizer Agreement; *provided, further, however,* this term shall *exclude* any intracompany business transfer profit.

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- KKK. “Teva” means Teva Pharmaceutical Industries Limited, a corporation organized, existing and doing business under and by virtue of the laws of the State of Israel, with its headquarters address at 5 Basel Street, P.O. Box 3190, Petach Tikva 49131 Israel.
- LLL. “Third Party” means any private entity other than the following: (1) Respondents; or (2) an Acquirer.
- MMM. “Trade Dress” means the current trade dress of the Divestiture Products, including but not limited to, Product packaging, and the lettering of the Product trade name or brand name.
- NNN. “Trademarks” means all proprietary names or designations, trademarks, service marks, trade names, and brand names, including registrations and applications for registration therefor (and all renewals, modifications, and extensions thereof) and all common law rights, and the goodwill symbolized thereby and associated therewith, for the Product.
- OOO. “Valmed” means Valmed Pharmaceutical, Inc., a/k/a VIP, a corporation organized, existing and doing business under and by virtue of the laws of the State of New York, with its headquarters address at 3000 Alt Boulevard, Grand Island, New York 14072.
- PPP. “Watson-Interpharm Agreement” means the Manufacturing and Supply Agreement by and between Interpharm, Inc. and Watson Laboratories, Inc., dated October 14, 2003, and all amendments, exhibits, attachments, agreements, and schedules related thereto. The Watson-Interpharm Agreement is attached to this Order and contained in non-public Appendix VII.

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QQQ. "Website" means the content of the Website(s) located at the Domain Names, the Domain Names, and all copyrights in such Website(s), to the extent owned by Respondents; *provided, however*, this term shall not include the following: (1) content owned by Third Parties and other Intellectual Property not owned by Respondents that are incorporated in such Website(s), such as stock photographs used in the Website(s), *except* to the extent that Respondents can convey their rights, if any, therein; or (2) content unrelated to the Divestiture Products.

II.**IT IS FURTHER ORDERED** that:

- A. Not later than ten (10) days after the Acquisition Date, Respondents shall divest the Generic Oral Contraceptive Assets, absolutely and in good faith, to Teva pursuant to, and in accordance with, the Generic Oral Contraceptive Divestiture Agreement (which agreement shall not vary or contradict, or be construed to vary or contradict, the terms of this Order, it being understood that nothing in this Order shall be construed to reduce any rights or benefits of Teva or to reduce any obligations of Respondents under such agreement);

Provided, however, that if Respondents have divested the Generic Oral Contraceptive Assets to Teva prior to the date this Order becomes final, and if, at the time the Commission determines to make this Order final, the Commission notifies Respondents that the manner in which the divestiture was accomplished is not acceptable, the Commission may direct Respondents, or appoint a Divestiture Trustee, to effect such modifications to the manner of divestiture of the Generic Oral Contraceptive Assets to Teva (including, but not limited to, entering into additional agreements or arrangements) as the

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Commission may determine are necessary to satisfy the requirements of this Order.

Provided, further, however, that Respondents may not modify or amend the Generic Oral Contraceptive Divestiture Agreement without receiving the prior approval of the Commission. *Provided, further, however,* that such prior approval shall not be required for modifications or amendments that do not relate directly or indirectly, in whole or in part, to the Generic Oral Contraceptive Products.

- B. At Teva's option and upon reasonable notice, Respondents shall enter into a Generic Oral Contraceptive Supply Agreement with the Acquirer for the supply of Andrx Manufactured Generic Oral Contraceptive Products for a time sufficient to allow the Acquirer, or a Third Party affiliated with the Acquirer, to obtain all the relevant Agency approvals necessary to manufacture in commercial quantities, and in a manner consistent with cGMP, the Andrx Manufactured Generic Oral Contraceptive Products independently of Respondents and to secure sources of supply of the relevant active pharmaceutical ingredients, excipients, and other ingredients specified in Respondents' Applications for the Andrx Manufactured Generic Oral Contraceptive Products from entities other than Respondents.

Provided, however, that the Generic Oral Contraceptive Supply Agreement shall not exceed a term of five (5) years.

Provided, further, however, that Respondents may not modify or amend the Generic Oral Contraceptive Supply Agreement without receiving the prior approval of the Commission. *Provided, further, however,* that such prior approval shall not be required for modifications or

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amendments that do not relate directly or indirectly, in whole or in part, to the Generic Oral Contraceptive Products.

- C. The Generic Oral Contraceptive Supply Agreement shall require Respondents to:
1. Deliver, in a timely manner and under reasonable terms and conditions, a supply of Andrx Manufactured Generic Oral Contraceptive Products at a price not to exceed Supply Cost;
 2. Represent and warrant to the Acquirer that Respondents shall hold harmless and indemnify the Acquirer for any liabilities or loss of profits resulting from the failure by Respondents to deliver the Andrx Manufactured Generic Oral Contraceptive Products in a timely manner as required by the Generic Oral Contraceptive Supply Agreement unless Respondents can demonstrate that their failure was entirely beyond the reasonable control of Respondents and in no part the result of negligence or willful misconduct by Respondents;
 3. Represent and warrant to the Acquirer that the Andrx Manufactured Generic Oral Contraceptive Products supplied under the Generic Oral Contraceptive Supply Agreement meet the Agency-approved specifications. For Andrx Manufactured Generic Oral Contraceptive Products to be marketed or sold in the Geographic Territory, Respondents shall agree to indemnify, defend and hold the Acquirer harmless from any and all suits, claims, actions, demands, liabilities, expenses or losses alleged that result from the failure of the Andrx Manufactured Generic Oral Contraceptive Products to meet cGMP. This obligation may be made contingent upon the Acquirer giving Respondents prompt, adequate notice of such claim and cooperating

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fully in the defense of such claim. *Provided, however,* that Respondents may reserve the right to control the defense of any such litigation, including the right to settle the litigation, so long as such settlement is consistent with Respondents' responsibilities to supply the ingredients in the manner required by this Order; *Provided, further, however,* that this obligation shall not require Respondents to be liable for any negligent act or omission of the Acquirer or for any representations and warranties, express or implied, made by the Acquirer that exceed the representations and warranties made by Respondents to the Acquirer;

4. Make available to the Acquirer and the Interim Monitor all records that relate to the manufacture of the Andrx Manufactured Generic Oral Contraceptive Products that are generated or created after the Closing Date;
5. Include in the Andrx Manufactured Generic Oral Contraceptive Supply Agreement a representation from the Acquirer that such Acquirer shall use commercially reasonable efforts to secure the FDA approval(s) necessary to manufacture, or to have manufactured by a Third Party, in commercial quantities, the Andrx Manufactured Generic Oral Contraceptive Products and to do so independently of Respondents as soon as reasonably practicable;
6. Not seek, pursuant to any dispute resolution mechanism incorporated in the Generic Oral Contraceptive Supply Agreement, a result that would be inconsistent with the terms or the remedial purposes of this Order.

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Provided, however, the Andrx-Teva Amendments, if approved by the Commission, shall satisfy the requirements of this Paragraph.

III.**IT IS FURTHER ORDERED** that:

- A. Not later than ten (10) days after the Acquisition Date, Respondents shall divest the Glipizide ER Assets, absolutely and in good faith, to Actavis pursuant to and in accordance with the Glipizide ER Divestiture Agreement (which agreement shall not vary or contradict, or be construed to vary or contradict, the terms of this Order, it being understood that nothing in this Order shall be construed to reduce any rights or benefits of Actavis or to reduce any obligations of Respondents under such agreement);

Provided, however, that if Respondents have divested the Glipizide ER Assets to Actavis prior to the date this Order becomes final, and if, at the time the Commission determines to make this Order final, the Commission notifies Respondents that Actavis is not an acceptable purchaser of the Glipizide ER Assets then Respondents shall immediately rescind the transaction with Actavis and shall divest the Glipizide ER Assets within one hundred eighty (180) days from the date the Order becomes final, absolutely and in good faith, at no minimum price, to an Acquirer and only in a manner that receives the prior approval of the Commission;

Provided, further, however, that if Respondents have divested the Glipizide ER Assets to Actavis prior to the date this Order becomes final, and if, at the time the Commission determines to make this Order final, the Commission notifies Respondents that the manner in which the divestiture was accomplished is not acceptable,

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the Commission may direct Respondents, or appoint a Divestiture Trustee, to effect such modifications to the manner of divestiture of the Glipizide ER Assets to Actavis (including, but not limited to, entering into additional agreements or arrangements) as the Commission may determine are necessary to satisfy the requirements of this Order.

- B. Not later than ten (10) days after the Acquisition Date, Respondents shall enter into a Glipizide ER Supply Agreement by:
1. Assigning the Andrx-Pfizer Agreement to the Acquirer of the Glipizide ER Products; or
 2. Entering into a supply agreement with the Acquirer for the supply of Glipizide ER Products under Respondent Watson's ANDA No. 76-467, under terms and conditions no less favorable in the aggregate to the Andrx-Pfizer Agreement, for a period not to exceed thirty (30) months.
- C. The Glipizide ER Supply Agreement shall require Respondents to:
1. Deliver, in a timely manner and under reasonable terms and conditions, a supply of Glipizide ER Products at a price not to exceed Supply Cost;
 2. Represent and warrant to the Acquirer that Respondents shall hold harmless and indemnify the Acquirer for any liabilities or loss of profits resulting from the failure by Respondents to deliver the Glipizide ER Products in a timely manner as required by the Glipizide ER Supply Agreement unless Respondents can demonstrate that their failure was entirely beyond the reasonable control of Respondents

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and in no part the result of negligence or willful misconduct by Respondents;

3. Represent and warrant to the Acquirer that the Glipizide ER Products supplied under the Glipizide ER Supply Agreement meet the Agency-approved specifications. For Glipizide ER Products to be marketed or sold in the Geographic Territory, Respondents shall agree to indemnify, defend and hold the Acquirer harmless from any and all suits, claims, actions, demands, liabilities, expenses or losses alleged that result from the failure of the Glipizide ER Products to meet cGMP. This obligation may be made contingent upon the Acquirer giving Respondents prompt, adequate notice of such claim and cooperating fully in the defense of such claim. *Provided, however,* that Respondents may reserve the right to control the defense of any such litigation, including the right to settle the litigation, so long as such settlement is consistent with Respondents' responsibilities to supply the ingredients in the manner required by this Order; *provided, further, however,* that this obligation shall not require Respondents to be liable for any negligent act or omission of the Acquirer or for any representations and warranties, express or implied, made by the Acquirer that exceed the representations and warranties made by Respondents to the Acquirer;
4. Make available to the Acquirer and the Interim Monitor (if applicable) all records that relate to the manufacture of the Glipizide ER Products that are generated or created after the Closing Date;
5. Include in the Glipizide ER Supply Agreement a representation from the Acquirer that such Acquirer shall use commercially reasonable efforts to secure the FDA approval(s) necessary to manufacture, or to have manufactured by a Third Party, in commercial

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quantities, the Glipizide ER Products and to do so independently of Respondents as soon as reasonably practicable;

6. Not seek, pursuant to any dispute resolution mechanism incorporated in the Glipizide ER Supply Agreement, a result that would be inconsistent with the terms or the remedial purposes of this Order.

Provided, however, if Respondents enter into a Glipizide ER Supply Agreement pursuant to Paragraph III.B.1 of this Order, then the Andrx-Pfizer Agreement shall satisfy the requirements of this Paragraph.

IV.**IT IS FURTHER ORDERED** that:

- A. Not later than ten (10) days after the Acquisition Date, Respondents shall terminate their rights to the Interpharm Product, absolutely and in good faith, pursuant to the Interpharm Product Termination Agreement (which agreement shall not vary or contradict, or be construed to vary or contradict, the terms of this Order, it being understood that nothing in this Order shall be construed to reduce any rights or benefits of Interpharm or to reduce any obligations of Respondents under such agreements);

Provided, however, that if Respondents have terminated their rights to the Interpharm Product prior to the date this Order becomes final, and if, at the time the Commission determines to make this Order final, the Commission notifies Respondents that the manner in which the termination was accomplished is not acceptable, the Commission may direct Respondents, or appoint a Divestiture Trustee, to effect such modifications to the manner of termination of such rights to the Interpharm

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Product (including, but not limited to, entering into additional agreements or arrangements) as the Commission may determine are necessary to satisfy the requirements of this Order.

- B. For a period of six (6) months after the Closing Date, Respondents shall not solicit any current customer of the Interpharm Product for the supply of Products similar to the Interpharm Product.

V.**IT IS FURTHER ORDERED** that:

- A. After the Closing Date for the assets related to the Divestiture Products or Interpharm Product, Respondents shall not receive any payment or other compensation from an Acquirer that is:
 - 1. Based on the actual amount of sales or profits of the Divestiture Products or Interpharm Product realized at any time after the Closing Date, or
 - 2. Due upon the realization of any aggregate amount of sales or profits of the Divestiture Products or Interpharm Product after the Closing Date;

Provided, however, Respondents may receive payments from an Acquirer based on units of Divestiture Products supplied to an Acquirer pursuant to the Generic Oral Contraceptive Supply Agreement and the Glipizide ER Supply Agreement.

- B. At an Acquirer's option, and upon reasonable notice, Respondents shall provide, for a period of five (5) years after the Closing Date, the following technical assistance:

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1. An organized, comprehensive, complete, useful, timely, and meaningful transfer of information related to the Product Manufacturing Technology, and, as a part of such transfer, shall designate employees of Respondents knowledgeable with respect to such Product Manufacturing Technology and experienced in such transfers to a committee for the purposes of communicating directly with an Acquirer and the Interim Monitor for the purposes of effecting such transfer; and
2. In a timely manner and at Direct Cost:
 - a. Assistance and advice to enable an Acquirer to obtain all necessary permits and approvals from any Agency to manufacture and sell the Divestiture Products;
 - b. Assistance to an Acquirer to manufacture the Divestiture Products in substantially the same manner, quality, and quantity(ies) employed or achieved by Respondent Andrx for the Divestiture Products;
 - c. Consultation with Respondents' employees with relevant knowledge, and training at a facility chosen by an Acquirer, sufficient to satisfy management of an Acquirer that its personnel are adequately trained in the manufacture of the Divestiture Products; and
 - d. Personnel, assistance and training as an Acquirer might reasonably need to transfer the assets related to the Divestiture Products.

C. Respondents shall:

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1. At an Acquirer's option and upon reasonable notice, provide, in a timely manner and at no greater than Direct Cost, assistance of Respondents' employees with knowledge to assist an Acquirer to defend against, respond to, or otherwise participate in any litigation related to the Intellectual Property related to the relevant Divestiture Products;
2. For any patent infringement suit in which Respondents are parties or are preparing to be parties to prior to the Closing Date, and where such a suit would have the potential to interfere with an Acquirer's freedom to practice in the research, Development, manufacture, use, import, export, distribution or sale of the relevant Divestiture Products:
 - a. Cooperate with an Acquirer and provide any and all necessary technical and legal assistance, documentation and witnesses from Respondents in connection with obtaining resolution of any pending patent litigation involving the Divestiture Products;
 - b. Waive conflicts of interest, if any, to allow Respondents' outside legal counsel to represent an Acquirer in any ongoing patent litigation involving the Divestiture Product; and
 - c. Permit the transfer to an Acquirer of all of the litigation files and any related attorney work-product in the possession of Respondents' outside counsel relating to the Divestiture Products; and
3. Not join, file, prosecute or maintain any suit, in law or equity against an Acquirer for the research, Development, manufacture, use, import, export, distribution, or sale of the Divestiture Products, if such suit would have the potential to interfere with an

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Acquirer's freedom to practice the research, Development, manufacture, use, import, export, distribution, or sale of the relevant Divestiture Products, under:

- a. Any Patent owned or licensed by Respondents as of the Acquisition Date that claims a method of making, using, or administering, or a composition of matter, relating to the Divestiture Products, or that claims a device relating to the use thereof; and
- b. Any Patents owned or licensed at any time after the Acquisition Date by Respondents that claim any aspect of the research, Development, manufacture, use, import, export, distribution, or sale of the respective Divestiture Products, other than such Patents that claim inventions conceived by and reduced to practice after the Acquisition Date;

Provided, however, Respondents shall also covenant to an Acquirer that, as a condition of any assignment, transfer, or license to a Third Party of the above-described Patents, the Third Party shall agree to covenant not to sue an Acquirer under such Patents if Respondents were prohibited from bringing such suit.

D. As related to the Divestiture Products and the Interpharm Product, Respondents shall:

1. Submit and deliver to an Acquirer, at Respondents' expense, in good faith and as soon as practicable, in a manner that ensures its completeness and accuracy, all Confidential Business Information;
2. Provide an Acquirer and the Interim Monitor with access to all Confidential Business Information and to employees who possess or are able to locate or identify

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the books, records, and files that contain Confidential Business Information pending complete delivery of all the Confidential Business Information;

3. Not use, directly or indirectly, any Confidential Business Information related to the research, Development, manufacturing, marketing, or sale of the Divestiture Products or the Interpharm Product other than to comply with the requirements of this Order;
 4. Not disclose or convey any Confidential Business Information, directly or indirectly, to any person except an Acquirer; and
 5. Not provide, disclose or otherwise make available, directly or indirectly, any Confidential Business Information related to the marketing or sales of the Divestiture Products or the Interpharm Product to the employees associated with business related to those Retained Products that are approved by the FDA for the same or similar indications.
- E. Not later than thirty (30) days after the Acquisition Date, Respondents shall provide written notification of the restrictions on the use of the Confidential Business Information by Respondents' personnel to all of Respondents' employees who:
1. Are, or were, directly involved in the research, Development, manufacturing, distribution, sale or marketing of the Divestiture Products or the Interpharm Product;
 2. Are directly involved in the research, Development, manufacturing, distribution, sale or marketing of Retained Products that are approved by the FDA for the same or similar indications as the Divestiture Products or Interpharm Product prior to the

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Acquisition; and/or

3. May have Confidential Business Information.

Provided, however, Respondents shall give such notification by e-mail with return receipt requested or similar transmission, and keep a file of such receipts for one (1) year after the relevant Closing Date. Respondents shall maintain complete records of all such agreements at Respondents' corporate headquarters, and provide an officer's certification to the Commission stating that such acknowledgment program has been implemented and is being complied with. Respondents shall provide an Acquirer with copies of all certifications, notifications and reminders sent to Respondents' personnel.

F. Respondents shall require, as a condition of continued employment post-divestiture of the assets required to be divested pursuant to this Order, that each Divestiture Product Core Employee retained by Respondents, the direct supervisor of any such employee, and any other employee retained by Respondents and designated by the Interim Monitor, sign a confidentiality agreement pursuant to which such employee shall be required to maintain all Confidential Business Information as strictly confidential, including the non-disclosure of such information to all other employees, executives or other personnel of Respondents (other than as necessary to comply with the requirements of this Order).

G. Respondents shall:

1. For a period of at least six (6) months after the Closing Date ("Employee Access Period"), provide an Acquirer with the opportunity to enter into employment contracts with the Divestiture Product Core Employees; and

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2. Provide an Acquirer with the Employee Information no later than the earlier of the following dates:
 - a. Ten (10) days after notice by staff of the Commission to Respondents to provide the Employee Information; or
 - b. Ten (10) days after the Closing Date.

Provided, however, failure by Respondents to provide the Employee Information within the time provided herein shall extend the Employee Access Period with respect to any such employee in an amount equal to the delay.

H. Respondents shall:

1. During the Employee Access Period, not interfere with the hiring or employing of the Divestiture Product Core Employees by an Acquirer, and remove any impediments within the control of Respondents that may deter these employees from accepting employment with an Acquirer, including, but not limited to, any non-compete or non-disclosure provision of employment that would affect the ability or incentive of those individuals to be employed by an Acquirer. In addition, Respondents shall not make any counteroffer to such a Divestiture Product Core Employee who has received a written offer of employment from an Acquirer;

Provided, however, that this paragraph shall not prohibit Respondents from continuing to employ any Divestiture Product Core Employee during the Employee Access Period (subject to the condition of continued employment prescribed in this Order);

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2. Until the Closing Date, provide all Divestiture Product Core Employees with reasonable financial incentives to continue in their positions and to research, develop, and manufacture the Divestiture Products consistent with past practices and/or as may be necessary to preserve the marketability, viability and competitiveness of the Divestiture Products and to ensure successful execution of the pre-Acquisition plans for such Divestiture Products. Such incentives shall include a continuation of all employee compensation and benefits offered by Respondents until the Closing Date for the divestiture of the Divestiture Products has occurred, including regularly scheduled raises, bonuses, and vesting of pension benefits (as permitted by Law);

Provided, however, that nothing in this Order requires or shall be construed to require Respondents to terminate the employment of any employee or prevents Respondents from continuing the employment of the Divestiture Product Core Employees (other than those conditions of continued employment prescribed in this Order) in connection with the Acquisition; and

3. For a period of one (1) year from the Closing Date, not:
 - a. Directly or indirectly, solicit or otherwise attempt to induce any Acquirer Employee to terminate his or her employment relationship with an Acquirer; or
 - b. Hire any Acquirer Employees; *provided, however,* Respondents may hire any Acquirer Employee whose employment has been terminated by an Acquirer, or who independently applies for employment with Respondents, as long as such employee was not solicited in violation of the non-

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solicitation requirements contained herein;

Provided, however, Respondents may do the following: (1) Advertise for employees in newspapers, trade publications or other media not targeted specifically at the Acquirer Employees; or (2) hire a Acquirer Employee who contacts Respondents on his or her own initiative without any direct or indirect solicitation or encouragement from Respondents.

- I. Prior to the Closing Date, Respondents shall secure all consents and waivers from all Third Parties that are necessary to permit Respondents to divest the assets required to be divested pursuant to this Order to an Acquirer, and/or to permit an Acquirer to continue the research, Development, manufacture, sale, marketing or distribution of the Divestiture Products; *provided, however,* Respondents may satisfy this requirement by certifying that an Acquirer has executed all such agreements directly with each of the relevant Third Parties.
- J. Respondents shall not enforce any agreement against a Third Party or an Acquirer to the extent that such agreement may limit or otherwise impair the ability of an Acquirer:
 1. To acquire the Product Manufacturing Technology related to the Divestiture Products, the related equipment, or the use of such equipment, from the Third Party. Such agreements include, but are not limited to, agreements with respect to the disclosure of Confidential Business Information related to such Product Manufacturing Technology; and/or
 2. To acquire all Confidential Business Information related to the Interpharm Product. Until all of Respondent Watson's rights to enforce restrictions on

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the use, disclosure, conveyance or provision of Confidential Business Information related to the Interpharm Product are fully assigned or conveyed to Interpharm, Respondents shall enforce any agreement against a Third Party to the extent that such agreement prevents or limits the ability of the Third Party to provide any such Confidential Business Information to any person or entity other than: (1) Interpharm or (2) any Third Party authorized by Interpharm to receive such information.

- K. Not later than ten (10) days after the Closing Date, Respondents shall grant a release to each Third Party that:
1. Is subject to an agreement as described in Paragraph V.J.1. that allows the Third Party to provide the relevant Product Manufacturing Technology and/or the related equipment or use thereof, to an Acquirer. Within five (5) days of the execution of each such release, Respondents shall provide a copy of the release to an Acquirer for the relevant assets; and
 2. Allows the Third Party to provide all such Confidential Business Information within the Third Party's possession or control to Interpharm. This includes, but is not limited to, such releases as may be necessary to permit the transfer to Interpharm of any attorney work-product related to the intellectual property connected to the Interpharm Product in the possession of Respondent Watson's outside counsel. Within five (5) days of the execution of each such release, Respondents shall provide a copy of the release to Interpharm.
- L. Respondents shall not, in the Geographic Territory:

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1. Use the Trademarks related to the Divestiture Products or any mark confusingly similar to such Trademarks, as a trademark, trade name, or service mark;
2. Attempt to register Trademarks related to the Divestiture Products;
3. Attempt to register any mark confusingly similar to Trademarks related to the Divestiture Products;
4. Challenge or interfere with an Acquirer's use and registration of Trademarks related to the Divestiture Products; or
5. Challenge or interfere with an Acquirer's efforts to enforce its trademark registrations for and trademark rights in Trademarks related to the Divestiture Products against Third Parties;

Provided, however, that nothing in this Order shall preclude Respondents from continuing to use those trademarks, tradenames, or service marks related to the Retained Products as of the Acquisition Date.

- M. The Remedial Agreements shall be deemed incorporated into this Order, and any failure by Respondents to comply with any term of the Remedial Agreements shall constitute a failure to comply with this Order. Respondents shall include in each Remedial Agreement a specific reference to this Order and the remedial purpose thereof. The Remedial Agreements entered into pursuant to Paragraph II., III., and IV. are attached to this Order and contained in non-public Appendices II., IV., V., and VI.
- N. Pending divestiture of the assets required to be divested pursuant to this Order, Respondents shall take such actions as are necessary to maintain the full economic viability and marketability of the business associated with such

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assets, to minimize any risk of loss of competitive potential for such business, and to prevent the destruction, removal, wasting, deterioration, or impairment of any of these assets until after their respective transfer to an Acquirer in a manner that ensures that there is no disruption, delay, or impairment of the regulatory approval processes related to such assets. Respondents shall not sell, transfer, encumber or otherwise impair such assets (other than in the manner prescribed in this Order) nor take any action that lessens the full economic viability, marketability, or competitiveness of the above-described businesses.

- O. Respondents shall maintain manufacturing facilities necessary to manufacture the Divestiture Products in finished form until Respondents have completed their obligations under Paragraphs II. and III. of this Order.
- P. The purpose of Paragraphs II. through V. is: (1) to ensure the continued use of such assets in the research, Development, manufacture, distribution, sale and marketing of the Divestiture Products and the Interpharm Product; (2) to create a viable and effective competitor in the relevant markets alleged in the Complaint who is independent of Respondents; and, (3) to remedy the lessening of competition resulting from the Acquisition as alleged in the Commission's Complaint in a timely and sufficient manner.

VI.**IT IS FURTHER ORDERED** that:

- A. Francis J. Civile of Califon, New Jersey, shall serve as the monitor ("Interim Monitor") to assure that Respondents expeditiously comply with all of their obligations and perform all of their responsibilities as required by this

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Order, the Order to Maintain Assets, and the Remedial Agreements.

- B. If Mr. Civile fails to serve, or if a new Interim Monitor must be selected, the Commission shall select the Interim Monitor, subject to the consent of Respondent Watson, which consent shall not be unreasonably withheld. If Respondent Watson has not opposed, in writing, including the reasons for opposing, the selection of a proposed Interim Monitor within ten (10) days after notice by the staff of the Commission to Respondent Watson of the identity of any proposed Interim Monitor, Respondents shall be deemed to have consented to the selection of the proposed Interim Monitor.
- C. Not later than ten (10) days after the appointment of the Interim Monitor, Respondents shall execute an agreement that, subject to the prior approval of the Commission, confers on the Interim Monitor all the rights and powers necessary to permit the Interim Monitor to monitor Respondents' compliance with the relevant requirements of the Order in a manner consistent with the purposes of the Order.
- D. Respondents shall consent to the following terms and conditions regarding the powers, duties, authorities, and responsibilities of the Interim Monitor:
 - 1. The Interim Monitor shall have the power and authority to monitor Respondents' compliance with the divestiture and asset maintenance obligations and related requirements of the Order, and shall exercise such power and authority and carry out the duties and responsibilities of the Interim Monitor in a manner consistent with the purposes of the Order and in consultation with the Commission;

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2. The Interim Monitor shall act in a fiduciary capacity for the benefit of the Commission;
3. The Interim Monitor shall serve until the later of:
 - a. The completion by Respondents of:
 - (1) The divestiture of all Divestiture Assets in a manner that fully satisfies the requirements of this Order; and
 - (2) Notification by each Acquirer to the Interim Monitor that such Acquirer is: (1) approved by the FDA to manufacture each of the relevant Divestiture Products, and (2) able to manufacture such Divestiture Products in commercial quantities, in a manner consistent with cGMP, independently of Respondent; or
 - b. The completion by Respondents of the last obligation under the Orders pertaining to the Interim Monitor's service;

Provided, however, that the Commission may extend or modify this period as may be necessary or appropriate to accomplish the purposes of the Orders;
4. Subject to any demonstrated legally recognized privilege, the Interim Monitor shall have full and complete access to Respondents' personnel, books, documents, records kept in the normal course of business, facilities and technical information, and such other relevant information as the Interim Monitor may reasonably request, related to Respondents' compliance with their obligations under the Order, including, but not limited to, their obligations related

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to the relevant assets. Respondents shall cooperate with any reasonable request of the Interim Monitor and shall take no action to interfere with or impede the Interim Monitor's ability to monitor Respondents' compliance with the Order;

5. The Interim Monitor shall serve, without bond or other security, at the expense of Respondents on such reasonable and customary terms and conditions as the Commission may set. The Interim Monitor shall have authority to employ, at the expense of Respondents, such consultants, accountants, attorneys and other representatives and assistants as are reasonably necessary to carry out the Interim Monitor's duties and responsibilities;
6. Respondents shall indemnify the Interim Monitor and hold the Interim Monitor harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Interim Monitor's duties, including all reasonable fees of counsel and other reasonable expenses incurred in connection with the preparations for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Interim Monitor;
7. Respondents shall report to the Interim Monitor in accordance with the requirements of this Order and/or as otherwise provided in any agreement approved by the Commission. The Interim Monitor shall evaluate the reports submitted to the Interim Monitor by Respondents, and any reports submitted by the Commission-approved Acquirer with respect to the performance of Respondents' obligations under the Order or the Remedial Agreement. Within thirty (30)

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days from the date the Interim Monitor receives these reports, the Interim Monitor shall report in writing to the Commission concerning performance by Respondents of their obligations under the Order; and

8. Respondents may require the Interim Monitor and each of the Interim Monitor's consultants, accountants, attorneys and other representatives and assistants to sign a customary confidentiality agreement; *provided, however,* that such agreement shall not restrict the Interim Monitor from providing any information to the Commission.
- E. The Commission may, among other things, require the Interim Monitor and each of the Interim Monitor's consultants, accountants, attorneys and other representatives and assistants to sign an appropriate confidentiality agreement related to Commission materials and information received in connection with the performance of the Interim Monitor's duties.
- F. If the Commission determines that the Interim Monitor has ceased to act or failed to act diligently, the Commission may appoint a substitute Interim Monitor in the same manner as provided in this Paragraph.
- G. The Commission may on its own initiative, or at the request of the Interim Monitor, issue such additional orders or directions as may be necessary or appropriate to assure compliance with the requirements of the Order.
- H. The Interim Monitor appointed pursuant to this Order may be the same person appointed as a Divestiture Trustee pursuant to the relevant provisions of this Order.

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VII.**IT IS FURTHER ORDERED** that:

- A. If Respondents have not fully complied with their obligations under Paragraphs II. through V. of this Order, the Commission may appoint a trustee (“Divestiture Trustee”) to assign, grant, license, divest, transfer, deliver or otherwise convey the assets required to be assigned, granted, licensed, divested, transferred, delivered or otherwise conveyed pursuant to each of the relevant Paragraphs in a manner that satisfies the requirements of each such Paragraph. In the event that the Commission or the Attorney General brings an action pursuant to § 5(l) of the Federal Trade Commission Act, 15 U.S.C. § 45(l), or any other statute enforced by the Commission, Respondents shall consent to the appointment of a Divestiture Trustee in such action to assign, grant, license, divest, transfer, deliver or otherwise convey the relevant assets. Neither the appointment of a Divestiture Trustee nor a decision not to appoint a Divestiture Trustee under this Paragraph shall preclude the Commission or the Attorney General from seeking civil penalties or any other relief available to it, including a court-appointed Divestiture Trustee, pursuant to § 5(l) of the Federal Trade Commission Act, or any other statute enforced by the Commission, for any failure by Respondents to comply with this Order.
- B. The Commission shall select the Divestiture Trustee, subject to the consent of Respondent Watson, which consent shall not be unreasonably withheld. The Divestiture Trustee shall be a person with experience and expertise in acquisitions and divestitures. If Respondent Watson has not opposed, in writing, including the reasons for opposing, the selection of any proposed Divestiture Trustee within ten (10) days after notice by the staff of the Commission to Respondent Watson of the identity of any

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proposed Divestiture Trustee, Respondents shall be deemed to have consented to the selection of the proposed Divestiture Trustee.

- C. Not later than ten (10) days after the appointment of a Divestiture Trustee, Respondents shall execute a trust agreement that, subject to the prior approval of the Commission, transfers to the Divestiture Trustee all rights and powers necessary to permit the Divestiture Trustee to effect the divestiture required by this Order.
- D. If a Divestiture Trustee is appointed by the Commission or a court pursuant to this Paragraph, Respondents shall consent to the following terms and conditions regarding the Divestiture Trustee's powers, duties, authority, and responsibilities:
 1. Subject to the prior approval of the Commission, the Divestiture Trustee shall have the exclusive power and authority to assign, grant, license, divest, transfer, deliver or otherwise convey the assets that are required by this Order to be assigned, granted, licensed, divested, transferred, delivered or otherwise conveyed;
 2. The Divestiture Trustee shall have one (1) year after the date the Commission approves the trust agreement described herein to accomplish the divestiture, which shall be subject to the prior approval of the Commission. If, however, at the end of the one (1) year period, the Divestiture Trustee has submitted a plan of divestiture or believes that the divestiture can be achieved within a reasonable time, the divestiture period may be extended by the Commission; *provided, however,* the Commission may extend the divestiture period only two (2) times;

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3. Subject to any demonstrated legally recognized privilege, the Divestiture Trustee shall have full and complete access to the personnel, books, records and facilities related to the relevant assets that are required to be assigned, granted, licensed, divested, delivered or otherwise conveyed by this Order and to any other relevant information, as the Divestiture Trustee may request. Respondents shall develop such financial or other information as the Divestiture Trustee may request and shall cooperate with the Divestiture Trustee. Respondents shall take no action to interfere with or impede the Divestiture Trustee's accomplishment of the divestiture. Any delays in divestiture caused by Respondents shall extend the time for divestiture under this Paragraph in an amount equal to the delay, as determined by the Commission or, for a court-appointed Divestiture Trustee, by the court;
4. The Divestiture Trustee shall use commercially reasonable efforts to negotiate the most favorable price and terms available in each contract that is submitted to the Commission, subject to Respondents' absolute and unconditional obligation to divest expeditiously and at no minimum price. The divestiture shall be made in the manner and to an acquirer as required by this Order; *provided, however*, if the Divestiture Trustee receives bona fide offers from more than one acquiring entity, and if the Commission determines to approve more than one such acquiring entity, the Divestiture Trustee shall divest to the acquiring entity selected by Respondents from among those approved by the Commission; and, *provided, further, however*, that Respondents shall select such entity within five (5) days after receiving notification of the Commission's approval;

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5. The Divestiture Trustee shall serve, without bond or other security, at the cost and expense of Respondents, on such reasonable and customary terms and conditions as the Commission or a court may set. The Divestiture Trustee shall have the authority to employ, at the cost and expense of Respondents, such consultants, accountants, attorneys, investment bankers, business brokers, appraisers, and other representatives and assistants as are necessary to carry out the Divestiture Trustee's duties and responsibilities. The Divestiture Trustee shall account for all monies derived from the divestiture and all expenses incurred. After approval by the Commission of the account of the Divestiture Trustee, including fees for the Divestiture Trustee's services, all remaining monies shall be paid at the direction of Respondents, and the Divestiture Trustee's power shall be terminated. The compensation of the Divestiture Trustee shall be based at least in significant part on a commission arrangement contingent on the divestiture of all of the relevant assets that are required to be divested by this Order;

6. Respondents shall indemnify the Divestiture Trustee and hold the Divestiture Trustee harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Divestiture Trustee's duties, including all reasonable fees of counsel and other expenses incurred in connection with the preparation for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Divestiture Trustee;

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7. The Divestiture Trustee shall have no obligation or authority to operate or maintain the relevant assets required to be divested by this Order; *provided, however,* that the Divestiture Trustee appointed pursuant to this Paragraph may be the same person appointed as Interim Monitor pursuant to the relevant provisions of the Order to Maintain Assets in this matter;
 8. The Divestiture Trustee shall report in writing to Respondents and to the Commission every sixty (60) days concerning the Divestiture Trustee's efforts to accomplish the divestiture; and
 9. Respondents may require the Divestiture Trustee and each of the Divestiture Trustee's consultants, accountants, attorneys and other representatives and assistants to sign a customary confidentiality agreement; *provided, however,* such agreement shall not restrict the Divestiture Trustee from providing any information to the Commission.
- E. If the Commission determines that a Divestiture Trustee has ceased to act or failed to act diligently, the Commission may appoint a substitute Divestiture Trustee in the same manner as provided in this Paragraph.
- F. The Commission or, in the case of a court-appointed Divestiture Trustee, the court, may on its own initiative or at the request of the Divestiture Trustee issue such additional orders or directions as may be necessary or appropriate to accomplish the divestiture required by this Order.

VIII.

IT IS FURTHER ORDERED that, in any instance wherein Respondents' counsel (including in-house counsel under

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appropriate confidentiality arrangements) either retain unredacted copies of documents or other materials provided to an Acquirer or access original documents (under circumstances where copies of documents are insufficient or otherwise unavailable) provided to an Acquirer, Respondents shall assure that Respondents' counsel do so only in order to do the following:

- A. Comply with the Remedial Agreements, this Order, any law (including, without limitation, any requirement to obtain regulatory licenses or approvals), any data retention requirement of any applicable Government Entity, or any taxation requirements; or
- B. Defend against, respond to, or otherwise participate in any litigation, investigation, audit, process, subpoena or other proceeding relating to the divestiture, the Divestiture Assets or the Interpharm Product, and businesses associated with the Divestiture Assets or the Interpharm Product;

Provided, however, that Respondents may disclose such information as necessary for the purposes set forth in this Paragraph pursuant to an appropriate confidentiality order, agreement or arrangement; and

Provided, further, however, that pursuant to this Paragraph VIII, Respondents shall: (1) require those who view such unredacted documents or other materials to enter into confidentiality agreements with an Acquirer (but shall not be deemed to have violated this requirement if an Acquirer withholds such agreement unreasonably); and (2) use its best efforts to obtain a protective order to protect the confidentiality of such information during any adjudication.

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IX.**IT IS FURTHER ORDERED** that:

- A. Within five (5) days of the Acquisition, Respondents shall submit to the Commission a letter certifying the date on which the Acquisition occurred.
- B. Within thirty (30) days after the date this Order becomes final, and every sixty (60) days thereafter until Respondents have fully complied with Paragraphs II., III., IV., and V. of this Order (*i.e.*, have assigned, licensed, divested, transferred, delivered, terminated or otherwise conveyed all relevant assets or rights to an Acquirer in a manner that fully satisfies the requirements of the Order), Respondents shall:
 - 1. Submit to the Commission a verified written report setting forth in detail the manner and form in which they intend to comply, are complying, and have complied with this Order;
 - 2. At the same time, submit a copy of their verified report concerning compliance with this Order to the Interim Monitor, if any Interim Monitor has been appointed; and
 - 3. In their verified reports, include, among other things, a full description of the efforts being made to comply with the relevant Paragraphs of the Order, all substantive contacts or negotiations related to the divestiture of the relevant assets and the identity of all persons contacted, copies of all written communications to and from such persons, all internal memoranda, and all reports and recommendations concerning completing the obligations.

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- C. One (1) year after the date this Order becomes final, annually for the next nine years on the anniversary of the date this Order becomes final, and at other times as the Commission may require, Respondents shall file a verified written report with the Commission that includes information regarding any modifications or amendments to the Generic Oral Contraceptive Divestiture Agreement or the Generic Oral Contraceptive Supply Agreement that Respondents entered without the prior approval of the Commission, and sets forth in detail the manner and form in which they have complied and are complying with the Order.

X.

IT IS FURTHER ORDERED that Respondents shall notify the Commission at least thirty (30) days prior to any proposed (1) dissolution of such Respondents; (2) acquisition, merger or consolidation of Respondents; or (3) any other change in the Respondents, including, but not limited to, assignment and the creation or dissolution of subsidiaries, if such change might affect compliance obligations arising out of the Order.

XI.

IT IS FURTHER ORDERED that, for purposes of determining or securing compliance with this Order, and subject to any legally recognized privilege, and upon written request and upon five (5) days notice to Respondents made to their principal United States offices or headquarters address, Respondents shall, without restraint or interference, permit any duly authorized representative of the Commission:

- A. Access, during business office hours of Respondents and in the presence of counsel, to all facilities and access to inspect and copy all books, ledgers, accounts, correspondence, memoranda and all other records and

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documents in the possession or under the control of Respondents related to compliance with this Order, which copying services shall be provided by Respondents at the request of authorized representative(s) of the Commission; and

- B. To interview officers, directors, or employees of Respondents, who may have counsel present, regarding such matters.

XII.

IT IS FURTHER ORDERED that this Order shall terminate on December 6, 2016.

By the Commission, Commissioner Rosch recused.

**PUBLIC APPENDIX I
ORDER TO MAINTAIN ASSETS**

**NON-PUBLIC APPENDIX II.
THE GLIPIZIDE ER SUPPLY AGREEMENT
THE ANDRX-PFIZER AGREEMENT**

**[Redacted From Public Record But Incorporated By
Reference]**

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**NON-PUBLIC APPENDIX III.
THE ANDRX-TEVA AGREEMENT**

**[Redacted From Public Record But Incorporated By
Reference]**

**NON-PUBLIC APPENDIX IV.
THE GENERIC ORAL CONTRACEPTIVE DIVESTITURE
AND SUPPLY AGREEMENTS
THE ANDRX-TEVA AMENDMENTS NO. 1 AND 2**

**[Redacted From Public Record But Incorporated By
Reference]**

**NON-PUBLIC APPENDIX V.
THE GLIPIZIDE ER DIVESTITURE AGREEMENT
THE ACTAVIS PURCHASE AGREEMENT**

**[Redacted From Public Record But Incorporated By
Reference]**

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**NON-PUBLIC APPENDIX VI.
THE INTERPHARM PRODUCT TERMINATION
AGREEMENT**

**[Redacted From Public Record But Incorporated By
Reference]**

**NON-PUBLIC APPENDIX VII.
THE WATSON-INTERPHARM AGREEMENT**

**[Redacted From Public Record But Incorporated By
Reference]**

**ANALYSIS OF CONSENT ORDERS TO AID PUBLIC
COMMENT**

The Federal Trade Commission (“Commission”) has accepted, subject to final approval, an Agreement Containing Consent Orders (“Consent Agreement”) from Watson Pharmaceuticals, Inc. (“Watson”) and Andrx Corporation (“Andrx”), which is designed to remedy the anticompetitive effects of the acquisition of Andrx by Watson. Under the terms of the proposed Consent Agreement, the companies would be required to: (1) terminate Watson’s marketing agreement with Interpharm Holdings, Inc. (“Interpharm”) and return all of the Watson rights and assets necessary to market generic hydrocodone bitartrate/ibuprofen tablets back to Interpharm; (2) assign and divest the Andrx rights

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and assets necessary to develop, manufacture, and market generic extended release glipizide (“glipizide ER”) tablets to Actavis Elizabeth LLC, a subsidiary of The Actavis Group hf. (“Actavis”); and (3) divest the Andrx rights and assets necessary to develop, manufacture, and market the eleven generic oral contraceptive products to Teva Pharmaceutical Industries, Inc. (“Teva”).

The proposed Consent Agreement has been placed on the public record for thirty (30) days for receipt of comments by interested persons. Comments received during this period will become part of the public record. After thirty (30) days, the Commission will again review the proposed Consent Agreement and the comments received, and will decide whether it should withdraw from the proposed Consent Agreement, modify it, or make final the Decision and Order (“Order”).

Pursuant to an Agreement and Plan of Merger dated March 12, 2006, Watson proposes to acquire all of the outstanding shares of Andrx at a cost of \$25.00 per share. The Commission’s Complaint alleges that the proposed acquisition, if consummated, would violate Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45, by lessening competition in the U.S. markets for the manufacture and sale of the following generic pharmaceutical products: (1) hydrocodone bitartrate/ibuprofen tablets; (2) glipizide ER tablets; and (3) eleven oral contraceptive products (the “Products”). The proposed Consent Agreement will remedy the alleged violations by replacing the lost competition that would result from the acquisition in each of these markets.

The Products and Structure of the Markets

The proposed acquisition of Andrx by Watson would strengthen Watson’s position in generic pharmaceuticals and provide Watson with a stronger pipeline of generic products. The companies overlap in a number of generic pharmaceutical

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markets, and if consummated, the transaction likely would lead to anticompetitive effects in thirteen of these markets, including eleven oral contraceptive markets.

The transaction would reduce the number of competing generic suppliers in the overlap markets. The number of generic suppliers has a direct and substantial effect on generic pricing as each additional generic supplier can have a competitive impact on the market. Because there are multiple generic equivalents for each of the products at issue here, the branded versions no longer significantly constrain the generics' pricing.

For four generic products, Watson and Andrx currently are two of a small number of suppliers offering the product. In each of these markets, there are a limited number of competitors. In nine additional oral contraceptive product markets, both Watson and Andrx have generic products either on the market or in development. Furthermore, there are few firms that are capable of, and interested in, entering these markets. As a result, the proposed acquisition would eliminate important future competition in these markets.

Hydrocodone bitartrate/ibuprofen is a combination of an opioid analgesic agent, hydrocodone bitartrate, and a nonsteroidal anti-inflammatory drug ("NSAID"), ibuprofen and is the generic version of Abbott Laboratories Inc.'s Vicoprofen. Generic hydrocodone bitartrate/ibuprofen tablets are used for the short-term management of acute pain and have been available in the United States since 2003. In 2005, sales of generic hydrocodone bitartrate/ibuprofen exceeded \$62 million. Only three companies compete in the generic hydrocodone bitartrate/ibuprofen market: Watson, Andrx, and Teva. An additional company is in the process of obtaining FDA approval and expects to enter the market once the approval is granted, which is likely to occur in the next two years. Teva is the market leader with approximately 62 percent of the market. Andrx and Watson account for the rest of the market with about 27 percent and 12 percent market share, respectively. After Watson's acquisition of Andrx, Watson's

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market share would increase from 12 percent to approximately 39 percent, and Teva would be the only remaining competitor to Watson.

Glipizide ER is the generic version of Pfizer's Glucotrol XL. Glipizide ER corrects the effects of type 2 diabetes by stimulating the release of insulin in the pancreas, thereby reducing blood sugar levels in the body. Generic glipizide ER was first introduced in the United States in November 2003. In 2005, sales of generic glipizide ER totaled approximately \$174 million. Watson is the leading supplier in the U.S. market for generic glipizide ER tablets with over 45 percent of the market. Only two other firms, Andrx and Greenstone Ltd. ("Greenstone"), compete with Watson in this market. Andrx and Greenstone have market shares of about 35 percent and 20 percent, respectively. Post-acquisition, Watson's market share would increase to over 80 percent, and Greenstone would be the only other remaining U.S. supplier of generic glipizide ER.

Oral contraceptives are pills taken by mouth to prevent ovulation and pregnancy. They are the most common method of reversible birth control, used by up to 82 percent of women in the United States at some time during their reproductive years. Oral contraceptives contain various formulations of synthetic estrogen and progestin, which are chemical analogues of natural female hormones. Andrx and Teva have an agreement whereby Andrx develops and manufactures these oral contraceptives and Teva markets the products. Andrx also receives a royalty payment on Teva's sales of the products. In each of the eleven relevant oral contraceptive markets, Watson and Andrx/Teva are two of a limited number of suppliers or potential entrants.

Two of the oral contraceptive products at issue are currently marketed formulations of generic norgestimate/ethinyl estradiol bioequivalent to the branded products, Ortho-Cyclen and Ortho Tri-Cyclen, from Johnson & Johnson. Both products have varying ratios of norgestimate (a progestin) and ethinyl estradiol

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(an estrogen) that prevent ovulation and pregnancy. Generic formulations of Ortho-Cyclen and Ortho Tri-Cyclen are among the best selling generic oral contraceptives, representing sales of over \$58 million and \$261 million, respectively, in 2005.

Watson, Andrx/Teva, and Barr Pharmaceuticals, Inc. (“Barr”) are the only suppliers of generic Ortho-Cyclen and generic Ortho Tri-Cyclen in the United States. After the acquisition, the combined Watson/Andrx would account for 28 percent of the generic Ortho-Cyclen market. Watson is the leading supplier in the U.S. market for the manufacture and sale of generic Ortho Tri-Cyclen tablets. After the acquisition, Watson would account for 56 percent of the market.

Watson currently competes in seven additional oral contraceptive markets where Andrx/Teva is developing competitive products. These seven markets represent generic products that are equivalent to Ortho-cept, Triphasil 28, Alesse, Ortho-Novum 1/35, Ortho-Novum 7/7/7, Loestrin FE (1 mg/0.020 mg), and Loestrin FE (1.5 mg/0.030 mg). In each of these highly concentrated markets, Watson is one of only two or three suppliers. Andrx/Teva is one of a limited number of firms developing generic oral contraceptives that would compete in each of these markets, and is well-positioned to enter the markets in a timely manner.

Both Watson and Andrx/Teva are developing generic Mircette tablets and generic Ovcon-35 tablets. They are two of a limited number of suppliers capable of entering these future generic markets in a timely manner.

Entry

Entry into the markets for the manufacture and sale of the Products would not be timely, likely or sufficient in its magnitude, character, and scope to deter or counteract the anticompetitive effects of the acquisition. Developing and obtaining Food and Drug Administration (“FDA”) approval for the manufacture and

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sale of the Products takes at least two (2) years due to substantial regulatory, technological, and intellectual property barriers.

Effects

The proposed acquisition would cause significant anticompetitive harm to consumers in the U.S. markets for the manufacture and sale of generic hydrocodone bitartrate/ibuprofen tablets, generic glipizide ER tablets, generic Ortho-Cyclen tablets, and generic Ortho Tri-Cyclen tablets. In generic pharmaceutical markets, pricing is heavily influenced by the number of competitors that participate in a given market. Here, the evidence shows that the price of the generic pharmaceutical product at issue decreases with the entry of each additional competitor. The proposed transaction would eliminate one of at most four competitors in these markets. Evidence gathered during our investigation indicates that anticompetitive effects – whether unilateral or coordinated – are likely to result from a decrease in the number of independent competitors in the markets at issue.

In the markets for generic hydrocodone bitartrate/ibuprofen and generic glipizide ER, the acquisition of Andrx by Watson would leave only two current competitors: the combined firm and one other company. The evidence indicates that the presence of three independent competitors in these markets allows customers to negotiate lower prices, and that a reduction in the number of competitors would allow the merged entity and other market participants to raise prices. Likewise, in the generic oral contraceptive markets, the reduction in the number of competitors from three to two would likely lead to higher prices.

The competitive concerns can be characterized as both unilateral and coordinated in nature. The homogenous nature of the products involved, the minimal incentives to deviate, and the relatively predictable prospects of gaining new business all indicate that the firms in the market will find it profitable to coordinate their pricing. The impact that a reduction in the

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number of firms would have on pricing can also be explained in terms of unilateral effects, as the likelihood that the merging parties would be the first and second choices in a significant number of bidding situations is enhanced where the number of firms participating in the market decreases substantially.

The acquisition also would cause significant anticompetitive harm to consumers in the U.S. markets for the manufacture and sale of generic Ortho-Cept tablets, generic Triphasil 28 tablets, generic Alesse tablets, generic OrthoNovum 1/35 tablets, generic OrthoNovum 7/7/7 tablets, generic Loestrin FE (1 mg/0.020 mg) tablets, and generic Loestrin FE (1.5 mg/0.030 mg) tablets, generic Mircette tablets and generic Ovcon-35 tablets by eliminating future competition between Watson and Andrx. In each of these markets, there are no more than three current suppliers, and Andrx is poised to enter in the near future. Andrx's independent entry into these markets likely would result in lower prices. The proposed transaction would eliminate that independent entry and, hence, would leave prices at their current, higher levels.

The Consent Agreement

The proposed Consent Agreement effectively remedies the proposed acquisition's anticompetitive effects in the relevant product markets. Pursuant to the Consent Agreement, Watson and Andrx are required to divest certain rights and assets related to the relevant products to a Commission-approved acquirer no later than ten (10) days after the acquisition. Specifically, the proposed Consent Agreement requires that: (1) Watson terminate its marketing agreement with Interpharm, thereby returning all of its rights to generic hydrocodone bitartrate/ibuprofen back to Interpharm; (2) Andrx divest its rights and assets to generic glipizide ER to Actavis, including assigning its supply agreement with Pfizer, Inc.; and (3) Andrx divest its rights and assets related to the eleven generic oral contraceptives to Teva, and supply Teva with the products for five years in order for Teva (or its

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designated contract manufacturer) to obtain all necessary FDA approvals to manufacture and sell the products independently.

The acquirers of the divested assets must receive the prior approval of the Commission. The Commission's goal in evaluating possible purchasers of divested assets is to maintain the competitive environment that existed prior to the acquisition. A proposed acquirer of divested assets must not itself present competitive problems.

Interpharm specializes in the development, manufacture, and marketing of generic pharmaceutical and over-the-counter products. Interpharm currently manufactures and markets 23 generic pharmaceutical products, and has ten ANDAs under review by the FDA. As a contract manufacturer for Watson's product, Interpharm is an acceptable acquirer of generic hydrocodone bitartrate/ibuprofen because it already has the experience, know-how, and manufacturing infrastructure to produce and sell generic hydrocodone bitartrate/ibuprofen in the United States. Interpharm understands the scientific and technical details of generic hydrocodone bitartrate/ibuprofen because it formulated, developed, and tested the product, and registered the product with the FDA. Moreover, Interpharm will not present competitive problems in any of the markets in which it will acquire a divested asset because it currently does not compete in those markets. With its resources, capabilities, good reputation, and experience marketing generic products, Interpharm is well-positioned to replicate the competition that would be lost with the proposed acquisition.

Actavis is a leading developer, manufacturer, marketer, and distributor of generic pharmaceutical products, and is an acceptable acquirer of generic glipizide ER. Actavis has an extensive distribution network in the United States, with three major manufacturing facilities and approximately 162 pharmaceutical products in the U.S. market. Actavis also has experience obtaining FDA approvals for generic pharmaceutical

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products. While Actavis currently does not compete in the market for the divested assets, it has the resources, capabilities, good reputation, and experience necessary to restore fully the competition that would be lost if the proposed Watson/Andrx transaction were to proceed unremedied.

Teva is a global pharmaceutical company specializing in the development, production, and marketing of generic and branded pharmaceuticals. Founded in 1901 and headquartered in Petach Tikva, Israel, Teva employs approximately 25,000 people worldwide and has production facilities in Israel, North America, Europe, and Mexico. Teva and its affiliates are the world's largest generic pharmaceutical company with over 300 generic products, representing \$6.6 billion in estimated 2006 revenue. Because of its current agreement with Andrx, and its well-known reputation and experience in the pharmaceutical industry, Teva is ideally positioned to be a viable, independent competitor in the eleven generic oral contraceptive markets. The acquisition of the eleven generic oral contraceptive products by Teva would effectively restore the competition that would be lost with the proposed merger.

If the Commission determines that either Interpharm or Actavis is not an acceptable acquirer of the assets to be divested, or that the manner of the divestitures to Interpharm, Actavis, or Teva is not acceptable, the parties must unwind the sale and divest the Products within six (6) months of the date the Order becomes final to another Commission-approved acquirer. If the parties fail to divest within six (6) months, the Commission may appoint a trustee to divest the Product assets.

The proposed remedy contains several provisions to ensure that the divestitures are successful. The Order requires Watson and Andrx to provide transitional services to enable the Commission-approved acquirers to obtain all of the necessary approvals from the FDA. These transitional services include technology transfer assistance to manufacture the Products in

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substantially the same manner and quality employed or achieved by Watson and Andrx.

The Commission has appointed Francis J. Civile as the Interim Monitor to oversee the asset transfer and to ensure Watson and Andrx's compliance with all of the provisions of the proposed Consent Agreement. Mr. Civile has over 27 years of experience in the pharmaceutical industry. He is a highly-qualified expert in areas such as pharmaceutical research and development, regulatory approval, manufacturing and supply, and marketing. He has provided consulting services in healthcare business development to major pharmaceutical companies, biotechnology companies, universities, and government agencies. In order to ensure that the Commission remains informed about the status of the proposed divestitures and the transfers of assets, the proposed Consent Agreement requires Watson and Andrx to file reports with the Commission periodically until the divestitures and transfers are accomplished.

The purpose of this analysis is to facilitate public comment on the proposed Consent Agreement, and it is not intended to constitute an official interpretation of the proposed Order or to modify its terms in any way.

Complaint

IN THE MATTER OF

**SERVICE CORPORATION INTERNATIONAL
AND
ALDERWOODS GROUP, INC.**

CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATIONS
OF SEC. 7 OF THE CLAYTON ACT AND SEC. 5 OF THE FEDERAL
TRADE COMMISSION ACT

Docket C-4174, File No. 0610156

Complaint, November 21, 2006 – Decision, December 29, 2006

This consent order addresses the acquisition by Service Corporation International (SCI) of Alderwoods Group, Inc. The acquisition would lessen competition in connection with the provision of funeral services (and associated products) or cemetery services (and associated products and property) in many of the local markets in which the respondents compete. Under the terms of the order, SCI must divest 40 funeral home facilities in 29 local markets and 15 cemetery properties in 12 local markets across the United States. In each of six additional funeral service markets, SCI has the option of either divesting the Alderwoods funeral home(s) it will be acquiring or terminating its licensing agreement with the third-party funeral homes that are providing funeral services in the markets under SCI's Dignity Memorial trademark. In these markets, until the divestitures required by the order are completed, SCI must cease and desist from suggesting prices to those third-party Dignity Affiliates. The eventual acquirers of the assets required to be divested and the manner of their divestiture must receive the prior approval of the Commission. The order also requires SCI to provide the Commission with regular compliance reports.

Participants

For the *Commission*: *Joseph Brownman, Jeanne H. Liu, Paul J. Nolan, M. Elizabeth O'Neill, and Nicholas A. Widnell.*

For the *Respondents*: *David Clanton and David Laing, Baker & McKenzie; Tom D. Smith, Jones Day; James Shelger, SCI General Counsel; and Michael Byowitz and David Schwartz, Wachtell, Lipton, Rosen & Katz.*

Complaint

COMPLAINT

Pursuant to the Clayton Act and the Federal Trade Commission Act, and by virtue of the authority vested in it by said Acts, the Federal Trade Commission (“Commission”), having reason to believe that Respondent Service Corporation International (“SCI”), a corporation subject to the jurisdiction of the Commission, has agreed to acquire Respondent Alderwoods Group, Inc., (Alderwoods), a corporation subject to the jurisdiction of the Commission, in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18 and Section 5 of the Federal Trade Commission Act (“FTC Act”), as amended, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding in respect thereof would be in the public interest, hereby issues its Complaint, stating its charges as follows:

I. Respondent Service Corporation International

1. Respondent SCI is a corporation organized, existing, and doing business under and by virtue of the laws of the State of Texas, with its office and principal place of business located at 1929 Allen Parkway, Houston, Texas 77019. SCI, among other things, is engaged in the sale and provision of (a) funeral services and associated products, and (b) cemetery services and associated products and property.

2. Respondent SCI is, and at all times relevant herein has been, engaged in commerce, or in activities affecting commerce, within the meaning of Section 1 of the Clayton Act, 15 U.S.C. § 12, and Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44.

3. As of December 31, 2005, Respondent SCI owned and operated about 1023 funeral homes and 359 cemeteries in the United States. SCI had sales in 2005 of \$1.7 billion. In the majority of instances, SCI’s sales of funeral and cemetery services are of the traditional, full-service variety.

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II. Respondent Alderwoods Group, Inc.

4. Respondent Alderwoods is a corporation organized, existing, and doing business under and by virtue of the laws of the State of Delaware, with its office and principal place of business located at 311 Elm Street, Suite 1000, Cincinnati, Ohio 45202. Alderwoods is engaged in the sale and provision of (a) funeral services and associated products, and (b) cemetery services and associated products and property.

5. Respondent Alderwoods is, and at all times relevant herein has been, engaged in commerce, or in activities affecting commerce, within the meaning of Section 1 of the Clayton Act, 15 U.S.C. § 12, and Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44.

6. As of December 31, 2005, Respondent Alderwoods owned and operated about 581 funeral homes and 128 cemeteries in the United States. Alderwoods had sales in 2005 of approximately \$740 million. In the majority of instances, Alderwoods' sales of funeral and cemetery services are of the traditional, full-service variety.

III. The Proposed Acquisition

7. On or about April 2, 2006, Respondents SCI and Alderwoods entered into an agreement for SCI to acquire all of the outstanding voting securities of Alderwoods. The purchase price is approximately \$1.23 billion, including the assumption of debt.

8. The proposed acquisition would combine the two largest sellers and providers of funeral and cemetery services and associated merchandise or property in the United States. Respondents SCI and Alderwoods both own and operate funeral service facilities, cemetery service facilities, or both funeral

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service and cemetery service facilities, in about 140 of the same local geographic areas throughout the United States.

IV. SCI's Dignity Memorial Program

9. One of the service marks used by Respondent SCI in connection with its sale of funeral services and associated products is "Dignity Memorial." In some parts of the country where SCI does not operate funeral service facilities, SCI has entered into license agreements or other business relationships with third party funeral service providers to allow those third parties, for a fee, to sell funeral services and associated products under the Dignity Memorial service mark. SCI refers to these third parties as "Dignity Memorial affiliates."

10. Pursuant to its license agreements with the Dignity Memorial affiliates, Respondent SCI sells promotional materials or sales aids to these third party funeral homes and requires that a specified level of service be provided in connection with a Dignity Memorial funeral arrangement. SCI has suggested retail prices for Dignity Memorial services to some third party funeral homes. Alderwoods provides funeral services in some of the areas in which SCI has a contractual relationship with Dignity Memorial affiliates. After the acquisition, SCI, through the acquired Alderwoods facilities and businesses, will be in direct competition with the third party Dignity Memorial affiliates that by contract will continue to operate under the license agreement to sell Dignity Memorial funeral services.

V. Nature of Trade and Commerce

11. The funeral homes and cemeteries of Respondents SCI and Alderwoods compete on many fronts, including name recognition and reputation, location, price, range of available services, quality of service and associated product offerings, and the appearance of facilities.

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12. Respondents SCI and Alderwoods normally provide a broad spectrum of products and services from each of their facilities in an effort to meet the desires of a highly diverse population. Within that highly diverse population, consumers of funeral or cemetery services often observe a tradition of shared customs and rituals associated with specific cultural, ethnic, or religious needs. Notwithstanding the willingness of funeral and cemetery service providers to serve all potential customers, customers of funeral and cemetery facilities often associate specific facilities or properties with the ability to provide the specialized customs and ritual services that they require. SCI has recognized that, in some areas, people who share a common culture generally have an affinity to each other when there is a death in the family. SCI refers to consumers seeking specialized services associated with their cultural, ethnic, or religious affiliation as “customs-conscious” consumers.

VI. Relevant Product Markets

13. The relevant lines of commerce in which to analyze the proposed acquisition are the provision and sale of:

- (a) funeral services and funeral-service associated products, which includes all activities relating to the sale of funeral services and funeral goods, including but not limited to, services used to care for and prepare bodies for burial, cremation, or other final disposition; services used to arrange, supervise, or conduct the funeral ceremony or final disposition of human remains; and the sale of goods in connection with funeral services; and
- (b) cemetery services and cemetery-service associated products and property, which includes all activities relating to the sale of goods and services provided for the final disposition of human remains in a cemetery, whether by burial, entombment in a mausoleum or crypt, or disposition in a niche.

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14. In some local markets, certain funeral homes and cemeteries cater to specific populations by focusing on the customs and rituals associated with one or more religious, ethnic, or cultural heritage groups. In these situations, market segmentation exists in connection with Jewish, Chinese-American, or African-American populations.

VII. Relevant Geographic Markets

15. For the purposes of this Complaint, the relevant geographic markets within which to assess the competitive effects of the proposed acquisition, as concerns funeral services and funeral-service associated products, are the following: (1) Abilene, Texas; (2) Alhambra, California; (3) Anchorage, Alaska; (4) Baton Rouge, Louisiana; (5) Broward County, Florida; (6) Brownsville, Texas; (7) Cartersville, Georgia; (8) Charlotte, North Carolina; (9) Fort Myers, Florida; (10) Gonzales, Louisiana; (11) Greensboro, North Carolina; (12) Hanford, California; (13) Hobbs, New Mexico; (14) Klamath Falls, Oregon; (15) Killeen, Texas; (16) Lansing, Michigan; (17) Lexington and West Columbia, South Carolina; (18) Lynchburg, Virginia; (19) Manassas, Virginia; (20) Mansfield, Ohio; (21) Memphis, Tennessee; (22) Merced, California; (23) Meridian, Mississippi; (24) Miami-Dade County, Florida; (25) Newton, Mississippi; (26) Odessa, Texas; (27) Pascagoula, Mississippi; (28) Port Orange, Florida; (29) Northern Rockland County, New York; (30) Seguin, Texas; (31) Tulare, California; (32) Southern Ventura County, California; (33) Williamsburg, Virginia; (34) Yakima, Washington; and (35) Yuma, Arizona.

16. For the purposes of this Complaint, the relevant geographic markets within which to assess the competitive effects of the proposed acquisition, as concerns cemetery services and cemetery-service associated products and property, are the following: (1) Abilene, Texas; (2) Baton Rouge, Louisiana; (3) Bradenton and Palmetto, Florida; (4) Broward County, Florida;

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(5) Columbia and Lexington, South Carolina; (6) Conroe, Texas; (7) Fort Myers, Florida; (8) Macon, Georgia; (9) Miami-Dade County, Florida; (10) Memphis, Tennessee; (11) Nashville, Tennessee; and (12) Ventura County, California.

VIII. Concentration

17. Each of the local areas identified in Paragraphs 15 and 16 is highly concentrated, and the proposed acquisition will substantially increase concentration, taking account of concentration measured by the Herfindahl-Hirschman Index (“HHI”), the number of competitively significant firms remaining in the market, and the market shares of SCI and Alderwoods.

(a) In the funeral service markets:

1. **Abilene, Texas:** SCI and Alderwoods have a combined market share of about 63 percent. The proposed acquisition would increase the HHI by about 1210 points, from 3130 to 4340, leave a total of only four competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

2. **Alhambra, California:** SCI and Alderwoods have a combined market share of about 100 percent of a market limited to competitors and their facilities that provide the customs and rituals that serve the Chinese-American community. The proposed acquisition would increase the HHI by about 4990 points, from 5010 to 10,000, and create a virtual monopoly of meaningful competitors.

3. **Baton Rouge, Louisiana:** SCI and Alderwoods have a combined market share of about 44 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 546 points, from 4529 to 5075, and create a virtual duopoly of meaningful competitors.

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4. **Broward County, Florida:** SCI and Alderwoods have a combined market share of about 100 percent of a market limited to competitors and their facilities that provide the customs and rituals that serve the Jewish community. The proposed acquisition would increase the HHI by about 3977 points, from 6023 to 10,000, and create a virtual monopoly of meaningful competitors.

5. **Brownsville, Texas:** SCI and Alderwoods have a combined market share of about 47 percent. The proposed acquisition would increase the HHI by about 1103 points, from 2127 to 3230, and leave a total of only four competitors.

6. **Cartersville, Georgia:** SCI and Alderwoods have a combined market share of about 100 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 4983 points, from 5017 to 10,000, and create a virtual monopoly of meaningful competitors.

7. **Charlotte, North Carolina:** SCI and Alderwoods have a combined market share of about 62 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 1411 points, from 2726 to 4137, leave a total of only four meaningful competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

8. **Fort Myers, Florida:** SCI and Alderwoods have a combined market share of about 47 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 1098 points, from 1990

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to 3088, and leave a total of only three meaningful competitors.

9. **Gonzales, Louisiana:** SCI and Alderwoods have a combined market share of about 81 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 2188 points, from 4689 to 6877, and create a virtual duopoly of meaningful competitors.

10. **Greensboro, North Carolina:** SCI and Alderwoods have a combined market share of about 58 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 1156 points, from 3525 to 4681, leave a total of only three meaningful competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

11. **Hanford, California:** SCI and Alderwoods have a combined market share of about 100 percent. The proposed acquisition would increase the HHI by about 4558 points, from 5442 to 10,000, and create a virtual monopoly.

12. **Killeen, Texas:** SCI and Alderwoods have a combined market share of about 57 percent. The proposed acquisition would increase the HHI by about 1140 points, from 2942 to 4082, and leave a total of only four competitors.

13. **Lansing, Michigan:** SCI and Alderwoods have a combined market share of about 65 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 1701 points, from 2858

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to 4559, and leave a total of only four meaningful competitors.

14. Lexington and West Columbia, South Carolina: SCI and Alderwoods have a combined market share of about 47 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 599 points, from 2982 to 3581, and leave a total of only four meaningful competitors.

15. Lynchburg, Virginia: SCI and Alderwoods have a combined market share of 55 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 1188 points, from 2717 to 3905, and leave a total of only four meaningful competitors.

16. Manassas, Virginia: SCI and Alderwoods have a combined market share of about 42 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 795 points, from 4341 to 5136, and create a virtual duopoly of meaningful competitors.

17. Memphis, Tennessee: SCI and Alderwoods have a combined market share of about 63 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 1869 points, from 2409 to 4278, leave a total of only five meaningful competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

18. Merced, California: SCI and Alderwoods have a combined market share of about 59 percent. The proposed acquisition would increase the HHI by about

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1722 points, from 2329 to 4051, leave a total of only four competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

19. Meridian, Mississippi: SCI and Alderwoods have a combined market share of about 100 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 3870 points, from 6130 to 10,000, and create a virtual monopoly of meaningful competitors.

20. Miami-Dade County, Florida: SCI and Alderwoods have a combined market share of about 100 percent of a market limited to competitors and their facilities that provide the customs and rituals that serve the Jewish community. The proposed acquisition would increase the HHI by about 4666 points, from 5334 to 10,000, and create a virtual monopoly of meaningful competitors.

21. Newton, Mississippi: SCI and Alderwoods have a combined market share of about 100 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 3856 points, from 6144 to 10,000, and create a virtual monopoly of meaningful competitors.

22. Odessa, Texas: SCI and Alderwoods have a combined market share of about 75 percent. The proposed acquisition would increase the HHI by about 1605 points, from 4433 to 6038, leave a total of only three competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

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23. **Port Orange, Florida:** SCI and Alderwoods have a combined market share of about 36 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 631 points, from 2068 to 2699, leave a total of only five meaningful competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

24. **Northern Rockland County, New York:** SCI and Alderwoods have a combined market share of about 70 percent. The proposed acquisition would increase the HHI by about 2120 points, from 3103 to 5223, leave a total of only four competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

25. **Seguin, Texas:** SCI and Alderwoods have a combined market share of about 81 percent. The proposed acquisition would increase the HHI by about 1970 points, from 4724 to 6694, and leave a total of only three competitors.

26. **Tulare, California:** SCI and Alderwoods have a combined market share of about 38 percent. The proposed acquisition would increase the HHI by about 716 points, from 4575 to 5291, and create a virtual duopoly.

27. **Southern Ventura County, California:** SCI and Alderwoods have a combined market share of about 65 percent. The proposed acquisition would increase the HHI by about 908 points, from 3591 to 4499, leave a total of only four competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

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28. **Yakima, Washington:** SCI and Alderwoods have a combined market share of about 83 percent. The proposed acquisition would increase the HHI by about 2582 points, from 4599 to 7181, and create a virtual duopoly.

29. **Yuma, Arizona:** SCI and Alderwoods have a combined market share of about 83 percent. The proposed acquisition would increase the HHI by about 2809 points, from 4418 to 7227, and leave a total of only three competitors.

(b) In the cemetery service markets:

1. **Abilene, Texas:** SCI and Alderwoods have a combined market share of about 88 percent. The proposed acquisition would increase the HHI by about 2341 points, from 5523 to 7864, leave a total of only three competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

2. **Baton Rouge, Louisiana:** SCI and Alderwoods have a combined market share of about 81 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 2989 points, from 3928 to 6917, and create a virtual duopoly of meaningful competitors.

3. **Bradenton and Palmetto, Florida:** SCI and Alderwoods have a combined market share of about 98 percent. The proposed acquisition would increase the HHI by about 3579 points, from 6108 to 9687, and create a virtual monopoly.

4. **Broward County, Florida:** SCI and Alderwoods have a combined market share of about 95 percent of a market limited to competitors and their facilities that

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provide the customs and rituals that serve the Jewish community. The proposed acquisition would increase the HHI by about 2604 points, from 6451 to 9055, and create a virtual duopoly of meaningful competitors.

5. Columbia and Lexington, South Carolina: SCI and Alderwoods have a combined market share of about 81 percent. The proposed acquisition would increase the HHI by about 3202 points, from 3518 to 6720, and leave a total of only three competitors.

6. Conroe, Texas: SCI and Alderwoods have a combined market share of about 82 percent. The proposed acquisition would increase the HHI by about 3097 points, from 3757 to 6854, leave a total of only three meaningful competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

7. Fort Myers, Florida: SCI and Alderwoods have a combined market share of about 92 percent. The proposed acquisition would increase the HHI by about 4189 points, from 4288 to 8477, and create a virtual duopoly.

8. Macon, Georgia: SCI and Alderwoods have a combined market share of about 48 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 914 points, from 2169 to 3083, leave a total of only four meaningful competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

9. Miami-Dade County, Florida: SCI and Alderwoods have a combined market share of about 46 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed

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acquisition would increase the HHI by about 779 points, from 2766 to 3545, leave a total of only four meaningful competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

10. Memphis, Tennessee: SCI and Alderwoods have a combined market share of about 63 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 1941 points, from 2534 to 4475, and leave a total of only four meaningful competitors.

11. Nashville, Tennessee: SCI and Alderwoods have a combined market share of about 68 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 1910 points, from 3173 to 5083, and leave a total of only three meaningful competitors.

12. Ventura County, California: SCI and Alderwoods have a combined market share of about 42 percent of a market limited to facilities that serve certain demographic segments of the population. The proposed acquisition would increase the HHI by about 858 points, from 2379 to 3237, leave a total of only four meaningful competitors, and eliminate one of two competitors that are the first and second choices for a substantial number of consumers.

18. SCI has a contract with a Dignity Memorial affiliate and Alderwoods also has funeral service facilities in each of the following highly concentrated local areas:

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1. **Anchorage, Alaska:** The SCI Dignity Memorial affiliate and Alderwoods have a combined market share of about 81 percent. The market has only two other competitors.

2. **Hobbs, New Mexico:** The SCI Dignity Memorial affiliate and Alderwoods have a combined market share of about 68 percent. The market has only two other competitors.

3. **Klamath Falls, Oregon:** The SCI Dignity Memorial affiliate and Alderwoods have a combined market share of about 65 percent. The market has only two other competitors.

4. **Mansfield, Ohio:** The SCI Dignity Memorial affiliate and Alderwoods have a combined market share of about 70 percent. The market has only three other competitors.

5. **Pascagoula, Mississippi:** The SCI Dignity Memorial affiliate and Alderwoods have a combined market share of about 70 percent of a market limited to facilities that serve certain demographic segments of the population. The market has only one other meaningful competitor.

6. **Williamsburg, Virginia:** The SCI Dignity Memorial affiliate and Alderwoods have a combined market share of about 100 percent of a market limited to facilities that serve certain demographic segments of the population. There are no other meaningful competitors.

IX. Entry Conditions

19. Entry would not be timely, likely, or sufficient to prevent anticompetitive effects.

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X. Effects of the Acquisition

20. The acquisition may substantially lessen competition in the 29 funeral service relevant markets identified in Paragraph 17(a) and the 12 cemetery service relevant markets identified in Paragraph 17(b) in which SCI and Alderwoods both own and operate funeral homes or cemeteries in the following ways, among others:

(a) by eliminating direct competition between Respondents SCI and Alderwoods;

(b) by increasing the likelihood that Respondent SCI will unilaterally exercise market power; or

(c) by increasing the likelihood of, or facilitating, coordinated interaction among remaining competitively significant firms;

each of which increases the likelihood of an increase in the prices of funeral services and their associated products, or cemetery services and their associated products and property; or that the services, or the quality of services, provided to funeral and cemetery service customers will decrease.

21. In 19 funeral service markets and nine cemetery service markets identified in Paragraph 17, the acquisition will increase the likelihood that Respondent SCI will unilaterally exercise market power in one of two ways:

(a) by increasing prices or reducing services generally in markets in which it will have a monopoly or near-monopoly market share post-acquisition; or

(b) by increasing prices or reducing services where it has a significant, but not a monopoly or near-monopoly market share post-acquisition, and owns funeral homes or cemeteries that are the first and second choices for a substantial number

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of consumers (due to: their appeal to specific religious or ethnic groups; the physical proximity of their facilities; or their provision of traditional, high-end funeral services) so that it will benefit from: (i) the increase in price (or decrease in services) at the facilities of first choice for consumers and (ii) the business moving from the facilities of first choice for consumers to their second choices.

22. In 15 funeral service markets and four cemetery service markets identified in Paragraph 17, the acquisition will increase the likelihood of coordinated interaction. In these highly concentrated markets, the merger will facilitate coordination by the small number of remaining competitively significant firms by facilitating: (a) agreement upon terms of coordination; (b) opportunities to monitor compliance with those terms of agreement; and (c) the ability of the firms in the market to punish firms that deviate from the terms of agreement.

23. The acquisition also may substantially lessen competition in the six funeral service relevant markets identified in Paragraph 18 in which SCI has a license agreement or other contractual relationship with a Dignity Memorial affiliate and in which Alderwoods owns and operates a funeral home. Because of the danger that SCI and the Dignity Memorial affiliate will coordinate on pricing or the quality or level of services offered, the lessening of competition may occur in the following ways, among others:

(a) by eliminating direct competition between the Dignity Memorial affiliate and Alderwoods; or

(b) by increasing the likelihood of, or facilitating, coordinated interaction among all competitively significant firms;

each of which increases the likelihood of an increase in the prices of funeral services and their associated products, or that the

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services, or the quality of services, provided to funeral service customers will decrease.

XI. Violations Charged

24. The agreement described in Paragraph 7 constitutes a violation of Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45, and the proposed acquisition, if consummated, would violate Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45.

WHEREFORE, THE PREMISES CONSIDERED, Federal Trade Commission on this twenty-first day of November, 2006, issues its Complaint against said Respondents.

By the Commission.

ORDER TO HOLD SEPARATE AND MAINTAIN ASSETS

The Federal Trade Commission (“Commission”) having initiated an investigation of the proposed acquisition by Respondent Service Corporation International (“SCI”) of the outstanding voting securities of Respondent Alderwoods Group, Inc. (“Alderwoods”), hereinafter referred to collectively as “Respondents,” and Respondents having been furnished thereafter with a copy of the draft of Complaint that the Bureau of Competition proposed to present to the Commission for its consideration and which, if issued by the Commission, would charge Respondents with violations of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

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Respondents, their attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Orders (“Consent Agreement”), containing an admission by Respondents of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondents that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondents have violated the said Acts, and that a Complaint should issue stating its charges in that respect, and having determined to accept the executed Consent Agreement and to place such Consent Agreement containing the Decision and Order on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby issues its Complaint, makes the following jurisdictional findings and issues this Order to Hold Separate and Maintain Assets (“Hold Separate”):

1. Respondent SCI is a corporation organized, existing, and doing business under, and by virtue of, the laws of the State of Texas, with its office and principal place of business located at 1929 Allen Parkway, Houston, Texas 77019.

2. Respondent Alderwoods is a corporation organized, existing, and doing business under, and by virtue of, the laws of the State of Delaware, with its office and principal place of business located at 311 Elm Street, Suite 1000, Cincinnati, Ohio 45202.

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3. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the Respondents and the proceeding is in the public interest.

ORDER**I.**

IT IS ORDERED that, as used in this Hold Separate, the following definitions, and all other definitions used in the Consent Agreement and the proposed Decision and Order (and when made final, the Decision and Order), shall apply:

- A. “Additional Held Separate Businesses” means all activities conducted by Alderwoods, prior to the Acquisition, at the locations identified in Appendix C of this Hold Separate, relating to the provision of Funeral Services or Cemetery Services.
- B. “Decision and Order” means the:
 - 1. Proposed Decision and Order contained in the Consent Agreement in this matter until the issuance and service of a final Decision and Order by the Commission; and
 - 2. Final Decision and Order issued by the Commission following the issuance and service of a final Decision and Order by the Commission.
- C. “Divestiture Date” means, with regard to any Divestiture Business, the date on which Respondents (or a Divestiture Trustee) close on the divestiture of that Divestiture Business completely and as required by Paragraph II (or Paragraph VI) of the Decision and Order to an Acquirer approved by the Commission.
- D. “Held Separate Business” means the Alderwoods Divestiture Assets, Alderwoods Divestiture Businesses, all

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full-time, part-time, or contract employees of the Alderwoods Divestiture Businesses (“Held Separate Business employees”), and the Additional Held Separate Businesses.

- E. “Hold Separate” means this Order to Hold Separate and Maintain Assets.
- F. “Hold Separate Period” means the time period during which the Hold Separate is in effect, which shall begin on the Acquisition Date and terminate pursuant to Paragraph VI hereof.
- G. “Interim Monitor” means the Person appointed pursuant to Paragraph II.D. of this Hold Separate.
- H. “Orders” means the Decision and Order and this Hold Separate.

II.**IT IS FURTHER ORDERED** that:

- A. During the Hold Separate Period, Respondents shall hold the Held Separate Business separate, apart, and independent as required by this Hold Separate and shall vest the Held Separate Business with all rights, powers, and authority necessary to conduct its business. Respondents shall not exercise direction or control over, or influence directly or indirectly, the Held Separate Business or any of its operations, or the Interim Monitor, except to the extent that Respondents must exercise direction and control over the Held Separate Business as is necessary to assure compliance with this Hold Separate, the Consent Agreement, the Decision and Order, and all applicable laws.

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- B. During the Hold Separate Period, Respondents shall:
1. Take such actions as are necessary to maintain the full economic viability, marketability and competitiveness of the Divestiture Businesses and to prevent the destruction, removal, wasting, deterioration, or impairment of any of the Divestiture Businesses, except for ordinary wear and tear; and
 2. Not sell, transfer, encumber or otherwise impair the full economic viability, marketability or competitiveness of the Divestiture Businesses.
- C. From the date Respondents execute the Consent Agreement until the Hold Separate Period begins, Respondent Alderwoods shall take such actions as are necessary to maintain and assure the continued maintenance of the full economic viability, marketability and competitiveness of the Held Separate Business, and prevent the destruction, removal, wasting, deterioration, or impairment of any of the assets, except for ordinary wear and tear.
- D. Respondents shall hold the Held Separate Business separate, apart, and independent of SCI and Alderwoods on the following terms and conditions:
1. William E. Rowe shall serve as Interim Monitor, pursuant to the agreement executed by the Interim Monitor and Respondents and attached as Confidential Appendix A (“Monitor Agreement”).
 - (a) Respondents shall, no later than one (1) day after the Acquisition Date, pursuant to the Monitor Agreement, transfer to and confer upon the Interim Monitor all rights, powers, and authority necessary to permit the Interim Monitor to perform his duties and responsibilities pursuant to this Hold Separate,

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in a manner consistent with the purposes of the Decision and Order and in consultation with Commission staff, and shall include in the Monitor Agreement all provisions necessary to effectuate this requirement.

- (b) The Monitor Agreement shall require that the Interim Monitor shall act in a fiduciary capacity for the benefit of the Commission.
- (c) The Interim Monitor shall have the responsibility for monitoring the organization of the Held Separate Business; supervising the management of the Held Separate Business by the Manager; maintaining the independence of the Held Separate Business; and monitoring Respondents' compliance with their obligations pursuant to the Orders, including maintaining the viability, marketability and competitiveness of the Divestiture Businesses pending divestiture.
- (d) Subject to all applicable laws and regulations, the Interim Monitor shall have full and complete access to all personnel, books, records, documents and facilities of the Divestiture Businesses and Additional Held Separate Businesses, and to any other relevant information as the Interim Monitor may reasonably request including, but not limited to, all documents and records kept by Respondents in the ordinary course of business that relate to the Divestiture Businesses and Additional Held Separate Businesses. Respondents shall develop such financial or other information as the Interim Monitor may reasonably request and shall cooperate with the Interim Monitor. Respondents shall take no action to interfere with or impede the Interim Monitor's ability to monitor Respondents'

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compliance with this Hold Separate, the Consent Agreement or the Decision and Order or otherwise to perform his duties and responsibilities consistent with the terms of this Hold Separate.

- (e) The Interim Monitor shall have the authority to employ, at the cost and expense of Respondents, such consultants, accountants, attorneys, and other representatives and assistants as are reasonably necessary to carry out the Interim Monitor's duties and responsibilities.
- (f) The Commission may require the Interim Monitor and each of the Interim Monitor's consultants, accountants, attorneys, and other representatives and assistants to sign an appropriate confidentiality agreement relating to materials and information received from the Commission in connection with performance of the Interim Monitor's duties.
- (g) Respondents may require the Interim Monitor and each of the Interim Monitor's consultants, accountants, attorneys, and other representatives and assistants to sign an appropriate confidentiality agreement; *provided, however*, such agreement shall not restrict the Interim Monitor from providing any information to the Commission.
- (h) Thirty (30) days after the Acquisition Date, and every thirty (30) days thereafter until the Hold Separate terminates, the Interim Monitor shall report in writing to the Commission concerning the efforts to accomplish the purposes of this Hold Separate. Included within that report shall be the Interim Monitor's assessment of the extent to which the businesses comprising the Divestiture Businesses and Additional Held Separate Businesses are meeting (or exceeding) their

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projected goals as are reflected in operating plans, budgets, projections or any other regularly prepared financial statements.

- (i) If the Interim Monitor ceases to act or fails to act diligently and consistent with the purposes of this Hold Separate, the Commission may appoint a substitute Interim Monitor consistent with the terms of this Hold Separate, subject to the consent of Respondents, which consent shall not be unreasonably withheld. If Respondents have not opposed, in writing, including the reasons for opposing, the selection of the substitute Interim Monitor within ten (10) days after notice by the staff of the Commission to Respondents of the identity of any substitute Interim Monitor, Respondents shall be deemed to have consented to the selection of the proposed substitute Interim Monitor. Respondents and the substitute Interim Monitor shall execute a Monitor Agreement, subject to the approval of the Commission, consistent with this paragraph.
 - (j) The Interim Monitor shall serve until the day after the Divestiture Date pertaining to the last divestiture of a business or asset within the Divestiture Businesses; *provided, however*, that the Commission may extend or modify this period as may be necessary or appropriate to accomplish the purposes of the Orders.
2. No later than one (1) day after the Acquisition Date, Respondents shall enter into a management agreement with, and shall transfer all rights, powers, and authority necessary to manage and maintain the Held Separate Business, to Ron Collins (“Manager”).

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- (a) In the event that the aforementioned individual declines an offer to act as a Manager, or accepts the position of Manager and subsequently ceases to act as a Manager, then Respondents shall select a substitute Manager, subject to the approval of the Commission, and transfer to the substitute Manager all rights, powers and authorities necessary to permit the substitute Manager to perform his/her duties and responsibilities, pursuant to this Hold Separate.
- (b) The Manager shall report directly and exclusively to the Interim Monitor and shall manage the Held Separate Business independently of the management of Respondents. The Manager shall not be involved, in any way, in the operations of the other businesses of Respondents during the term of this Hold Separate.
- (c) The management agreement between Respondents and the Manager shall provide that:
 - (1) Respondents shall provide the individual who agrees to serve as Manager with reasonable financial incentives to undertake this position. Such incentives shall include a continuation of all employee benefits, including regularly scheduled raises, bonuses, vesting of pension benefits (as permitted by law), and additional incentives as may be necessary to assure the continuation and prevent any diminution of the Held Separate Business's viability, marketability and competitiveness until the applicable Divestiture Date(s) have occurred, and as may otherwise be necessary to achieve the purposes of this Hold Separate; and

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- (2) Respondents shall, at the option of the Manager, offer to continue the Manager's employment for a period of no less than one (1) year following the Manager's acceptable completion of service as a Manager at terms no less favorable than those pursuant to which the Manager was employed prior to the Acquisition; *provided, however,* this requirement shall not apply if the Manager was removed from service for cause.
- (d) The Manager shall make no material changes in the ongoing operations of the Held Separate Business except with the approval of the Interim Monitor, in consultation with the Commission staff.
- (e) The Manager shall have the authority, with the approval of the Interim Monitor, to remove Held Separate Business employees and replace them with others of similar experience or skills. If any Person ceases to act or fails to act diligently and consistent with the purposes of this Hold Separate, the Manager, in consultation with the Interim Monitor, may request Respondents to, and Respondents shall, appoint a substitute Person, which Person the Manager shall have the right to approve.
- (f) In addition to Held Separate Business employees, the Manager may, with the approval of the Interim Monitor, employ such Persons as are reasonably necessary to assist the Manager in managing the Held Separate Business.
- (g) The Interim Monitor shall be permitted, in consultation with the Commission staff, to remove

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the Manager for cause. Within fifteen (15) days after such removal of the Manager, Respondents shall appoint a replacement Manager, subject to the approval of the Commission, on the same terms and conditions as provided in this paragraph.

3. The Interim Monitor and the Manager shall serve, without bond or other security, at the cost and expense of Respondents, on reasonable and customary terms commensurate with the person's experience and responsibilities.
4. Respondents shall indemnify the Interim Monitor and Manager and hold each harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Interim Monitor's or the Manager's duties, including all reasonable fees of counsel and other expenses incurred in connection with the preparation for, or defense of any claim, whether or not resulting in any liability, except to the extent that such liabilities, losses, damages, claims, or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the Interim Monitor or the Manager.
5. The Held Separate Business shall be staffed with sufficient employees to maintain the viability and competitiveness of the Held Separate Business. To the extent that such employees leave or have left the Held Separate Business prior to the Divestiture Date, the Manager, with the approval of the Interim Monitor, may replace departing or departed employees with persons who have similar experience and expertise or determine not to replace such departing or departed employees.
6. In connection with support services or products not included within the Held Separate Business,

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Respondents shall continue to provide, or offer to provide, the same support services to the Held Separate Business as customarily have been or are being provided to such businesses by Respondent Alderwoods as of the date the Consent Agreement is signed by Respondent Alderwoods. For any services or products that Respondents may provide to the Held Separate Business, Respondents may charge no more than the same price they charge others for the same services or products. Respondents' personnel providing such services or products must retain and maintain all Confidential Business Information of or pertaining to the Held Separate Business on a confidential basis, and, except as is permitted by this Hold Separate, such persons shall be prohibited from disclosing, providing, discussing, exchanging, circulating, or otherwise furnishing any such information to or with any person whose employment involves any of Respondents' businesses, other than the Held Separate Business. Such personnel shall also execute confidentiality agreements prohibiting the disclosure of any Confidential Business Information of the Held Separate Business.

- (a) Respondents shall offer to the Held Separate Business any services and products that Respondents provide, in the ordinary course of their businesses, to their other businesses directly or through third party contracts, or that they have provided in the ordinary course of their businesses directly or through third party contracts to the businesses constituting the Held Separate Business at any time since March 31, 2006. The Held Separate Business may, at the option of the Manager with the approval of the Interim Monitor, obtain such services and products from Respondents. Subject to the foregoing, the

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services and products that Respondents shall offer the Held Separate Business shall include, but shall not be limited to, the following:

- (1) human resources and administrative services, including but not limited to payroll processing, labor relations support, pension administration, and procurement and administration of employee benefits, including health benefits;
- (2) federal and state regulatory compliance and policy development services;
- (3) environmental health and safety services, which are used to develop corporate policies and insure compliance with federal and state regulations and corporate policies;
- (4) financial accounting services;
- (5) preparation of tax returns;
- (6) audit services;
- (7) information technology support services;
- (8) processing of accounts payable and accounts receivable;
- (9) technical support;
- (10) procurement of supplies;
- (11) maintenance and repair of facilities;
- (12) procurement of goods and services utilized in the ordinary course of business by the Held Separate Business; and

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(13) legal services.

(b) The Held Separate Business shall have, at the option of the Manager with the approval of the Interim Monitor, the ability to acquire services and products from third parties unaffiliated with Respondents.

7. Respondents shall provide the Held Separate Business with sufficient financial and other resources:

(a) as are appropriate in the judgment of the Interim Monitor to operate the Held Separate Business as it is currently operated;

(b) to perform all maintenance to, and replacements of, the assets of the Held Separate Business;

(c) to carry on existing and planned capital projects and business plans; and

(d) to maintain the viability, competitiveness, and marketability of the Held Separate Business.

Such financial resources to be provided to the Held Separate Business shall include, but shall not be limited to, (i) general funds, (ii) capital, (iii) working capital, and (iv) reimbursement for any operating losses, capital losses, or other losses; *provided, however,* that, consistent with the purposes of the Decision and Order and in consultation with the Interim Monitor, the Manager may reduce in scale or pace any capital or research and development project, or substitute any capital or research and development project for another of the same cost.

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8. Respondents shall cause the Interim Monitor, the Manager, and each of Respondent SCI's employees having access to Confidential Business Information of or pertaining to the Held Separate Business to submit to the Commission a signed statement that the individual will maintain the confidentiality required by the terms and conditions of this Hold Separate. These individuals must retain and maintain all Confidential Business Information of or pertaining to the Held Separate Business on a confidential basis and, except as is permitted by this Hold Separate, such Persons shall be prohibited from disclosing, providing, discussing, exchanging, circulating, or otherwise furnishing any such information to or with any other Person whose employment involves any of Respondents' businesses or activities other than the Held Separate Business.
9. Except for the Manager, Held Separate Business employees, and support services employees involved in providing services to the Held Separate Business pursuant to this Hold Separate, and except to the extent provided in this Hold Separate, Respondents shall not permit any other of its employees, officers, or directors to be involved in the operations of the Held Separate Business.
10. Respondents' employees (excluding the Held Separate Business employees and employees involved in providing support services to the Held Separate Business pursuant to Paragraph II.D.6.) shall not receive, or have access to, or use or continue to use any Confidential Business Information of the Held Separate Business not in the public domain except:
 - (a) as required by law; and

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- (b) to the extent that necessary information is exchanged:
- (1) in the course of consummating the Acquisition;
 - (2) in negotiating agreements to divest assets pursuant to the Consent Agreement and engaging in related due diligence;
 - (3) in complying with this Hold Separate or the Consent Agreement;
 - (4) in overseeing compliance with policies and standards concerning the safety, health and environmental aspects of the operations of the Held Separate Business and the integrity of the financial controls of the Held Separate Business;
 - (5) in defending legal claims, investigations or enforcement actions threatened or brought against or related to the Held Separate Business; or
 - (6) in obtaining legal advice.

Nor shall the Manager or any Held Separate Business employees receive or have access to, or use or continue to use, any Confidential Business Information not in the public domain about Respondents and relating to Respondents' businesses, except such information as is necessary to maintain and operate the Held Separate Business. Respondents may receive aggregate financial and operational information relating to the Held Separate Business only to the extent necessary to allow Respondents to comply with the requirements and obligations of the laws of the

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United States and other countries, to prepare consolidated financial reports, tax returns, reports required by securities laws, and personnel reports, and to comply with this Hold Separate. Any such information that is obtained pursuant to this subparagraph shall be used only for the purposes set forth in this subparagraph.

11. Respondents and the Held Separate Business shall jointly implement, and at all times during the Hold Separate Period maintain in operation, a system, as approved by the Interim Monitor, of access and data controls to prevent unauthorized access to or dissemination of Confidential Business Information of the Held Separate Business, including, but not limited to, the opportunity by the Interim Monitor, on terms and conditions agreed to with Respondents, to audit Respondents' networks and systems to verify compliance with this Hold Separate.
 12. No later than five (5) days after the Acquisition Date, Respondents shall establish written procedures, subject to the approval of the Interim Monitor, covering the management, maintenance, and independence of the Held Separate Business consistent with the provisions of this Hold Separate.
 13. No later than five (5) days after the date this Hold Separate becomes final, Respondents shall circulate to employees of the Held Separate Business, and to persons who are employed in Respondents' businesses that compete with the Held Separate Business, a notice of this Hold Separate and the Consent Agreement, in the form attached hereto as Appendix B.
- E. Among other things as may be necessary to preserve the marketability, economic viability, and competitiveness of

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the SCI Divestiture Assets and SCI Divestiture Businesses, Respondents shall:

1. Maintain the operations of the SCI Divestiture Businesses in the regular and ordinary course of business and in accordance with past practice (including regular repair and maintenance of the SCI Divestiture Assets);
2. Provide sufficient working capital to operate the SCI Divestiture Businesses at least at current rates of operation, to meet all capital calls with respect to the SCI Divestiture Businesses and to carry on, at least at their scheduled pace, all capital projects, business plans and promotional activities for the SCI Divestiture Businesses;
3. Make available for use by the SCI Divestiture Businesses funds sufficient to perform all routine maintenance and all other maintenance as may be necessary to, and all replacements of, the SCI Divestiture Assets;
4. Continue, at least at their scheduled pace, any additional expenditures for the SCI Divestiture Businesses authorized prior to the date the Consent Agreement was signed by Respondents including, but not limited to, all marketing expenditures;
5. Use best efforts to maintain and increase sales of the SCI Divestiture Businesses, and to maintain at budgeted levels for the year 2006 or the current year, whichever are higher, all administrative, technical, and marketing support for the SCI Divestiture Businesses;
6. Provide such support services to the SCI Divestiture Businesses as were being provided to these businesses

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as of the date the Consent Agreement was signed by Respondents;

7. Maintain a work force at least as equivalent in size, training, and expertise to what has been associated with the SCI Divestiture Businesses prior to the Acquisition;
 8. Assure that Respondents' employees with primary responsibility for managing and operating the SCI Divestiture Businesses are not transferred or reassigned to other areas within Respondents' organizations except for transfer bids initiated by employees pursuant to Respondents' regular, established job posting policy; and
 9. Use best efforts to preserve and maintain the existing relationships with customers, suppliers, vendors, private and governmental entities, and others having business relations with the SCI Divestiture Businesses.
- F. Until the respective Divestiture Date for each business within the Divestiture Businesses has occurred, Respondents shall provide the relevant Divestiture Business Employees with reasonable financial incentives to continue in their positions consistent with past practices and/or as may be necessary to preserve the marketability, viability and competitiveness of the relevant Divestiture Businesses pending divestiture. Such incentives shall include a continuation of all employee benefits, including regularly scheduled raises, bonuses, vesting of pension benefits (as permitted by law), and additional incentives as may be necessary to assure the continuation and prevent any diminution of the viability, marketability and competitiveness of each business within the Divestiture Businesses until the applicable Divestiture Date(s) occur(s), and as may otherwise be necessary to achieve the purposes of this Hold Separate.

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- G. From the date Respondents execute the Consent Agreement until this Hold Separate terminates, Respondents shall not, directly or indirectly, solicit, induce, or attempt to solicit or induce any Divestiture Business Employee(s) for a position of employment with Respondents. The Acquirer shall have the option of offering employment to any Divestiture Business Employee(s). Respondents shall not interfere with the employment by the Acquirer of such employees; shall not offer any incentive to such employees to decline employment with the Acquirer or to accept other employment with the Respondents; and shall remove any impediments that may deter such employees from accepting employment with the Acquirer including, but not limited to, any non-compete or confidentiality provisions of employment or other contracts that would affect the ability of such employees to be employed by the Acquirer, and the payment, or the transfer for the account of the employee, of all current and accrued bonuses, pensions and other current and accrued benefits to which such employees would otherwise have been entitled had they remained in the employment of the Respondents.
- H. Respondents shall not, directly or indirectly, solicit, induce or attempt to solicit or induce any Divestiture Business Employee(s) who have accepted offers of employment with the Acquirer, or who are employed by the Acquirer, to terminate their employment relationship with the Acquirer; *provided, however*, a violation of this provision will not occur if: (1) the person's employment has been terminated by the Acquirer, (2) Respondents advertise for employees in newspapers, trade publications, or other media not targeted specifically at the employees, or (3) Respondents hire employees who apply for employment with Respondents, so long as such employees were not solicited by Respondents in violation of this paragraph.

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- I. The purpose of this Hold Separate is to: (1) preserve the assets and businesses within the Held Separate Business as viable, competitive, and ongoing businesses independent of Respondents until the divestitures required by the Decision and Order are achieved; (2) assure that no Confidential Business Information is exchanged between Respondents and the Held Separate Business, except in accordance with the provisions of this Hold Separate; (3) prevent interim harm to competition pending the relevant divestitures and other relief; and (4) maintain the full economic viability, marketability and competitiveness of all of the business(es) associated with the Divestiture Businesses, and prevent the destruction, removal, wasting, deterioration, or impairment of any of the Divestiture Businesses except for ordinary wear and tear.

III.

IT IS FURTHER ORDERED that until such time as Respondents have either terminated the Dignity Memorial Affiliate Agreement with each Dignity Affiliate in accordance with the requirements of Paragraph III.A.1. of the Decision and Order or divested the correlating Alternative Divestiture Assets pursuant to Paragraph III.A.2. of the Decision and Order, Respondents shall not, directly or indirectly, or through any corporate or other device, enter into or enforce any agreement, or exchange or facilitate in any manner, the exchange or transfer of information from Respondents to any current or former Dignity Affiliate, regarding actual, suggested, or future prices, or other terms or conditions of sale, of Funeral Services; *provided, however,* that nothing herein shall prohibit Respondents from enforcing their Intellectual Property rights as to “Dignity” (including “Dignidad,” “Dignite” and other translations of Dignity into languages other than English) and “Dignity Memorial.”

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IV.

IT IS FURTHER ORDERED that Respondents shall notify the Commission at least thirty (30) days prior to any proposed (1) dissolution of Respondents, (2) acquisition, merger or consolidation of Respondents, or (3) any other change in Respondents that may affect compliance obligations arising out of this Hold Separate, including but not limited to assignment, the creation or dissolution of subsidiaries, or any other change in Respondents.

V.

IT IS FURTHER ORDERED that, for the purpose of determining or securing compliance with this Hold Separate, and subject to any legally recognized privilege, and upon written request with reasonable notice to Respondents, relating to compliance with this Hold Separate, Respondents shall permit any duly authorized representative of the Commission:

- A. Access, during office hours of Respondents and in the presence of counsel, to all facilities, and access to inspect and copy all books, ledgers, accounts, correspondence, memoranda and all other records and documents in the possession or under the control of Respondents; and
- B. Upon five (5) days' notice to Respondents and without restraint or interference from Respondents, to interview officers, directors, or employees of Respondents, who may have counsel present.

VI.

IT IS FURTHER ORDERED that this Hold Separate shall terminate at the earlier of:

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- A. Three (3) business days after the Commission withdraws its acceptance of the Consent Agreement pursuant to the provisions of Commission Rule 2.34, 16 C.F.R. § 2.34; or
- B. The day after the Divestiture Date pertaining to the last divestiture of a business or asset within the Divestiture Businesses required to be divested pursuant to the Decision and Order; *provided, however*, that (1) each of the Alderwoods Divestiture Businesses identified in Appendix B of the Decision and Order shall be included in the Held Separate Business only until such business is divested pursuant to Paragraph II.A. of the Decision and Order, (2) each of the Alderwoods Divestiture Businesses identified in Appendix D of the Decision and Order shall be included in the Held Separate Business only until (i) such business is divested pursuant to Paragraph III.A. of the Decision and Order, or (ii) Respondents have terminated the Dignity Memorial Affiliate Agreement with the corresponding Dignity Affiliate in each relevant market pursuant to Paragraph III.A. of the Decision and Order, and (3) each business identified in Appendix C of this Hold Separate shall be included in the Held Separate Business only until Respondents have divested the corresponding SCI Divestiture Businesses in each relevant market pursuant to Paragraph II.A. of the Decision and Order.

By the Commission.

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CONFIDENTIAL APPENDIX A**[Redacted from the Public Record
But Incorporated by Reference]****APPENDIX B****NOTICE OF DIVESTITURE AND REQUIREMENT FOR
CONFIDENTIALITY**

Service Corporation International (“SCI”) and Alderwoods Group, Inc. (“Alderwoods”), referred to as “Respondents,” have entered into an Agreement Containing Consent Orders (“Consent Agreement”) with the Federal Trade Commission (“Commission”) providing for divestiture of certain businesses and assets and other relief, in connection with the acquisition of Alderwoods by SCI.

Under the terms of the Consent Agreement, SCI must divest the SCI businesses and assets at the locations identified in Appendix ___ (attached), and the Alderwoods businesses and assets at the locations identified in the Appendix ___ (attached), to persons approved by the Commission and in a manner acceptable to the Commission, within 180 days of the consummation of SCI’s acquisition of Alderwoods.

As used in the Consent Agreement, the term “Held Separate Business” means the Alderwoods businesses and assets identified in Appendix ___, and all full-time, part-time or contract employees of those businesses. During the Hold Separate Period, which begins on the date SCI acquires Alderwoods and ends after SCI has completed the required divestitures, SCI must hold the

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Held Separate Business separate, apart, and independent from SCI's other businesses. The businesses within the Held Separate Business must be maintained as ongoing, competitive businesses, independent of all other businesses of SCI, until SCI has completed the required divestitures. All competitive information relating to the businesses within the Held Separate Business must be retained and maintained on a confidential basis by the persons who have been and continue to be involved in the operations or sale of any of the businesses within the Held Separate Business. Except as provided in the Decision and Order or the Hold Separate, all such persons are prohibited from disclosing, providing, discussing, exchanging, circulating, or otherwise furnishing any such information to or with any other person employed by SCI or whose employment relates to any of SCI's businesses other than the Held Separate Business, and may be required to sign a statement agreeing to keep such information confidential. Similarly, persons involved in similar activities with respect to SCI's businesses are prohibited from disclosing, providing, discussing, exchanging, circulating, or otherwise furnishing any similar SCI information to or with any other person whose employment involves the Held Separate Business, except as otherwise provided in the Consent Agreement.

In addition, until divestiture occurs, Respondents must take such actions as are necessary to maintain the economic viability, marketability, and competitiveness of each of the SCI businesses and assets identified in Appendix ____, and each of the Alderwoods businesses and assets identified in Appendix ____, and must prevent the destruction, removal, wasting, deterioration, sale, disposition, transfer, or impairment of these businesses and assets except for ordinary wear and tear. The Commission has appointed [Name] to serve as Interim Monitor until the divestitures are completed to oversee compliance with the hold separate and asset maintenance requirements of the Consent Agreement. [Name] can be contacted at: [toll free number; e-mail address].

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Because any violation of the Consent Agreement may subject Respondents to civil penalties and other relief as provided by law, it is important that the letter and spirit of the Consent Agreement be honored.

APPENDIX C

Additional Held Separate Businesses

Relevant Market	FH/CE	Name	Property Address
Abilene, TX	FH	Elliott-Hamil Funeral Home	5701 U.S. Highway 277S Abilene, TX
Abilene, TX	FH	Elliott-Hamil Funeral Home	542 Hickory St. Abilene, TX
Abilene, TX	FH	Community Memorial Funeral Home	1443 N. 2 nd St. Abilene, TX
Abilene, TX	CE	Elliott-Hamil Garden of Memory	5701 U.S. Highway 277S Abilene, TX
Alhambra, CA	FH	Rose Hills Mortuary	205 S. Chapel Ave. Alhambra, CA
Cartersville, GA	FH	Owen Funeral Home	12 Collins Drive Cartersville, GA
Fort Myers, FL	FH	Lee Memorial Park Funeral Home	12777 State Road 82 Fort Myers, FL

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Relevant Market	FH/CE	Name	Property Address
Fort Myers, FL	FH	Phil Kiser Funeral Home	9231 Cypress Lake Dr. Fort Myers, FL
Fort Myers, FL	CE	Coral Ridge Cemetery	1630 SW Pine Island Rd. Cape Coral, FL
Fort Myers, FL	CE	Lee Memorial Park	12777 State Road 82 Fort Myers, FL
Gonzales, LA	FH	Ourso Funeral Home	13533 Airline Highway Gonzalez, LA
Greensboro, NC	FH	Hanes-Lineberry Funeral Service	515 N. Elm St. Greensboro, NC
Greensboro, NC	FH	Hanes-Lineberry Funeral Service	1900 Vanstory St. Greensboro, NC
Greensboro, NC	FH	Hanes-Lineberry Funeral Service	6000 High Point Rd. Greensboro, NC
Greensboro, NC	FH	Sensible Alternatives	3601 Whitehurst Rd. Greensboro, NC
Lansing, MI	FH	Gorsline Runciman Funeral Homes	111 S. Franklin St. Dewitt, MI
Lansing, MI	FH	Gorsline Runciman Funeral Homes	1730 E. Grand River Ave. E. Lansing, MI
Lansing, MI	FH	Gorsline Runciman Funeral Homes	900 E. Michigan Ave. Lansing, MI
Lansing, MI	FH	Gorsline Runciman Funeral Homes	621 S. Jefferson St. Mason, MI

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Relevant Market	FH/CE	Name	Property Address
Lansing, MI	FH	Gorsline Runciman Funeral Homes	205 E. Middle St. Williamston, MI
Macon, GA	CE	Macon Memorial Park	3969 Mercer University Dr. Macon, GA
Merced, CA	FH	Stratford Evans Merced Funeral Home	1490 B Street Merced, CA
Meridian, MS	FH	Barham Funeral Home	7774 Highway 39 #A Meridian, MS
Meridian, MS	FH	Stephens Funeral Home	2800 Old North Hills St. Meridian, MS
Newton, MS	FH	Barham Funeral Home	Highway 15 N Newton, MS
Odessa, TX	FH	Frank W. Wilson Funeral Directors	4635 Oakwood Dr. Odessa, TX
Odessa, TX	FH	Hubbard-Kelly Funeral Home	601 N. Alleghany Ave. Odessa, TX
Odessa, TX	FH	Odessa Funeral Home Angeles Memorial Chapel	1700 N. Jackson Ave. Odessa, TX

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DECISION AND ORDER

The Federal Trade Commission (“Commission”) having initiated an investigation of the proposed acquisition by Respondent Service Corporation International (“SCI”) of the outstanding voting securities of Respondent Alderwoods Group, Inc. (“Alderwoods”), hereinafter referred to collectively as “Respondents,” and Respondents having been furnished thereafter with a copy of the draft of Complaint that the Bureau of Competition proposed to present to the Commission for its consideration and which, if issued by the Commission, would charge Respondents with violations of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45; and

Respondents, their attorneys, and counsel for the Commission having thereafter executed an Agreement Containing Consent Orders (“Consent Agreement”), containing an admission by Respondents of all the jurisdictional facts set forth in the aforesaid draft of Complaint, a statement that the signing of said Consent Agreement is for settlement purposes only and does not constitute an admission by Respondents that the law has been violated as alleged in such Complaint, or that the facts as alleged in such Complaint, other than jurisdictional facts, are true, and waivers and other provisions as required by the Commission’s Rules; and

The Commission having thereafter considered the matter and having determined that it had reason to believe that Respondents have violated the said Acts, and that a Complaint should issue stating its charges in that respect, and having thereupon issued its Complaint and its Order to Hold Separate and Maintain Assets and having accepted the executed Consent Agreement and placed such Consent Agreement on the public record for a period of thirty (30) days for the receipt and consideration of public comments, now in further conformity with the procedure described in Commission Rule 2.34, 16 C.F.R. § 2.34, the Commission hereby makes the following jurisdictional findings and issues the following Decision and Order (“Order”):

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1. Respondent SCI is a corporation organized, existing, and doing business under, and by virtue of, the laws of the State of Texas, with its office and principal place of business located at 1929 Allen Parkway, Houston, Texas 77019.

2. Respondent Alderwoods is a corporation organized, existing, and doing business under, and by virtue of, the laws of the State of Delaware, with its office and principal place of business located at 311 Elm Street, Suite 1000, Cincinnati, Ohio 45202.

3. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the Respondents and the proceeding is in the public interest.

ORDER**I.**

IT IS HEREBY ORDERED that, as used in this Order, the following definitions shall apply:

- A. "SCI" means Service Corporation International, its directors, officers, employees, agents, representatives, successors, and assigns; its subsidiaries, divisions, groups, and affiliates controlled by SCI (including, after the Acquisition Date, Alderwoods) and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.
- B. "Alderwoods" means Alderwoods Group, Inc., its directors, officers, employees, agents, representatives, successors, and assigns; its subsidiaries, divisions, groups, and affiliates controlled by Alderwoods, and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.

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- C. "Commission" means the Federal Trade Commission.
- D. "Acquisition" means the proposed acquisition described in the Agreement and Plan of Merger, dated as of April 2, 2006, between Alderwoods Group, Inc. and Service Corporation International.
- E. "Acquisition Date" means the date the Acquisition is consummated.
- F. "Acquirer(s)" means any Person(s) that receives the prior approval of the Commission to acquire all or any of the Divestiture Businesses pursuant to Paragraphs II, III, or VI of this Order.
- G. "Alderwoods Divestiture Assets" means all of Respondents' right, title, and interest in and to all property and assets, tangible or intangible, of every kind and description, wherever located, and any improvements or additions thereto, relating to operation of the Alderwoods Divestiture Businesses, including but not limited to:
1. All real property interests (including fee simple interests and real property lease-hold interests), including all easements, appurtenances, licenses, and permits, together with all buildings and other structures, facilities, and improvements located thereon, owned, leased, or otherwise held;
 2. All Tangible Personal Property, including any Tangible Personal Property removed from any location of an Alderwoods Divestiture Business (and not replaced), except in the ordinary course of business (and only if the cost of the Tangible Personal Property is less than \$5,000), at any time after April 2, 2006 and which is necessary to operate the relevant Alderwoods Divestiture Business as a going concern;

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3. All inventories;
4. All accounts receivable;
5. All agreements, contracts, and leases and all rights thereunder and related thereto;
6. All consents, licenses, certificates, registrations or permits issued, granted, given or otherwise made available by or under the authority of any governmental body or pursuant to any legal requirement, and all pending applications therefor or renewals thereof, to the extent assignable;
7. All intangible rights and property, including Intellectual Property, going concern value, goodwill, telephone, telecopy and e-mail addresses and listings;
8. All data and Records, including client and customer lists and Records, referral sources, research and development reports and Records, production reports and Records, service and warranty Records, equipment logs, operating guides and manuals, financial and accounting Records, creative materials, advertising materials, promotional materials, studies, reports, correspondence and other similar documents and Records, subject to legal requirements, and copies of all personnel Records;
9. All insurance benefits, including rights and proceeds (including insurance benefits relating to or arising from any Pre-need Contracts); and
10. All rights relating to deposits and prepaid expenses (including bank, trust, or other accounts relating to or arising from any Pre-need Contracts and endowment

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or perpetual care funds), claims for refunds and rights to offset in respect thereof.

Provided, however, that the Alderwoods Divestiture Assets need not include:

(i) assets located at facilities or offices not included in the Alderwoods Divestiture Businesses and whose use is not exclusively or primarily related to the operation of the Alderwoods Divestiture Businesses;

(ii) vehicles used by the relevant Alderwoods Divestiture Businesses if the Acquirer does not need them and the Commission approves the divestiture without such vehicles;

(iii) rights in any lease of Tangible Personal Property that pertains to generally available property relating to office furniture, office equipment, or computers;

(iv) Respondents' right, title, and interest in any Alderwoods display, national license, national supply or service agreement, or any national proprietary or licensed advertising program;

(v) commercial names, trade names, "doing business as" (d/b/a) names, registered and unregistered trademarks, service marks and applications using the words "Alderwoods Group, Inc.," "Alderwoods," or "Caughman-Harman;"

(vi) assets relating to the Alderwoods Divestiture Business(es) at the locations identified in Appendix D of this Order (hereinafter "Alternative Divestiture Assets"), to the extent that Respondents do not divest such assets pursuant to the terms of Paragraph III.A. of this Order; or

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(vii) any asset or agreement not covered by the previous exclusions if not needed by the Acquirer and the Commission approves the divestiture without it.

Provided further, however, that the Alderwoods Divestiture Assets shall include Respondents' right, title, and interest in the (x) facility located at 1000 S. Yates Road, Memphis, Tennessee, in connection with the divestiture of Memorial Park, Inc. cemetery, located at 5668 Poplar Avenue, Memphis, Tennessee, and (y) facility located across the street from Conroe Memorial Park cemetery, in connection with the divestiture of Conroe Memorial Park, located at 1600 Porter Road, Conroe, Texas.

- H. "Alderwoods Divestiture Businesses" means all activities conducted by Alderwoods, prior to the Acquisition, at the locations identified in Appendix B and Appendix D of this Order, relating to the provision of Funeral Services or Cemetery Services.
- I. "Alderwoods License" means:
1. A worldwide, royalty-free, paid-up, perpetual, irrevocable, transferable, sublicensable, non-exclusive license under all Intellectual Property owned by or licensed to Respondent Alderwoods relating to operation of the Alderwoods Divestiture Businesses (other than Intellectual Property already included in the Alderwoods Divestiture Assets); and
 2. Such tangible embodiments of the licensed rights (including but not limited to physical and electronic copies) as may be necessary or appropriate to enable each Acquirer to use the rights.

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Provided, however, that the Alderwoods License need not include rights to (i) commercial names, trade names, “doing business as” (d/b/a) names, registered and unregistered trademarks, service marks and applications using the words “Alderwoods Group, Inc.,” “Alderwoods,” or “Caughman-Harman,” (ii) national proprietary or licensed advertising programs, (iii) national proprietary software used to service a national network of funeral homes and cemeteries or generally available software, (iv) Intellectual Property not covered by the previous exclusions if not needed by the Acquirer and the Commission approves the divestiture without it, or (iv) casket cuts relating to any Alderwoods display room for a period of more than six (6) months; *provided further, however* that Respondents may limit rights to any Alderwoods display room to the geographic area in which each Alderwoods Divestiture Business is located.

- J. “Alternative Divestiture Assets” means the assets defined in proviso (vi) of Paragraph I.G. of this Order.
- K. “Cemetery Services” means all activities relating to the sale of property, goods and services provided for the final disposition of human remains in a cemetery, whether by burial, entombment in a mausoleum or crypt, or disposition in a niche.
- L. “Confidential Business Information” means competitively sensitive, proprietary and all other business information of any kind that is not in the public domain owned by or pertaining to the Divestiture Businesses or Respondents, as the case may be (including, but not limited to, financial statements, financial plans and forecasts, operating plans, price lists, cost information, supplier and vendor contracts, marketing analyses, customer lists, customer contracts, employee lists, salary and benefits information, technologies, processes, and other trade secrets), except for any information that Respondents demonstrate (i) was

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or becomes generally available to the public other than as a result of a disclosure by Respondents, or (ii) was available, or becomes available, to Respondents on a non-confidential basis, but only if, to the knowledge of Respondents, the source of such information is not in breach of a contractual, legal, fiduciary, or other obligation to maintain the confidentiality of the information.

- M. “Dignity Affiliate(s)” means the third-party owned funeral homes identified in Appendix C of this Order.
- N. “Dignity Memorial Affiliate Agreement” means any agreement or other arrangement between any Person engaged in the provision of Funeral Services and Respondents pursuant to which the Person is or becomes a member of Respondent SCI’s Dignity Memorial affiliate network with respect to Dignity Memorial funeral plans.
- O. “Direct Cost” means the cost of direct material and direct labor used to provide the relevant service.
- P. “Divestiture Agreement” means any agreement that receives the prior approval of the Commission between Respondents (or between a Divestiture Trustee appointed pursuant to Paragraph VI of this Order) and an Acquirer to purchase all or any of the Divestiture Businesses, and all amendments, exhibits, attachments, agreements, and schedules thereto that have been approved by the Commission.
- Q. “Divestiture Businesses” means the SCI Divestiture Assets, SCI Divestiture Businesses, Alderwoods Divestiture Assets, and Alderwoods Divestiture Businesses.
- R. “Divestiture Businesses Employee(s)” means (i) any and all full-time, part-time, or contract employees of the

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Divestiture Businesses as of the Acquisition Date, including, but not limited to, all Key Employees, and (ii) any of Respondents' other employees whose work primarily relates to the Divestiture Businesses and who are employed on a regional or national level.

- S. "Funeral Services" means all activities relating to the sale of funeral services and funeral goods, including, but not limited to, services used to care for and prepare bodies for burial, cremation, or other final disposition; services used to arrange, supervise, or conduct the funeral ceremony or final disposition of human remains; and the sale of any goods in connection with funeral services.
- T. "Intellectual Property" means all intellectual property owned or licensed (as licensor or licensee) by Respondents, in which Respondents have a proprietary interest, including (i) commercial names, trade names, "doing business as" (d/b/a) names, registered and unregistered trademarks, logos, service marks and applications; (ii) all patents, patent applications and inventions and discoveries that may be patentable; (iii) all registered and unregistered copyrights in both published works and unpublished works; (iv) all know-how, trade secrets, confidential or proprietary information, protocols, quality control information, customer lists, software, technical information, data, process technology, plans, drawings and blue prints; (v) and all rights in internet web sites and internet domain names presently used by Respondents.
- U. "Key Employees" means (i) funeral home Divestiture Businesses Employees whose job title is funeral director, location manager, or other job title with responsibilities similar to those of funeral director or location manager, and (ii) cemetery Divestiture Businesses Employees whose responsibilities include management of a cemetery.

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- V. “Person” means any individual, partnership, firm, corporation, association, trust, unincorporated organization or other business entity.
- W. “Pre-need Contract” means any type of contract or other agreement entered into by a customer with any of the Divestiture Businesses to provide Funeral Services or Cemetery Services at a future time, regardless of whether such agreement is revocable or how payment for such services is arranged.
- X. “Record” means information that is inscribed on a tangible medium or that is stored in an electronic or other medium and is retrievable in perceivable form.
- Y. “Respondents” means SCI and Alderwoods, individually and collectively.
- Z. “SCI Divestiture Assets” means all of Respondents’ right, title, and interest in and to all property and assets, tangible or intangible, of every kind and description, wherever located, and any improvements or additions thereto, relating to operation of the SCI Divestiture Businesses, including but not limited to:
1. All real property interests (including fee simple interests and real property lease-hold interests), including all easements, appurtenances, licenses, and permits, together with all buildings and other structures, facilities, and improvements located thereon, owned, leased, or otherwise held;
 2. All Tangible Personal Property, including any Tangible Personal Property removed from any location of an SCI Divestiture Business (and not replaced), except in the ordinary course of business (and only if the cost of the Tangible Personal Property is less than

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\$1,000), at any time after April 2, 2006, and which is necessary to operate the relevant SCI Divestiture Business as a going concern;

3. All inventories;
4. All accounts receivable;
5. All agreements, contracts, and leases and all rights thereunder and related thereto;
6. All consents, licenses, certificates, registrations or permits issued, granted, given or otherwise made available by or under the authority of any governmental body or pursuant to any legal requirement, and all pending applications therefor or renewals thereof, to the extent assignable;
7. All intangible rights and property, including Intellectual Property, going concern value, goodwill, telephone, telecopy and e-mail addresses and listings;
8. All data and Records, including client and customer lists and Records, referral sources, research and development reports and Records, production reports and Records, service and warranty Records, equipment logs, operating guides and manuals, financial and accounting Records, creative materials, advertising materials, promotional materials, studies, reports, correspondence and other similar documents and Records, subject to legal requirements, and copies of all personnel Records;
9. All insurance benefits, including rights and proceeds (including insurance benefits relating to or arising from any Pre-need Contracts); and

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10. All rights relating to deposits and prepaid expenses (including bank, trust, or other accounts relating to or arising from any Pre-need Contracts and endowment or perpetual care funds), claims for refunds and rights to offset in respect thereof.

Provided, however, that the SCI Divestiture Assets need not include:

(i) assets located at facilities or offices not included in the SCI Divestiture Businesses and whose use is not exclusively or primarily related to the operation of the SCI Divestiture Businesses;

(ii) vehicles used by the relevant SCI Divestiture Businesses if the Acquirer does not need them and the Commission approves the divestiture without such vehicles;

(iii) rights in any lease of Tangible Personal Property that pertains to generally available property relating to office furniture, office equipment, or computers;

(iv) rights in any national license, national supply or service agreement, national proprietary or licensed advertising program, or national proprietary product associated with SCI's Dignity Memorial program;

(v) commercial names, trade names, "doing business as" (d/b/a) names, registered and unregistered trademarks, service marks and applications using the words "Service Corporation International," "SCI," "Welsh," "Chung Wah," "Dignity" (including "Dignidad," "Dignite," and other translations of Dignity into languages other than English), or "Dignity Memorial;" or

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(vi) any asset or agreement not covered by the previous exclusions if not needed by the Acquirer and the Commission approves the divestiture without it.

AA. “SCI Divestiture Businesses” means all activities conducted by SCI at the locations identified in Appendix A of this Order, relating to the provision of Funeral Services or Cemetery Services.

BB. “SCI License” means:

1. A worldwide, royalty-free, paid-up, perpetual, irrevocable, transferable, sublicensable, non-exclusive license under all Intellectual Property owned by or licensed to Respondent SCI relating to operation of the SCI Divestiture Businesses (other than Intellectual Property already included in the SCI Divestiture Assets), and
2. Such tangible embodiments of the licensed rights (including but not limited to physical and electronic copies) as may be necessary or appropriate to enable each Acquirer to use the rights.

Provided, however, that the SCI License need not include rights to (i) commercial names, trade names, “doing business as” (d/b/a) names, registered and unregistered trademarks, service marks and applications using the words “Service Corporation International,” “SCI,” “Welsh,” “Dignity” (including “Dignidad,” “Dignite,” and other translations of Dignity into languages other than English), or “Dignity Memorial,” (ii) national proprietary or licensed advertising programs, (iii) national proprietary products associated with Respondents’ Dignity Memorial program, (iv) national proprietary software used to service a national network of funeral homes and cemeteries or generally available software, or (v) Intellectual Property not covered by the previous exclusions if not needed by

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the Acquirer and the Commission approves the divestiture without it.

- CC. “Tangible Personal Property” means all machinery, equipment, tools, furniture, office equipment, computer hardware, supplies, materials, vehicles and other items of tangible personal property (other than inventories) of every kind owned or leased by Respondents, together with any express or implied warranty by the manufacturers or sellers or lessors of any item or component part thereof and all maintenance records and other documents relating thereto.
- DD. “Transitional Services” means assistance with respect to providing Funeral Services or Cemetery Services, including assistance relating to administrative and support services except for accounting/billing, purchasing, and information systems.

II.**IT IS FURTHER ORDERED** that:

- A. Respondents shall divest the SCI Divestiture Assets and Alderwoods Divestiture Assets (except that the Alternative Divestiture Assets shall be divested pursuant to Paragraph III.A. of this Order) at no minimum price, absolutely and in good faith, as on-going businesses, no later than 180 days from the Acquisition Date, to an Acquirer or Acquirers that receive the prior approval of the Commission and in a manner (including execution of a Divestiture Agreement with each Acquirer) that receives the prior approval of the Commission. Respondents shall comply with all provisions of any Divestiture Agreement approved by the Commission, and failure by Respondents to comply with any provision of a Divestiture Agreement shall constitute a failure to comply with this Order.

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- B. Respondents shall divest each of the following groups of funeral homes and cemeteries to no more than one Acquirer per group:
1. **Abilene, Texas:** (i) Elmwood Funeral Home, 5750 US Highway 277S, Abilene, Texas, and (ii) Elmwood Memorial Park cemetery, 5750 US Highway 277S, Abilene, Texas.
 2. **Baton Rouge/Gonzales, Louisiana:** (i) Welsh Funeral Home, 426 W. New River St., Gonzales, Louisiana, (ii) Resthaven Gardens of Memory funeral home, 11817 Jefferson Highway, Baton Rouge, Louisiana, and (iii) Resthaven Gardens of Memory cemetery, 11817 Jefferson Highway, Baton Rouge, Louisiana.
 3. **Broward County and Miami-Dade County, Florida:** (i) Levitt-Weinstein Memorial Chapel, 3201 NW 72nd Avenue, Hollywood, Florida, (ii) Levitt-Weinstein Memorial Chapel, 8135 W. McNab Road, Tamarac, Florida, (iii) Levitt-Weinstein Memorial Chapel, 1921 Pembroke Road, Hollywood, Florida, (iv) Levitt-Weinstein, 7500 North State Road 7, Coconut Creek, Florida, (v) Beth David Memorial Gardens & Chapel cemetery, 3201 NW 72nd Avenue, Hollywood, Florida, (vi) Blasberg-Rubin-Zilbert Funeral Chapel, 720 71st Street, Miami Beach, Florida, (vii) Eternal Light Funeral Directors, Inc., 17250 West Dixie Highway, North Miami Beach, Florida, and (viii) Levitt-Weinstein Memorial Chapels, 18840 West Dixie Highway, North Miami Beach, Florida.
 4. **Brownsville, Texas:** (i) Trevino Funeral Home, 1355 Old Port Isabel Road, Brownsville, Texas, and (ii) Darling-Mouser Funeral Home, 945 Palm Blvd., Brownsville, Texas.

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5. **Fort Myers, Florida:** (i) Fort Myers Memorial Gardens Funeral Home, 1589 Colonial Blvd., Fort Myers, Florida, and (ii) Fort Myers Memorial Gardens cemetery, 1589 Colonial Blvd., Fort Myers, Florida.
6. **Lansing, Michigan:** (i) Estes-Leadley Holt/Delhi Chapel, 2121 Cedar Street, Holt, Michigan, and (ii) Estes-Leadley Greater Lansing Chapel, 325 W. Washtenaw Street, Lansing, Michigan.
7. **Lexington/West Columbia/Columbia, South Carolina:** (i) Caughman-Harman Funeral Home, 5400 Bush River Road, Columbia, South Carolina, (ii) Caughman-Harman Funeral Home, 820 West Dunbar Road, West Columbia, South Carolina, (iii) Bush River Memorial Gardens cemetery, 5400 Bush River Road, Columbia, South Carolina, (iv) Elmwood Cemetery, 501 Elmwood Avenue, Columbia, South Carolina, and (v) Southland Memorial Gardens, 700 West Dunbar Road, West Columbia, South Carolina.
8. **Lynchburg, Virginia:** (i) Diuguid Funeral Service, 811 Wiggington Road, Lynchburg, Virginia, and (ii) Diuguid Waterlick Chapel, 21914 Timberlake Road, Lynchburg, Virginia.
9. **Memphis, Tennessee:** (i) Memorial Park Funeral Home, 5668 Poplar Avenue, Memphis, Tennessee, and (ii) Memorial Park, Inc. cemetery, 5668 Poplar Avenue, Memphis, Tennessee.
10. **Merced, California:** (i) Ivers & Alcorn Funeral Home, 901 W. Main St., Merced, California, and (ii) Ivers & Alcorn Funeral Home, 3050 Winton Way, Atwater, California.

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11. **Meridian/Newton, Mississippi:** (i) James F. Webb Funeral Home, 2514 7th Street, Meridian, Mississippi, and (ii) James F. Webb Funeral Home, 100 Old Highway 15 Loop, Newton, Mississippi.
 12. **Miami-Dade County, Florida:** (i) Graceland Memorial Park North cemetery, 4420 SW 8th Street, Miami, Florida, and (ii) Graceland South Memorial Park, 13900 SW 117th Avenue, Miami, Florida.
 13. **Northern Rockland County, New York:** (i) T.J. McGowan Sons Funeral Home, 71 North Central Highway, Garnerville, New York, and (ii) T.J. McGowan Sons Funeral Home, 133 Broadway, Haverstraw, New York.
- C. Notwithstanding any other provision of this Order, Respondents:
1. For a period not to exceed twelve (12) months after the date of their divestiture, shall allow the Acquirer of (i) Caughman-Harman Funeral Home, 820 West Dunbar Road, West Columbia, South Carolina, and Caughman-Harman Funeral Home, 5400 Bush River Road, Columbia, South Carolina, to use the commercial, trade, or business name of “Caughman-Harman,” and (ii) Welsh Funeral Home, 426 W. New River St., Gonzales, Louisiana, to use the commercial, trade, or business name of “Welsh.” The new trade names, commercial names, or other names (“Names”) under which the Acquirer seeks to conduct business for each of these funeral homes shall not include any of the Names, words, or other names or designations that are assets of the businesses being retained by Respondents.
 2. For a period not to exceed twelve (12) months from the Acquisition Date, may continue to use the

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following commercial, trade, or business names for the following funeral homes to be retained by Respondents (“Retained Funeral Homes”): (i) “Hankins & Whittington” for the funeral home located at 5301 Albemarle Road, Charlotte, North Carolina, (ii) “Levitt-Weinstein Memorial Chapel” for the funeral homes located at 5900 SW 77th St., Miami, Florida, 5411 Okeechobee Blvd., West Palm Beach, Florida, and 701 North Congress Ave., Boynton Beach, Florida, and (iii) “T.J. McGowan” for the funeral home located at 113 Lake Rd. East, Congers, New York. The Names under which Respondents seek to conduct business for each of the Retained Funeral Homes shall not include any of the Names, words, or other names or designations that are assets of the relevant businesses within the Divestiture Businesses.

- D. No later than the date of each divestiture of a business within the Divestiture Businesses, Respondents shall secure all consents, assignments, and waivers from all Persons that are necessary for the divestiture of such business or assets to an Acquirer.
- E. No later than the date of each divestiture of a business within the Divestiture Businesses, Respondents shall grant:
 - 1. An SCI License to each Acquirer of a funeral home or cemetery that is part of the SCI Divestiture Businesses for any use in any business providing Funeral Services or Cemetery Services, and shall take all actions necessary to facilitate the unrestricted use of the license; and
 - 2. An Alderwoods License to each Acquirer of a funeral home or cemetery that is part of the Alderwoods Divestiture Businesses for any use in any business

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providing Funeral Services or Cemetery Services, and shall take all actions necessary to facilitate the unrestricted use of the license.

- F. At the request of any Acquirer of a Divestiture Business, within thirty (30) days of consummating that acquisition, for a period not to exceed six (6) months from the date Respondents divest that Divestiture Business, and in a manner (including pursuant to an agreement) that receives the prior approval of the Commission:
1. Respondents shall provide Transitional Services to such Acquirer sufficient to enable the Acquirer to operate the divested business in substantially the same manner that Respondents conducted the divested business prior to the divestiture; and
 2. Respondents shall provide the Transitional Services required by this Paragraph at substantially the same level and quality as such services are provided by Respondents in connection with its operation of the divested business prior to the divestiture.

Provided, however, that Respondents shall not (i) require the Acquirer to pay compensation for Transitional Services that exceeds the Direct Cost of providing such goods and services, or (ii) terminate its obligation to provide Transitional Services because of a material breach by the Acquirer of any agreement to provide such assistance, in the absence of a final order of a court of competent jurisdiction.

- G. At the request of any Acquirer, Respondents shall use their best efforts to assist such Acquirer in the fulfillment of any Pre-need Contract relating to the sale of a Dignity Memorial Funeral Plan entered into by Respondents prior to the date of divestiture of the applicable funeral home or cemetery; *provided, however,* that this Paragraph requires

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Respondents to assist only with such goods and services that such Acquirer cannot reasonably provide on its own.

- H. Respondents shall allow every Acquirer an opportunity to recruit and employ any Divestiture Business Employee(s) under the following terms and conditions:
1. No later than one week after execution of a Divestiture Agreement, Respondents shall (i) identify each Divestiture Business Employee, (ii) allow the Acquirer an opportunity to interview any such employee, and (iii) allow the Acquirer to inspect the personnel files and other documentation relating to any such employee, to the extent permissible under applicable laws.
 2. Respondents shall (i) not offer any incentive to any Divestiture Business Employee to decline employment with the Acquirer, (ii) remove any contractual impediments with Respondents that may deter any Divestiture Business Employee from accepting employment with the Acquirer, including, but not limited to, any non-compete or confidentiality provisions of employment or other contracts with Respondents that would affect the ability of such employee to be employed by the Acquirer, and (iii) not otherwise interfere with the recruitment of any Divestiture Business Employee by the Acquirer.
 3. Respondents shall (i) vest all current and accrued pension benefits as of the date of transition of employment with the Acquirer for any Divestiture Business Employee who accepts an offer of employment from the Acquirer no later than thirty (30) days from the date Respondents divest the relevant assets and, if necessary, (ii) provide any Key Employee to whom the Acquirer has made an offer of

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employment with reasonable financial incentives to accept a position with the Acquirer at the time of divestiture of the corresponding businesses and assets.

4. For a period of two (2) years commencing at the date of divestiture applicable to the relevant business within the Divestiture Businesses, Respondents shall not, directly or indirectly, solicit, induce or attempt to solicit or induce any Divestiture Business Employee(s) who has accepted offers of employment with the Acquirer, or who is employed by the Acquirer, to terminate their employment relationship with the Acquirer; *provided, however,* a violation of this provision will not occur if: (1) the individual's employment has been terminated by the Acquirer, (2) Respondents advertise for employees in newspapers, trade publications, or other media not targeted specifically at the employees, or (3) Respondents hire employees who apply for employment with Respondents, so long as such employees were not solicited by Respondents in violation of this paragraph.
 - I. Respondents shall not, directly or indirectly, solicit, induce, or attempt to solicit or induce a consumer who has a Pre-need Contract to terminate such contract and enter into a Pre-need Contract with Respondents; *provided, however,* a violation of this provision will not occur if: (1) a consumer initiates communications with Respondents regarding a Pre-need Contract; or (2) Respondents' advertise in newspapers, trade publications, or other media in a manner not targeted specifically at customers of any Acquirer.
 - J. The purpose of the divestiture of the Divestiture Businesses is to ensure the continued use of the assets in the same businesses in which such assets were engaged at the time of the announcement of the Acquisition by Respondents and to remedy the lessening of competition

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resulting from the Acquisition as alleged in the Commission's Complaint.

III.**IT IS FURTHER ORDERED** that:

- A. No later than 180 days from the Acquisition Date, for each of the areas of Anchorage, Alaska; Hobbs, New Mexico; Klamath Falls, Oregon; Mansfield, Ohio; Pascagoula, Mississippi; and Williamsburg, Virginia (hereinafter "Dignity Area(s)"); Respondents shall either:
1. Terminate the Dignity Memorial Affiliate Agreement with each Dignity Affiliate in that Dignity Area; *provided, however,* that Respondents shall use their best efforts to assist any Dignity Affiliate in the fulfillment of any Pre-need Contract relating to the sale of a Dignity Memorial funeral plan entered into prior to the date each agreement is terminated; *provided further, however,* that Respondents shall assist only with such goods and services that each Dignity Affiliate cannot reasonably provide on its own; or
 2. Divest the Alternative Divestiture Assets in that Dignity Area at no minimum price, absolutely and in good faith, as an on-going business, to an Acquirer that receives the prior approval of the Commission and in a manner (including execution of a Divestiture Agreement with each Acquirer) that receives the prior approval of the Commission and that satisfies the requirements of Paragraph II of this Order.
- B. Respondents shall:

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1. Except in the course of performing any obligations under this Order, or in enforcing its Intellectual Property rights relating to “Dignity” (including “Dignidad,” “Dignite” and other translations of Dignity into languages other than English) and “Dignity Memorial,” (i) not provide, disclose or otherwise make available Dignity Affiliate Confidential Business Information to any Person, and (ii) not use Dignity Affiliate Confidential Business Information for any reason or purpose.
 2. Disclose Dignity Affiliate Confidential Business Information (i) only to those Persons who require such information for the purposes permitted under Paragraph III.B.1., (ii) only to the extent such Dignity Affiliate Confidential Business Information is required, and (iii) only to those Persons who agree in writing to maintain the confidentiality of such information.
 3. Enforce the terms of this Paragraph III.B. as to any Person and take such action as is necessary to cause each such Person to comply with the terms of this Paragraph III.B., including training of Respondents’ employees and all other actions that Respondents would take to protect their own trade secrets and proprietary information.
- C. Until such time as Respondents have either terminated the Dignity Memorial Affiliate Agreement with each Dignity Affiliate in accordance with the requirements of Paragraph III.A.1. or divested the correlating Alternative Divestiture Assets pursuant to Paragraph III.A.2., Respondents shall not, directly or indirectly, or through any corporate or other device, enter into or enforce any agreement (except that Respondents may enforce their Intellectual Property rights relating to “Dignity” (including “Dignidad,” “Dignite” and other translations of Dignity into languages

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other than English) and “Dignity Memorial”), or exchange or facilitate in any manner, the exchange or transfer of information from Respondents to any current or former Dignity Affiliate, regarding actual, suggested, or future prices, or other terms or conditions of sale, of Funeral Services.

IV.

IT IS FURTHER ORDERED that:

- A. Except in the course of performing obligations under any Divestiture Agreement, this Order, or as permitted by the Order to Hold Separate and Maintain Assets, Respondents shall not (i) provide, disclose or otherwise make available Divestiture Businesses Confidential Business Information to any Person and (ii) use Divestiture Businesses Confidential Business Information for any reason or purpose.
- B. Respondents shall disclose Divestiture Businesses Confidential Business Information (i) only to those Persons who require such information for the purposes permitted under Paragraph IV.A., (ii) only to the extent such Divestiture Businesses Confidential Business Information is required, and (iii) only to those Persons who agree in writing to maintain the confidentiality of such information.
- C. Respondents shall enforce the terms of this Paragraph IV as to any Person other than the Acquirers of the Divestiture Businesses and take such action as is necessary to cause each such Person to comply with the terms of this Paragraph IV, including training of Respondents’ employees and all other actions that Respondents would take to protect their own trade secrets and proprietary information.

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V.**IT IS FURTHER ORDERED** that:

- A. For a period of ten (10) years from the date this Order becomes final, Respondents shall not, without providing advance written notification to the Commission, with respect to any of the areas listed in Appendix E of this Order: (i) acquire, directly or indirectly, through subsidiaries or otherwise, any leasehold, ownership interest, or any other interest, in whole or in part, in any concern, corporate or non-corporate, or in any assets engaged in the provision of Funeral Services or Cemetery Services or (ii) enter into a Dignity Memorial Affiliate Agreement with any Person engaged in the provision of Funeral Services; *provided, however*, that with respect to any Dignity Area(s) for which Respondents do not terminate the applicable Dignity Memorial Affiliate Agreement pursuant to Paragraph III.A. of this Order, the prior notice requirement of this Paragraph V.A. shall not apply if Respondents renew the Dignity Memorial Affiliate Agreement with the Dignity Affiliate.
- B. The prior notification required by this Paragraph V shall be given on the Notification and Report Form set forth in the Appendix to Part 803 of Title 16 of the Code of Federal Regulations as amended (hereinafter referred to as “the Notification”), and shall be prepared and transmitted in accordance with the requirements of that part, except that no filing fee will be required for any such notification, notification shall be filed with the Secretary of the Commission, notification need not be made to the United States Department of Justice, and notification is required only of the Respondents and not of any other party to the transaction. Respondents shall provide the Notification to the Commission at least thirty (30) days prior to consummating the transaction (hereinafter referred to as the “first waiting period”). If, within the first waiting

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period, representatives of the Commission make a written request for additional information or documentary material (within the meaning of 16 C.F.R. § 803.20), the acquiring party shall not consummate the transaction until thirty (30) days after submitting such additional information or documentary material. Early termination of the waiting periods in this Paragraph V may be requested and, where appropriate, granted by letter from the Bureau of Competition. Provided, however, that prior notification shall not be required by this Paragraph for a transaction for which notification is required to be made, and has been made, pursuant to Section 7A of the Clayton Act, 15 U.S.C. 18a.

VI.**IT IS FURTHER ORDERED** that:

- A. If Respondents have not divested all of the Divestiture Businesses as required by Paragraphs II.A. and III.A. of this Order, the Commission may appoint one or more Persons as Divestiture Trustee to divest the SCI Divestiture Assets and Alderwoods Divestiture Assets in a manner that satisfies the requirements of this Order. The Divestiture Trustee appointed pursuant to this Paragraph may be the same Person appointed as Interim Monitor pursuant to the relevant provisions of the Order to Hold Separate and Maintain Assets.
- B. In the event that the Commission or the Attorney General brings an action pursuant to § 5(l) of the Federal Trade Commission Act, 15 U.S.C. § 45(l), or any other statute enforced by the Commission, Respondents shall consent to the appointment of a Divestiture Trustee in such action to divest the relevant assets in accordance with the terms of this Order. Neither the appointment of a Divestiture Trustee nor a decision not to appoint a Divestiture Trustee

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under this Paragraph shall preclude the Commission or the Attorney General from seeking civil penalties or any other relief available to it, including a court-appointed Divestiture Trustee, pursuant to § 5(l) of the Federal Trade Commission Act, or any other statute enforced by the Commission, for any failure by the Respondents to comply with this Order.

- C. The Commission shall select the Divestiture Trustee, subject to the consent of Respondents, which consent shall not be unreasonably withheld. The Divestiture Trustee shall be a person with experience and expertise in acquisitions and divestitures. If Respondents have not opposed, in writing, including the reasons for opposing, the selection of any proposed Divestiture Trustee within ten (10) days after notice by the staff of the Commission to Respondents of the identity of any proposed Divestiture Trustee, Respondents shall be deemed to have consented to the selection of the proposed Divestiture Trustee.
- D. Within ten (10) days after appointment of a Divestiture Trustee, Respondents shall execute a trust agreement that, subject to the prior approval of the Commission, transfers to the Divestiture Trustee all rights and powers necessary to permit the Divestiture Trustee to effect the relevant divestiture or transfer required by the Order.
- E. If a Divestiture Trustee is appointed by the Commission or a court pursuant to this Order, Respondents shall consent to the following terms and conditions regarding the Divestiture Trustee's powers, duties, authority, and responsibilities:
 - 1. Subject to the prior approval of the Commission, the Divestiture Trustee shall have the exclusive power and authority to assign, grant, license, divest, transfer, deliver or otherwise convey the relevant assets that are required by this Order to be assigned, granted,

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licensed, divested, transferred, delivered or otherwise conveyed.

2. The Divestiture Trustee shall have twelve (12) months from the date the Commission approves the trust agreement described herein to accomplish the divestiture, which shall be subject to the prior approval of the Commission. If, however, at the end of the twelve (12) month period, the Divestiture Trustee has submitted a plan of divestiture or believes that the divestiture can be achieved within a reasonable time, the divestiture period may be extended by the Commission.
3. Subject to any demonstrated legally recognized privilege, the Divestiture Trustee shall have full and complete access to the personnel, books, records, and facilities related to the relevant assets that are required to be assigned, granted, licensed, divested, delivered or otherwise conveyed by this Order and to any other relevant information, as the Divestiture Trustee may request. Respondents shall develop such financial or other information as the Divestiture Trustee may request and shall cooperate with the Divestiture Trustee. Respondents shall take no action to interfere with or impede the Divestiture Trustee's accomplishment of the divestiture. Any delays in divestiture caused by Respondents shall extend the time for divestiture under this Paragraph VI in an amount equal to the delay, as determined by the Commission or, for a court-appointed Divestiture Trustee, by the court.
4. The Divestiture Trustee shall use commercially reasonable best efforts to negotiate the most favorable price and terms available in each contract that is submitted to the Commission, subject to Respondents'

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absolute and unconditional obligation to divest expeditiously and at no minimum price. The divestiture shall be made in the manner and to an Acquirer as required by this Order; *provided, however*, if the Divestiture Trustee receives bona fide offers from more than one acquiring entity, and if the Commission determines to approve more than one such acquiring entity, the Divestiture Trustee shall divest to the acquiring entity selected by Respondents from among those approved by the Commission; *provided further, however*, that Respondents shall select such entity within five (5) days of receiving notification of the Commission's approval.

5. The Divestiture Trustee shall serve, without bond or other security, at the cost and expense of Respondents, on such reasonable and customary terms and conditions as the Commission or a court may set. The Divestiture Trustee shall have the authority to employ, at the cost and expense of Respondents, such consultants, accountants, attorneys, investment bankers, business brokers, appraisers, and other representatives and assistants as are necessary to carry out the Divestiture Trustee's duties and responsibilities. The Divestiture Trustee shall account for all monies derived from the divestiture and all expenses incurred. After approval by the Commission and, in the case of a court-appointed Divestiture Trustee, by the court, of the account of the Divestiture Trustee, including fees for the Divestiture Trustee's services, all remaining monies shall be paid at the direction of the Respondents, and the Divestiture Trustee's power shall be terminated. The compensation of the Divestiture Trustee shall be based at least in significant part on a commission arrangement contingent on the divestiture of all of the relevant assets that are required to be divested by this Order.

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6. Respondents shall indemnify the Divestiture Trustee and hold the Divestiture Trustee harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the Divestiture Trustee's duties, including all reasonable fees of counsel and other expenses incurred in connection with the preparation for, or defense of, any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities, or expenses result from gross negligence or willful misconduct by the Divestiture Trustee. For purposes of this Paragraph VI.E.6., the term "Divestiture Trustee" shall include all Persons retained by the Divestiture Trustee pursuant to Paragraph VI.E.5. of this Order.
 7. The Divestiture Trustee shall have no obligation or authority to operate or maintain the relevant assets required to be divested by this Order.
 8. The Divestiture Trustee shall report in writing to Respondents and to the Commission every sixty (60) days concerning the Divestiture Trustee's efforts to accomplish the divestiture.
 9. Respondents may require the Divestiture Trustee and each of the Divestiture Trustee's consultants, accountants, attorneys, and other representatives and assistants to sign a customary confidentiality agreement; *provided, however*, such agreement shall not restrict the Divestiture Trustee from providing any information to the Commission.
- F. If the Commission determines that a Divestiture Trustee has ceased to act or failed to act diligently, the Commission may appoint a substitute Divestiture Trustee in the same manner as provided in this Paragraph VI.

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- G. The Commission or, in the case of a court-appointed Divestiture Trustee, the court, may on its own initiative or at the request of the Divestiture Trustee issue such additional orders or directions as may be necessary or appropriate to accomplish the divestiture required by this Order.

VII.

IT IS FURTHER ORDERED that within thirty (30) days after the date this Order becomes final and every thirty (30) days thereafter until Respondents have fully complied with the provisions of Paragraphs II and III of this Order, and annually thereafter on the anniversary of the date this Order becomes final, until Respondents have fully complied with this Order, Respondents shall submit to the Commission a verified written report setting forth in detail the manner and form in which they intend to comply, are complying, and have complied with Paragraphs II through V of this Order. Respondents shall include in their compliance reports, among other things that are required from time to time, a full description of the efforts being made to comply with Paragraphs II through V of the Order, including a description of all substantive contacts or negotiations relating to the divestiture and approval, and the identities of all parties contacted. Respondents shall include in their compliance reports copies, other than of privileged materials, of all written communications to and from such parties, all internal memoranda, and all reports and recommendations concerning the divestiture and approval. The final compliance report required by this Paragraph VII shall include a statement that the divestiture has been accomplished in the manner approved by the Commission and shall include the date the divestiture was accomplished.

VIII.

IT IS FURTHER ORDERED that Respondents shall notify the Commission at least thirty (30) days prior to any proposed (1) dissolution of the Respondents, (2) acquisition, merger or

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consolidation of Respondents, or (3) any other change in the Respondents that may affect compliance obligations arising out of this Order, including but not limited to assignment, the creation or dissolution of subsidiaries, or any other change in Respondents.

IX.

IT IS FURTHER ORDERED that, for the purpose of determining or securing compliance with this Order, and subject to any legally recognized privilege, and upon written request with reasonable notice to Respondents, with respect to any matter contained in this Order, Respondents shall permit any duly authorized representative of the Commission:

- A. Access, during office hours and in the presence of counsel, to all facilities and access to inspect and copy all non-privileged books, ledgers, accounts, correspondence, memoranda and other records and documents in the possession or under the control of Respondents; and
- B. Upon five (5) days' notice to Respondents and without restraint or interference from them, to interview officers, directors, or employees of Respondents, who may have counsel present.

X.

IT IS FURTHER ORDERED that this Order shall terminate on December 29, 2016.

By the Commission.

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APPENDIX A

SCI Businesses As To Which Assets Are To Be Divested

Relevant Market	FH/CE	Name	Property Address
Abilene, TX	FH	Elmwood Funeral Home	5750 U.S. Highway 277S Abilene, TX
Abilene, TX	CE	Elmwood Memorial Park	5750 U.S. Highway 277S Abilene, TX
Alhambra, CA	FH	Universal Chung Wah Funeral Directors	225 North Garfield Avenue Alhambra, CA
Cartersville, GA	FH	Parnick Jennings Funeral Home & Cremation Services	430 Cassville Road Cartersville, GA
Fort Myers, FL	FH	Fort Myers Memorial Gardens Funeral Home	1589 Colonial Blvd. Fort Myers, FL
Fort Myers, FL	CE	Fort Myers Memorial Gardens	1589 Colonial Blvd. Fort Myers, FL
Gonzales, LA	FH	Welsh Funeral Home	426 W. New River St. Gonzalez, LA
Greensboro, NC	FH	Lambeth Troxler Funeral Home	300 W Wendover Avenue Greensboro, NC

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Relevant Market	FH/CE	Name	Property Address
Lansing, MI	FH	Estes-Leadley Holt/Delhi Chapel	2121 Cedar Street Holt, MI
Lansing, MI	FH	Estes-Leadley Greater Lansing Chapel	325 W Washtenaw Street Lansing, MI
Macon, GA	CE	Glen Haven Memorial Gardens	7070 Houston Road Macon, GA
Merced, CA	FH	Ivers & Alcorn Funeral Home	901 W. Main St. Merced, CA
Merced, CA	FH	Ivers & Alcorn Funeral Home	3050 Winton Way Atwater, CA
Meridian, MS	FH	James F. Webb Funeral Home	2514 7 th Street Meridian, MS
Newton, MS	FH	James F. Webb Funeral Home	100 Old Highway 15 Loop Newton, MS
Odessa, TX	FH	Sunset Memorial Funeral Home	6801 E. Highway 80 Odessa, TX

Decision and Order

APPENDIX B

Alderwoods Businesses As To Which Assets Are To Be Divested

Relevant Market	FH/CE	Name	Property Address
Baton Rouge, LA	FH	Resthaven Gardens of Memory	11817 Jefferson Hwy Baton Rouge, LA
Baton Rouge, LA	CE	Resthaven Gardens of Memory	11817 Jefferson Hwy Baton Rouge, LA
Bradenton and Palmetto, FL	CE	Skyway Memorial Gardens	5200 US Highway 19 Palmetto, FL
Broward County, FL	FH	Levitt-Weinstein Memorial Chapel	3201 NW 72 nd Avenue Hollywood, FL
Broward County, FL	FH	Levitt-Weinstein Memorial Chapel	8135 W McNab Road Tamarac, FL
Broward County, FL	FH	Levitt-Weinstein Memorial Chapel	1921 Pembroke Road Hollywood, FL
Broward County, FL	FH	Levitt-Weinstein Memorial Chapel	7500 North State Road 7 Coconut Creek, FL
Broward County, FL	CE	Beth David Memorial Gardens & Chapel	3201 NW 72 nd Avenue Hollywood, FL
Brownsville, TX	FH	Trevino Funeral Home	1355 Old Port Isabel Road Brownsville, TX
Brownsville, TX	FH	Darling-Mouser Funeral Home	945 Palm Blvd. Brownsville, TX
Charlotte, NC	FH	Hankins & Whittington - Dilworth Chapel	1111 East Blvd. Charlotte, NC
Hanford, CA	FH	Whitehurst-	100 W. Bush St.

Decision and Order

Relevant Market	FH/CE	Name	Property Address
		McNamara Funeral Service	Hanford, CA
Columbia and Lexington, SC	CE	Bush River Memorial Gardens	5400 Bush River Road Columbia, SC
Columbia and Lexington, SC	CE	Elmwood Cemetery	501 Elmwood Avenue Columbia, SC
Columbia and Lexington, SC	CE	Southland Memorial Gardens	700 W Dunbar Road West Columbia, SC
Conroe, TX	CE	Conroe Memorial Park	1600 Porter Road Conroe, TX
Killeen, TX	FH	Harper-Talasek Funeral Home	506 N. 38 th Street Killeen, TX
Lexington/West Columbia, SC	FH	Caughman-Harman Funeral Home	5400 Bush River Road Columbia, SC
Lexington/West Columbia, SC	FH	Caughman-Harman Funeral Home	820 West Dunbar Road West Columbia, SC
Lynchburg, VA	FH	Diuguid Funeral Service	811 Wiggington Road Lynchburg, VA
Lynchburg, VA	FH	Diuguid Waterlick Chapel	21914 Timberlake Road Lynchburg, VA
Manassas, VA	FH	Lee Funeral Home	8521 Sudley Road Manassas, VA
Memphis, TN	FH	Memorial Park Funeral Home	5668 Poplar Avenue Memphis, TN
Memphis, TN	CE	Memorial Park, Inc.	5668 Poplar Avenue Memphis, TN
Miami-Dade	FH	Blasberg-Rubin-	720 71 st Street

Decision and Order

Relevant Market	FH/CE	Name	Property Address
County, FL		Zilbert Funeral Chapel	Miami Beach, FL
Miami-Dade County, FL	FH	Eternal Light Funeral Directors, Inc.	17250 West Dixie Hwy North Miami Beach, FL
Miami-Dade County, FL	FH	Levitt-Weinstein Memorial Chapels	18840 West Dixie Hwy North Miami Beach, FL
Miami-Dade County, FL	CE	Graceland Memorial Park North	4420 SW 8 th Street Miami, FL
Miami-Dade County, FL	CE	Graceland South Memorial Park	13900 SW 117 th Ave. Miami, FL
Nashville, TN	CE	Spring Hill Funeral Home & Cemetery	5110 Gallatin Pike Nashville, TN
Port Orange, FL	FH	Cardwell & Maloney Funeral Home	3571 S. Ridgewood Ave. Port Orange, FL
Northern Rockland County, NY	FH	T.J. McGowan Sons Funeral Home	71 North Central Highway Garnerville, NY
Northern Rockland County, NY	FH	T.J. McGowan Sons Funeral Home	133 Broadway Haverstraw, NY
Seguin, TX	FH	Palmer Mortuary, Inc.	1116 N. Austin St. Seguin, TX
Tulare, CA	FH	Miller's Tulare Funeral Home	151 North H Street Tulare, CA
Southern Ventura County, CA	FH	Conejo Mountain Funeral Home & Memorial Park	2052 Howard Road Camarillo, CA

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Relevant Market	FH/CE	Name	Property Address
Ventura County, CA	CE	Conejo Mountain Funeral Home & Memorial Park	2052 Howard Road Camarillo, CA
Yakima, WA	FH	Shaw & Sons Funeral Directors, Inc.	201 N. 2 nd Street Yakima, WA
Yuma, AZ	FH	Yuma Mortuary & Crematory	551 West 16 th Street Yuma, AZ

APPENDIX C

Dignity Affiliates

Relevant Market	Funeral Home	Property Address
Anchorage, AK	Kehl's Forest Lawn Mortuary	11621 Old Seward Highway Anchorage, AK
Anchorage, AK	Witzleben Family Funeral Home	1707 S. Bragaw St. Anchorage, AK
Hobbs, NM	Chapel of Hope	3321 N. Dal Paso Street Hobbs, NM
Klamath Falls, OR	Eternal Hills Funeral Home	4711 Highway 39 Klamath Falls, OR
Mansfield, OH	Wappner Funeral Home	98 South Diamond St.

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		Mansfield, OH
Mansfield, OH	Wappner Funeral Home	100 S. Lexington Springmill Rd. Mansfield, OH
Pascagoula, MS	O'Bryant-O'Keefe Funeral Home	4811 Telephone Road Pascagoula, MS
Pascagoula, MS	O'Bryant-O'Keefe Gautier Funeral Home	3290 Ladnier Road Gautier, MS
Williamsburg, VA	Nelsen Funeral Home	3785 Strawberry Plains Road Williamsburg, VA

APPENDIX DAlderwoods Businesses As To Which Assets
May Be Divested Pursuant to Paragraph III.A.

Relevant Market	Funeral Home	Property Address
Anchorage, AK	Evergreen Memorial Chapel	737 E Street Anchorage, AK
Anchorage, AK	Alaska Cremation Center	3804 Spenard Road Anchorage, AK
Anchorage, AK	Evergreen's Eagle River Funeral Home	11046 Chugiak Dr. Eagle River, AK
Hobbs, NM	Griffin Funeral Home	401 North Dalmont Hobbs, NM
Klamath Falls, OR	O'Hair & Riggs Funeral Chapel	515 Pine Street Klamath Falls, OR
Mansfield, OH	Finefrock-Williams Funeral	350 Marion Ave.

Decision and Order

Relevant Market	Funeral Home	Property Address
	Home	Mansfield, OH
Pascagoula, MS	Holder Wells Funeral Home	4007 Main St. Moss Point, MS
Williamsburg, VA	Bucktrout of Williamsburg	4124 Ironbound Rd. Williamsburg, VA

APPENDIX E

Prior Notice - Funeral Homes

Area	Area Definition
Abilene, TX	Within a 10 mile radius of Elmwood Funeral Home, 5701 US Highway 277S, Abilene, TX
Alhambra, CA	Within an 8 mile radius of Rose Hills Mortuary, 205 S. Chapel Ave., Alhambra, CA, except that the prior notice requirement shall include only those facilities that provide the customs and rituals that primarily serve the Chinese community
Anchorage, AK	Within a 15 mile radius of Evergreen Memorial Chapel, 737 E Street, Anchorage, AK
Baton Rouge, LA	Within any zip code that begins with "708" in East Baton Rouge Parish plus zip code 70767
Broward County, FL	Within Broward County plus any part of Palm Beach County south of Latitude 26° 28' 23.8944" N (26.473304N), but including Lorne Funeral Home, 745 N.E. Sixth Street, Delray Beach, Florida, except that the prior notice requirement shall include only those facilities that provide the customs and rituals

Decision and Order

Area	Area Definition
	that primarily serve the Jewish community
Brownsville, TX	Within a 10 mile radius of Buena Vista Funeral Home, 5 McDavitt Blvd., Brownsville, TX
Cartersville, GA	Within an 18 mile radius of Owen Funeral Home, 12 Collins Drive, Cartersville, GA, except that the prior notice Area Definition shall not include Cherokee County
Charlotte, NC	Within Mecklenberg County plus the zip codes 28079 and 28104
Fort Myers, FL	Within a 15 mile radius of Lee Memorial Park Funeral Home, 12777 State Road 82, Fort Myers, FL, except that the prior notice Area Definition shall not extend north of the Caloosahatchee River
Gonzales, LA	Within a 10 mile radius of Ourso Funeral Home, 13533 Airline Hwy, Gonzales, LA
Greensboro, NC	Within Guilford County
Hanford, CA	Within a 10 mile radius of People's Funeral Chapel, 501 N. Douty Street, Hanford, CA
Hobbs, NM	Within a 10 mile radius of Griffin Funeral Home, 401 North Dalmont, Hobbs, NM
Killeen, TX	Within a 10 mile radius of Crawford-Bowers Funeral Home, 1615 S. Fort Hood Drive, Killeen, TX
Klamath Falls, OR	Within a 10 mile radius of O'Hair & Riggs Funeral Chapel, 515 Pine Street, Klamath Falls, OR
Lansing, MI	Within a 17 mile radius of Gorsline Runciman Funeral Home, 900 E. Michigan Ave., Lansing, MI
Lexington/West Columbia, SC	Within a 10 mile radius of Woodridge Funeral Home, 138 Corley Mill Rd., Lexington, SC
Lynchburg, VA	Within a 15 mile radius of Whitten Funeral Home,

Decision and Order

Area	Area Definition
	1336 Park Ave., Lynchburg, VA
Manassas, VA	Within a 10 mile radius of Lee Funeral Home, 8521 Sudley Road, Manassas, VA
Mansfield, OH	Within a 10 mile radius of Finefrock-Williams Funeral Home, 350 Marion Ave, Mansfield, OH
Memphis, TN	Within a 15 mile radius of Family Funeral Care, 4925 Summer Ave., Memphis, TN
Merced, CA	Within a 10 mile radius of Stratford Evans Merced Funeral Home, 1490 B Street, Merced, CA
Meridian, MS	Within a 10 mile radius of Stephens Funeral Home, 2800 Old North Hills St., Meridian, MS
Miami-Dade County, FL	Within Miami-Dade County, except that the prior notice requirement shall include only those facilities that provide the customs and rituals that primarily serve the Jewish community
Newton, MS	Within a 10 mile radius of James F. Webb Funeral Home, 100 Old Highway 15 Loop, Newton, MS
Odessa, TX	Within a 10 mile radius of Odessa Funeral Home Angeles Memorial Chapel, 1700 N. Jackson Avenue, Odessa, TX
Pascagoula, MS	Within a 10 mile radius of Holder Wells Funeral Home, 4007 Main Street, Moss Point, MS
Port Orange, FL	Within a 10 mile radius of Volusia Memorial Funeral Home, 4815 S. Clyde Morris Blvd., Port Orange, FL
Northern Rockland County, NY	Within a 10 mile radius of Michael J. Higgins Funeral Service, 73 North Liberty Drive, Stony Point, NY, except that the prior notice Area Definition shall not extend outside Rockland County
Seguin, TX	Within a 14 mile radius of Goetz Funeral Home, 713 N. Austin Street, Seguin, TX

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Area	Area Definition
Tulare, CA	Within a 10 mile radius of Goble-Miller Funeral Chapel, 144 S. L Street, Tulare, CA
Southern Ventura County, CA	Within a 20 mile radius of 1075 Daily Drive, Camarillo, CA
Williamsburg, VA	Within an 10 mile radius of Bucktrout of Williamsburg, 4124 Ironbound Road, Williamsburg, VA
Yakima, WA	Within a 10 mile radius of Langevin-Musser Funeral Home, 1010 W. Yakima Ave., Yakima, WA
Yuma, AZ	Within a 15 mile radius of Johnson Mortuary Desert Lawn, 1415 S. 1 st Ave., Yuma, AZ

Prior Notice - Cemeteries

Area	Area Definition
Abilene, TX	Within a 10 mile radius of Elliott-Hamil Garden of Memory, 5701 US Highway 277S, Abilene, TX
Baton Rouge, LA	Within a 10 mile radius of Greenoaks Memorial Park, 9595 Florida Blvd., Baton Rouge, LA
Bradenton and Palmetto, FL	Within a 10 mile radius of Mansion Memorial Park, 1400 36 th Ave E, Ellenton, FL
Broward County, FL	Within Broward County plus any part of Palm Beach County south of Latitude 26° 28' 23.8944" N (26.473304N), but in any event including Lorne Funeral Home, 745 N.E. Sixth Street, Delray Beach, FL, except that the prior notice requirement shall include only those facilities that provide the customs and rituals that primarily serve the Jewish community
Columbia/Lexington, SC	Within a 20 mile radius of Elmwood Cemetery, 501 Elmwood Ave., Columbia, SC

Decision and Order

Area	Area Definition
Conroe, TX	Within a 25 mile radius of Garden Park, 801 Teas Rd., Conroe, TX
Fort Myers, FL	Within Lee County
Macon, GA	Within a 20 mile radius of 826 Eisenhower Parkway, Macon, GA
Memphis, TN	Within a 20 mile radius of Memphis Memory Gardens, 6444 Raleigh Lagrange Rd., Memphis, TN, except that the prior notice Area Definition shall not extend outside of Shelby County, but shall include the zip codes 38637, 38654, 38671, 38672, 38680
Miami-Dade County, FL	Miami-Dade County plus any part of Broward County south of Latitude 26° 1' 21.9612" N (26.022767N), but including Beth David Memorial Gardens, 3201 NW 72 nd Ave., Hollywood, FL
Nashville, TN	Within a 20 mile radius of City Cemetery, 1001 4 th Ave S, Nashville, TN, except that the prior notice Area Definition shall exclude Williamson County
Ventura County, CA	Within a 25 mile radius of Conejo Mountain Funeral Home & Memorial Park, 2052 Howard Rd., Camarillo, CA

Analysis to Aid Public Comment

ANALYSIS OF CONSENT ORDERS TO AID PUBLIC COMMENT

I. Introduction

The Federal Trade Commission (“Commission”) has accepted for public comment, subject to final approval, an Agreement Containing Consent Orders (“Consent Agreement”) from Service Corporation International (“SCI”) and Alderwoods Group, Inc. (“Alderwoods”), formerly known as The Loewen Group, Inc. (“Loewen”).¹ The purpose of the Consent Agreement is to remedy the anticompetitive effects that would be likely to result from SCI’s purchase of Alderwoods, as alleged in the Complaint the Commission issued with the Consent Agreement. The Consent Agreement has been placed on the public record for thirty (30) days for the receipt of comments from the public. Comments received during this period will become part of the public record. After the thirty (30) day comment period, the Commission will consider the Consent Agreement and the comments received, and will decide whether to withdraw from the Consent Agreement or make it final.

The Consent Agreement provides for relief in 47 local markets in which the Commission in its Complaint alleged the proposed acquisition is anticompetitive. Under the terms of the Consent Agreement, SCI must divest 40 funeral home facilities in 29 local markets and 15 cemetery properties in 12 local markets across the United States. In each of six additional funeral service markets, the Consent Agreement gives SCI the option of either divesting the Alderwoods funeral home(s) it will be acquiring or terminating its licensing agreement with the third-party funeral homes that are providing funeral services in the markets under SCI’s Dignity Memorial trademark. In these Dignity Affiliate markets, until the divestitures required by the Consent Agreement,

¹ In mid 1999, Loewen, a Canadian corporation, filed for Chapter 11 bankruptcy protection. It emerged in early 2001 as a Delaware corporation under the Alderwoods name.

Analysis to Aid Public Comment

SCI must cease and desist from suggesting prices to those third-party Dignity Affiliates.

The Commission, SCI, and Alderwoods have also agreed to an Order to Hold Separate and Maintain Assets. This order requires SCI and Alderwoods to hold separate and maintain all of the Alderwoods assets in the markets where divestitures are required, pending the required divestitures. To ensure that the Alderwoods assets are properly held separate and maintained, the Commission has appointed William E. Rowe to act as monitor trustee. The eventual acquirers of the assets required to be divested and the manner of their divestiture must receive the prior approval of the Commission. The order also requires SCI to provide the Commission with regular compliance reports demonstrating how it is complying with the terms of the Consent Agreement, until it is in full compliance with that Agreement.

On April 2, 2006, SCI and Alderwoods agreed to SCI's proposed acquisition of Alderwoods for \$1.23 billion (a figure that includes the assumption of debt by SCI). The Commission's Complaint alleges that the proposed acquisition, if consummated, would violate Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45, by lessening competition in connection with the provision of funeral services (and associated products) or cemetery services (and associated products and property) in many of the local markets in which SCI and Alderwoods compete.²

² The Complaint identifies the market share of the parties, concentration levels in each market, and whether the principal anticompetitive concern is the increased likelihood of coordinated interaction among remaining competitors in the market or the exercise by SCI of unilateral market power, or both. The Complaint also alleges that new entry is not likely, or is likely to be insufficient in magnitude to constrain anticompetitive behavior in each of the markets of concern.

Analysis to Aid Public Comment

The purpose of this analysis is to invite public comment on the Consent Agreement, including the proposed required divestitures, to aid the Commission in its determination whether to make final the Consent Agreement. This analysis is not an official interpretation of the Consent Agreement nor does it modify any of its terms.

II. The Parties and the Transaction

SCI is a corporation organized, existing, and doing business under and by virtue of the laws of the State of Texas, with its office and principal place of business located at 1929 Allen Parkway, Houston, Texas 77019. SCI had sales in 2005 of \$1.7 billion. SCI is the nation's largest chain of funeral homes and cemeteries, with about 10% of all related United States revenues.

Alderwoods is a corporation organized, existing, and doing business under and by virtue of the laws of the State of Delaware, with its office and principal place of business located at 311 Elm Street, Suite 1000, Cincinnati, Ohio 45202. Alderwoods had sales in 2005 of approximately \$740 million. Alderwoods is the nation's second largest funeral home and cemetery chain, with about 5% of all related United States revenues.

The proposed acquisition is the largest deal of its kind to date in the funeral home and cemetery industry. After the acquisition, SCI will have about 15% of all United States funeral and cemetery service revenues. The Complaint alleges that the proposed acquisition would be anticompetitive in 35 highly concentrated local funeral service markets and 12 highly concentrated cemetery service markets, but not in the nation as a whole. For this reason, the contemplated relief is limited to local markets.

Analysis to Aid Public Comment

III. The Commission's Complaint

A. The Direct Overlap Markets

According to the Commission's Complaint, SCI and Alderwoods compete in the sale of funeral services³ and cemetery services⁴ in over 100 local markets throughout the United States. In highly concentrated local funeral service or cemetery service markets⁵ where SCI and Alderwoods compete, the acquisition will eliminate significant competition between SCI and Alderwoods and, in many of them, substantially increase the likelihood that SCI would be able unilaterally to exercise market power. In many

³ Funeral services include some or all of the following: family consultation, collection of the deceased and transportation from the place of death to the funeral home, registration of death, embalming and other preparations, sale of a casket, flowers, catering, and other merchandise, use of funeral home facilities by hosting a viewing and ceremony, transportation to a place of worship, conveying the deceased to the cemetery or crematorium, and advance planning.

⁴ Cemetery services include the traditional products and services offered by perpetual care cemeteries, including burial spaces, opening and closing of graves, memorials and burial vaults, mausoleum spaces, cemetery maintenance and upkeep, and advance planning.

⁵ In calculating market shares, the Commission relied on the number of "calls" (funerals or internments) of each competitor (rather than dollar revenues) because this information was available for all firms in the markets under investigation. For purposes of determining market share as well as calculating market concentration based on the Herfindahl-Hirschman Index ("HHI"), the Commission included all market participants that competed with the funeral homes or cemeteries in the market. In addition, the Commission examined the transaction's competitive effects in each market of concern. As part of this assessment, the Commission excluded fringe competitors (participants that did not act as a competitive constraint in the market), *e.g.*, small firms with less than three percent of the market or facilities that primarily offered direct disposals or direct cremations without attendant services, as well as storefront funeral homes to the extent that they did not act as a constraint on incumbents

Analysis to Aid Public Comment

other highly concentrated local funeral service or cemetery service markets where SCI and Alderwoods compete, the acquisition will increase substantially the likelihood that remaining firms in the market will be able to exercise market power through coordinated group behavior.⁶ In some markets, the Commission was concerned with both future coordinated interaction and the future exercise of unilateral market power.

1. The Two Ways to Exercise Unilateral Market Power

The Complaint alleges that the acquisition increases the likelihood of SCI unilaterally exercising market power in 19 funeral service markets and nine cemetery service markets. In these markets, SCI is more likely to be able to increase its prices or decrease its services notwithstanding actions taken by other firms already in the market or who may be considering entry. This market power may be exercised in one of two ways. First, in about half of the markets, SCI's post-acquisition market share will approach 100%, and SCI will be in a position to exercise unilateral market power because it will face no real competition. This market power may be exercised by increasing prices or decreasing services. Second, in other markets, SCI will have a significant, but not a monopoly or near monopoly, post-acquisition market share and will also own or control facilities that are the first and second choices for a substantial number of consumers. In these markets, SCI and Alderwoods are now the first and second choices for a substantial number of consumers for several reasons, including: (i) they are the leading providers for certain religious or ethnic groups, including the Jewish or Chinese-American communities; (ii) the proximity of the SCI and Alderwoods facilities makes them the first and second choices for many consumers; or (iii) they are the first and second choice providers of high-end funeral services, which are generally not

⁶ Market power is the ability of a firm, or group of firms, profitably to reduce output and raise prices above competitive levels or otherwise achieve anticompetitive effects such as by decreasing the quality or level of services.

Analysis to Aid Public Comment

available at the facilities of nearby competitors. In these markets, SCI's ability to exercise unilateral market power post-acquisition will increase because it will be able to obtain the profit from the combined benefits of (a) the increase in price (or decrease in services) at the facilities of first choice for consumers and (b) the increase in business moving from the facilities of first choice for consumers to their second choices.

The Commission alleges that the proposed acquisition would substantially increase concentration, and give SCI a monopoly or near monopoly market share, in 10 funeral service markets (Cartersville, Georgia; Hanford, California; Meridian, Mississippi; Newton, Mississippi; Alhambra, California; Broward County, Florida; Miami-Dade County, Florida; Yuma, Arizona; Yakima, Washington; and Gonzales, Louisiana) and five cemetery service markets (Bradenton/Palmetto, Florida; Broward County, Florida; Fort Myers, Florida; Abilene, Texas; and Baton Rouge, Louisiana). The Commission also alleges that unilateral effects are likely in nine additional funeral service markets (Odessa, Texas; Northern Rockland County, New York; Greensboro, North Carolina; Charlotte, North Carolina; Merced, California; Memphis, Tennessee; Abilene, Texas; Southern Ventura County, California; and Port Orange, Florida) and four additional cemetery service markets (Conroe, Texas; Miami-Dade County, Florida; Ventura County, California; and Macon, Georgia) where, post-merger, SCI will own or operate facilities that are the first and second choices for a substantial number of consumers, and will be in a position profitably to raise price at one of these facilities.

2. The Exercise of Market Power Through Coordinated Interaction

The Complaint alleges that the acquisition increases the likelihood of SCI exercising market power through coordinated interaction in 15 highly concentrated funeral service markets (Seguin, Texas; Odessa, Texas; Tulare, California; Northern Rockland County, New York; Manassas, Virginia; Baton Rouge,

Analysis to Aid Public Comment

Louisiana; Greensboro, North Carolina; Lansing, Michigan; Abilene, Texas; Killeen, Texas; Merced, California; Lynchburg, Virginia; Lexington/West Columbia, South Carolina; Brownsville, Texas; and, Fort Myers, Florida) and four highly concentrated cemetery service markets (Columbia/Lexington, South Carolina; Nashville, Tennessee; Memphis, Tennessee; and Miami-Dade County, Florida). These increased opportunities for successful coordinated interaction will be due to: (a) an increased ease of agreement upon terms of coordination, (b) the availability of opportunities to monitor compliance with those terms of agreement, and (c) the ability of the firms in the market to control or punish firms that deviate from their terms of agreement.

B. The Dignity Affiliate Markets

The Complaint alleges that in six funeral service markets in which Alderwoods is present, but in which SCI does not own or operate a facility, SCI nevertheless has a competitive presence through a licensing arrangement with third-party funeral service providers, which it refers to as Dignity Affiliates. SCI has authorized third parties to sell SCI trademarked Dignity Memorial funeral services. The Dignity Affiliates were competitors of Alderwoods, but not SCI, prior to the proposed acquisition. After SCI acquires Alderwoods, competition between the Alderwoods facility (which would be owned by SCI post-acquisition) and the Dignity Affiliate is likely to be reduced because it is likely that these firms will cooperate on pricing. Such cooperation on pricing would increase the likelihood that firms in these six markets⁷ would exercise market power through coordinated interaction.⁸

⁷ The six markets are identified in Table B, *infra*.

⁸ The Complaint and Consent Agreement do not address SCI's licensing arrangements with third-party Dignity Affiliates except in the six highly concentrated markets.

Analysis to Aid Public Comment

C. “Customs-Conscious” Consumers Sometimes Create Narrow Antitrust Product Markets

The Complaint alleges that in some local markets, some funeral homes or cemeteries cater to specific populations by focusing upon the customs and rituals associated with one or more religious, ethnic, or cultural heritage groups. In some of the local markets addressed in the proposed Consent Agreement, this market segmentation exists in connection with Jewish, Chinese-American, or African-American populations.

Because of the preferences of “customs-conscious” consumers, in some local markets, the alleged product market is limited to facilities that provide the customs and rituals for a specific population. In some other local markets, the alleged product market is limited to facilities that serve the general population but do not provide the customs and rituals that “customs-conscious” consumers require. The determination whether a product market was narrower than all facilities that provided funeral or cemetery services was made on a market-by-market basis. However, if other facilities in that market served both the “customs-conscious” population as well as a broader population, facilities that performed the customs and rituals associated exclusively with respect to a specific population were included in the overall market definition.

D. Entry Conditions

The Complaint alleges that entry would not be timely, likely or sufficient to prevent anticompetitive effects in the specific markets at issue. With regard to these cemetery service markets, entry would be difficult because of the limited availability of land, zoning regulations and other statutory restrictions, and high sunk costs, as well as the lead time necessary to develop a customer base. As concerns entry into the funeral service markets at issue, new entry, if it occurs, is unlikely to prove sufficient to prevent a significant price increase for “traditional” funeral home services

Analysis to Aid Public Comment

of the type offered by most of the parties' homes. If a new traditional funeral home were to enter, it is unlikely that it would make sufficient sales within two years to constrain anticompetitive behavior. Moreover, if "no frills" funeral homes were to enter, it is unlikely that the services that they would offer would be sufficiently close substitutes for traditional funeral home services to prevent a price increase for the latter.

IV. The Consent Agreement

The Commission believes that the Consent Agreement, if made final, would fully restore competition and maintain the competitive status quo ante in the local markets that would have been adversely impacted by the proposed acquisition.

A. The Direct Overlap Markets

In 29 local funeral service markets and 12 local cemetery service markets, the Consent Agreement provides for divestitures of specific properties. The following Table A lists each of the local markets in which the Complaint alleges that the proposed acquisition would be competitively problematic, separately for funeral services and cemetery services. Table A also lists the specific SCI or Alderwoods funeral home facilities that SCI will be required to divest under the Consent Agreement.

Table A

1. Funeral Service Markets and the Required Divestitures

Market Area	Properties Required To Be Divested
1. Abilene, Texas	Elmwood Funeral Home, 5750 US Highway 277 South, Abilene, Texas (an SCI property)
2. Alhambra, California	Universal Chung Wah Funeral Directors, 225 North Garfield Avenue, Alhambra, California (an SCI property)

Analysis to Aid Public Comment

3. Baton Rouge, Louisiana	Resthaven Gardens of Memory Funeral Home, 11817 Jefferson Highway, Baton Rouge, Louisiana (an Alderwoods property)
4. Brownsville, Texas	1. Trevino Funeral Home, 1355 Old Port Isabel Road, Brownsville, Texas (an Alderwoods property); and 2. Darling-Mouser Funeral Home, 945 Palm Boulevard, Brownsville, Texas (an Alderwoods property)
5. Broward County, Florida	1. Levitt-Weinstein Memorial Chapel, 3201 N.W. 72 nd Avenue, Hollywood, Florida (an Alderwoods property); 2. Levitt-Weinstein Memorial Chapel, 8135 West McNab Road, Tamarac, Florida (an Alderwoods property); 3. Levitt-Weinstein Memorial Chapel, 1921 Pembroke Road, Hollywood, Florida (an Alderwoods property); and 4. Levitt-Weinstein Memorial Chapel, 7500 North State Road 7, Coconut Creek, Florida (an Alderwoods property)
6. Cartersville, Georgia	Parnick Jennings Funeral Home & Cremation Services, 430 Cassville Road, Cartersville, Georgia (an SCI property)
7. Charlotte, North Carolina	Hankins & Whittington - Dilworth Chapel, 1111 East Boulevard, Charlotte, North Carolina (an Alderwoods property) ⁹
8. Fort Myers, Florida	Fort Myers Memorial Gardens Funeral Home, 1589 Colonial Boulevard, Fort Myers, Florida (an SCI property)
9. Gonzales, Louisiana	Welsh Funeral Home, 426 West New River Street, Gonzales, Louisiana (an SCI property) ¹⁰

⁹ SCI will retain funeral home assets with the “Hankins & Whittington” name in this market, but, under the terms of the Decision and Order, is permitted to use this name only for a period limited to twelve months.

¹⁰ SCI will retain funeral homes with the “Welsh” name in this geographic market, and thus the proposed Decision and Order includes a

Analysis to Aid Public Comment

10. Greensboro, North Carolina	Lambeth Troxler Funeral Home, 300 West Wendover Avenue, Greensboro, North Carolina (an SCI property)
11. Hanford, California	Whitehurst-McNamara Funeral Service, 100 West Bush Street, Hanford, California (an Alderwoods property)
12. Killeen, Texas	Harper-Talasek Funeral Home, 506 North 38 th Street, Killeen, Texas (an Alderwoods property)
13. Lansing, Michigan	1. Estes-Leadley Greater Lansing Chapel, 325 West Washtenaw Street, Lansing, Michigan (an SCI property); and 2. Estes-Leadley Holt/Delhi Chapel, 2121 Cedar Street, Holt, Michigan (an SCI property)
14. Lexington/West Columbia, South Carolina	1. Caughman-Harman Funeral Home, 820 West Dunbar Road, West Columbia, South Carolina (an Alderwoods property); and 2. Caughman-Harman Funeral Home, 5400 Bush River Road, Columbia, South Carolina (an Alderwoods property) ¹¹
15. Lynchburg, Virginia	1. Diuguid Waterlick Chapel, 21914 Timberlake Road, Lynchburg, Virginia (an Alderwoods property); and 2. Diuguid Funeral Service, 811 Wiggington Road, Lynchburg, Virginia (an Alderwoods property)
16. Manassas, Virginia	Lee Funeral Home, 8521 Sudley Road, Manassas, Virginia (an Alderwoods property)
17. Memphis, Tennessee	Memorial Park Funeral Home, 5668 Poplar Avenue, Memphis, Tennessee (an Alderwoods property)
18. Merced, California	1. Ivers & Alcorn Funeral Home, 901 West Main Street, Merced, California (an SCI property); and

provision that limits the acquirer's use of this name for the divested business to a period of twelve months.

¹¹ SCI will retain funeral homes with the "Caughman-Harman" name in this geographic market, and thus the proposed Decision and Order includes a provision that limits the acquirer's use of this name to a period of twelve months.

Analysis to Aid Public Comment

	2. Ivers & Alcorn Funeral Home, 3050 Winton Way, Atwater, California (an SCI property)
19. Meridian, Mississippi	James F. Webb Funeral Home, 2514 7 th Street, Meridian, Mississippi (an SCI property)
20. Miami-Dade County, Florida	1. Eternal Light Funeral Directors Inc., 17250 West Dixie Highway, North Miami Beach, Florida (an Alderwoods property); 2. Blasberg-Rubin-Zilbert Funeral Chapel, 720 71st Street, Miami Beach, Florida (an Alderwoods property); and 3. Levitt-Weinstein Memorial Chapels, 18840 West Dixie Highway, North Miami Beach, Florida (an Alderwoods property) ¹²
21. Newton, Mississippi	James F. Webb Funeral Home, 100 Old Highway 15 Loop, Newton, Mississippi (an SCI property)
22. Odessa, Texas	Sunset Memorial Funeral Home, 6801 East Highway 80, Odessa, Texas (an SCI property)
23. Port Orange, Florida	Cardwell & Maloney Funeral Home, 3571 South Ridgewood Avenue, Port Orange, Florida (an Alderwoods property)
24. Northern Rockland County, New York	1. T.J. McGowan Sons Funeral Home, 71 North Central Highway, Garnerville, New York (an Alderwoods property); and 2. T.J. McGowan Sons Funeral Home, 133 Broadway, Haverstraw, New York (an Alderwoods property) ¹³
25. Seguin,	Palmer Mortuary Inc., 1116 North Austin Street,

¹² SCI will retain funeral homes assets with the “Levitt-Weinstein Memorial Chapel” name in this market, but, under the terms of the Decision and Order, is permitted to use this name only for a period limited to twelve months.

¹³ SCI will retain funeral homes assets with the “T.J. McGowan” name in this market, but, under the terms of the Decision and Order, is permitted to the ongoing use of this name only for a period limited to twelve months.

Analysis to Aid Public Comment

Texas	Seguin, Texas (an Alderwoods property)
26. Tulare, California	Miller's Tulare Funeral Home, 151 North H Street, Tulare, California (an Alderwoods property)
27. Southern Ventura County, California	Conejo Mountain Funeral Home & Memorial Park, 2052 Howard Road, Camarillo, California (an Alderwoods property)
28. Yakima, Washington	Shaw & Sons Funeral Directors, Inc., 201 North 2 nd Street, Yakima, Washington (an Alderwoods property)
29. Yuma, Arizona	Yuma Mortuary & Crematory, 551 West 16 th Street, Yuma, Arizona (an Alderwoods property)

2. Cemetery Service Markets and the Required Divestitures

Market Area	Properties Required To Be Divested
1. Abilene, Texas	Elmwood Memorial Park, 5750 US Highway 277 South, Abilene, Texas (an SCI property)
2. Baton Rouge, Louisiana	Resthaven Gardens of Memory, 11817 Jefferson Highway, Baton Rouge, Louisiana (an Alderwoods property)
3. Bradenton/Palmetto, Florida	Skyway Memorial Gardens, 5200 US Highway 19, Palmetto, Florida (an Alderwoods property)
4. Broward County, Florida	Beth David Memorial Gardens & Chapel, 3201 N.W. 72 nd Avenue, Hollywood, Florida (an Alderwoods property)
5. Columbia/Lexington, South Carolina	1. Bush River Memorial Gardens, 5400 Bush River Road, Columbia, South Carolina (an Alderwoods property); 2. Elmwood Cemetery, 501 Elmwood Avenue, Columbia, South Carolina (an Alderwoods property); and 3. Southland Memorial Gardens, 700 West Dunbar Road, West Columbia, South Carolina (an Alderwoods property)
6. Conroe, Texas	Conroe Memorial Park, 1600 Porter Road, Conroe,

Analysis to Aid Public Comment

	Texas (an Alderwoods property)
7. Fort Myers, Florida	Fort Myers Memorial Gardens, 1589 Colonial Boulevard, Fort Myers, Florida (an SCI property)
8. Macon, Georgia	Glen Haven Memorial Gardens, 7070 Houston Road, Macon, Georgia (an SCI property)
9. Memphis, Tennessee	Memorial Park Inc., 5668 Poplar Avenue, Memphis, Tennessee (an Alderwoods property)
10. Miami-Dade County, Florida	1. Graceland Memorial Park North, 4420 S.W. 8 th Street, Miami, Florida (an Alderwoods property); and 2. Graceland South Memorial Park, 13900 S.W. 117 th Avenue, Miami, Florida (an Alderwoods property)
11. Nashville, Tennessee	Spring Hill Cemetery, 5110 Gallatin Pike, Nashville, Tennessee (an Alderwoods property)
12. Ventura County, California	Conejo Mountain Funeral Home & Memorial Park, 2052 Howard Road, Camarillo, California (an Alderwoods property)

B. The Dignity Affiliate Markets

In six funeral service markets, the Consent Agreement requires that SCI, at its option, either divest the Alderwoods property being acquired or terminate the SCI licensing relationship with the third-party Dignity Affiliate. The Consent Agreement also requires that until SCI has complied with this requirement in the markets, SCI shall not enter into or enforce any agreement or exchange information with the Dignity Affiliate regarding actual, suggested, or future prices of funeral services.

Table B lists each of the highly concentrated Dignity Affiliate funeral service markets in which the proposed acquisition would create a competitive problem, together with the remedy.

Analysis to Aid Public Comment

Table B**Funeral Service Markets Where Divestiture or Contract Termination is Required****Relief: (a) Properties That May Be Divested or (b) Dignity Affiliate Contracts That May Be Terminated**

Local Market	Be Terminated
1. Anchorage, Alaska	(a) Alderwoods properties that may be divested: Evergreen Memorial Chapel, 737 East Street, Anchorage, Alaska; Alaska Cremation Center, 3804 Spenard Road, Anchorage, Alaska; and Evergreen's Eagle River Funeral Home, 11046 Chugiak Drive, Eagle River, Alaska; or (b) Third-party contracts that may be terminated: Kehl's Forest Lawn Mortuary, 11621 Old Seward Highway, Anchorage, Alaska; and Witzleben Family Funeral Home, 1707 South Bragaw Street, Anchorage, Alaska
2. Hobbs, New Mexico	(a) Alderwoods property that may be divested: Griffin Funeral Home, 401 North Dalmont, Hobbs, New Mexico; or (b) Third-party contracts that may be terminated: Chapel of Hope, 3321 North Dal Paso Street, Hobbs, New Mexico
3. Klamath Falls, Oregon	(a) Alderwoods property that may be divested: O'Hair & Riggs Funeral Chapel, 515 Pine Street, Klamath Falls, Oregon; or (b) Third-party contracts that may be terminated: Eternal Hills Funeral Home, 4711 Highway 39, Klamath Falls, Oregon
4. Mansfield, Ohio	(a) Alderwoods property that may be divested: Finefrock-Williams Funeral Home, 350 Marion Avenue, Mansfield, Ohio; or (b) Third-party contracts that may be terminated: Wappner Funeral Home, 98 South Diamond Street, Mansfield, Ohio; and Wappner Funeral Home, 100 South Lexington Springmill Road, Mansfield, Ohio
5. Pascagoula, Mississippi	(a) Alderwoods properties that may be divested: Holder Wells Funeral Home, 4007 Main Street, Moss

Analysis to Aid Public Comment

	Point, Mississippi; or (b) Third-party contracts that may be terminated: O'Bryant-O'Keefe Funeral Home, 4811 Telephone Road, Pascagoula, Mississippi; and O'Bryant- O'Keefe Gautier Funeral Home, 3290 Ladnier Road, Gautier, Mississippi
6. Williamsburg, Virginia	(a) Alderwoods property that may be divested: Bucktrout of Williamsburg, 4124 Ironbound Road, Williamsburg, Virginia; or (b) Third-party contracts that may be terminated: Nelsen Funeral Home, 3785 Strawberry Plains Road, Williamsburg, Virginia

**INTERLOCUTORY, MODIFYING, VACATING,
AND MISCELLANEOUS ORDERS**

IN THE MATTER OF

KONINKLIJKE Ahold N.V.

Docket No. C-4027 – Order July 21, 2006

Order granting the Petition of Ahold to reopen and modify the Order of January 16, 2002.

ORDER REOPENING AND MODIFYING ORDER

On April 10, 2006, Koninklijke Ahold N.V. (“Ahold”), one of the respondents named in the consent order issued by the Commission on January 16, 2002, in Docket No. C-4027 (“Order”), filed a Petition requesting the Commission to reopen and set aside the Order insofar as it applies to Ahold (“Petition”). Ahold has accomplished the divestitures mandated by the Order and the remaining Order provisions require notice of future acquisitions and filing of annual compliance reports. Ahold’s Petition was filed pursuant to Section 5(b) of the Federal Trade Commission Act, 15 U.S.C. § 45(b), and Section 2.51 of the Commission’s Rules of Practice and Procedure, 16 C.F.R. § 2.51. In its Petition, Ahold asserts that changed circumstances eliminate the continuing need for the Order as it relates to Ahold.¹ Ahold also contends the requested modification is in the public interest.² On April 18, 2006, the Commission placed Ahold’s Petition on the public record and invited the public, for a period of 30 days, to submit comments on the Petition. No comments have been received. The Commission has reviewed the Petition and has determined to grant Ahold’s Petition.

1 Petition at 1-2, 5-6

2 *Id.* at 6-8

Interlocutory Orders, etc.

The Order that Ahold seeks to modify resulted from Ahold's acquisition of Bruno Supermarkets, Inc. ("Bruno") in 2001. The acquisition raised competitive concerns in the retail sale of food and grocery products in supermarkets located in "areas in and near Sandersville, Georgia and Milledgeville, Georgia."³ At the time, Ahold and Bruno's were direct competitors in Sandersville and Milledgeville and the Complaint alleged, among other things, that the acquisition would eliminate direct competition between Ahold and Bruno's in these areas.⁴

To remedy the competitive concerns raised by the acquisition, the Order required Ahold to divest its BI-LO supermarket in Milledgeville, Georgia (located in Baldwin County), and its BI-LO supermarket in Sandersville, Georgia (located in Washington County).⁵ Ahold divested the two supermarkets on December 14, 2001, and December 17, 2001, respectively. The Order's remaining operative provisions prohibit Ahold, for a ten-year period ending on January 21, 2012, from (1) acquiring any supermarket in Baldwin or Washington Counties without providing advance written notice to the Commission; (2) entering into or enforcing any agreement that restricts the ability of any person acquiring any location used as a supermarket to operate a supermarket at that site if the supermarket was formerly owned or operated by Ahold or Bruno's in either Baldwin or Washington Counties; and (3) with certain exceptions, removing any fixtures or equipment from any property owned or leased by Ahold or Bruno's in Baldwin and Washington Counties that no longer operates as a supermarket.⁶ Ahold is also required to file annual reports of its compliance with the Order until 2012, notify the

3 Complaint, Docket No. C-4027, ¶¶ 9-13.

4 *Id.* ¶ 17.

5 Order ¶ II.

6 *Id.* ¶¶ IV and V.

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Commission prior to any corporate changes that may affect compliance obligations arising out of the Order, and permit the Commission access, upon reasonable request, to all records and employees.⁷

Section 5(b) of the Federal Trade Commission Act, 15 U.S.C. § 45(b), provides that the Commission shall reopen an order to consider whether it should be modified if the respondent “makes a satisfactory showing that changed conditions of law or fact” require such modification.⁸ A satisfactory showing sufficient to require reopening is made when a request to reopen identifies significant changes in circumstances and shows that the changes eliminate the need for the order or make continued application of it inequitable or harmful to competition.⁹ The Commission may also modify an order when, although changed circumstances would not require reopening, the Commission determines that the public interest requires such action.¹⁰ Thus, Section 2.51 of the Commission’s Rules of Practice, as amended, invites respondents

7 *Id.* ¶¶ VI, VII and VIII.

8 Section 5(b) provides, in part:

[T]he Commission shall reopen any such order to consider whether such order (including any affirmative relief provision contained in such order) should be altered, modified, or set aside, in whole or in part, if the person, partnership, or corporation involved files a request with the Commission which makes a satisfactory showing that changed conditions of law or fact require such order to be altered, modified, or set aside, in whole or in part.

9 *See* S. Rep. No. 96-500, 96th Cong., 2nd Sess. 9 (1979) (significant changes or changes causing unfair disadvantage); *Louisiana Pacific Corp.*, Docket No. C-2956, Letter to John C. Hart (June 5, 1986), at 4 (unpublished); *see also United States v. Louisiana-Pacific Corp.*, 967 F.2d 1372, 1376-77 (9th Cir. 1992) (“A decision to reopen does not necessarily entail a decision to modify the order. Reopening may occur even where the petition itself does not plead facts requiring modification.”).

10 *See United States v. Louisiana-Pacific Corp.*, 967 F.2d 1372, 1376-77 (9th Cir. 1992).

Interlocutory Orders, etc.

in petitions to reopen to show how the public interest warrants the modification. In the case of a request for modification based on public interest grounds, a petitioner must make a *prima facie* “satisfactory showing” of a legitimate public interest reason or other reasons justifying the requested modification.¹¹ In this instance, however, we do not need to assess the sufficiency of Ahold’s public interest showing because Ahold has made the requisite satisfactory showing that changed conditions of fact require the Order to be reopened and set aside as to Ahold.

The record shows that on January 31, 2005, Ahold sold all of its interests in BI-LO Holding, LLC, to Lone Star U. S. Acquisitions, LLC (“Lone Star”). As a result, Ahold no longer owns or operates supermarkets in Baldwin and Washington Counties, Georgia, the relevant areas that are the subject of the Order’s remaining operative provisions.¹² The record also shows that Lone Star has acknowledged and agreed that it would continue to comply with the obligations of the Order as Ahold’s successor to those requirements.¹³ Further, Ahold has stated that it has no present intention to re-enter Baldwin County or Washington County.¹⁴

11 See Requests to Reopen, Supplementary Information, 65 Fed. Reg. 50,636, 50,637 (Aug. 21, 2001) *amending* 16 C.F.R. § 2.51(b).

12 Order ¶¶ IV- VIII.

13 Petition at 6 and Exhibit 10. See also Ahold’s Compliance Report (January 13, 2006).

14 *Id.* at 4-5 and Non-Public Exhibit 2 and Appendix I: Affidavit of Brian W. Hotarek, Executive Vice President of Ahold U.S.A. , Inc., In Support Of Petition To Reopen And Modify Decision And Order (April 4, 2006), and Affidavit of Thomas A. Hippler, Executive Vice President and General Counsel of Ahold U.S.A., Inc., In Support Of Petition To Reopen And Modify Decision And Order (June 8, 2006).

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Ahold's exit from the relevant markets eliminates the continuing need for the Order's remaining requirements to apply to Ahold and thus is a sufficient changed circumstance to support setting aside the Order as to Ahold.¹⁵ Setting aside Paragraph IV. of the Order (the prior notification provision) as to Ahold is also consistent with the *Statement of the Federal Trade Commission Policy Concerning Prior Approval and Prior Notice Provisions* issued June 21, 1995 ("Prior Approval Policy Statement").¹⁶ There is no evidence that a prior notification provision is needed as to Ahold as Ahold and its related entities do not own any interest in any supermarket operation in the relevant markets identified in the Order. Although Ahold remains in the supermarket business in areas that are not addressed by the Order, an acquisition by Ahold of any competitively significant supermarket operation in the relevant markets likely would be reportable under the Hart-Scott-Rodino Act, 15 U.S.C. 18a.¹⁷

¹⁵ See *Entergy Corporation, et al.*, Docket No. C-3998, Order Reopening and Setting Aside Order (July 1, 2005) ("the factual premise underlying the concerns that led to entry of the Order, . . . arose specifically from the acquisition of Entergy's ownership interest in Gulf South The sale of Gulf South constitutes a substantial change that eliminates the continuing need for the Order's requirements); see also *Union Carbide Corporation* 108 F.T.C. 184 (1986) (order modified because respondent had clearly exited a business covered by the order and had demonstrated it had no intention of re-entering the business).

¹⁶ 60 Fed. Reg. 39,745-47 (August 3, 1995); 4 Trade Reg. Rep. (CCH) ¶ 13,241, at 20,991 (June 21, 1995).

¹⁷ In its Prior Approval Policy Statement, the Commission states that it will "henceforth rely on the HSR process as its principal means of learning about and reviewing mergers by companies as to which the Commission had previously found a reason to believe that the companies had engaged or attempted to engage in an illegal merger. . . [and that as a general matter] Commission orders in such cases will not include prior approval or prior notification requirements." *Id.* at 2. See *KKR Associates, L.P.*, 120 F.T.C. 879 (October 31, 1995) (setting aside order containing prior approval provision pursuant to Prior Approval Policy Statement).

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Accordingly, **IT IS ORDERED** that this matter be, and it hereby is, reopened; and that the Commission's Order issued on January 16, 2002 be, and it hereby is, set aside as to respondent Ahold as of the effective date of this Order, but will continue in effect with respect to Ahold's successor, Lone Star U. S. Acquisitions, LLC.

By the Commission.

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IN THE MATTER OF

RAMBUS INCORPORATED

Docket No. 9302 – Order: July 31, 2006

**ORDER REVERSING AND VACATING INITIAL
DECISION AND ACCOMPANYING ORDER,
SCHEDULING SUPPLEMENTAL BRIEFING ON ISSUES
OF REMEDY, AND DENYING COMPLAINT COUNSEL’S
MOTION FOR SANCTIONS**

This matter having been heard by the Commission upon the appeal of Counsel Supporting the Complaint and the cross-appeal of Respondent, and upon the respective briefs and oral arguments in support of such positions, and the Commission having determined that Respondent has violated Section 5 of the Federal Trade Commission Act – for the reasons stated in the accompanying Opinion – the Commission has therefore determined to reverse and vacate the Initial Decision, to vacate the Order accompanying the Initial Decision, and to direct supplemental briefing on issues of remedy. The Commission has also determined to deny Complaint Counsel’s Motion for Sanctions Due to Rambus’s Spoliation of Documents (Aug. 10, 2005) (“Motion for Sanctions”).

Accordingly,

IT IS ORDERED THAT the Initial Decision dismissing the Complaint in this proceeding be, and it hereby is, **REVERSED** and **VACATED**;

IT IS FURTHER ORDERED THAT all findings and conclusions in the Initial Decision, other than those expressly cited and relied upon in the Opinion accompanying this Order, be, and they hereby are, **SET ASIDE**;

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IT IS FURTHER ORDERED THAT the Order accompanying the Initial Decision and dismissing the Complaint in this proceeding be, and it hereby is, **VACATED**;

IT IS FURTHER ORDERED THAT:

1. On or before September 15, 2006, Rambus and Complaint Counsel each shall file a brief, not to exceed 7,500 words – as measured pursuant to Commission Rule 3.52(b)(2) – addressing appropriate issues relating to remedy in this proceeding;¹ and
2. On or before September 29, 2006, each party may file a responding brief, not to exceed 5,000 words, as measured pursuant to Commission Rule 3.52(b)(2);

IT IS FURTHER ORDERED THAT additional oral argument relating to remedy will be scheduled by further order of the Commission after the receipt of the briefs directed by this Order; and

IT IS FURTHER ORDERED THAT the Motion for Sanctions be, and it hereby is, **DENIED**.

By the Commission.

¹ These briefs shall discuss, without limitation: (1) means for the Commission to determine, based on the existing record, reasonable royalty rates for licensing all technologies applicable to JEDEC-compliant products and covered by relevant Rambus patents; (2) alternative mechanisms and procedures for determining reasonable royalty rates, such as an independent arbitrator, a special master, or an administrative law judge; (3) qualitative characteristics descriptive of appropriate relief, against which specific royalty proposals might be evaluated; and (4) appropriate injunctive and other provisions that should be incorporated in the Final Order in this proceeding.

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IN THE MATTER OF

RAMBUS INCORPORATED

Docket No. 9302 – Order: August 1, 2006

**ORDER DENYING COMPLAINT COUNSEL’S MOTION
TO REOPEN THE RECORD TO INCLUDE EVIDENCE
THAT CORRECTS MISREPRESENTATION IN
ANSWERING BRIEF**

Complaint Counsel filed their Motion to Reopen the Record to Include Evidence that Corrects Misrepresentation in Answering Brief (July 2, 2004) (“Motion to Reopen”). The moving papers claim that Rambus “misrepresented that a version of the minutes of JEDEC’s February 2000 Board of Directors meeting [RX 1570] . . . had been approved by the JEDEC Chairman of the Board and the General Counsel.” Motion to Reopen at 1. Complaint Counsel further claim that RX 1570 is an “unapproved” version of the minutes and seek leave to reopen the record to admit “two documents and relevant pages of three deposition transcripts to correct the misrepresentation in Rambus’s answering brief.” *Id.* at 1-2. Rambus opposes on the grounds that RX 1570 shows “the necessary leadership approvals *on [its] face.*” Rambus’s Opposition to Complaint Counsel’s Motion to Reopen the Record to Include “Evidence that Corrects Misrepresentation in Answering Brief” at 1 (emphasis in original) (“Rambus’s Opposition”). Rambus further asserts that Complaint Counsel’s claim of surprise at Rambus’s reliance on RX 1570 is contradicted by “their own proposed findings” which were offered “without citation to evidence.” *Id.* at 2. Rambus also points out that Judge McGuire relied on RX 1570 in the Initial Decision in this matter. *Id.* We find that Complaint Counsel has not met its burden to reopen the record.

This is an instance where the oft-repeated maxim that a document speaks for itself is disproved. Complaint Counsel and Rambus chose to place RX 1570, and its virtually identical twin, JX 50, into evidence, Trial Transcript at 2598-2605, without

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examining any witnesses concerning the content and meaning of the documents, or, more important to the present inquiry, without asking whether the documents were in fact authentic and approved versions. Not only were the documents entered into evidence, but the Exhibit Lists themselves were entered in evidence as JX A (FTC Exhibits), JX B (Rambus Exhibits, including RX 1570), and JX C (Joint Exhibits, including JX 50). Trial Transcript at 2604. JX C was jointly moved into evidence by Complaint Counsel and Rambus. *Id.* at 2601-03. JX C contains a description of JX 50 which under the circumstances must be treated as a joint stipulation of the parties. That stipulation reads, “Version of Board of Directors, Minutes of Meeting No. 116 (Orlando, FL), February 7-8, 2000, apparently described as ‘uncorrected version’ by Ken McGhee.” JX C at 4.

Physical examination of RX 1570 and JX 50 shows them to be identical in all material respects. They differ only in litigation marginalia (Bates Nos., etc.) and an apparent copier misalignment or misfeed of the last page of RX 1570. Indeed, they are identical to the extent of non-litigation, hand-written marginalia on page 25 of each exhibit that appear to be someone’s notes and corrections of the documents. The approvals, which Rambus claims appear on the faces of the documents, are nothing more than blank signature lines with dates beside them. JX 50 at 13; and RX 1570 at 13. The significance of those blank lines and dates is not self-evident. Complaint Counsel and Rambus have stipulated that JX 50, and by necessary extension RX 1570, is an “uncorrected version” of the February 2000 minutes. Accordingly, the Commission finds that JX 50 and RX 1570 do not possess any probative value in and of themselves.

The standard for granting this Motion to Reopen has four elements: (1) due diligence on the part of the moving party; (2) a showing of the probative value of the proffered evidence; (3) a showing that the proffered evidence is non-cumulative; and (4) the absence of prejudice to the non-moving party. *Brake Guard Products Inc.*, 125 F.T.C. 138, 248 n. 38 (1998). Because we find that Complaint Counsel has failed to establish either of the first two prongs of the test, we need not evaluate the remaining two.

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Complaint Counsel's claim of surprise, Motion to Reopen at 5-6, is not supported by the record. By their own admission, Complaint Counsel chose not to examine witnesses at trial on these issues. *Id.* at 4-5. The discovery deposition excerpts being offered into evidence clearly show these issues were contested by the parties. Even if Complaint Counsel's claim of surprise were genuine, it does not explain why RX 1570 was offered into evidence without objection by Complaint Counsel, nor why Complaint Counsel joined in the motion to enter RX 50 into evidence. Two of the witnesses whose depositions Complaint Counsel would now add to the record, Desi Rhoden and John Kelly, were called as witnesses at trial. Complaint Counsel made a deliberate election not to examine them regarding the February 2000 minutes. The third witness, Kenneth McGhee, was on the witness list, but was uncalled by either side. We cannot find due diligence based on the record.

The two additional exhibits, alternative versions of the February 2000 minutes, offered by Complaint Counsel, CX 153 and CX 153g, appear on their faces to be incomplete, unauthenticated and unapproved. Without additional testimony, it is highly unlikely that they could possess any significant probative value.

Two factors argue against the admission of the deposition transcript excerpts proffered by Complaint Counsel. First, the depositions do not seem to focus in any substantial way on authenticating one version of the minutes as opposed to some other. Second, Complaint Counsel has not shown, as required by Rule 3.33(g)(1)(iii), 16 C.F.R. 3.33(g)(1)(iii), that they should be allowed to have the deposition transcripts of witnesses who were available at the time of trial now entered into evidence. Accordingly,

IT IS HEREBY ORDERED that Complaint Counsel's Motion to Reopen be, and it hereby is, **DENIED**.

By the Commission.

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IN THE MATTER OF

**SOUTH CAROLINA STATE BOARD OF
DENTISTRY***Docket No. 9311 – Order: August 9, 2006***ORDER GRANTING MOTION FOR STAY PENDING
PETITION FOR CERTIORARI**

On July 28, 2004, the Commission issued an Order Denying Respondent South Carolina State Board of Dentistry's Motion to Dismiss on State Action Grounds, Holding in Abeyance Motion to Dismiss on Mootness Grounds, Retaining Jurisdiction, and Referring Mootness Issues to an Administrative Law Judge. On August 9, 2004, Chief Administrative Law Judge Stephen J. McGuire issued an Order Setting Discovery Deadlines and Briefing Schedule on the mootness issues raised in Respondent's Motion to Dismiss.

On August 10, 2004, Respondent filed a Petition for Review of the Commission's Order with the United States Court of Appeals for the Fourth Circuit. On August 17, 2004, the Commission granted Respondent's Unopposed Motion to Stay Discovery Pending Judicial Review "solely as a matter of discretion" until the Fourth Circuit issued "an Order disposing of Respondent's Petition for Review." On May 1, 2006, the Fourth Circuit dismissed Respondent's interlocutory petition for lack of jurisdiction concluding that the antitrust state action doctrine does not constitute an immunity from suit and that therefore the Commission's denial of state action protection was not an immediately reviewable "collateral order." *South Carolina State Board of Dentistry v. Federal Trade Commission*, No. 04-2006, 2006 WL 1134136 (4th Cir. May 1, 2006), *rehearing and rehearing en banc denied* (4th Cir. June 27, 2006).

Respondent has filed the instant Motion for Stay Pending Petition for Certiorari in this proceeding asserting that it intends

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to file a petition for a writ of certiorari of the Fourth Circuit's May 1 decision in the Supreme Court no later than September 25, 2006. While Complaint Counsel asserts that it "is prepared to move forward with this litigation," it "take[s] no position on the Board's motion for a stay," and acknowledges that "[i]f [Respondent] were correct that state action [is] an immunity from suit, a stay of the proceedings pending an appeal of the Commission's denial of state action would be appropriate." Complaint Counsel also does not contest Respondent's argument – and the Commission has thus far seen no evidence to the contrary – that it is not currently engaging in any conduct similar to that challenged in the complaint that might prejudice or harm the public interest.

For these reasons, and without considering the merits of Respondent's arguments or statements in the instant motion, the Commission again exercises its discretion and grants the instant motion, staying discovery in this proceeding until the Supreme Court finally disposes of this matter. Accordingly,

IT IS ORDERED THAT all discovery and other proceedings before the Chief Administrative Law Judge in this matter be, and they hereby are, stayed until the Supreme Court finally disposes of this matter pursuant to a petition for a writ of certiorari to be filed by Respondent. If Respondent fails to file a petition for a writ of certiorari by September 25, 2006, this stay will automatically expire on that date without further action by the Commission.

By the Commission.

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IN THE MATTER OF

RAMBUS INCORPORATED*Docket No. 9302 – Order: October 19, 2006***ORDER GRANTING MOTIONS FOR LEAVE TO FILE
BRIEFS *AMICI CURIAE***

Five separate motions have been filed seeking leave to file *amicus* briefs related to remedy.¹ Rambus opposes the Nvidia Motion on the grounds that the brief is an attempt to reargue liability issues, and that its arguments are redundant with arguments made by Complaint Counsel. Rambus Opposition to Nvidia Motion at 1. Rambus also opposes the AAI Motion on the ground that it is untimely filed and prejudicial. Rambus Opposition to AAI Motion at 1. Neither Rambus nor Complaint Counsel has filed an opposition to the other three motions.

As the Commission previously has stated in this and other matters, the standard for determining whether to grant a motion for leave to file an *amicus* brief is whether “the public interest will benefit from Commission consideration of the perspectives enunciated in the . . . brief,”² and all five proffered *amicus* briefs

¹ Motion of JEDEC Solid State Technology Association for Leave to File *Amicus Curiae* Brief (September 15, 2006); Joint Motion of Broadcom Corp. and Freescale Semiconductor, Inc. for Leave to File *Amicus Curiae* Brief Under 16 C.F.R. 3.52(j) (September 15, 2006); Motion of Nvidia Corp., Micron Technology, Inc., Samsung Electronics Corp., Ltd., and Hynix Semiconductor, Inc. for Leave to File Brief as *Amici Curiae* (September 15, 2006) (“Nvidia Motion”), Motion of Gesmer Updegrove LLP and Andrew Updegrove for Leave to File *Amici Curiae* Brief on the Issue of the Appropriate Remedy for Rambus’s Violations of the FTC Act (September 18, 2006); and Motion of the American Antitrust Institute, Inc. for Leave to File Responding *Amicus Curiae* Brief on Issues of Remedy in Support of Neither Party (September 29, 2006) (“AAI Motion”).

² In the Matter of Telebrands Corp., *et al.*, Dkt. No. 9313, Order Granting Motion for Leave to File Brief *Amicus Curiae* and Revising Briefing Schedule (Dec. 1, 2004) at 2 (“Telebrands Order”); *accord*, In the Matter of Rambus, Dkt. No. 9302, Order Granting Motions for Leave to File Briefs *Amici*

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satisfy that standard. Thus, for example, while the brief filed by Nvidia suggests that the remedy could extend to additional technologies, that argument does not constitute a request to reopen the liability issue, contrary to Rambus's position. See Rambus Opposition to Nvidia Motion at 2.³ Rather, Nvidia's reliance on *Federal Trade Comm'n v. Ruberoid Co.*, 343 U.S. 470, 472-74 (1952), appears to invoke the fencing-in relief doctrine to argue that the remedy the Commission adopts should be more expansive than needed to prevent a recurrence of Rambus's precise violations of the Federal Trade Commission Act. Nvidia Brief at 11. The Commission expresses no view on whether or not the doctrine of fencing-in relief could support the contours of the remedy the Nvidia Brief proposes. However, asking the Commission for fencing-in relief constitutes an appropriate issue for consideration by the Commission with respect to remedy. Further, granting the Nvidia motion will not prejudice Rambus because it has had the opportunity to outline in detail its opposition to Nvidia's arguments in its Opposition to that Motion.⁴

With respect to the AAI Motion, Rambus's reliance on Commission denial of a similar motion filed by the Voluntary Trade Council ("VTC") in *In the Matter of North Texas Specialty Physicians* is misplaced. In that instance, the Commission found that "numerous statements in both [VTC's] Motion and in its Brief indicate that the Brief in fact supports the position of Respondent 'as to affirmance or reversal'"⁵ The

Curiae (June 21, 2004), and Order Granting Motions for Leave to File Briefs *Amici Curiae* and Scheduling Oral Argument (April 30, 2004).

³ Likewise, Nvidia's argument that extending the remedy to DDR2 SDRAM is "needed to restore competitive conditions," Nvidia Brief at 9, does not constitute a request that the Commission change its finding that the causal link to DDR2 was not established by the record, contrary to Rambus's argument. See Rambus Opposition to Nvidia Motion at 4.

⁴ See *Telebrands Order* at 3.

⁵ In the Matter of North Texas Specialty Physicians, Dkt. No. 9312, Order Denying [VTC] Motion for Leave to File Brief *Amicus Curiae*, 2005 WL 1541535 (June 7, 2004) at 2.

Interlocutory Orders, etc.

Commission therefore determined that the VTC brief should have been filed at the same time as the respondents' appeal brief. Instead, however, VTC filed the brief more than one month later.⁶ In this case, by contrast, the AAI Brief on its face appears only to raise two principles of remedy it claims should apply to the remedy issues, and the view that those principles were not adequately addressed by the parties in their initial remedy briefs. Moreover, the AAI Brief takes no position for or against either party. It is true that the principles of remedy AAI advocates may favor one party on some issues and the other party on other issues, as a function of the underlying facts. That circumstance, however, does not convert the AAI Brief into the sort of pretextual filing offered by VTC in the *North Texas* matter.⁷ Furthermore, the AAI Motion was filed on the same date responding briefs were to be filed under the Commission's briefing schedule in this matter.⁸ The briefing schedule for remedy contemplated simultaneous filing of initial briefs by Rambus and Complaint Counsel, and the Commission has now determined to permit Respondent and Complaint Counsel to file supplemental briefs addressing any arguments made in the AAI Brief, should they wish to do so.

Pursuant to Commission Rule 3.52(j), 16 C.F.R. § 3.52(j), the Commission has determined to grant the five motions for leave to file *amicus* briefs because the public interest will benefit from

⁶ *Id.*

⁷ On October 11, 2006, AAI filed a Reply Brief to Rambus's Opposition to the AAI Motion. Commission rules do not provide for such a reply, and AAI did not seek leave to file it.

That pleading does not appear to state anything that was not reasonably determinable from AAI's moving papers; accordingly, the Commission has not relied on that pleading for any purpose in resolving this issue.

⁸ AAI's Brief addresses the issues based on how the parties themselves framed the issues. AAI had to see the initial filings of the parties before it could formulate any position. The earliest date on which the initial briefs of the parties were available on the Commission's web site was September 19, 2006. Under these circumstances, we do not find the filing untimely.

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Commission consideration of the perspectives enunciated in the five accompanying briefs. Accordingly,

IT IS ORDERED THAT the Motion of JEDEC Solid State Technology Association for Leave to File *Amicus Curiae* Brief (September 15, 2006); the Joint Motion of Broadcom Corp. and Freescale Semiconductor, Inc. for Leave to File *Amicus Curiae* Brief Under 16 C.F.R. 3.52(j) (September 15, 2006); the Nvidia Motion; the Motion of Gesmer Updegrove LLP and Andrew Updegrove for Leave to File *Amici Curiae* Brief on the Issue of the Appropriate Remedy for Rambus's Violations of the FTC Act (September 18, 2006); and the AAI Motion be, and they hereby are, **GRANTED**; and

IT IS FURTHER ORDERED THAT Respondent and Complaint Counsel be, and they hereby are, **GRANTED** leave to file a supplemental brief, provided that each such brief shall not exceed 2,000 words; shall be limited to addressing arguments made in the AAI Brief; and shall be filed on or before October 30, 2006.

By the Commission.

Interlocutory Orders, etc.

IN THE MATTER OF

MIREALSOURCE, INC.

Docket No. 9321 – Order: November 27, 2006

**ORDER WITHDRAWING MATTER FROM
ADJUDICATION FOR THE PURPOSE OF CONSIDERING
A PROPOSED CONSENT AGREEMENT**

Complaint Counsel and Respondent having jointly moved that this matter be withdrawn from adjudication to enable the Commission to consider a proposed Consent Agreement; and

Complaint Counsel and Respondent having submitted a proposed Consent Agreement containing a proposed Decision and Order, executed by the Respondent and by Complaint Counsel and approved by the Director of the Bureau of Competition which, if accepted by the Commission, would resolve this matter in its entirety;

IT IS ORDERED, pursuant to Rule 3.25(c) of the Commission Rules of Practice, 16 C.F.R. § 3.25(c) (2006), that this matter in its entirety is hereby withdrawn from adjudication, and all proceedings before the Administrative Law Judge are hereby stayed, pending a determination by the Commission with respect to the proposed Consent Agreement, pursuant to Rule 3.25(f), 16 C.F.R. § 3.25(f); and

IT IS FURTHER ORDERED, pursuant to Rule 3.25(b) of the Commission Rules of Practice, 16 C.F.R. § 3.25(b), that the proposed Consent Agreement shall not be placed on the public record unless and until it is accepted by the Commission.

By the Commission.

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