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B. Direct Evidence Demonstrates That Unocal Has the Power to Raise Prices in the Technology Market.  


   a. The Competitive Price was Zero.  
   d. Unocal Has Monopoly Power Because It Is Seeking, and Has Collected, Royalties Above Zero.  
   e. 
   
   f. Royalties Charged By Unocal Outside California are Not the Appropriate Benchmark to Establish the Market Value of Unocal’s Patented Technology.  
   g. 
   
   C. Indirect Evidence of Market Power.
1. Refiners are Likely Infringing One or More of the Unocal Patents in Large Numbers. ........................................ -386-
2. Unocal’s Patents are Valid and Present a Business Risk to Refiners. .................................................. -386-
3. Unocal Has Claimed That Its Patents Cover the CARB Regulations. .................................................. -389-
4. Unocal’s Patents Overlap Substantially with the CARB Reformulated Gasoline Regulations. ................... -391-
5. The Coverage Rate is a Useful Indicator of Monopoly Power. .......................................................... -394-
   a. There are No Technology Suppliers Available to Constrain Unocal’s Monopoly Pricing ..... -395-
   b. Approximately 93 Percent of CARB-Compliant Gasoline Falls Within the Numerical Limitations of the Unocal Patents. ........................................... -395-
6. The Evidence Demonstrates That Overlap With the Numerical Property Limitations of the Unocal Patents Shows Likely Infringement. ........................................ -400-
   a. }
   }
   }
   }
   b. The Refiners Consider the Numerical Limitations of the Unocal Patents as Part of Ordinary Business Practices. .............................................. -405-

D. No Serious Dispute Exists as to the Meaning of Any Patent Claim That Unocal Contends Must Be Construed. ........................................... -406-
1. No Dispute Exists As To the Definition of Gasoline. .......... -406-
2. No Dispute Exists as to Measurement of Hydrocarbons. .... -407-
3. The Method for Calculating Reid Vapor Pressure Is Clear. -408-
4. The Addition of Ethanol to Gasoline Does Not Raise Claim Construction Issues. ................................ -408-

E. Unocal’s Own Expert Concedes that 50.4 Percent of the Gasoline in California Actually Infringes the ‘393 and Part of the ‘126 Patent, Without Regard to the Remaining Claims of the ‘126 Patent or the Other Three Unocal Patents. .................................................. -410-

F. Unocal’s Remaining Patent Elements are Likely to Be Satisfied By the Typical Production Activities at California Refineries. ............................................. -412-
1. Unocal’s Chief Patent Counsel Believed It Inconceivable That Persons Skilled in the Art Would Have Any Doubt as to Whether Refiners Were Infringing Many of the Method and Process Limitations. ............................................. -412-
2. The ‘126 Method Claims Describe the Most Basic Elements of Producing Commercial Gasoline. ............... -417-
a. Blending at Least Two Hydrocarbon-Containing Streams Together. ................. -418-
b. Produce at Least 50,000 Gallons. ........ -419-
c. Suitable for Combustion in An Automotive Engine. .......................... -419-
d. Having the Following Properties: ........ -420-
e. Commencing Delivery of Unleaded Gasoline Produced Pursuant to Step (1) To Gasoline Service Stations. .................... -420-
f. If Only the ’393 And The ’126 Patents Were Considered, Unocal Would Have A Substantial Overlap Rate With CARB-compliant Summertime RFG Production. ......................... -421-

3. The ‘866 and ‘567 Claims Describe the Most Basic Elements of Using Gasoline in California Automobiles. -421-
   a. Operating an Automobile Having a Spark-induced, Internal Combustion Engine and a Catalytic Converter. .................. -422-
   b. To Yield a Reduced Amount of Certain Pollutants When Compared to the A/O Ave. ......... -423-

4. The ‘521 Claims Merely Describe Making Gasoline Under the Predictive Model. -------------------------- -424-

G. California Refiners as a Whole Cannot Avoid the Unocal Patents. -425-
1. Unocal Concedes that Refiners Can Never Avoid the Patents All of the Time. .................. -427-
2. As a Matter of Chemistry, Refiners Cannot Avoid the Unocal Patents to Any Significant Extent. ........ -428-
3. Only Narrow Blending Methods Exist to Avoid the Patents. .................................................. -431-
   a. Refiners Uniformly Testified That They Cannot Avoid the Patents. ....................... -437-
      i. BP ................................ -437-
      ii. Chevron .......................... -440-
      iii. Shell. ............................ -442-
      iv. Valero. .......................... -453-
      v. ExxonMobil. ..................... -459-
4. } .................................... -464-
   a. { ................................ -464-
   b. { ................................ -466-
   c. { ................................ -467-
   d. { ................................ -468-
H. Refiners Cannot Switch to Other Technologies to Substantially Avoid the Unocal Patents. .................................................. -471-

1. Refiners Cannot Reduce Likely Infringement by Trying Harder. .................................................. -471-

2. Importing Alkylate to Reduce Likely Infringement Levels is Infeasible and Uneconomic. -473-

3. Importing Iso-Octane to Reduce Likely Infringement Levels is Infeasible and Uneconomic. -475-

4. Importing Iso-Octene to Reduce Likely Infringement Levels is Infeasible and Uneconomic. -477-

5. Refiners Cannot Take Operational Steps to Increase Olefin Levels to a Point Where They Can Consistently Avoid the Patents. .................................................. -478-

6. On Line Analyzers. ................................ -480-

7. CARB’s Phase 3 Regulations Have Not Allowed Refiners to Avoid the Unocal Patents on a Consistent Basis. ................................ -481-

8. Even if Refiners Were Able to Avoid the Patents More Frequently, Unocal Would Still Have Monopoly Power. ................. -482-

I. Refiners Cannot Avoid the Unocal ‘393 and the ‘126 Patents. .... -483-

J. Unocal Has a Dangerous Probability of Success in Achieving Monopoly Power in the Market for CARB Phase 2-Compliant Summertime Gasoline. .................................................. -485-

1. Unocal Intended to Monopolize the Downstream Market. .. -485-

2. Suppliers Have Chosen Not to Import CARB-Compliant Gasoline Because of the Unocal Patent Claims. .................... -486-

3. Unocal Royalties Will Raise the Price of CARB-Compliant Summertime Gasoline. ........................................ -489-

4. Unocal is Still Seeking to Collect Royalties from the Time When Unocal Was in the Refining Business. ................. -490-

5. Unocal Was a California Refiner until 1997. ................. -491-

XXVI. By the Time CARB and the Refiners Learned of the Unocal Patent, the Industry and the Regulators Were “Locked-in” to the Phase 2 Regulations and Related Modifications. .................................................. -492-

A. CARB Could Not Roll Back the Phase 2 RFG Regulations to Avoid the Unocal Patent. .................................................. -493-

B. CARB Knew That Refiners Had Made Billions of Dollars of Specific Investments to Modify Their Refineries. .................... -494-

C. The Need for Coordination with Refiners and Auto Manufacturers

-xviii-
Prevented CARB From Rescinding the Phase 2 Regulations. .......... -499-

D. The Need for Coordination by CARB in Implementing a State
Implementation Plan Prevented CARB From Rescinding the Phase 2
Regulations. ................................................ -501-

E. CARB Could Not Avoid the Unocal Patents in Subsequent “Phase 3"
Amendments to the RFG Regulations. .......................... -501-
1. Events Leading up to the “Phase 3” Rulemaking in 1999. .... -501-
2. Because of Refiner Sunk Investments, EPA’s Approval of the SIP
Incorporating Phase 2, and Further California Legislative and
Executive Directives, CARB in Phase 3 Could Not Rescind or
Reduce the Emissions Benefits of the Phase 2 Rule as a Means of
Avoiding the Unocal Patents. .......................... -502-
3. Due to the Breadth of Unocal’s Patent Claims, CARB in Phase 3
Could Not Revise the Phase 2 Rule in a Manner That Avoided
Unocal’s Patents and Maintained the Necessary Emissions
Benefits. ............................................. -503-
4. Unocal Representatives Strenuously Argued in Phase 3 Against
Relaxing T50 Requirements on Supposed Environmental
Protection Grounds. ........................................... -504-
5. CARB’s Issuance of Phase 3 Regulations That Provided No
Significant Relief from the Unocal Patents Did Not Signify
Indifference to the Patent Issue. .............................. -505-

F. Unocal Itself Claimed in Subsequent Patent Litigation That CARB and
the Refiners Were Locked-in. .................................. -506-

G. Refiners Are “Locked-in” to Producing Infringing Gasoline. .... -507-
1. By the Time the Refiners Learned of the Unocal Patents, They
Had Invested Years of Work in the Phase 2 Modifications. .. -507-
a. By the Time Refiners Learned of the Unocal Patent,
They Were Stuck with the Plans for Refinery
Modifications That They Had Submitted Shortly
After the Filing of Permit Applications. ...... -507-
b. Opportunities to Make Alternative Refinery
Modifications That Would Allow for the Same
Level of Production of CARB Gasoline While
Avoiding Unocal Patents Were Lost Well Before
Refiners Learned of the Patents. .................. -509-

H. Phase 2 Modification Pushed Refiners Towards the Claims of the Unocal
Patents. .......................................................... -519-
1. There Are No Practical Steps That Refiners Can Take Today to
Substantially Decrease the Amount of Likely Infringement.
......................................................... -521-

I. Unocal’s Own Experts Have Admitted That Refiners Were Locked-in By
Their Prior Huge Investments to Produce RFG Under Phase 2 Regulations.
............................................................. -523-
XXVII. Unocal’s Deceptive Conduct Caused it to Achieve Market Power. ......... -526-

A. Unocal’s Deceptive Conduct Before CARB Was Material to CARB’s Decisionmaking. ........................................ -526-

1. It Was Important for CARB to Know That Unocal’s Plan to Charge Royalties Could Significantly Raise the Cost of the Phase 2 Reformulated Gasoline Regulations. .............................. -526-
   a. CARB Followed its Statutory Mandates and Considered Cost and Maintaining Competition as an Integral Part of the Phase 2 Reformulated Gasoline Rulemaking. .............................. -526-
   b. CARB Expected That Outside Parties, When Urging CARB to Incorporate Research in the Phase 2 Regulations, Would Not Deceive CARB. ........................................ -530-
   c. Unocal Knew That CARB Expected, andDepended On, the Accuracy and Truthfulness of Cost Information Provided by Refiners. .............................. -531-
   d. During the Phase 2 Rulemaking, CARB Modified the Proposed Phase 2 Regulations Due to Cost Concerns. ........................................ -533-
   e. Unocal Urged CARB to Avoid Costs That Had Far Less Potential Impact than Unocal’s Patents. ........................................ -534-

2. To Preserve the Integrity of its Decisionmaking, it Was Important for CARB to Know That Issuing Phase 2 as Adopted Would Facilitate Unocal’s Acquisition of Monopoly Power. ........ -536-
   a. Avoiding Favoring Individual Companies Was Integral to CARB’s Mission. .............................. -536-

   b. Unocal Believed and Stated Publicly That CARB Was under a Duty to Preserve Competition and a “Level Playing Field.” .............................. -537-

3. To Further the Purposes of its Regulatory Decisionmaking, it Was Important for CARB to Know That Unocal’s Pending Patents Could Impact the Supply of Phase 2 Compliant Reformulated Gasoline. .............................. -538-
   a. CARB Had a Responsibility to Ensure an Adequate Supply of Gasoline. .............................. -538-

   b. Unocal Was Well Aware That CARB Viewed Any Threat to Supply as a Critical Factor in the Phase 2 Rulemaking and Implementation. .............................. -539-
B. CARB Officials Relied on Unocal’s Deceptive Conduct and Were Deceived. .............................................. -540-

1. CARB Included a T50 Specification in the Regulations Because Unocal Presented its Research to CARB Staff. .............. -540-
   a. CARB Staff Did Not Have Sufficient Information to Justify a T50 Specification Before Receiving Unocal’s Release of Its 5/14 Research. ...... -540-
   b. The Official Rulemaking Record for Phase 2 RFG Regulations Clearly Shows CARB’s Reliance on Unocal’s T50 Research. .............. -541-
      i. CARB Relied on Unocal’s Equations. .......................................................... -542-
      ii. CARB Relied on Unocal’s Presentation Slides. ........................................ -543-
   c. Unocal Knew that CARB Relied on Its Research and Informed the U.S. Patent and Trademark Office That Only Unocal Research Persuasively Proved the Emission Reduction Benefits of T50. ... -544-
   d. Unocal in the ‘393 Patent Litigation Asserted That Unocal’s T50 Research Was the Basis for CARB’s Decision to Regulate T50. .............. -547-
   e. Unocal’s Research Provided the Support Necessary for a T50 Parameter in Reformulated Gasoline Regulations. .............. -548-
      i. CARB Staff Demanded as the Technical Basis for the Regulation Sound Studies That Proved the Independent Effects of the Gasoline Property in Question. ...... -548-
      ii. CARB Developed the T50 Specification Using Unocal’s Research. .......... -550-

2. CARB Reasonably Relied on Unocal’s Assertions That its Research Was “Non-proprietary” and “Available” for Use and That Unocal Would Forego All “Competitive Advantage” If CARB Considered a Predictive Model. .............. -551-
   a. Unocal Presented its Research as “Non-proprietary” and “Available” for Use. ..................... -551-
   b. Unocal Did Not Reveal its Intentions to Enforce its Patent Rights. .......................... -554-
   c. Unocal Conveyed the Basic Deceptive Message That CARB Could Use Unocal’s 5/14 Research as a Basis for its Phase 2 Reformulated Gasoline Regulations Without Cost. .......... -555-
   d. Unocal’s Use of the Term Non-Proprietary was
Consistent With the Use of the Term “Proprietary” in Industry As Referring to Ownership and Property Rights. .............................. -556-  

e. Unocal’s Letters, Taken Together, Conveyed the Message That Unocal Would Give up “Competitive Advantage” If CARB Agreed to Consider a Predictive Model. ............................. -557-  
f. CARB Staff Reasonably Understood Unocal’s Communications To Mean That There Were No Associated Costs with Use of Unocal’s Research. .............................. -558-  
g. Unocal Gave CARB All of Its 5/14 Data Including the Graphs, Presentation Materials, and Equations Showing the Invention. .............................. -560-  

C. Unocal’s Deception Before WSPA and Auto/Oil Was Material to the Decisions of California Refiners. .............................. -564-  

D. Refiners Relied on Unocal’s Statements and Conduct Conveying That Unocal’s Research Was in the Public Domain Before Using Unocal’s Research Materials. .............................. -566-  
1. There Were Other Options Available to Refiner Members That Would Have Mitigated Unocal’s Market Power Had Refiners Timely Been Informed of the Unocal Patents. .............................. -566-  

2. Auto/Oil Relied upon Representations That Unocal’s Research Was in the Public Domain and Members Used it to Further Their Own Research. .............................. -567-  
3. WSPA Members Relied upon Representations That Unocal’s Research Was in the Public Domain and Used it to Further Their Own Research. .............................. -570-  

E. Unocal’s Deceptive Conduct Caused Unocal to Achieve Monopoly Power. .............................. -572-  
1. The Proper But-For World Is The One Where Unocal Makes Good On Its Zero Royalty Representation. .............................. -572-  

F. If CARB Had Timely Knowledge of Unocal’s Patent Intentions, CARB Would Not Have Adopted Regulations That Gave Unocal a Monopoly, but Instead Would Have Selected Another Viable Alternative. .............................. -575-  
1. CARB Did Not Know it Was Taking Action Facilitating Unocal’s Exercise of Market Power. .............................. -575-  
2. CARB Decision Makers Would Not Have Approved a Reformulated Gasoline Regulation Giving Unocal Substantial Market Power, But For Unocal’s Misrepresentations About its Patent Rights and Plans to Charge for Use of its Technology. .............................. -576-
a. CARB Decision Makers Would Not Have Approved the Versions of the Phase 2 Rule That Staff Proposed in October and November 1991. ..................................... -576-

b. The Executive Officer of CARB Would Not Have Approved the Reformulated Gasoline Regulation Proposal Had He Known of Unocal’s Plans to Enforce Its Proprietary Interests in Its 5/14 Research. ........................... -578-

c. CARB’s General Counsel Would Not Have Approved Phase 2 RFG Regulations as Adopted Had he Known of Unocal’s Pending Patents. ........................................ -579-

d. CARB’s Chairman and the CARB Board Would Not Have Approved a Reformulated Gasoline Regulation, As Actually Adopted in November 1991, Knowing That the Reformulated Gasoline it Mandated Potentially Overlapped with a Pending Unocal Patent. ................... -579-

e. CARB’s Executive Officer Would Have Prevented the Phase 2 Reformulated Gasoline Regulations as Approved, from Being Formally Adopted in September 1992. ...................... -581-

f. The Views of CARB’s Decision Makers Are Entirely Consistent with CARB’s Contemporaneous Actions to Avoid Excessive Cost and Adverse Impacts on Competition. ............. -582-

3. CARB Had Other Alternatives Than Adopting the Reformulated Gasoline Regulations It Actually Adopted in November 1991. .......................................................... -582-

a. CARB Management Had the Option of Delaying the Phase 2 Proceeding to Consider Alternatives. ........................................ -582-

b. CARB Could Have Adopted Other Specifications That Avoided Overlap with Unocal’s Patents. ................................... -583-

c. EPA’s RFG Regulations Would Have Achieved Significant Emissions Reductions in California. ........................................ -584-

d. Neither CARB nor Unocal Believed That CARB, to Satisfy the California Clean Air Act, Had No Choice But to Issue Phase 2 as Actually Adopted. .......................... -586-

e. California Refiners are Able to Avoid the Unocal
G. Had Refiners Learned That the Unocal Research Presented to CARB, Auto/Oil and WSPA Was the Subject of a Unocal Patent for Which Unocal Intended to Charge Royalties, the Refiners Could Have Taken a Number of Different Steps to Mitigate Unocal’s Monopoly Power.

1. Refiners Would Have Informed CARB of the Potential Cost of the CARB Regulations.

2. Refiners Would Have Altered Their Investment Plans, Which Would Have Led CARB to Take Action.
   a. Refiners Would Have Delayed, Limited or Cancelled Investments in Modifications to Make CARB Phase 2-Compliant Gasoline.
      i. ARCO
      ii. Chevron
      iii. Exxon
      iv. Shell
      v. Texaco
   b. Dr. Teece’s Criticisms of Refiners’ Decisions as Not Realistic Is Misplaced.
   c. As a Matter of Course, the Refiners Would Have Informed CARB of Their Decisions Not to Invest.
   d. If Refiners Did Not Invest in CARB Phase 2 Capability, the Supply of CARB-Compliant Gasoline Would Have Been Greatly Reduced, and the Price of Gasoline in California Would Have Increased Substantially.

   a. ARCO’s Carson Refinery
   b. Chevron’s El Segundo Refinery
   c. Chevron’s Richmond Refinery
   d. Exxon’s Benicia Refinery
   e. Mobil’s Torrance Refinery
   f. Shell’s Martinez Refinery
   g. Texaco’s (Shell’s) Wilmington Refinery
   h. Valero’s (Ultramar’s) Wilmington Refinery.


XXVIII. Unocal’s Actions In This Case Are Likely To Harm Consumers.

A. Unocal’s Deception Has Harmed the Consumers in the Technology
B. Unocal’s Deceptive and Exclusionary Conduct Has Raised, And Continues To Raise, the Price of CARB Summertime Reformulated Gasoline. -631-

XXIX. The Proposed Remedy Is Needed to Relieve the Competitive Harm Caused by Unocal’s Conduct. -636-

A. The Proposed Remedy Will Deter Deceptive Conduct. -637-
B. The Proposed Remedy Will Not Have Adverse Effects on Innovation. -637-
C. The Proposed Remedy Will Not Cause Any Harm If The Patents Are Later Found to be Invalid or Not Infringed. -637-
D. The Harm to Consumers Is Ongoing. -637-
E. There Is A Strong Likelihood of Recurrence. -637-

COMPLAINT COUNSEL’S PROPOSED CONCLUSIONS OF LAW -640-

COMPLAINT COUNSEL’S PROPOSED ORDER -643-