

## IN THE MATTER OF

## OCCIDENTAL PETROLEUM CORPORATION, ET AL.

FINAL ORDER, OPINION, ETC., IN REGARD TO ALLEGED VIOLATION OF  
SEC. 7 OF THE CLAYTON ACT AND SEC. 5 OF  
THE FEDERAL TRADE COMMISSION ACT

*Docket 9205. Complaint,\* April 11, 1986--Final Order, Dec. 22, 1992*

This final order upholds the ruling of the administrative law judge, which requires Occidental, a California-based corporation, to divest certain Tenneco PVC plants to a Commission-approved acquirer within one year. The order prohibits Occidental, for 10 years, from acquiring all or any part of the stock or assets of, or any interest in, any producer of PVC located in the United States, without prior Commission approval.

*Appearances*

For the Commission: *Rhett R. Krulla and Marc G. Schildkraut.*

For the respondents: *Michael Sohn, Arnold & Porter, Washington, D.C. Louis Nizer Phillips, Nizer, Benjamin Krim & Ballon, New York, N.Y. and Robert Luss, in-house counsel for respondent Occidental Chemical Corporation, Dallas, TX.*

## INITIAL DECISION BY

THOMAS F. HOWDER, ADMINISTRATIVE LAW JUDGE  
SEPTEMBER 30, 1988

## CITATION FORMAT

Hearing testimony presented by affidavit or declaration in this proceeding is identified by the name of the witness, the exhibit number and the appropriate page and paragraph reference (e.g., Pflugrath CX 177F ¶10).

Hearing testimony from The B.F. Goodrich Co., FTC Docket 9159, is identified by the name of the witness followed by the

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\* Complaint previously published at 111 FTC 27 (1988).

designation "Dkt. 9159" and the Goodrich transcript page number (*e.g.*, Kaserman Dkt. 9159, 2313).

Hearing testimony from the preliminary injunction proceeding in *FTC v. Occidental Petroleum Corp.*, Civil No. 86-0900 (D.D.C. 1986), is identified by the name of the witness, the joint exhibit number (JX 1) and the appropriate page and line reference (*e.g.*, Kaserman JX 1, 266 ln. 19 - 267 ln. 15).

Joint exhibits, comprised of the trial exhibits and transcripts of testimony from the hearing on the preliminary injunction in *FTC v. Occidental Petroleum Corp.*, Civil No. 86-0900 (D.D.C. 1986), are identified by the prefix "JX" and the exhibit number, followed by the district court transcript page number and line reference for trial testimony, or by the prefix "PX" or "DX," for plaintiff's exhibit and defendant's exhibit, respectively, and the district court exhibit number and page reference as appropriate (*e.g.*, JX 3, PX 129 at 7).

Complaint counsel's and respondents' exhibits are identified by the prefix "CX" or "RX," respectively, and the exhibit number and page reference as appropriate (*e.g.*, CX 156F).

References to exhibits in the record in *The B.F. Goodrich Co.*, FTC Docket No. 9159, are identified by the prefix "Dkt. 9159" followed by the exhibit number and appropriate page reference (*e.g.*, Dkt. 9159 CX 1Z37).

References to the numbered findings in Goodrich, as adopted by the Commission in *The B.F. Goodrich Company*, Docket No. 9159, Final Order, March 15, 1988, at 2, are identified as "Goodrich F." and the finding number. Other references to the Initial Decision, as adopted by the Commission in Goodrich, are identified as "Goodrich ID at" followed by the page number of the Initial Decision.

References to complaint counsel's proposed findings are identified by "CPF" and the finding number.

References to respondents' proposed findings dated December 7, 1987, are identified by "RPF" and the finding number.

#### PRELIMINARY STATEMENT

The Federal Trade Commission issued its administrative complaint in this case on April 11, 1986, challenging the acquisition of Tenneco Polymers, Inc., a wholly-owned subsidiary of Tenneco,

Inc., by Occidental Chemical Corporation, a wholly-owned subsidiary of Occidental Petroleum Corporation. Respondents filed their Answers on May 19, 1986, denying that the transaction violated Section 7 of the Clayton Act and Section 5 of the Federal Trade Commission Act, as alleged in the complaint.<sup>1</sup>

Pursuant to agreement of the parties, the record in the instant case incorporates the record in The B.F. Goodrich Company case, Docket 9159 (decided by the Commission on March 15, 1988), together with additional documentary exhibits and witness testimony in the form of affidavits and declarations. The record also contains trial exhibits and testimony adduced by the parties in the Commission's unsuccessful attempt to obtain a preliminary injunction in the instant case.<sup>2</sup>

This proceeding is before me upon the pleadings, the record as described above, and the proposed findings of fact and conclusions of law filed by the parties. The proposed findings, conclusions and arguments of the parties have been considered, and those findings and conclusions not adopted either in the form proposed or in substance are rejected as not supported, or as involving immaterial issues unnecessary for this decision.

Any motions not heretofore or herein specifically ruled upon, either directly or by the necessary effect of the conclusions in this decision, are hereby denied.

#### FINDINGS OF FACT

##### I. THE RESPONDENTS

###### A. *Occidental*

1. Occidental Petroleum Corporation ("Occidental") is a California corporation with its principal offices in Los Angeles, California (JX 3, PX 15 at 17; JX 3, PX 16 at 56; JX 3, PX 46).

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<sup>1</sup> The Commission subsequently accepted a consent agreement on the part of the Tenneco respondents, the Decision and Order dated July 19, 1988.

<sup>2</sup> See the description of this attempt set forth in note 3 and pages 2-3 of the Commission's opinion in the Goodrich case (March 15, 1988).

2. Occidental Chemical Corporation ("Oxychem") is the Occidental subsidiary responsible for all of Occidental's PVC-related activities (JX 3, PX 15 at 14). Oxychem is the entity which acquired Tenneco Polymers, Inc. (JX 3, PX 17 at 904338A).

3. [##] (JX 3, PX 16 at 11-18). [##] (PX 3, PX 140 *In Camera*; JX 3, PX 16 at 17).

4. [##] (Lull JX 1, 506-508; JX 3, PX 15; Dkt. 159 CX 519M *In Camera*).

5. Oxychem is the successor corporation to Diamond Shamrock Chemicals Company ("DSCC"), a respondent in The B.F. Goodrich Company, FTC Docket No. 9159. In 1986, DSCC was acquired by Occidental and merged into Oxychem (CX 1D, N, Z2, Z12; CX 160).

6. At all times relevant herein, Occidental Petroleum Corporation and Occidental Chemical Corporation have engaged in commerce as "commerce" is defined in Section 1 of the Clayton Act, 15 U.S.C. 12, and Section 4 of the FTC Act, 15 U.S.C. 44 (Occidental Answer ¶ 2; JX 3, PX 15 at 17; JX 3, PX 16 at 5; RPF 6).

#### B. Tenneco

7. Tenneco Inc. ("Tenneco"), is a large, integrated oil company (JX 3, PX 19 at 1-5) [##] (JX 3, PX 140 *In Camera*; *See* Schaefer JX 1, 592 ln. 10-13; JX 3, PX 20 at 11, 15, 17, 19).

8. Tenneco Polymers, Inc. ("Tenneco Polymers"), is a wholly-owned subsidiary of Tenneco Inc. (JX 3, PX 11 at 622 ln. 12-14; Cunningham JX 1, 784 ln. 2-5).

9. At all times relevant herein, Tenneco Inc., and Tenneco Polymers, Inc. have engaged in commerce as "commerce" is defined in Section 1 of the Clayton Act, 15 U.S.C. 44 (JX 3, PX 19 at 1, 3-17).

10. Prior to the acquisition, Oxychem and Tenneco Polymers were direct competitors in the relevant PVC (Schaefer JX 1, 592 ln. 10-13; JX 3, PX 8 at 38 ln. 6-9; Weimar JX 1, 34 ln. 14-20 (copolymer); Mason JX 1, 196 ln. 7-13 (dispersion); Beveridge JX 1, 87 ln. 25-88 ln. 2 (dispersion); Friedman JX 1, 131 ln. 1-133 ln. 12 (mass and suspension homopolymer)).



## II. THE ACQUISITION

11. Through its wholly-owned subsidiary, Oxychem, Occidental acquired Tenneco Polymers' 750 million-pound capacity suspension PVC plant at Pasadena, Texas, and its 150 million-pound capacity suspension PVC copolymer and dispersion PVC resin plant at Burlington, New Jersey. In addition, Oxychem acquired all buildings, machinery, equipment, and intangible assets related to Tenneco Polymers' PVC operations (Cunningham JX 1, 751 ln. 6-21; *See, e.g.*, JX 3, PX 97).<sup>3</sup> The total purchase price was approximately \$70 million, plus approximately \$30 million for Tenneco's PVC inventories (Cunningham JX 1, 805 ln. 7-14; JX 3, PX 17 at 8).

## III. PVC INDUSTRY OVERVIEW

A. *Product Description*

12. PVC resins are "thermoplastic" materials, *i.e.*, plastics that become soft and malleable when heated. In virtually all applications, PVC resins must be compounded with a variety of additives, including stabilizers, plasticizers, and coloring agents to give the resins the desired characteristics required for processing and fabrication into end products. After compounding with other ingredients, PVC resins can be converted, through the application of heat and pressure, into a wide variety of finished "vinyl" products (The B.F. Goodrich Company, (FTC Docket No. 9159) slip op. at 1, 17 (March 21, 1988); Goodrich F 17-18; Kaserman JX 1, 270 ln. 10-20, 266 ln. 16 - 267 ln. 11; Dkt. 9159 CX 427L-M; Dkt. 9159 CX 428M-N).

13. [##] (Dkt. 9159 CX 6D, 6Z37; Dkt. 9159 CX 8B; Dkt. 9159 CX 40Z2 *In Camera*; Dkt. 9159 CX 109E, *In Camera*). In 1987,

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<sup>3</sup> In addition to the resin and compounding plants and portions of the associated land, acquired assets include all buildings, machinery and equipment related to the manufacturing facilities; inventories; stores; spare equipment; and intangible assets such as trade secrets, patents, technology agreements, permits, trade names and customer rights (JX 3, PX 17 at 2-8). [##] (JX 3, PX 97; Taylor 181B ¶ 2 *In Camera*). [##] (Taylor CX181B-D *In Camera*).

United States production of PVC of all types was approximately 8.0 billion pounds (CX 213C).

14. PVC resins are derived from the chemicals ethylene and chlorine. The chemicals are converted into ethylene dichloride ("EDC"), from which the intermediate chemical product, vinyl chloride monomer ("VCM"), is manufactured by a thermal-cracking process (Goodrich, slip op. at 17, 20; Goodrich F 17, 30, 32; Dkt. 9159 CX 4G; Dkt. 9159 CX 6, Z35-Z36).

*B. Production Processes*

15. All PVC resins are produced by a polymerization process which links VCM molecules together in a vessel, commonly referred to as a reactor, under specific temperatures in the presence of catalysts. The resulting PVC resins, in the form of white powder or granules, can be compounded with auxiliary ingredients (*e.g.*, stabilizers, plasticizers, and impact modifiers), and converted into a wide variety of vinyl end products through several types of fabricating and finishing processes. The processing and performance characteristics of PVC resins and, consequently, suitability for a particular end-use product, vary according to the resin type and, within each type, a number of variables that are controlled in the resin production process (Goodrich F 17-23; JX 3, PX 11 at 627 ln. 13-631 ln. 11, 656 ln. 17 - 658 ln. 17; Lull JX 1,504 ln. 6-14).

16. There are four basic processes used to manufacture PVC resin: (1) suspension; (2) mass (or bulk); (3) dispersion (or emulsion); and (4) solution<sup>4</sup> (Goodrich F 20-23; JX 3, PX 11 at 627 ln. 13 - 631 ln. 11; JX 3, PX 8 at 7 ln. 18-21; Dkt. 9159 CX 6D, 6Z37; Dkt. 9159 CX 427I-K).

17. The most common method is the suspension process (Disch Dkt. 9159, 627-628). VCM is added to a reactor that contains water, a colloid (a suspending agent), and initiators. The mixture is then heated, which starts the reaction. The process of polymerization, *i.e.*,

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<sup>4</sup> The solution polymerization process is utilized at only one facility in the United States, exclusively for the production of specialty copolymers. It represents less than one percent of total U.S. production capacity (Goodrich F 23 n.6; Disch Dkt. 9159, 630-631; Dkt. 9159 CX 427L).

combining the VCM molecules into longer molecular chains, requires several hours. The manufacturer then stops the reaction, removes unreacted VCM from the mixture, and dries the PVC (JX 3, PX 11 at 627 ln. 22-629 ln. 5; Disch Dkt. 9159, 627-629; Dkt. 9159 CX 642Z26-Z29). Suspension PVC homopolymer resins account for approximately eighty-five percent of all PVC resin manufactured in the United States (Goodrich, slip op. at 17; Goodrich F 21; JX 3, PX 11 at 627 ln. 22 - 628 ln. 5; Dkt. 9159 CX 30G).

18. Another method of polymerization of homopolymer PVC resin is the mass process (also known as the bulk process). In this method, VCM is polymerized without the use of other liquids (Goodrich, slip op. at 17; Goodrich F 23; JX 3, PX 11 at 629 ln. 7-13; Dkt. 9159 CX 642Z31). Mass polymerization consists of a two-stage process, which yields a resin comparable in appearance and properties to suspension PVC homopolymer resin (Goodrich F 23-24; JX 3, PX 11 at 631 ln. 13 - 632 ln. 24; JX 3, PX 8 at 12 ln. 12-21; JX 3, PX 6 at 73 ln. 18-21; Disch Dkt. 9159, 631-632; Dkt. 9159 CX 50V-W; Dkt. 9159 CX 427K-L; Dkt. 9159 CX 642Z31-Z36).

19. Suspension PVC copolymer resins are produced by a suspension process, but differ from suspension PVC homopolymer resin in that they are produced by the polymerization of two distinct monomers, introduced in controlled proportions in the reaction process. [##] (Hill CX 183F ¶13 *In Camera*; Flammer CX 184B ¶3, CX 184D ¶6; JX 3, PX 9 at 15 ln. 20-16 ln. 4; JX 3, PX 8 at 13 ln. 6 - 16 ln. 20; Lull JX 1, 505 ln. 4-8). VCM accounts for 80 to 90 percent of the raw material cost of the finished product, and vinyl acetate accounts for 10 to 20 percent of the raw material cost of the finished product (JX 3, PX 8 at 30 ln. 22 -31 ln. 5).

20. [##] (Goodrich F 22; Hill CX 183F ¶ 17 *In Camera*; Flammer CX 184B ¶ 4, CX 184D ¶ 6; Boyer 185B-C ¶ 3, ¶ 5; JX 3, PX 8 at 7 ln. 18 - 8 ln. 23; JX 3, PX 11 at 630 ln. 3-23, 632 ln. 25 - 633 ln. 10; Lull JX 1, 505 ln. 12 - 506 ln. 6; Dkt. 9159 CX 642Z29-Z31).

*C. Uses*

## 1. Mass and suspension PVC homopolymer

21. [##] (Goodrich F 97-193; Pflugrath CX 177B ¶ 3 *In Camera*; Heath CX 178B-C ¶ 3 *In Camera*; Stuart CX 201A-B ¶ 2 *In Camera*; Friedman JX 1, 116 ln. 7-14, 118 ln. 1-16, 121 ln. 6-14; Witsken JX 1, 610 ln. 20 - 611 ln. 1; DiLiddo Dkt. 9159 3108; Disch Dkt. 9159, 665-671, 674-677; Belt Dkt. 9159, 2010-2012; Dkt. 9159 CX 14F *In Camera*; Dkt. 9159 CX 40Z2-Z6 *In Camera*; Dkt. 9159 CX 92F; Dkt. 9159 CX 97C *In Camera*; Dkt. 9159 RX 143C; Dkt. 9159 RX 166A; Dkt. 9159 CX 244E-G; Dkt. 9159 CX 417A-Z22; *See generally* JX 3, PX 9 at 112 ln. 7 - 116 ln. 21). [##] (Wilhite CX 179B-C ¶ 3 *In Camera*; Porter CX 198B-C ¶ 3 *In Camera*; Alberti CX 199F-G ¶ 9 *In Camera*; Stuart CX 201B-C ¶ 4 *In Camera*; Underwood CX 203B ¶ 3 *In Camera*; Yu Dkt. 9159, 2142-2144; Waggoner Dkt. 9159, 3646; Dkt. 9159 CX 300Z7 *In Camera*). [##] (Dkt. 9159 CX 92Y; Dkt. 9159 CX 300Z8 *In Camera*; Dkt. 9159 CX 428Z100). [##] (Friedman CX 191B ¶ 5 *In Camera*; Friedman JX 1, 116 ln. 7-14, 118 ln. 1-16, 121 ln. 6-14; Disch Dkt. 9159, 665; Becker Dkt. 9159, 1317; Dkt. 9159 CX 300Z9 *In Camera*; Dkt. 9159 CX 92X; Dkt. 9159 RX 172T). [##] (Becker Dkt. 9159, 1268-1270; Dkt. 9159 CX 428E; Dkt. 9159 CX 542A *In Camera*; Dkt. 9159 CX 642Z9).

22. [##] (Clark CX 193B ¶ 2 *In Camera*; Bendavid CX 194B ¶ 3 *In Camera*; JX 3, PX 9 at 112 ln. 7-12; JX 3, PX 8 at 47 ln. 23-48 ln. 3; Kaserman JX 1, 270 ln. 10-20; Dkt. 9159 CX 299Z44- Z46, Z49-Z50 *In Camera*).

23. Compounding gives mass and suspension PVC homopolymer a broad array of performance properties. Plasticizers can be used to make mass and suspension PVC homopolymer more flexible and less brittle. Stabilizers are added to protect against degradation from heat or light. For less demanding applications, fillers can be utilized to reduce raw material costs. Pigments add color (JX 3, PX 11 at 627 ln. 13 - 631 ln. 11, 656 ln. 17 - 658 ln. 17; Disch Dkt. 9159, 656-58; Dkt. 9159 CX 184Z83-Z85; Dkt. 9159 CX 427L).

24. [##] (Goodrich F18 n.5; Dellevigne CX 188A ¶ 4 *In Camera*; Friedman CX 191B ¶ 4 *In Camera*; Dkt. 9159 CX 427M; Dkt. 9159 CX 642Z23).

## 2. Suspension PVC copolymer

25. [##] (Hill CX 183D ¶ 10 *In Camera*; JX 3, PX 13 at 452726; JX 3, PX 9 at 14 ln. 12-25; *See* Weimar JX 1, 30 ln. 20 - 31 ln. 2).

26. Suspension PVC copolymer resins are compounded with various additives before processing (Disch Dkt. 9159, 655-657). [##] (Hill CX 183E ¶ 11 *In Camera*; Dkt. 9159 CX 427Z7). [##] (Goodrich F 186; Hill CX 183F ¶ 13-14 *In Camera*; Flammer CX 184E-F ¶ 10; Disch Dkt. 9159, 678-679; JX 3, PX 136 56 ln. 24 - 57 ln. 1; Dkt. 9159 CX 300Z10 *In Camera*).

27. Phonograph records are fabricated by the compression-molding of suspension PVC copolymer compound (Disch Dkt. 9159, 661-662). [##] (Hill CX 183E ¶ 12 *In Camera*).

28. [##] (Weimar CX 192F-G ¶ 15 *In Camera*; Rawlins CX 197B ¶ 3 *In Camera*; Weimar JX 1, 30-32; Barlet JX 1, 56-57).

29. [##] (Weimar CX 192A-B ¶ 3 *In Camera*). [##] (Weimar CX 192A-B ¶ 3 *In Camera*; Rawlins CX 197A-B ¶ 2 *In Camera*; Barlet JX 1 56-57).

## 3. Dispersion PVC

30. [##] (van Haaren CX 187B ¶ 5-6 *In Camera*; Boulay CX 189A-B ¶ 2 *In Camera*; Truog CX 202A ¶ 1 *In Camera*; Baker CX 205A-B ¶ 1; Kaserman JX 1, 262 ln. 9 - 264 ln. 9, 266 ln. 16 - 267 ln. 15 Rutland JX 1, 731; JX 3, PX 8 at 8 ln. 24 - 9 ln. 11, 32 ln. 15-21, 47 ln. 16-23; JX 3, PX 9 at 14 ln. 12-18; JX 3, PX 13 at 452717). [##] (Flammer CX 184E-F ¶ 10; van Haaren CX 187B ¶ 5 *In Camera*; JX 3, PX 8 at 32 ln. 15 - 37 ln. 24).

31. The consumption of approximately 40 percent of the United States market for dispersion PVC resin is accounted for in the manufacture of vinyl resilient sheet flooring (JX 3, PX 8 at 43 ln. 16-23). [##] (van Haaren CX 187B-C ¶ 6 *In Camera*; Barlet JX 1, 63-66; JX 3, PX 9 at 98 ln. 3-7).

32. A major group of applications for dispersion resin involve coating a surface with a plastisol of resin (dispersion particles suspended in fluid plasticizers) compounded with other ingredients. These applications primarily comprise the coating of fabric or paper with resin which is then fused to the substrate. Products using

dispersion-coated fabric include vinyl upholstery covering, handbags, shoe uppers, wall coverings, luggage, apparel, hospital equipment and carpet backing (Mason JX 1, 192; JX 3, PX 9 at 96 ln. 25 - 97 ln. 19). In addition, dispersion resin may be used for coating containers, such as paint cans or bottles (JX 3, PX 8 at 34 ln. 15 - 35 ln. 7; JX 3, PX 9 at 95 ln. 8-10, 97 ln. 20-23).

33. [##] (Flammer CX 184E-F ¶10; Boulay CX 189A-B ¶ 2 *In Camera*; Lore JX 1, 177-179, 186-188; JX 3, PX 8 at 35 ln. 15 - 37 ln. 12).

#### *D. History of PVC*

34. [##] (Dkt. 9159 CX 200M *In Camera*). [##] (Goodrich F 27; DiLiddo Dkt. 9159, 3106; Dkt. 9159 CX 92G; Dkt. 9159 CX 40Z2 *In Camera*).

##### 1. Mass and suspension PVC homopolymer

35. The initial growth and development of mass and suspension PVC homopolymer as a product in the 1950's and 1960's occurred as flexible (plasticized) PVC resin found markets in wire and cable, calendered sheet, and specialty applications (Goodrich F 28; *See* DiLiddo Dkt. 9159, 3106-08). [##] (Goodrich F 28; Dkt. 9159 RX 639H *In Camera*).

36. [##] (Goodrich F 29; Dkt. 9159 RX 639H *In Camera*). [##] (Goodrich F 29; Dkt. 9159 RX 639H, P *In Camera*). [##] (Goodrich F 29; Disch Dkt. 9159, 641, 648-653; Dkt. 9159 CX 374G, Q *In Camera*; Dkt. 9159 CX 405R; Dkt. 9159 CX 420F; Dkt. 9159 CX 428Z12).

37. [##] (H. Wheeler Dkt. 9159, 1734-35; Disch Dkt. 9159, 641-42; *See* Dkt. 9159 CX 505S-T; Dkt. 9159 CX 515G; Dkt. 9159 RX 639H, R *In Camera*; Dkt. 9159 CX 6420), and the development and implementation of vinyl chloride emission control technology to comply with newly-instituted environmental regulations (*See* Dkt. 9159 CX 642 U-V; Dkt. 9159 CX 597 A-E).

38. [##] (Dkt. 9159 CX 42A-Z64 *In Camera*; Dkt. 9159 RX 639H *In Camera*). [##] (*See* Eades Dkt. 9159, 1464-1465; *See* Dkt. 9159 RX 639H *In Camera*).

39. The mid-to-late 1970's were also a period of fundamental changes in the regulatory environment facing the PVC and VCM industries which had a profound effect on the technological design, siting, and operation of plants, capital costs, and the structure of the markets (*See* Dkt. 9159 CX 642Z5-Z6; Dkt. 9159 CX 504D-O; Dkt. 9159 CX 505S-U; Dkt. 9159 CX 597A-E). While regulations promulgated by both federal and state agencies during this period affected all aspects of business, environmental regulations had the greatest overall impact on the PVC and VCM industries (*See* Dkt. 9159 CX 597C). Following the finding of VCM as a highly specific cause of liver cancer, the Occupational Health and Safety Administration (OSHA) announced a standard in 1975 to reduce occupational exposure to residual VCM. And in 1976, the Environmental Protection Agency (EPA) promulgated a standard to reduce atmospheric VCM emissions (Goodrich, slip op. at 32; *See* Dkt. 9159 CX 642U). Additional environmental regulations affecting other aspects of PVC and VCM production facilities were subsequently adopted (Dkt. 9159 CX 597C-D; Dkt. 9159 CX 642Z164- Z177).

40. [##] (Dkt. 9159 CX 200L *In Camera*; Dkt. 9159 CX 642Z5). Most of the requirements regarding VCM control technology pertain to PVC plants, which, as batch process operations, contribute proportionately more emissions than VCM/EDC plants, which operate through a self-contained continuous flow process (Dkt. 9159 CX 642).

## 2. Suspension PVC copolymer

41. [##] (Hill CX 183F ¶ 16 *In Camera*; Flammer CX 184D ¶ 7; Boyer CX 185G-H ¶ 16; Fisher CX 208A-B ¶ 2; Schaefer JX 1, 586; Kaserman JX 1, 329, 473-474; JX 3, PX 9 at 42 ln. 17 - 43 ln. 11; JX 3, PX 13 at 452726)

## 3. Dispersion PVC

42. [##] (Flammer CX 184D ¶ 7; Boyer CX 185E ¶ 10; van Haaren CX 187C ¶ 8 *In Camera*; Kaserman JX 1, 329, 473; JX 3, PX

8 at 34 ln. 21 - 35 ln. 1, 80 ln. 20-24; JX 3, PX 9 at 93 ln. 25 - 94 ln. 16; JX 3, PX 13 at 452717).

#### IV. THE RELEVANT PRODUCT MARKETS

43. In its landmark decision in *Brown Shoe Co. v. United States*, 370 U.S. 294 (1962), the Supreme Court outlined a two-step process for product market analysis. First, the outer boundaries of a product market are to be identified by determining reasonable interchangeability of use or cross-elasticity of demand between the product itself and substitutes for it. *Id.* at 325. *See also United States v. Continental Can Co.*, 378 U.S. 441, 447-49 (1964); *Tampa Electric Co. v. Nashville Coal Co.*, 365 U.S. 320 (1961); *United States v. E.I. du Pont de Nemours & Co.*, 351 U.S. 377, 393-395, 400-401, 404 (1956).

44. Further *Brown Shoe* explains that the boundaries of markets for antitrust purposes may be determined by examining "such practical indicia as industry or public recognition of the [market] as a separate economic entity, the product's particular characteristics and uses, unique production facilities, distinct prices, sensitivity to price changes, and specialized vendors." *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 (1962). The overriding principle in this two-step analysis is to identify meaningful competition where it actually exists. *United States v. Continental Can Co.*, 378 U.S. 441, 449 (1964).

45. The *Department of Justice Merger Guidelines* and the *Statement of Federal Trade Commission Concerning Horizontal Mergers*<sup>5</sup> provide principles for defining the relevant product market.

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<sup>5</sup> In 1982, the Justice Department issued revised Merger Guidelines. *Department of Justice Merger Guidelines* (1982), 2 Trade Reg. Rep. (CCH) ¶ 4500, *et seq.* Those 1982 Guidelines were further revised by the Department in 1984. *See U.S. Department of Justice Guidelines*, 2 Trade Reg. Rep. (CCH) ¶ 4490, *et seq.* (June 14, 1984) ("DOJ Merger Guidelines"). Also in 1982 the Federal Trade Commission issued a statement concerning horizontal mergers. *Statement of Federal Trade Commission Concerning Horizontal Mergers*, 2 Trade Reg. Rep. (CCH) ¶ 4516 (June 14, 1982) ("FTC Merger Statement").

While these statements are not binding on the courts, courts have applied them when determining the impact on competition of a proposed acquisition. *See, e.g.,*



*The DOJ Merger Guidelines* establish the following test for determining a relevant product market:

[T]he Department will begin with each product (narrowly defined) produced or sold by each merging firm and ask what would happen if a hypothetical monopolist of that product imposed a "small but significant and non-transitory" increase in price. If the price increase would cause so many buyers to shift to other products that a hypothetical monopolist would not find it profitable to impose such an increase in price, then the Department will add to the product group the product that is the next-best substitute for the merging firm's product and ask the same question again. This process will continue until a group of products is identified for which a hypothetical monopolist could profitably impose a "small but significant and nontransitory" increase in price. The Department generally will consider the relevant product market to be the smallest group of products that satisfies this test.

*DOJ Merger Guidelines, supra*, ¶ 492.101, at 6879-9. The Department has identified an example of "a small but significant and nontransitory increase in price" as a price increase of five percent lasting for one year. *Id.*

46. Although direct evidence of the likely effects of a price increase is sometimes available, it is often necessary to rely on circumstantial evidence to delineate a product market. Such indicia are set out in both the *DOJ Merger Guidelines* and the *FTC Statement*. The evidence may include the buyer's perception that the products are not substitutes, *DOJ Merger Guidelines, supra*, ¶ 4492.102, at 6879-9; differences or similarities in price movements that are not explained by common costs or similar variables, *Id.*; differences between products in usage, physical composition or technical characteristics; *Id.*; sellers' perceptions that the products are not substitutes, *Id.*; and persistent price differences over time. *FTC Merger Statement, supra*, ¶ 4516, at 6901-6-7; *See Goodrich*, slip op. at 16; *Grand Union Co.*, 102 FTC 812, 1041 (1983).

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*FTC v. Bass Brothers Enterprises, Inc.*, 1984-1 Trade Cas. (CCH) ¶ 66,041, at 68,620 (N.D. Ohio 1984); *FTC v. PPG Industries, Inc.*, 628 F. Supp. 881, 884-85 (D.D.C.), *aff'd in part & rev'd in part on other grounds*, 798 F.2d 1500, 1503 (D.C. Cir. 1986); *Monfort of Colorado, Inc. v. Cargill, Inc.*, 591 F. Supp. 683 (D. Colo. 1983), *aff'd*, 761 F.2d 570 (10th Cir. 1985), *rev'd on other grounds*, 107 S. Ct. 484 (1986); *Marathon Oil Co. v. Mobil Corp.*, 530 F. Supp. 315, 325 (N.D. Ohio), *aff'd*, 669 F.2d 378 (6th Cir. 1981), *cert. denied*, 455 U.S. 982 (1982).

47. A meaningful economic market is a market that could be subject to the exercise of market power, *i.e.*, a market in which firms could exercise market power if they possessed the ability to coordinate their actions. *DOJ Merger Guidelines, supra*, ¶ 4,492 at 6879-8; Goodrich slip op. at 15-16; Kaserman JX 1, 252; *See also* Klass Dkt. 9159, 5030-32. The group of products (product market) and geographic area (geographic market) that comprise a market for purposes of merger analysis are defined in terms of the probable demand responses of consumers and supply responses of other firms to a price increase for the product of the merging firms. *DOJ Merger Guidelines, supra*, ¶ 4,492 at 6879-8.

48. A product market defines a group of products that are close substitutes such that the producers of that group of products could profit from a price increase without experiencing a degree of substitution by other suppliers or to other products sufficient to defeat the profitability of that price increase (Kaserman JX 1, 252-54; Kaserman Dkt. 9159, 2222, 2229). *See* Goodrich, slip op. at 16. Products which are not close substitutes in consumption or production for those of the merging firms are excluded from the relevant product market because changes in the prices or availability of such products do not directly or substantially affect the pricing decisions for the product of the merging firms (Kaserman JX 1, 252; Klass Dkt. 9159, 5025).

49. The purpose of defining a relevant product market is to provide a context for analysis of industry structure so that a meaningful prediction of industry performance may be made on the basis of the effects of the acquisition on industry structure (Kaserman JX 1, 252; Kaserman Dkt. 9159, 2226; *FTC Merger Statement* ¶ 4516 at 6901-6; *See also* Klass Dkt. 9159, 2227).

50. The Supreme Court has concluded that both demand and supply substitutability are relevant to determining the contours of a relevant product market,<sup>6</sup> (Goodrich, slip op. at 15). Thus, a relevant product market is defined in light of both demand and supply side substitution (Goodrich, slip op. at 15; Kaserman JX 1, 255;

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<sup>6</sup> *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 & n. 42 (1962); *United States v. Columbia Steel Corp.*, 334 U.S. 495, 510-11 (1948); *See also United States v. E.I. du Pont de Nemours & Co.*, 351 U.S. 377 (1956).

Kaserman Dkt. 9159, 2223-24; *See also* Klass Dkt. 9159, 5025, 5021). A relevant product market can also be delineated by measuring cross-elasticities of supply and demand; that is, by determining the degree to which -- within a given period of time -- changes in the price of a given product or service will induce changes in the quantities of a second product or services that are demanded or supplied<sup>7</sup> (Goodrich, slip op. at 15). The economic issue in defining a product market is to locate the point beyond which products are no longer close substitutes in terms of either demand or supply for the product of the merging firms (Klass Dkt. 9159, 5025).

51. On the demand side, the Commission seeks "to define a product or group of products sufficiently distinct that buyers could not defeat an attempted exercise of market power on the part of sellers of those products by shifting purchases to still different products"<sup>8</sup> (Goodrich at 16; Kaserman JX 1, 253-54). The Commission thus seeks to determine whether purchasers are likely to shift purchases away from the products of the merging firms in sufficient magnitude to defeat any constraint by the merging firms to raise prices, restrict supply, or lower quality (*FTC Merger Statement* ¶ 4516 at 6901-6; Goodrich, slip op. at 16).

52. Inclusion of products within a product market means that the cross-price elasticity of demand between those products is positive and sufficiently large that they should be considered to be close substitutes (Kaserman Dkt. 9159, 2224; *FTC Merger Statement*, ¶ 4516 at 6901-6. *See* Kaserman JX 1, 254-55). Alternative sources of supply to which users could reasonably turn should all be included in the relevant product market (Klass Dkt. 9159, 5017).

53. Therefore, to hold that something is a product market means that, whatever other products there are that might substitute for this product, they are not close enough substitutes to defeat a price increase (Kaserman Dkt. 9159, 2227; Goodrich, slip op. at 15-16;

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<sup>7</sup> *Grand Union Co.*, 102 FTC 812, 1039-40 (1983); *Beatrice Foods Co.*, 101 FTC 733, 836 (1983) (Douglas, Commissioner and Miller, Chairman, concurring); *FTC Merger Statement*, ¶ 4516 at 6901-7.

<sup>8</sup> *Hospital Corporation of America*, 106 FTC 361, 464, 466 (1985) (hereinafter "HCA"), *aff'd*, 807 F.2d 1381 (1986), *cert. denied*, 107 S. Ct. 1975 (1987).

Kaserman JX 1, 254-56). This follows from the fact that products that are close enough substitutes to defeat a price increase are included in the market definition (Kaserman Dkt. 9159, 2227; Kaserman JX 1, 252-54, 257; *See also* Klass Dkt. 9159, 4141).

54. On the supply side, market definition takes into account close substitutes in production so as to include those producers who could easily and economically produce and sell the product of the merging firms in response to an increase in price by existing producers of the product (*DOJ Merger Guidelines*, ¶ 4492 at 6879-10; Kaserman Dkt. 9159, 2230; Kaserman JX 1, 255).

*A. Mass and Suspension PVC*

55. The parties agree that mass and suspension PVC constitutes a relevant product market (Complaint ¶ 13(a); Answer of Occidental ¶ 5; Harris JX 1, 858 ln. 13-18; JX 3, PX 14 at 2). The Commission has held that this stipulation is consistent with the record (Goodrich, slip op. at 19).

56. [##] (*See* Hornack CX 182B-D ¶ 6-8 *In Camera*; Hill CX 183B-D ¶ 4-7 *In Camera*; Flammer CX 184B-E ¶ 3-8; Boyer CX 185G ¶ 15; *See* Goodrich, slip op. at 79-80).

57. Further, PVC homopolymer resin produced by the mass process and PVC homopolymer resin produced by the suspension process belong in one product market because the resins are interchangeable in use (Goodrich F 24; Friedman JX 1, 113 ln. 5-16, 126 ln. 8-11; JX 3, PX 11 at 632 ln. 17-24; RPF 16; JX 3, PX 6 at 73 ln. 18-21; JX 3, PX 8 at 12 ln. 12-21) over a large variety of applications, such as PVC pipe and pipe fitting, wire and cable applications, packaging film and sheet, vinyl siding, bottles, vinyl window components, medical applications, and miscellaneous calendered products (Goodrich F 97; Kaserman JX 1, 270 ln. 12-20; JX 3, PX 9 at 112 ln. 7-12; JX 3, PX 8 at 47 ln. 23-48 ln. 3).

58. Because mass and suspension PVC constitutes a relevant product market, producers of mass and suspension PVC homopolymer could succeed in raising prices a small but significant amount (such as 5 percent) for a sustained period if they coordinated their actions and engaged in collusion. This means that such a price increase would succeed because demand for mass and suspension

PVC resin is significantly inelastic (*e.g.*, consumers cannot economically and feasibly switch to substitute input products) so that customers could not switch their demand to another raw material to defeat the price increase (Goodrich at 19, 73-75; *See* Kaserman JX 1, 252-54, 256-57, 270-71, 345).

59. No suppliers of resins other than mass and suspension PVC can economically or practicably produce mass and suspension PVC homopolymer to defeat a small but significant price increase for a sustained period (*DOJ Merger Guidelines, supra*, ¶ 4,492 at 6878-9; Kaserman Dkt. 9159, 2222, 2229; Kaserman JX 1, 344; *See also* Klass Dkt. 9159, 5221, 5225; Harris JX 1, 858 ln. 13-859 ln. 2). Moreover, because of their higher costs and extremely limited capacity, it makes little difference to the success of any collusive arrangement whether the copolymer producers elect to go along with the collusion by homopolymer producers or elect to take advantage of higher homopolymer prices by increasing their production of suspension PVC homopolymer (Kaserman JX 1, 271, 335-36).

60. In addition, firms producing other products are unlikely to switch to producing mass and suspension PVC in response to a small increase in PVC resin prices, because the machinery needed to produce PVC is essentially unique to that application (Goodrich, slip op. at 19-20; *See* Disch Dkt. 9159 at 663).

61. [##] (Goodrich, slip op. at 19; Kaserman JX 1, 252-55; Kaserman Dkt. 9159, 2231-32; Hornack CX 182B-E ¶¶ 5-6, 8-9 *In Camera*; Hill CX 183B-G ¶¶ 4-8, 10-17 *In Camera*; Flammer CX 184B-F ¶¶ 3-10; Boyer 185D, G ¶¶ 8,15). Indeed, respondents' economic expert himself has examined the product market definition and concluded that he could properly work with the mass and suspension PVC market (Harris JX 1, 858 ln. 13-18).

62. [##] (Goodrich F 94; Kaserman JX 1, 270 ln. 13-25). [##] (Barlet JX 1, 74 ln. 12-21 *In Camera*, Friedman JX 1, 121 ln. 25-122 ln. 5; Goodrich F 95; JX 3, PX 11 at 661 ln. 10-662 ln. 22). As found by the Commission:

Firms that currently purchase [mass and suspension] PVC resin to manufacture PVC end use products cannot substitute other inputs in response to a small increase in PVC resin prices; there are simply no substitutes for PVC resin as an input to produce these products.

(Goodrich, slip op. at 19. *See* Goodrich F 95; JX 3, PX 11 at 662 ln. 23-663 ln. 5; JX 3, PX 8 at 48 ln. 12-20; Kaserman Dkt. 9159, 2232; H. Wheeler Dkt. 9159, 1751-1752).

63. Mass and suspension PVC homopolymer is used to manufacture hundreds of products. The major applications include: pipe and fittings, wire and cable, packaging, film and sheet, siding, and bottles (Goodrich, slip op. at 18-19; Goodrich F 97; Kaserman JX 1, 270 ln. 12-20; *See* JX 3, PX 11 at 663 ln. 14-680 ln. 8; JX 3, PX 8 at 47 ln. 23-48 ln. 3; JX 3, PX 9 at 112 ln. 7-12). As discussed in detail *infra*, the price elasticity of demand for mass and suspension PVC homopolymer products is low, and there is relatively little substitutability between mass and suspension PVC homopolymer products and products manufactured from other materials (Goodrich, slip op. at 72-75; Kaserman JX 1, 254-57, 270-71). Mass and suspension PVC homopolymer products possess unique characteristics that make them highly desirable in their end uses. Consequently, PVC homopolymer finished goods are often selected on the basis of their distinctive properties and not on the basis of changes in price. Mass and suspension PVC homopolymer finished goods generally offer substantial cost savings to purchasers, compared to products manufactured from other materials (Friedman JX 1, 116 ln. 7-14, 118 ln. 1-16, 121 ln. 6-14; Witsken JX 1, 610 ln. 20-611 ln. 1; Goodrich FF 97-193; JX 3, PX 11 at 672 ln. 10-677 ln. 19; *See* generally JX 3, PX 9 at 112 ln. 7-116 ln. 21).

64. There is no supply side substitution for mass and suspension PVC. Apart from the relatively small level of suspension PVC copolymer capacity that can be used to produce suspension PVC homopolymer, machinery and facilities of producers who manufacture products other than mass and suspension PVC homopolymer cannot be converted economically to the manufacture of mass and suspension PVC homopolymer (Kaserman JX 1, 270-72, 335-36; Kaserman Dkt. 9159, 2233; Klass Dkt. 9159, 4119; Dkt. 9159 CX 46A). Moreover, firms producing other products are unlikely to switch to producing mass and suspension PVC homopolymer in response to a small increase in PVC resin prices, because the machinery needed to produce PVC is essentially unique to that application (Goodrich, slip op. at 19-20; *See* Disch Dkt. 9159, 663).

65. For the reasons discussed, *infra*, demand for mass and suspension PVC homopolymer is inelastic (Kaserman JX 1, 270 ln. 10-271 ln. 5; JX 3, PX 10 at 1141 ln. 10-18; (See generally Goodrich FF 97-193; Goodrich, slip op. at 72-75)). There is very little effect on the volume consumed based on the industry-wide movements in mass and suspension PVC homopolymer price (JX 3, PX 6 at 151 ln. 4-152 ln. 5; JX 3, PX 10 at 1141 ln. 10-18; JX 3, PX 136 at 71 ln. 23-72 ln. 2; JX 3, PX 82 at 900139; See CPF 512). This creates a natural incentive for companies to restrict output to raise prices (Kaserman JX 1, 255 ln. 2-9; JX 3, PX 82 at 900138). The strong inference is that mass and suspension PVC homopolymer producers could probably profitably raise prices by five percent or more (Friedman JX 1, 118 ln. 1-20).

66. [##] (Hill CX 183B-F ¶ 4-8, 10-16 *In Camera*; Flammer CX 184B-F ¶ 3-10; Boyer CX 185G-H ¶ 15-16; Weimar CX 192B-C ¶ 4-5 *In Camera*; Rawlins CX 197B- C ¶ 3-4 *In Camera*; JX 3, PX 136 at 60 ln. 21-61 ln. 10; Kaserman JX 1, 260 ln. 10-21; 261 ln. 21-25; Harris JX 1, 858 ln. 19-859 ln.2; See Hornack CX 182C-E ¶¶ 7-9 *In Camera*). On the supply side, however, as noted, because specialty grades of suspension PVC homopolymer resin can be produced at suspension PVC copolymer plants, the relatively small level of suspension PVC copolymer capacity is included as part of the mass and suspension PVC market (See Kaserman JX 1, 270-72, 335-36).

67. Solution PVC resin does not compete with any other PVC resin product, including mass and suspension PVC homopolymer, and is not produced by Occidental or the former Tenneco Polymers (JX 3, PX 7 at 133 ln. 3-134 ln.3; JX 3, PX 8 at 11 ln. 13-12 ln. 11).

68. It is accordingly found that mass and suspension PVC (including suspension PVC copolymer production capacity) constitutes a relevant product market (Goodrich, slip op. at 19; Complaint ¶ 13(a); Answer of Occidental ¶ 5; Kaserman JX 1, 252 ln. 6-9, 269 ln. 21-272 ln. 25).

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Initial Decision

*B. Suspension PVC Copolymer*

1. Suspension PVC copolymer is recognized in the PVC industry as a distinct market

69. Suspension PVC copolymer resin is recognized by producers as a "separate, distinct product" from other PVC resins selling into "distinct end-use markets" (JX 3, PX 8 at 31 ln. 21-32 ln. 14; JX 3, PX 9 at 14 ln. 3-16 ln. 14, 85 ln. 11-86 ln. 14, 145 ln. 24-146 ln. 15; *See Harris JX 1, 858 ln. 19-859 ln. 2*). [##] (JX 3, PX 8 25 ln. 6-16; JX 3, PX 9 32 ln. 25 - 33 ln. 9; Fisher CX 208B ¶ 2; Hill CX 183C ¶ 3 *In Camera*; Boyer CX 185G ¶ 16; Beveridge JX 1 82 ln. 25 - 83 ln. 6; Weimar JX 1, 34 ln. 14-20; Marcus CX 209D ¶ 8 *In Camera*; Kaserman JX 1, 261 ln. 18-20). As noted by Mr. Flammer of Vista:

Both dispersion PVC and copolymer PVC are completely different businesses from suspension PVC homopolymer production. Suspension PVC homopolymer resins do not compete with . . . copolymer PVC resins because these products are sold into different markets.

(Flammer CX 184E ¶ 10).

70. [##] (CX 81B *In Camera*; CX 82C *In Camera*). One such memorandum noted that the acquisition would reduce the number of copolymer producers to two, providing Occidental "with almost half the market . . ." (JX 3, PX 12). The memorandum then stated that "[this] will significantly enhance the profitability of the Pottstown suspension plant " (*Id.*).

71. [##] (CX 96B *In Camera*).

2. Suspension PVC copolymer is characterized by distinct prices and insensitivity to changes in prices of other materials.

72. The prices of suspension PVC copolymer resin move independently of the prices of other PVC resins (Kaserman JX 1, 260 ln. 24 - 261 ln. 9; JX 3, PX 6 at 63 ln. 16-66 ln. 8; JX 3, PX 7 at 54 ln. 4-5; JX 3, PX 8 at 31 ln. 21-32 ln. 14; JX 3, PX 9 at 26 ln. 14-20; JX 3, PX 136 at 121 ln. 2-122 ln. 8; JX 3, PX 13 at 452726; JX 3, PX 128 at PVC 10; JX 3, PX 130 at 131). Copolymer resin is priced higher than other suspension resins (JX 3, PX 13 at 452726). [##]



(CX 114 *In Camera*; *Accord* JX 3, PX 13 at 452726; Hill CX 183D ¶ 8 *In Camera*; Flammer CX 184E ¶ 9). The price of copolymer resin is also independent of the level of supply of other PVC resins (JX 3, PX 6 at 63 ln. 16 - 66 ln. 8; JX 3, PX 9 at 14 ln. 14-20).

73. Mr. Stevens, in explaining that there is little relation between the level of output of suspension PVC copolymer and the price of suspension PVC homopolymer, testified that the copolymer market and the homopolymer market are "separate entities" (JX 3, PX 9 at 14 ln. 14-20). Similarly, Mr. Disch testified that Tenneco did not look at homopolymer prices in setting copolymer prices because the two are "separate, distinct product groups and, in most cases, two distinct end use markets" (JX 3, PX 8 at 31 ln. 21 - 32 ln. 2). Mr. Schaefer echoed this testimony, noting that copolymer and homopolymer prices may show similar movements in price at times not because they are used in the same end-use markets, but because of general economic conditions (JX 3, PX 136 at 121 ln. 1 - 122 ln. 8).

74. Occidental's actual realized prices for its suspension PVC copolymer resins and for its mass and suspension PVC homopolymer resins, as presented in the following table, confirm the relative independence of prices and price movements for suspension PVC copolymer compared to homopolymer resins. [##]

3. The distinct customers, characteristics, and uses of suspension PVC copolymer give suspension PVC copolymer a low cross-elasticity of demand

75. Substitution between suspension PVC copolymer and suspension PVC homopolymer is limited by the unique characteristics of copolymer that require its use in certain product applications, particularly vinyl resilient floor tile and vinyl records.

76. [##] (Weimar JX 1, 31 ln. 21 - 32 ln. 1; Barlet JX 1, 56 ln. 22 - 57 ln. 7; Marcus CX 209B ¶ 4 *In Camera*; Rawlins CX 197B-C ¶ 4 *In Camera*). Suspension PVC copolymer resin is used in floor tile because its properties allow the tile manufacturer to use a substantial amount of inexpensive filler, which the copolymer binds together in the tile (Weimar JX 1, 31 ln. 21 - 32 ln. 1; Barlet JX 1, 56 ln. 22 - 57 ln. 7). Homopolymer resin does not have melt or flow properties similar to copolymer resin, and therefore substitution of homo-

polymer for copolymer requires that greater amounts of PVC relative to filler be used, or that the PVC be blended for longer periods of time at higher temperatures. In either case, the manufacturing cost of the tile would be higher (Weimar JX 1, 32 ln. 9 - 33 ln. 9; Barlet JX 1, 58 ln. 13 - 59 ln. 2). [##] (Weimar JX 1, 32 ln. 3-5; Weimar CX 192C ¶ 5 *In Camera*; Barlet JX 1, 62 ln. 22-25, 73 ln. 7-13 *In Camera*; Rawlins CX 197B-C ¶ 4 *In Camera*; JX 3, PX 136 at 60 ln. 21 - 61 ln. 10).

77. [##] (Hill CX 183E ¶13-14 *In Camera*; JX 3, PX 8 at 13 ln. 6-21; JX 3, PX 9 at 33 ln. 15-22, 37 ln. 25 - 38 ln. 7, JX 3, PX 136 at 56 ln. 18 - 57 ln. 1). Significant increases in the price of suspension PVC copolymer resin would not result in substitution of other materials for copolymer resin in the manufacture of phonograph records (JX 3, PX 8 at 22 ln. 25 - 23 ln. 25; JX 3, PX 9 at 42 ln. 17-25; JX 3, PX 136 56 ln. 24 - 57 ln. 1).

78. The demand for suspension PVC copolymer resin is inelastic. This means that there would be little substitution of other material by purchasers in response to significant increases in the price of suspension PVC resin. Substitution of products manufactured from materials other than PVC, moreover, is limited by the low cost share of copolymer resin in vinyl resilient floor tile and phonograph records, and by the characteristics of these products that reduce the substitutability between them and other products (*See* Goodrich F 95; Goodrich ID Discussion at 93).

4. There is a low cross-elasticity of supply between  
suspension PVC copolymer and other materials

79. There would be no supply-side substitution by producers of suspension PVC homopolymer in response to significant increases in the price of suspension PVC copolymer resin. Mr. Disch has noted that Tenneco did not shift capacity between suspension PVC homopolymer and suspension PVC copolymer in response to changes in the relative prices of the two resins, because, in his view, they are two distinct situations (JX 3, PX 8 at 32 ln. 7-14). [##] (Boyer CX 185G ¶ 16; Fisher CX 208C ¶ 3; Hornack CX 182C ¶ 7 *In Camera*).

80. Concluding the above discussion, it must be noted that under the *Merger Guidelines*, the issue is whether it would be possible for

a hypothetical monopolist in the sale of suspension PVC copolymer resin profitably to impose a "small but significant and non-transitory" increase in price. The factors described above show that such an increase would be profitable. On the demand side, there would be little substitution between copolymer resin and other materials. Indeed, both complaint counsel's and respondent's economic experts described the demand for suspension PVC copolymer as inelastic, which is the prime issue posed under the *Guidelines* (Kaserman JX 1, 345 ln. 2-6; Harris JX 1, 858 ln. 19-24). On the supply side, there would similarly be no substitution.

81. Thus, it must be found that suspension PVC copolymer resin constitutes a relevant product market.

*C. Dispersion PVC*

82. The parties agree that dispersion PVC resin constitutes a relevant product market (Complaint ¶ 13(c); Answer of Occidental ¶ 5; Harris JX 1, 858 ln. 13-18; JX 3, PX 14 at 2; *See* JX 3, PX 8 at 8 ln. 3-9 ln. 11; JX 3, PX 9 at 13 ln. 23-14 ln. 25, 146 ln. 3-15).

83. By definition, because dispersion PVC resin constitutes a relevant product market, producers could succeed in raising prices a sustained 5 percent if they coordinated their actions and engaged in collusion. This means that such a price increase would succeed because demand for dispersion PVC is sufficiently inelastic so that consumers could not use other raw materials in sufficient quantities to defeat the price increase (Kaserman JX 1, 262-69, 345). This small but significant and nontransitory price increase would be programed to succeed because no producer of raw materials other than dispersion PVC could practicably and economically supply the marketplace with dispersion PVC to defeat the price increase (*DOJ Merger Guidelines, supra*, ¶ 4,492 at 6879-8; Kaserman Dkt. 9159, 2222, 2229; Kaserman JX 1, 262-69, 345; *See also* Klass Dkt. 9159, 5221, 5225).

84. The evidence submitted in this proceeding fully supports the agreement of the parties that dispersion PVC resin constitutes a relevant product market. The respondents' expert economist utilized a dispersion PVC resin product market to analyze the effects of

Occidental's acquisition of Tenneco Polymers (Harris JX 1, 858 ln. 13-ln. 18).

85. Dispersion PVC resin uses differ from the uses for mass and suspension PVC homopolymer resin and suspension PVC copolymer resin. As the Commission found in Goodrich: "Bulk and suspension PVC resins have 'quite different' applications than dispersion resins" (Goodrich, slip op. at 17-18 n.37; *See* Disch, Dkt. 9159, 634). [##] (Hill CX 183F-G ¶ 17 *In Camera*; Flammer CX 184E-F ¶ 10; Boyer CX 185D-F ¶¶ 7-12; JX 3, PX 6 at 65 ln. 6-66 ln. 18, 106 ln. 23-107 ln. 7; JX 3, PX 8 at 8 ln. 11, 40 ln. 8-18; JX 3, PX 9 at 13 ln. 23-14 ln. 25, 89 ln. 17-90 ln. 1, 111 ln. 3-12, 146 ln. 3-15; Harris JX 1, 858 ln. 13-18).

86. Purchasers of dispersion PVC resin perceive that dispersion PVC constitutes a distinct and separate market from any other PVC resin. As noted by Mr. Flammer of Vista:

Both dispersion PVC and copolymer PVC are completely different businesses from suspension PVC homopolymer production. Suspension PVC homopolymer resins do not compete with . . . dispersion PVC . . . because these products are sold into different markets.

(Flammer, CX 184E ¶ 10).

87. [##] (van Haaren CX 187B-C ¶¶ 5-7 *In Camera*; Baker CX 205B ¶ 2; Boulay CX 189B-C, D ¶¶ 4-5, 10 *In Camera*; JX 3, PX 8 at 32 ln. 15-37 ln. 24; JX 3, PX 9 at 96 ln. 21-99 ln. 11, 103 ln. 8-104 ln. 14; Kaserman JX 1, 267 ln. 22-268 ln. 12).

88. [##] (JX 3, PX 9 at 15 ln. 1-19, 97 ln.10-98 ln. 2. *See* Hill CX 183F-G ¶ 17 *In Camera*; Flammer CX 184B-D ¶¶ 4-6; Boyer CX 185B-C ¶¶ 3-4).

89. Purchasers and producers recognize that dispersion PVC prices and mass and suspension PVC homopolymer prices and suspension PVC copolymer prices are independent of each other (Flammer, CX 184E ¶ 9; Boyer 185E-F ¶ 11; Beveridge JX 1, 88 ln. 18-23; Kaserman JX 1, 269 ln. 7-12).

90. Dispersion PVC prices move independently of the price of mass and suspension PVC homopolymer or suspension PVC copolymer (Kaserman JX 1, 269; Boyer CX 185E-F ¶ 11; Flammer CX 184E ¶ 9; JX 3, PX 136 at 63-64, 67, 122; Schaefer JX 1, 583; JX

3, PX 8 at 40, 87- 89; JX 3, PX 9 at 13-14, 26-27, 100, JX 3, PX 6 at 33-34, 64-67; JX 3, PX 7 at 127-28, 163-64).

91. [##] (CX 100 A-L *In Camera*; Kaserman JX 1, 269 ln. 7-12).

92. [##] (*See* CX 100 A-L *In Camera*). [##]

93. Producers and purchasers report that dispersion PVC prices remained stable or declined slightly from 1981 until the time of the acquisition (*See* JX 3, PX 8 at 40; JX 3, PX 9 at 81; Schaefer JX 1, 583). Since the acquisition, dispersion PVC prices have increased: once in July 1987 by \$.03 a pound and once in January 1988 by another \$.03 a pound (Baker CX 205C ¶ 4). [##] (Hill CX 183D ¶ 8 *In Camera*; Flammer CX 184E ¶9; Boyer CX 185E-F ¶ 11; Baker CX 205C ¶ 4. *See, e.g.*, Pflugrath CX 177D-E ¶¶ 8-9 *In Camera*; Heath CX 178D-E ¶¶ 7-8 *In Camera*; Weimar CX 192E ¶ 11 *In Camera*).

94. The only common factor affecting the price of dispersion PVC resins and other PVC resins is the cost of the major feedstock, vinyl chloride monomer (VCM) (Schaefer JX 1, 583 ln. 13-15; JX 3, PX 6 at 66 ln. 19-68 ln. 3; JX 3, PX 7 at 83; Disch JX 3, PX 8 at 40 ln. 8-18; JX 3, PX 9 at 100 ln. 15-101 ln. 16; JX 3, PX 136 at 123; Kaserman JX 1, 268 ln. 23-269 ln. 13).

95. As a result of its unique physical characteristics, dispersion PVC resin is essential in the production of a variety of coating, molding, and dipping end-use applications (Kaserman JX 1, 262 ln. 20-21; *See* JX 3, PX 9 at 104 ln. 20-22). Suspension PVC homopolymer resin cannot be processed in the way dispersion resin is processed, because suspension resin is not dispersible in a liquid form (Flammer CX 184E-F ¶ 10).

96. Dispersion PVC resin is used to manufacture products grouped in essentially three end-use segments. These segments are: (1) vinyl resilient sheet flooring; (2) coated fabrics and textiles such as carpet tile; and (3) molding and coating applications, including can or bottle coating (Kaserman JX 1, 266-67, JX 3, PX 138; *See* JX 3, PX 8 at 32-41). Vinyl sheet flooring accounts for consumption of between approximately 33% and 40% of the United States market for dispersion PVC resin (Kaserman JX 1, 266-67, JX 3, PX 138; JX 3, PX 8 at 40; JX 3, PX 9 at 92). Bottle closure and sealant applications account for consumption of approximately 16% of dispersion PVC resin, vinyl automotive molded products account for approximately 7% of consumption of dispersion PVC resin, and coated fabrics

account for approximately 25% of United States consumption of dispersion PVC resin (Kaserman JX 1, 266-67; JX 3, PX 138). The remaining consumption of dispersion PVC resin is accounted for by miscellaneous applications (Kaserman JX 1, 266 ln. 19-267 ln. 15; JX 3, PX 138; Disch JX 3, PX 8 at 43 ln. 16-23).

97. [##] (Barlet JX 1, 64 ln. 13-19, 64 ln. 25-65 ln. 13; van Haaren CX 187B-C ¶¶ 5-7 *In Camera*; Baker CX 205B ¶ 2). No other raw material can presently provide these characteristics.

98. [##] (Barlet JX 1, 65 ln. 17-21; van Haaren CX 187C ¶ 6-7 *In Camera*). [##] (Barlet JX 1, 73 ln. 14-74 ln. 11 *In Camera*; Van Haaren CX 187C,E ¶ 7, 9, 15 *In Camera*; Baker CX 205B, D ¶ 2,4). [##] (Barlet JX 1, 68 ln. 9-69 ln. 5; van Haaren CX 187C-D ¶ 7, 9, 13-14 *In Camera*; Baker CX 205B ¶ 2; JX 3, PX 8 at 32 ln. 15-37 ln. 24, 42 ln. 3-17, 44 ln. 3-10; JX 3, PX 9 at 98 ln. 3-7).

99. Can coatings, bottle cap closures, and adhesives and sealants account for about 50 percent of the approximately 160 million pounds of dispersion PVC consumed in molding applications, or approximately 16% of all dispersion PVC consumed in the United States (Kaserman JX 1, 266-67; JX 3, PX 138). Vinyl dispersion PVC coating is the formulation used to perform those applications. The liquid or paste-like coating consists of a formulation of dispersion PVC resin and several other ingredients, including solvents and plasticizers (Lore JX 1, 177). A 5% increase in the price of dispersion PVC resin would not be likely to lead manufacturers to substitute any other raw material for dispersion PVC resin, because the dispersion PVC would continue to be a lower cost material than any present potential substitutes (Lore JX 1, 177 ln. 8-178 ln. 5, 179 ln. 24-180 ln. 25; *See* JX 3, PX 6 at 44 ln. 2-18, 45 ln. 18-21; JX 3, PX 9 at 95 ln. 8-10; JX 3, PX 138). In addition, dispersion PVC coating creates less environmental concerns than do potential substitutes (Lore JX 1, 180).

100. Vinyl backed carpet tile accounts for consumption of 14 million pounds of dispersion PVC annually, or over 10% of dispersion PVC resin used in all coating applications. Vinyl backed carpet tile accounts for approximately 3.2% of all dispersion PVC consumed in the United States (Kaserman JX 1, 266-67; JX 3, PX 138). Carpet tile contains a fixed formulation of dispersion PVC resin to blending PVC resin (Mason JX 1, 193, 194-95). The two

PVC resins complement each other. The carpet tile is fabricated by adding the vinyl backing, which contains dispersion PVC resin to a tile covered with carpet (Mason JX 1, 192-93). A 5% increase in the price of dispersion PVC resin would not be likely to allow a substitution of blending PVC or any other raw material for the dispersion PVC (Mason JX 1, 194 ln. 25-195 ln. 8; Kaserman JX 1, 266 ln. 16-267 ln. 11). The dispersion PVC resin gives the carpet tile properties that cannot presently be duplicated by any other raw material (Mason JX 1, 194 ln. 25-195 ln. 8; Kaserman JX 1, 266 ln. 16-267 ln. 11; *See* JX 3, PX 9 at 95 ln. 11-13; JX 3, PX 138).

101. [##] (Hill CX 183F-G ¶ 17 *In Camera*; Flammer CX 184B-F ¶¶ 4-8, 10; Boyer CX 185B-E ¶¶ 3-9; JX 3, PX 9 at 14 ln. 3-25, 100 ln. 15-101 ln. 16; JX 3, PX 8 at 86 ln. 5-10).

102. [##] (Hill CX 183F-G ¶ 17 *In Camera*; Flammer CX 184D-E ¶ 8; Boyer CX 185B-E ¶¶ 5-9). [##] (van Haaren CX 187D ¶¶ 13-14 *In Camera*; Boyer CX 185E ¶ 9).

103. [##] (Hill CX 183F-G ¶ 17 *In Camera*; Flammer CX 184B-D ¶¶ 4-6; Boyer CX 185B-D ¶¶ 3-8; JX 3, PX 9 at 14 ln. 3-25, 100 ln. 15-101 ln. 16; JX 3, PX 8 at 86 ln. 5-10).

104. [##] (*See* Hill CX 183F-G ¶ 17 *In Camera*; Flammer CX 184B-F; ¶¶ 4-8, 10; Boyer CX 185B-F ¶¶ 3-11). Therefore, from the supply side, it must be found that dispersion PVC resin constitutes a separate relevant product market.

105. Accordingly, it is clear that dispersion PVC resin constitutes a relevant product market (Complaint ¶ 13(c); Answer of Occidental ¶ 5; Harris JX 1, 858 ln. 13-18; JX 3, PX 14 at 2; *See* JX 3, PX 8 at 8 ln. 3-9 ln. 11; JX 3, PX 9 at 13 ln. 23-14 ln. 25, 146 ln. 3-15).

#### V. THE RELEVANT GEOGRAPHIC MARKET

106. The purpose of a geographic market definition is to establish a geographic boundary separating firms that are important factors in the competitive analysis of a merger from those that are not (*DOJ Merger Guidelines*, Section 2.31, (CCH) ¶ 4,492 at 6,879-10-11).

107. A geographic market delineates a group of buyers and sellers within a geographic space whose interactions on supply and demand determine the price of the product (Kaserman JX 1, 281; Kaserman Dkt. 9159, 2234-35, 2237) A geographic market is

defined to include producers of the merged firm's product who "place a significant constraint on the ability of the merged firm to raise price or restrict output" (*FTC Merger Statement*, (CCH) ¶ 4,516 at 6,901-7).

108. As in the case of product market definition, a relevant geographic market is defined so as to include all firms whose participation in any collusive arrangement among the producers of a product to raise the price of that product would be necessary in order to make the price increase profitable to those producers (*See Kaserman Dkt. 9159, 2235-37, 2241-42*). Therefore, a geographic market delineates an area within which the producers of a product could profit by formation of a collusive arrangement (*Kaserman Dkt. 9159, 2240*).

109. The Commission has determined that "the relevant geographic market must be broad enough that buyers would be unable to switch to alternative sellers in sufficient numbers to defeat an exercise of market power by firms in the area" (*HCA*, 106 *FTC* at 466; *See Goodrich*, slip op. at 13; *Kaserman JX 1, 281*).

110. The responsiveness of import supply to changes in relative prices is a factor to be considered in determining whether the United States or another geographic area constitutes the relevant geographic market for a product (*Kaserman Dkt. 9159, 2237-38, Kaserman JX 1, 283* *ln. 13-24 citing Elzinga & Hogarty, The Problem of Geographic Market Delineation in Antimerger Suits*, 18 *Antitrust Bull.* 45 (1973); *Elzinga & Hogarty, The Problem of Geographic Market Delineation Revisited: The Case of Coal*, 23 *Antitrust Bull.* 1 (1978); and *Horowitz, Market Definition in Antitrust Analysis: A Regression-Based Approach*, 48 *S. Econ. J.* 1 (1981); *See also Klass 5135*).

111. The *DOJ Merger Guidelines* and *FTC Merger Statement* provide principles for defining the relevant geographic market. The *DOJ Merger Guidelines* test is similar to the product market test, asking whether a hypothetical monopolist for sales of the product in an area could impose a price increase that would not be undermined by firms outside the area shifting substantial quantities of product into the area. If the seller located in the area can profitably raise prices despite some additional sales into the area from firms outside the area, the area is an appropriate geographic market. *DOJ Merger*



*Guidelines, supra*, ¶ 4492.301 at 6879-10-11 (*See Goodrich, slip op. at 13-14; Kaserman JX 1, 281-282*). The smallest area that satisfies this test, in most contexts on the basis of a five-percent increase in price lasting one year, would be defined under the *DOJ Merger Guidelines* as the relevant geographic market. (*Id.*) "Imports that could profitably enter the market within one year in response to a 'small but significant and nontransitory' price increase should also be included" (*Goodrich, slip op. at 14-15; See, e.g., HCA, 106 FTC at 466-467*).

112. Although direct evidence of the effect of a price increase is sometimes available (*i.e.*, the relationship between price and quantity shipped into the market, *FTC Merger Statement, supra*, ¶ 4516 at 69,601-7), it is often necessary to rely on circumstantial evidence to delineate the geographic market (*See Goodrich, slip op. at 14*). Such forms of evidence are set out in the *DOJ Merger Guidelines*, the *FTC Merger Statement*, and the Commission's recent opinion in *Goodrich*. The evidence may include shipping patterns, *DOJ Merger Guidelines, supra*, ¶ 4492.302 at 6879-11, differences in price movements not explained by common cost factors, *Id.*; costs of transportation or distribution, *Id.*; excess capacity outside the area, *Id.*; or price discrimination, *DOJ Merger Guidelines, supra*, ¶ 4492.303 at 6879-11; *FTC Merger Statement, supra*, ¶ 451 at 9601-7 (*See Kaserman JX 1, 283-284*). As most recently outlined by the Commission: "Surrogates such as persistent price differences; price change differences; similarities or differences in price movements; impediments to trade, such as transportation costs that are high relative to product value; shipment patterns and transshipment levels; and industry perceptions therefore may be used" (*Goodrich, slip op. at 14*).

113. The established shipping pattern is particularly probative evidence of a geographic market, *Id.* Some scholars have suggested that an area is a geographic market if imports account for less than 25 percent of consumption in the area (and exports account for less than 25 percent of production in the area). The area is a "strong market" if imports and exports are less than 10-percent. Elzinga & Hogarty, *The Problem of Geographic Market Delineation Revisited: The Case of Coal*, 23 Antitrust Bull. 1, 2 (1978); Elzinga & Hogarty, *The Problem of Geographic Market Delineation in Antimerger Suits*, 18 Antitrust Bull. 45, 75 (1973) (*See Kaserman JX 1, 283*).

114. There is direct evidence in the instant case that the United States is the appropriate geographic market for each of the relevant PVC products in question. *See* Goodrich, slip op. at 15. Dr. Kaserman, the Commission's economic expert, analyzed the relationship between United States PVC prices and shipments into the market (imports). Dr. Kaserman found that United States producers would lose a relatively small share of their sales to imports of PVC resins as producers increased their price (Kaserman 296 ln. 20-303 ln. 19; *See also* JX 3, PX 141). Based on a regression analysis, Dr. Kaserman found that the long-run effect of a 10-percent increase in the domestic resin price would be a 20-percent increase in PVC resin imports.

115. Because imports, at the time of Dr. Kaserman's analysis, accounted for about 5 percent of the overall PVC sales in the United States, a 10 percent increase in domestic prices would indicate to him that the volume of imports would increase from about 5 to 6 percent of the market (*See* Kaserman 300 ln. 5-18; 301 ln. 12 - 302 ln. 2; CX 172C). This means that, under his analysis, domestic producers would find it profitable to raise their price, as they would only lose about 1 percent of their overall sales if they raised prices by 10 percent (Kaserman 300 ln. 11 - 301 ln. 5, 301 ln. 12-302 ln. 2, 303 ln. 1-11; Harris 860 ln. 15-17; JX 3, PX 141; *See* JX 3, PX 6 at 152 ln. 6-16).

116. [##] (*See* JX 4, DX 13 *In Camera*). Tenneco's December 1985 analysis was relied on by respondents' economic expert in his district court injunction testimony (Harris JX 1, 846 ln. 7 - 848 ln. 3, 886 ln. 21 - 892 ln. 5). [##] (JX 4, DX 13 at 9 *In Camera*). [##] (JX 4, DX 13 at 2 *In Camera*). [##] (JX 4, DX 13 at 3 *In Camera*). The value of the dollar has in reality sharply declined since 1985 (CX 172B-D), leading to a decrease in imports of PVC resin as both the Tenneco study and Dr. Kaserman's analyses would predict.

117. During the 12-month period December 1986 through November 1987, imported PVC resin accounted for 1.5 percent of overall United States PVC supply (CX 158D; CX 212C; CX 147R-Z5; CX 211A-D; Sherman CX 171D ¶ 8; CX 173C). Thus, applying Dr. Kaserman's analysis to the PVC industry today, a 20-percent increase in imports, associated with a 10-percent increase in PVC prices, would increase imports from about 1.5 percent to 1.8 percent of overall United States sales. This means that domestic

producers would find, and indeed have found, it profitable to raise the prices of each of the relevant PVC products, as they would lose only 0.3 percent of their overall sales if they raise prices by 10-percent. Domestic PVC producers would find, and have found, it profitable to raise PVC prices because the low market share of imports in combination with the low responsiveness of imports would not be sufficient to undermine a domestic price increase (Kaserman JX 1, 300 ln. 19-301 ln. 5). Thus, as the Commission found in Goodrich, imports of PVC resin do not, absent extraordinary circumstances, constrain domestic prices (Goodrich, slip op. at 38).

*A. Mass and Suspension PVC*

118. In Goodrich, the Commission found that the United States as a whole is the relevant geographic market for mass and suspension PVC. The Commission's finding is consistent with the record evidence and confirms the stipulation made by the parties (Goodrich, slip op. at 15; *See* Kaserman JX 1, 291-292).

119. Prices of mass and suspension PVC have increased significantly since the time of the acquisition. Mr. Schaefer, a Vice-President of Occidental, testified that mass and suspension PVC prices were about 23 cents per pound in November 1984 (Schaefer JX 1, 579 ln. 5-17), and that prices had risen to the 28-cent to 30-cent range by the time of the acquisition (Schaefer JX 1, 579 ln. 18-20). [##] (Donnelly CX 176A-B ¶ 2 *In Camera*; Heath CX 178D-E ¶ 7 *In Camera*; Alberti CX 199B ¶ 3 *In Camera*; Wilhite CX 179B ¶ 2 *In Camera*; Pflugrath CX 177D ¶ 7 *In Camera*; Clark CX 193B-C ¶ 3 *In Camera*). Despite the strong price increases sustained in the industry, the level of imports has declined from the four to five-percent range of 1984-1985 (Schaefer JX 1, 580 ln. 4-9, 582 ln. 14-15), to a market share of 1.5 percent during the most recent 12-month period in the evidentiary record (CX 158D; CX 212C; CX 147R-Z5; CX 211A-D; Sherman CX 171C-D ¶ 7; *See* CX 173A-D).

120. Mass and suspension PVC imports have been, and continue to be, only a minor factor in the marketplace. This fact is recognized by Occidental management. Steven Schaefer, Senior Vice President, PVC Products, Occidental Chemical Corporation, observed, in

December 1984, when the level of PVC imports was substantially higher than it is today:

They are there. They exist. They will probably continue to exist but they are not a dominant force in the marketplace by any stretch in my view.

(JX 3, PX 10 at 1129 ln. 24 - 1130 ln. 4; Schaefer JX 1, 575 ln. 20-576 ln. 5; *See* JX 3, PX 52; JX 3, PX 131 at 1335-1336; Beveridge JX 1, 89 ln. 11-12; Goodrich, slip op. at 38).

121. Other witnesses testified in the Goodrich proceeding that imports of mass and suspension PVC do not, and are not likely to, operate as a significant constraint on prices for mass and suspension PVC in the United States (Taylor Dkt. 9159, 1591-92; Arp Dkt. 9159, 3557; Schaefer Dkt. 9159, 1131; McMath Dkt. 9159, 1924). Accordingly, the Commission concluded in that case that mass and suspension PVC imports do not significantly constrain the pricing discretion of producers in the United States (Goodrich, slip op. at 38). Moreover, as discussed, *infra*, imports are even less of a factor today than they were at the close of the record in Goodrich.

122. [##] (Lewis CX 204B ¶ 4 *In Camera*; Pflugrath CX 177C ¶ 5 *In Camera*; Wilhite CX 179D ¶ 4 *In Camera*; Goldstein CX 180C ¶ 4 *In Camera*; Clark CX 193D-E ¶ 6 *In Camera*; Bendavid CX 194C-D ¶ 5 *In Camera*; Gmach CX 200D ¶ 4 *In Camera*). [##] (Rutland CX 196B ¶ 5 *In Camera*). [##] (Donnelly CX 176F-G ¶ 6 *In Camera*). [##] (CX 137B *In Camera*; *See also* RX 198 *In Camera*). It is thus expected that the United States will be, for the remainder of the decade, a net exporter of PVC (CX 43L).

123. The evidence regarding shipping patterns also shows that the United States mass and suspension PVC market is a strong geographic market. Imports accounted for about five percent of mass and suspension supply in 1985 (Schaefer JX 1, 580 ln. 4-9; JX 3, PX 141; Kaserman JX 1, 294 ln. 6-12; Schaefer JX 1, 576 ln. 8-16; *See* Harris JX 1, 860 ln. 15-17), and exports were less than imports (Schaefer JX 1, 577 ln. 7-11; JX 3, PX 9 at 66 ln. 4-16). Imports of PVC resin today account for only 1.5 percent of overall PVC resin consumption (CX 158D; CX 212C; CX 147R-Z5; CX 211A-D; Sherman CX 171C-D ¶ 7).

124. [##] (*See* McMath Dkt. 9159, 1924; Taylor Dkt. 9159, 1590; Arp Dkt. 9159, 3557; Dkt. 9159 CX 66C, F, I, L, O, R, U, X, Z1, Z4, Z13, Z16, Z25, Z28, Z31, Z41, Z44, Z47, Z56 *In Camera*). The Commission stated in that case that imports are only a "small proportion of domestic PVC consumption..." (Goodrich, slip op. at 37-38). Published import statistics do not disaggregate PVC resin imports by type (*See* CX 147A-Z5). It is clear, however, that since 1985, total PVC imports have declined steadily (CX 173A). In 1986, PVC imports of all types accounted for 2.7 percent of total PVC supply in the United States (CX 172C). In the period December 1986 through November 1987, imports of all types of PVC accounted for 1.5 percent of total United States PVC supply (CX 158D; CX 212C; CX 147R-Z5; CX 211D). Moreover, imports in the second half of 1987 were less than one-half the level in the first six months of the year. In the first six months of 1987, PVC imports of all types accounted for 2.1 percent of total PVC supply (CX 147Z1; CX 152C; CX 172C; CX 173A). In the second half of 1987, based upon the five months for which data are in the record, total PVC imports accounted for under one percent of total United States PVC supply (compare CX 211D and CX 212C with CX 147Z1 and CX 152C; *See* CX 172C; CX 173A).

125. The graphs below, prepared by the Commission's Dr. Sherman from published trade and production statistics, depict, by calendar quarter for the period extending from the first quarter of 1982 through the third quarter of 1987, respectively: (1) the level of PVC imports in relation to the level of United States production of PVC (CX 172A); and (2) the level of PVC imports as a percent of the total United States supply (*i.e.*, production plus imports) of PVC (CX 173A). [##]

126. The sharply lower level of PVC imports since mid 1987 may be attributable to a change in applicable United States tariffs and is not likely to be reversed by normal market forces (CX 141A-B). Duty-free imports of PVC from Mexico accounted for 45.1 percent of total United States PVC imports in 1986, and 59.5 percent of total United States PVC imports in the period January through July 1987 (CX 147R; CX 147Z2). Elimination of duty-free status for Mexican PVC imports in August 1987 (CX 141A-B), has terminated this former low-cost source of PVC supply, and has reduced total PVC

imports from Mexico to a small amount (CX 147Z3-Z5; CX 211A-D).

127. In 1985, forty-five percent of United States PVC imports were from Canada (JX 3, PX 5; *See* Kaserman JX 1, 244-245). [##] (Goodrich, slip op. at 38; Kaserman JX 1, 294 ln. 20-295 ln. 13; Kaserman Dkt. 9159, 2248-49; JX 3, PX 140 *In Camera*; Dkt. 9159 CX 299O-P *In Camera*; Dkt. 9159 CX 92K; Dkt. 9159 RX 190D *In Camera*). These countries are the principal sources of imports of mass and suspension PVC into the United States (Goodrich, slip op. at 38; Kaserman Dkt. 9159, 2248; Taylor Dkt. 9159, 1687; CX 43L-M; Dkt. 9159 CX 601AZ8). [##] (Goodrich, slip op. at 38; Kaserman JX 1, 294 ln. 20-295 ln. 13; DiLiddo Dkt. 9159, 3381; Dkt. 9159 CX 185O *In Camera*). [##] (JX 3, PX 140, Tables 1 through 10 *In Camera*).

128. [##] (*See* Pflugrath CX 177C-D, ¶ 6 *In Camera*).

129. It is Occidental's position that, although PVC imports have declined, world-wide excess capacity presents a competitive threat to United States PVC producers (*See* RPF 95, 100). [##] (Stuart RX 245C ¶ 8 *In Camera*; Marcus RX 242D ¶ 8 *In Camera*). Foreign mass and suspension PVC production capacity does not have a significant impact on the United States marketplace. Mr. Steven Schaefer, Senior Vice President, PVC Products, Occidental Chemicals has testified: "I don't believe it [the overcapacity situation] has a very significant role" (JX 3, PX 10 at 1208 ln. 4-8; Schaefer JX 1, 576 ln. 17-577 ln. 6). [##] (CX 137B *In Camera*; RX 198E *In Camera*; RX 212; Lull RX 1 E ¶ 12 *In Camera*).

130. Another indication that foreign capacity utilization and PVC production is of small importance to competition in the U.S. market is the fact that Occidental does not track PVC output outside the United States (Schaefer JX 1, 577 ln. 12-578 ln. 25). And, it appears that the reason Occidental does not track output outside the United States is because it is not relevant to its business (Schaefer JX 1, 578 ln. 19-579 ln. 4). Indeed, in 1986, Occidental's PVC management canceled Occidental's subscription to *Tecnon Reports*, a British-based trade publication which monitors world PVC developments (CX 218 [March 4, 1988 letter from Henry L. Huser to Rhett R. Krulla, cc: The Honorable Thomas F. Howder]; *See* RX 288-RX 310). Occidental's Chlor-Alkali and Chlorine Group continues to subscribe to

*Tecnon Reports* and to *Harriman Reports*, another British-based trade publication which tracks world PVC activities (*See* CX 217A-H), but, according to Occidental counsel, Occidental only uses these publications for their chlor-alkali and chlorine sections and the publications are not used by or transmitted to Occidental's PVC personnel (CX 218).

131. [##] (Stuart RX 245C ¶ 8 *In Camera*; Marcus RX 242D ¶ 8 *In Camera*). [##] (RX 1Q *In Camera*; *See* CX 7; CX 169C). [##] (CX 7; CX 169C; RX 198 *In Camera*). [##] (RX 198F *In Camera*). [##] (CX 137C *In Camera*). Given these factors, it appears that PVC capacity outside of the United States does not act as a constraint on the exercise of market power in the United States.

132. [##] (Schaefer JX 1, 587 ln. 21-589 ln. 14; JX 3, PX 10 at 1208 ln. 4-24; JX 3, PX 136 at 147 ln. 11-21; 148 ln. 7-149 ln. 9; CX 132; CX 10 *In Camera*; CX 11 *In Camera*; *See* Kaserman JX 1, 245-246). The graph below tracks domestic and export prices for suspension PVC homopolymer, as reported in RX 288 through RX 310. [##]

133. Until July 1987, United States PVC producers continued their practice, recognized in the prior Goodrich proceeding, of exporting mass and suspension PVC resin at prices substantially below the prevailing domestic price level (RX 288-RX 310). As the dollar has declined in value relative to foreign currencies, U.S. export prices have been rising relative to domestic prices, but remained below domestic prices through June 1987. By September 1987, the continuing decline in the value of the dollar enabled United States PVC producers to charge a premium for export sales. In this climate, United States PVC producers no longer need to accept a lower price in order to divert PVC supplies from the domestic market. United States PVC producers continue to discriminate in price between the United States market and export markets, however, now charging foreign purchasers more than domestic purchasers. The fact that domestic prices are distinct from, and move independently of, export prices, is further evidence that the United States is a relevant geographic market (*See* Goodrich, slip op. at 14; Kaserman JX 1, 295-296).

134. The fact that United States producers of mass and suspension PVC resin are able to discriminate in price between

United States buyers and foreign buyers of the resin is evidence that the appropriate geographic market is the United States, and not a world market (Kaserman JX 1, 295 ln. 14-296 ln. 4; *See also* Harris JX 1, 915 ln. 14-917 ln. 12). Price discrimination across geographic areas means that producers are charging a different price for the same product in different markets. Such price differences cannot be sustained if these different geographic areas are, in fact, in the same market. Thus, in order to practice price discrimination geographically, it is necessary to have separate geographic markets (Kaserman JX 1, 295 ln. 14-296 ln. 4; *DOJ Merger Guidelines, supra*, ¶ 4492.303 at 6879-11).

135. [##] (Lewis CX 204B ¶ 4 *In Camera*). [##] (CX 112C *In Camera*; CX 113A *In Camera*; JX 3, PX 94; *Cf.* RX 206A *In Camera*). These facts also suggest that producers of mass and suspension PVC homopolymer resin do not consider imported resin to be a significant factor in the United States market.

136. Changes in exchange rates may cause historic import sales and shipment data to overstate the future competitive significance of foreign firms (*DOJ Merger Guidelines*, Section 3.23, (CCH) ¶ 4,493 at 6,879-15; *See also* Klass Dkt. 9159, 5203). [##] (Stevens JX 3, PX 9 at 66 ln. 25 - 67 ln. 7; Donnelly CX 176F ¶ 6 *In Camera*; Goldstein CX 180B ¶ 4 *In Camera*; Dellevigne CX 188D ¶ 11 *In Camera*; Rutland CX 196B ¶ 5 *In Camera*; *See* Klass Dkt. 9159, 5201, 5202).

137. As observed by Dr. Klass in the Goodrich case, the strength of the dollar has had a significant effect on the level of imports (Klass Dkt. 9159, 4222). In order to corroborate witness testimony on this issue, Dr. Klass quantified the changes in the value of the dollar in the years preceding 1985 by tabulating the index of weighted average exchange values of the U.S. dollar on the basis of data reported in the *Federal Reserve Bulletin* (Klass Dkt. 9159, 5175-76, 5179-80; *See* Dkt. 9159 CX 250; *See* Klass Dkt. 9159, 5641, 5645-46). Federal Reserve System data show that, from the third quarter of 1980 to the third quarter of 1984, the United States dollar increased in value by 66 percent, as measured by the Federal Reserve's index of weighted average exchange value (compare Dkt. 9159 CX 776E and Dkt. 9159 CX 777E (Tables 3.28, Foreign Exchange Rates, July-Sept.); *See* Dkt. 9159 CX 250; Klass Dkt. 9159, 5192-94; *See* Klass Dkt. 9159, 5653-55, 5659-60). All else



being equal, this represents a 66 percent increase in the price of mass and suspension PVC in the United States relative to foreign PVC resin prices over this time period (Goodrich, slip op. at 37; Klass Dkt. 9159, 5195). [##] (Goodrich, slip op. at 37; Klass Dkt. 9159, 5200-01; *See* Dkt. 9159 RX 1174A (PVC import volumes); CX 664U *In Camera*; CX 778C (PVC production); Klass Dkt. 9159, 5196-97).

138. As explained by Dr. Klass, these data indicate the supply response of imports to changes in United States mass and suspension PVC resin prices (Klass Dkt. 9159, 4229). In effect, a 66 percent increase in the relative price of mass and suspension PVC in the United States was associated with a 2.9 percent loss of market position by domestic producers to foreign competition through imports (*See* Klass Dkt. 9159, 4150). Had this price increase resulted from concerted action by United States producers of mass and suspension PVC, rather than changes in foreign exchange rates, the price increase clearly would have been profitable to the colluding producers, in light of the observed magnitude of the import response. A 66-percent increase in price accompanied by a 2.9-percent loss of volume sold would yield a net increase in revenues of 61 percent. Price increases in mass and suspension PVC result in little loss of volume by domestic producers to imports, even though, when viewed in comparison to the minuscule level of imports, the threefold increase in imports may appear large. This is because, as acknowledged by Dr. Klass, when the fraction of total consumption accounted for by imports is small, the elasticity of demand faced by collusive firms in the market may be low, notwithstanding a high elasticity of imports (Klass Dkt. 9159, 5156; *See* Klass Dkt. 9159, 5136-43).

139. This evidence demonstrates that, if United States producers of mass and suspension PVC were able to coordinate their actions so as to increase mass and suspension PVC resin prices, the resulting loss of market share by the collusive group to import competition would have little effect on the profitability of the price increase. This conclusion is further supported by the more recent analyses of PVC imports conducted by Dr. Kaserman and by Dr. Sherman (Kaserman JX 1, 282, 300-302; Kaserman Dkt. 9159, 300 ln. 5 - 302 ln. 12; *See* JX 3, PX 141; Sherman CX 171B-E ¶¶ 4-11; CX 174A-D).

140. The record regarding the responsiveness of imports confirms that imports are not sufficiently responsive to changes in mass and suspension PVC resin prices to defeat collusive action by United States producers. Whether imports are likely to constrain pricing actions by United States producers of mass and suspension PVC is dependent upon the responsiveness of imports to changes in United States prices relative to foreign price levels. As explained by Dr. Klass, the evidence of what has happened to imports in relation to changes in the value of the dollar is relevant to assessing the likely effect of a long term sustained increase in mass and suspension PVC prices (Klass Dkt. 9159, 4150). An increase in the value of the dollar relative to foreign currencies is equivalent in effect to a corresponding increase in United States prices for mass and suspension PVC in relation to foreign mass and suspension PVC (Klass Dkt. 9159, 4222-23, 5179; *See* Dkt. 9159 Klass 5169-70).

141. The strong relationship between the level of PVC imports (both in pounds and as a percent of total United States supply) and the value of the dollar can be charted in the graph below (CX 174A). The volume of imports has closely tracked the exchange value of the dollar from 1982 through 1987. Imports attained their peak penetration (6.7 percent - *See* CX 174D) into the domestic market in early 1985, a time at which the U.S. dollar had appreciated nearly 50 percent against other currencies.<sup>9</sup> Since that time, PVC imports have fallen to less than one percent of U.S. supply, as the dollar has attained values beneath its 1982 levels (CX 174D). [##]

142. As discussed below, reliance by customers on imported mass and suspension PVC resin is limited by several factors, including import duties, high handling costs, and logistical and quality problems associated with imported resin.

143. Imported PVC resin faces substantial duties in the United States, pursuant to The Tariff Act of 1930, 19 U.S.C. 1202, Part 4. The current duty on imported PVC resin of 10.1 percent (*See* CX 147A-Z5) significantly increases the price of imported PVC resins. For example, resin priced at 40 cents per pound overseas would have

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<sup>9</sup> Imports earlier reached a peak of 6 percent of U.S. supply in early 1984 after domestic PVC prices rose sharply following freezing weather conditions that forced the shutdown of several domestic PVC plants (Goodrich, slip op. at 37).

an added duty in the United States of 4 cents. Mexico has recently lost its designation as a "beneficiary developing country," terminating the duty-free status of imports, including PVC resins, from Mexico (CX 141A-B): With this change, customers have found that the price of Mexican resin, before handling and other costs are added, is higher than the price of resin in the United States (*See* CX 14). [##] (Pflugrath CX 177C ¶ 5 *In Camera*; Underwood CX 203C ¶ 5 *In Camera*).

144. The high handling costs associated with shipments of mass and suspension PVC from overseas also represent a barrier to trade flows into the United States. Imports from overseas must be shipped in bags while domestic mass and suspension resin is transported in bulk by rail tank car. The costs to users of handling bag shipments are substantial and are estimated to amount to between three and seven cents per pound (Goodrich, slip op. at 38; *See* Kaserman JX 1, 293). [##] (Pflugrath CX 177C ¶ 5 *In Camera*; Wilhite CX 179D ¶ 4 *In Camera*; Clark CX 193D-E ¶ 6 *In Camera*; Alberti CX 199E ¶ 7 *In Camera*; Weimar RX 249A-B ¶ 3 *In Camera*; Kaserman Dkt. 9159, 2248; H. Wheeler Dkt. 9159, 1776-77; Taylor Dkt. 9159, 1592; Yu Dkt. 9159, 2158-59).

145. [##] (Pflugrath CX 177C Q5 *In Camera*; Wilhite CX 179D ¶ 4 *In Camera*; Goldstein CX 180C-D ¶ 4 *In Camera*; Clark CX 193D-E ¶ 6 *In Camera*; Bendavid CX 194C-D ¶ 5 *In Camera*; Alberti CX 199E ¶ 7 *In Camera*; Gmach CX 200D ¶ 4 *In Camera*; Lewis CX 204B ¶ 4 *In Camera*; Dellevigne CX 188D ¶ 11 *In Camera*; Weimar CX 192F ¶ 14 *In Camera*; Weimar RX 249A-B ¶ 3 *In Camera*; Kaserman JX 1, 293 ln. 6-17; Friedman JX 1, 134 ln. 9 - 135 ln. 18). [##] (CX 15 *In Camera*; *See also* Alberti CX 199E ¶ 7 *In Camera*; Clark CX 193E ¶ 6 *In Camera*; Bendavid CX 194C-D ¶ 5 *In Camera*; Weimar RX 249A-B ¶ 3 *In Camera*). [##] (Goldstein CX 180C ¶ 4 *In Camera*; Gmach CX 200D ¶ 4 *In Camera*; Lewis CX 204B ¶ 4 *In Camera*). [##] (Lewis CX 204B ¶ 4 *In Camera*). The high handling cost and logistical and quality problems associated with bag shipments of mass and suspension PVC limits the feasibility of imports as a practicable source of supply for the major users of mass and suspension PVC in the United States and represents a barrier to trade flows (Yu Dkt. 9159, 2158-59; *See FTC Merger Statement*, (CCH) ¶ 4,516 at 6901-7).

146. [##] (Pflugrath CX 177C ¶ 5 *In Camera*; Heath CX 178C ¶ 5 *In Camera*; Wilhite CX 179D ¶ 4 *In Camera*; Clark CX 193D-E ¶ 6 *In Camera*; Bendavid CX 194C ¶ 5 *In Camera*; Alberti CX 199E ¶ 7 *In Camera*; Gmach CX 200D ¶ 4 *In Camera*; Underwood CX 203C ¶ 5 *In Camera*; Goldstein CX 180C ¶ 4 *In Camera*).

147. Thus, it is found that the United States is an appropriate geographic market for mass and suspension PVC (Complaint ¶ 14; Goodrich, slip op. at 15, 37-38; Kaserman JX 1, 303 ln. 12-19; CPF 122).

*B. Suspension PVC Copolymer*

148. [##] (Kaserman JX 1, 284 ln. 5-21; Harris JX 1, 863 ln. 6-13; Beveridge JX 1, 85 ln. 11-18; JX 3, PX 8 at 91 ln. 14-25; JX 3, PX 9 at 28 ln. 6-23; Hill CX 183D ¶ 9 *In Camera*; Boyer CX 185F ¶ 14; Dellevigne CX 188D 11 *In Camera*; Silver CX 190D *In Camera*; Weimar CX 192F ¶ 14 *In Camera*; Weimar RX 249A-B ¶ 3 *In Camera*; Marcus CX 209D ¶ 8 *In Camera*; Mercer CX 119I-J). [##] (Marcus CX 209D ¶ 8 *In Camera*). Accordingly, the Commission has earlier concluded in Goodrich that, absent extraordinary circumstances, imports do not constrain domestic prices (Goodrich, slip op. at 38).

149. [##] (Weimar JX 1, 34 ln. 21-35 ln. 2; Weimar CX 192F ¶ 14 *In Camera*; Weimar RX 249A-B ¶ 3 *In Camera*; Beveridge JX 1, 87 ln. 1-4). [##] (Weimar CX 192F ¶ 14 *In Camera*; Weimar RX 249B ¶ 3 *In Camera*).

150. [##] (Silver CX 190D *In Camera*). [##] (Weimar RX 249A-B ¶ 3 *In Camera*), [##] (Weimar CX 192E ¶ 9 *In Camera*) [##]

151. [##] (Weimar CX 192F ¶ 14 *In Camera*). [##] (Weimar CX 192F ¶ 14 *In Camera*)<sup>10</sup> [##] (Weimar CX 192E ¶ 9 *In Camera*), [##] (Weimar RX 249B ¶ 3 *In Camera*). [##] (CX 119I-J *In Camera*; JX 3, PX 9 at 28 ln. 15-23). [##] (CX 136 *In Camera*; See JX 3, PX 140, Table 20 *In Camera*). [##] (Marcus CX 209D ¶ 8 *In Camera*).

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<sup>10</sup> The record does not reveal whether the purchases of resin from Mexico, referred to in Mr. Weimar's cross-examination affidavit (Weimar RX 249A-B ¶ 3), were made prior or subsequent to the imposition of these duties.

152. As a result of these factors, it is unlikely that a significant increase in the price of copolymer resin by United States producers would lead to significant increases in the amount of imported copolymer resin (Kaserman JX 1, 287 ln. 22-288 ln. 14 Beveridge JX 1, 87 ln. 19-24).

153. Because it is unlikely that purchasers could easily turn to imported copolymer resin as a regular source of supply, and because it is unlikely that an increase in the price of suspension VC copolymer would lead to significant increases in the amount of imported fabricated products (discussed *infra*), it is likely that copolymer producers could profitably implement an increase in the price of copolymer resin of some 5 percent without being undermined by imports (Kaserman JX 1, 287 ln. 5-13; JX 3, PX 136 at 60 ln. 21-61 ln. 10).

154. Thus, it is found that the United States is an appropriate geographic market for suspension PVC copolymer (Kaserman JX 1, 303 ln. 12-19).

*C. Dispersion PVC*

155. [##] (JX 3, PX 140, Table 24 *In Camera*). [##] (JX 3, PX 76 at 351556), [##] (See JX 3, PX 140, Table 24 *In Camera*). Based on these estimates, the United States constitutes a "strong" geographic market for dispersion PVC (JX 3, PX 7 at 119 ln. 23-120 ln. 2; Kaserman JX 1, 289 ln. 12-25; Harris JX 1, 864 ln. 5-17).

156. [##] (JX 3, PX 140, Table 15, Table 24 *In Camera*). As a leading participant in the both the United States and the North American markets for dispersion PVC, it is unlikely that Goodrich would disrupt a collusive agreement among dispersion PVC producers (See Goodrich, slip op. at 38).

157. The share of total United States consumption accounted for by dispersion PVC imports is likely significantly lower today than 8 percent. Occidental's own analysis shows a decline in the level of imports of dispersion PVC in each year since 1984, and projected that 1986 imports would be 13.6 percent below the level in 1985 (JX 3, PX 76 at 351556). The continuing decline in the value of the dollar since the beginning of 1985 has made foreign dispersion PVC significantly more expensive for United States purchasers and has

caused import levels to decline more rapidly than had been projected (*See* CX 174A; JX 3, PX 9 at 58-59). Because dispersion PVC is priced higher than most types of PVC, the decline in the value of the dollar would impact the cost of dispersion PVC resin imports, on a cent-per-pound basis, more severely than other types of PVC resin. PVC imports of all types in the period December 1986 through November 1987 totaled 121.6 million pounds, reflecting a 68-percent decline from the level experienced in the peak year 1985 (CX 172C; CX 147R; CX 211D). Tenneco's PVC sales manager observed, in early 1986, that "over the past six months we have seen a drying up of [dispersion PVC] imports as the dollar value has declined" (Stevens JX 3, PX 9 at 59). [##] (*See* CX 172C; CX 147R; CX 211D; JX 3, PX 140, Table 24 *In Camera*).

158. [##] (JX 3, PX 140, Table 12 *In Camera*). [##] (JX 3, PX 140, Table 13, Table 14 *In Camera*). [##] (*See* Baker, RX 251C ¶ 6; Russ, RX 316B ¶ 4 *In Camera*). Total PVC industry production in 1987 was 17.7 percent higher than industry production in 1985 (compare CX 213C (7,971 million pounds in 1987) and CX 172C (6,771 million pounds in 1985)). If dispersion PVC production increased between 1985 and 1987 in proportion to the increase in production for the PVC industry as a whole, 1987 dispersion PVC production would be approximately 490.1 million pounds ( $416.4 * 117.7\%$ ). Based on this estimate, the dispersion PVC imports of approximately 11.6 million pounds, accounted for approximately 2.3 percent of total dispersion PVC supply ( $11.6 / (490.1 + 11.6)$ ). This estimate suggests that total market demand for dispersion PVC grew at an annual rate of 5.3 percent (501.7 million pounds in 1987 vs. 452.5 million pounds in 1985). If market demand, in fact, remained unchanged between 1985 and 1987, domestic production would have only increased to 440.9 million pounds, with the increase in domestic production just offsetting the decline in dispersion PVC imports. In this event, 1987 dispersion PVC imports may account for as much as 2.6 percent of total dispersion PVC market supply ( $11.6 / 452.5$ ). In any event, imports account for an insignificant share of the United States dispersion PVC market.

159. Imported dispersion PVC resin does not significantly affect the price of dispersion PVC resin sourced in the United States (JX 3, PX 136 at 145 ln. 12-15; Kaserman JX 1, 290 ln. 2-291 ln. 12;

Schaefer JX 1, 583 ln. 10-584 ln. 11). Mr. Schaefer testified that he believed dispersion PVC resin imports have had little effect on the price of dispersion resin in the United States (JX 3, PX 136 145 ln. 12-15). Mr. Disch identified only United States producers as his competitors in dispersion PVC in the United States market (JX 3, PX 8 ln. 6-10). Mr. Stevens noted that competition among United States suppliers of dispersion PVC resin is the principal determinant of dispersion PVC prices in the United States (JX 3, PX 9 at 63 ln. 13-17). Similarly, Mr. Boyer of Formosa testified that imported dispersion PVC resin is "not currently a significant source of supply in the domestic market for dispersion PVC resin . . ." (Boyer CX 185F ¶ 13). [##] (*See* RX 206 *In Camera*; RX 163 *In Camera*).

160. [##] (*See* Van Haaren CX 187D ¶ 11 *In Camera*; Baker CX 205B ¶ 3; Beveridge JX 1, 89 ln. 11-14). Sheet flooring accounts for the largest percentage, approximately 40 percent, of total dispersion PVC resin demand (JX 3, PX 8 at 43 ln. 16-21). [##] (*See* Lore JX 1, 182 ln. 11 - 23), [##] (Boulay CX 189C-D ¶ 8 *In Camera*; JX 3, PX 8 at 44 ln. 14-18). Mr. Disch estimated that approximately 40-50 percent of the dispersion resin customers in the United States, primarily in the coating and the flooring industries, would find it very difficult to use imported resin (JX 3, PX 8 at 44 ln. 3-13; *See* JX 3, PX 9 at 56-57). Mr. Stevens similarly testified that imported resin has been used primarily in low-end dispersion PVC markets, such as traffic cones, in which "there is very little technology involved" (JX 3, PX 9 at 55 ln. 20-23, 56 ln. 14-18).

161. Imported dispersion PVC resin is used primarily in low-end, or non-critical applications. These applications include applications such as slush-molding of products such as toys or balls (JX 3, PX 8 at 14-20). In these applications, the quality of the dispersion resin used is lower than the quality of the dispersion resin used in more critical applications such as flooring (JX 3, PX 8 at 44 ln. 21 - 45 ln. 8; JX 3, PX 9 at 56-57). PVC producers price dispersion resins sold for more critical applications higher than dispersion resins sold for low-end applications (JX 3, PX 8 at 45 ln. 9-14). Mr. Disch testified that, with increases of 5-10 percent in the price of dispersion PVC resin in the United States, there would be some substitution of imported for domestic dispersion PVC resin in these applications (JX 3, PX 8 at 43 ln. 1-15). [##] (*See* CX 39 *In Camera*; CX 40 *In*

*Camera*; CX 41 *In Camera*; CX 42 *In Camera*). [##] (*Id.*) [##] (Baker CX 205C ¶ 4; Baker RX 251B ¶ 4 *In Camera*). Dispersion PVC imports failed to constrain these price increases. The successful implementation of these increases, as indicated by the overall increase that has occurred in the price of dispersion PVC resin, demonstrates that imported dispersion PVC resin has little influence on the United States price level, even with respect to the low-end applications.

162. [##] (Beveridge JX 1, 89 ln. 24 - 90 ln. 6; Mason JX 1, 196 ln. 12 - 197 ln. 5; Boulay CX 189C ¶ 8 *In Camera*). [##] (Beveridge JX 1, 89 ln. 11-12, 89 ln. 24-90 ln. 6; Lore JX 1, 182 ln. 11-13; Mason JX 1, 196 ln. 14-15; Boulay CX 189C ¶ 8 *In Camera*; Baker CX 205C-D ¶ 3).

163. [##] (JX 3, PX 9 at 56 ln. 19-57 ln. 3; Beveridge JX 1, 89 ln. 4-10; van Haaren CX 187D ¶ 13-14 *In Camera*).

164. [##] (Kaserman JX 1, 290 ln. 1 - 291 ln. 12; Boulay CX 189C ¶ 8 *In Camera*; Baker CX 205B ¶ 3; Mason JX 1, 196 ln. 14 - 197 ln. 17; van Haaren CX 187F ¶ 15 *In Camera*).

165. Accordingly, it is found that the United States is an appropriate geographic market for dispersion PVC (Kaserman JX 1, 303 ln. 12-19).

#### *D. Fabricated Product Imports*

166. As discussed below, imports of fabricated products do not constrain prices in the relevant markets.

167. One element to be considered regarding the likely response of fabricated good imports in response to increased PVC prices in the United States is the cost share of PVC in the final product (*i.e.*, the percentage of the product manufacturing cost accounted for by PVC). If the cost share is low, increased resin prices have a very small effect on the ultimate price of the final product, and therefore are not likely to result in increased imports of fabricated products (Kaserman JX 1, 287 ln. 7-13).

168. The cost share of PVC in fabricated products in each of the relevant product markets is low (Goodrich F 96; Kaserman JX 1, 287 ln. 14-18, 291 ln. 13-24; Goodrich, slip op. at 73-75). As a result, increased PVC resin prices in the United States would be unlikely to



result in a substantial increase in the level of fabricated product imports into the United States (Kaserman JX 1, 291 ln. 13-24).

169. Respondents argued in Goodrich that mass and suspension PVC pricing is constrained by the level of fabricated products containing mass and suspension PVC (Dkt. 9159 RPF 270-271). Evidence in that case, however, established that fabricated product imports were limited primarily to calendered products (*See* Dkt. 9159 RX 1178A-B), an application which constituted only a very small portion of total United States consumption of mass and suspension PVC (Goodrich, slip op. at 75). Even in this application, however, the level of fabricated product imports is not responsive to the price of mass and suspension PVC resin, because PVC accounts for only a small portion of the cost of finished PVC calendered goods (*i.e.*, less than 10 percent, *See* Becker Dkt. 9159, 1308-09). Producers of calendered PVC products overseas, at that time, were utilizing more efficient plants than the plants in the United States, which were considered "outdated" (Dkt. 9159 RX 1320C). Moreover, it was shown that many imported calendered products consisted of "non-critical products with fairly standard colors and with little customer reliance on technical service" (Dkt. 9159 RX 1320C). Thus, producers of calendered products in the United States maintained their competitiveness with overseas imports by providing greater customer and technical service, and by providing better delivery schedules (Dkt. 9159 RX 1320C).

170. [##] (Marcus CX 209C ¶ 5 *In Camera*).

#### 1. Mass and suspension PVC

171. As shown, imports of mass and suspension PVC fabricated products do not significantly affect the price of mass and suspension PVC homopolymer in the United States.

172. Mr. Disch testified that, across a wide range of fabricated products, the price of mass and suspension PVC homopolymer PVC does not significantly affect the level of fabricated product imports (JX 3, PX 8 at 93 ln. 25 - 94 ln. 16, 94 ln. 17-20, 95 ln. 8-21, 29 ln. 15-20). Mr. Disch testified that, in general, the price of mass and suspension PVC does not affect the level of imports of fabricated products, given that the PVC resin accounts for such a small portion

of the price of the product (JX 3, PX 8 at 93 ln. 25 - 94 ln. 13, 95 ln. 14-21, 29 ln. 15 - 25).

173. [##] (Pflugrath CX 177B ¶ 4 *In Camera*; Heath CX 178C ¶ 4 *In Camera*; Wilhite CX 179E ¶ 5 *In Camera*; Underwood CX 203B ¶ 4 *In Camera*). [##] (Wilhite CX 179E ¶ 5 *In Camera*; Pflugrath CX 177B ¶ 4 *In Camera*; Underwood CX 203B ¶ 4 *In Camera*).

174. Thus, the level of imports of PVC pipe does not substantially change as the price of mass and suspension PVC homopolymer resin changes. The very low level of PVC pipe imports and the apparent lack of any supply response as the price of mass and suspension PVC homopolymer resin in the United States changes show that the level of PVC pipe imports into the United States is not sensitive to the price of mass and suspension PVC homopolymer resin in the United States. Therefore, PVC pipe imports have little, if any, effect on the price of mass and suspension PVC homopolymer resin in the United States.

175. [##] (Donnelly CX 176E ¶ 6 *In Camera*; Goldstein CX 180B ¶ 4 *In Camera*).

## 2. Suspension PVC copolymer

176. Similarly, the level imports of suspension PVC copolymer fabricated products is not sensitive to the price of resin in the United States.

177. [##] (JX 3, PX 11 at 678 ln. 10-16; Hill CX 183E-F ¶ 15 *In Camera*). Mr. Disch noted that a record could sell for as much as 40 times the cost of the PVC compound that was used in the record (JX 3, PX 8 at 29 ln. 1-6). [##] (JX 3, PX 8 at 94 ln. 17-20; JX 3, PX 11 at 679 ln. 2-5; Hill CX 183E-F ¶ 15 *In Camera*).

178. [##] (JX 3, PX 8 at 94 ln. 14-17; Weimar CX 192H ¶ 18 *In Camera*; Marcus CX 209B-C ¶ 5 *In Camera*). [##] (JX 3, PX 6 at 87 ln. 1-87 ln. 1-88 ln. 3; JX 3, PX 8 at 93 ln. 25-94 ln. 13; JX 3, PX 11 at 673 ln. 21-674 ln. 2; Barlet JX 1, 60 ln. 7-23; Weimar JX 1, 35 ln. 3-16; Marcus CX 209C ¶ 6 *In Camera*). Mr. Disch testified that PVC resin accounts for approximately 15-20 percent of the cost of the finished tile (JX 3, PX 11 at 673 ln. 21-24; JX 3, PX 8 at 27). Armstrong has estimated that the resin accounts for close to 10 percent of the cost of one of its typical tile products (Barlet JX 1, 60

ln. 7-23). [##] (JX 3, PX 8 at 93 ln. 25-95 ln. 13; Weimar CX 192H ¶ 18 *In Camera*; Marcus CX 209C ¶ 6 *In Camera*).

### 3. Dispersion PVC

179. The price level of dispersion PVC fabricated products is also relatively insensitive to the price of dispersion PVC resin in the United States.

180. Mr. Disch testified that the price of dispersion PVC does not significantly affect the level of fabricated product imports (JX 3, PX 8 at 39 ln. 16-19, 95 ln. 8-21, 29 ln. 15-20, 39 ln. 16 - 40 ln. 7). Mr. Disch pointed out, for example, that the reduction in American production of coated fabrics, a dispersion PVC end-use application which has been particularly subject to import competition, has not been affected by dispersion PVC prices in the United States (JX 3, PX 8 at 95 ln. 14-21).

181. Dispersion PVC accounts for only a small portion of the cost of vinyl sheet flooring, a major end-use application of the resin (Barlet JX 1, 66 ln. 15 - 67 ln. 11; JX 3, PX 8 at 11-21). Mr. Barlet also estimated that the dispersion resin accounts for 10 percent, and possibly less, of the cost of sheet flooring products (Barlet JX 1, 66 ln. 15 - 67 ln. 11). Thus, significant increases in the price of dispersion PVC resin would not likely result in any significant increase in the percentage of imported vinyl resilient sheet floors purchased in the United States (JX 3, PX 8 at 39 ln. 16-19; *See* Kaserman JX 1, 291 ln. 13-24).

182. Imports of the other dispersion PVC fabricated products are also insensitive to the price of dispersion PVC resin in the United States. Mr. Disch testified that the effect of imports of coated fabrics on the use of dispersion PVC resin in that application has been "disasterville," yet noted that the price of PVC has had no effect on the level of coated fabric imports (JX 3, PX 8 at 95 ln. 8-21). The level of imports of dispersion PVC in various molding and coating applications is similarly insensitive to the price of dispersion PVC resin in the United States. In general, the price of PVC is a relatively insignificant portion of the cost of the final product (JX 3, PX 8 at 39 ln. 12-15; Lore JX 1, 83 ln. 16 - 184 ln. 4; Mason JX 1, 195 ln. 23 - 196 ln. 3; Kaserman 291 ln. 13-24). Thus, significant increases in the

price of dispersion PVC would not likely have a significant effect on the level of imports of these products (*Id.*).

183. Thus, the level of imports of each of the relevant products, in resin and in fabricated products, is relatively insensitive to the price of these products in the United States. Imports are a small factor in the United States PVC markets and do not constrain United States prices for the relevant products (*See* Goodrich, slip op. at 38). Mr. Schaefer testified generally as to the effect of significant PVC price increases on the level of demand for PVC resin in the domestic market in each of the relevant product markets. He testified that he did not believe such increases would have much effect on demand (JX 3, PX 136 at 71 ln. 22 - 72 ln. 2, 60 ln. 21 - 61 ln. 10, 67 ln. 2 - 11, 75 ln. 23 - 76 ln. 3).

## VI. PVC QUANTITATIVE ANALYSIS

### A. Competitors in the Mass and Suspension PVC

184. [##] (JX 3, PX 140 "Table 1" In Camera ). [##] (JX 3, PX 140 "Table 7" In Camera). [##] (JX 3, PX 140 "Table 23" In Camera).

185. [##] (JX 3, PX 140 "Table 2" In Camera). [##] (JX 3, PX 140 "Table 7" In Camera).

186. [##] (JX 3, PX 140 "Table 2" In Camera ). [##] (JX 3, PX 140 "Table 7" In Camera).

187. [##] (JX 3, PX 140 "Table 2," "Table 7" In Camera).

188. [##] (JX 3, PX 140 "Table 2," "Table 7" In Camera).

189. [##] (JX 3, PX 140 "Table 2," "Table 7" In Camera).

190. [##] (JX 3, PX 140 "Table 2," "Table 7" In Camera).

191. [##] (JX 3, PX 140 "Table 2," "Table 7" In Camera).

192. [##] (JX 3, PX 140 "Table 2," "Table 1" In Camera).

193. [##] (JX 3, PX 140 "Table 2," "Table 7" In Camera).

194. [##] (JX 3, PX 140 "Table 2," "Table 7" In Camera).

195. [##] (JX 3, PX 140 "Table 2," "Table 7" In Camera).

196. [##] (JX 3, PX 140 "Table 2," "Table 7" In Camera).

*B. Effect of the Acquisition on Concentration in  
The Mass and Suspension PVC Market*

197. [##] (See JX 3, PX 140 *In Camera*; Kaserman JX 1, 306 ln. 20-314 ln. 4).

United States Mass and Suspension PVC Market Shares and Rank

| <u>Company</u> | 1986<br><u>Operating<br/>Capacity</u> <sup>11</sup> | 1985<br><u>Homopolymer<br/>Production</u> <sup>12</sup> | 1985<br><u>Mass and Suspension<br/>PVC Production</u> <sup>13</sup> |
|----------------|-----------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------|
|                | Share Rank                                          | Share Rank                                              | Share Rank                                                          |
| Goodrich       |                                                     |                                                         |                                                                     |
| Shintech       |                                                     |                                                         |                                                                     |
| Formosa        |                                                     |                                                         |                                                                     |
| Tenneco        |                                                     |                                                         |                                                                     |
| Georgia Gulf   |                                                     |                                                         |                                                                     |
| Vista          |                                                     |                                                         |                                                                     |
| Borden         |                                                     |                                                         |                                                                     |
| Occidental     |                                                     |                                                         |                                                                     |
| Air Products   |                                                     |                                                         |                                                                     |
| Certain-Teed   |                                                     |                                                         |                                                                     |
| Vygen          |                                                     |                                                         |                                                                     |
| Keysor-Century |                                                     |                                                         |                                                                     |
| Total          |                                                     |                                                         |                                                                     |

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<sup>11</sup> JX 3, PX 140 "Table 2" *In Camera*.

<sup>12</sup> JX 3, PX 140 "Table 7" *In Camera*.

<sup>13</sup> JX 3, PX 140 "Table 1" *In Camera*.

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Initial Decision

Operating  
Capacity

Homopolymer  
Production

Mass and Suspension  
PVC Production

Pre-Acquisition HHI:  
Post-Acquisition HHI:  
Increase in HHI:

Occidental/Tenneco  
Combined Share:  
Combined Rank:

Pre-Acquisition CR2:  
Post-Acquisition CR2:  
Increase in CR2:

Pre-Acquisition CR4:  
Post-Acquisition CR4:  
Increase in CR4 :

Pre-Acquisition CR8:  
Post Acquisition CR8:  
Increase in CR8:

198. The acquisition reduced from twelve to eleven the number of competitors in the market and eliminated Tenneco as a competitor in the mass and suspension PVC market and as an independent producer of suspension PVC homopolymer. As a result of the acquisition, Occidental and B.F. Goodrich are essentially tied as the leading firms in the market.

199. The acquisition resulted in a substantial increase in concentration in the mass and suspension PVC market by all measurements. HHI concentration in mass and suspension PVC homopolymer production increased by 131 to a level of 1281 and, measured on the basis of total mass and suspension PVC production, increased by 156 to a level of 1278. Significantly, the operating capacity HHI increased by 158 to a level of 1305.

200. Corresponding increases are reflected in two-firm, four-firm and eight-firm concentration ratios. Two-firm concentration in mass and suspension PVC operating capacity increased by 4.83 percent to 37.08 percent; four-firm concentration increased by 7.1 percent to 62.7 percent; and eight-firm concentration increased by 5.05 percent to 95.04 percent. Similar increases are recorded for concentration in homopolymer production and in overall mass and suspension PVC production.

*C. Competitors in The Suspension PVC Copolymer*

201. [##] (JX 3, PX 140 "Table 18" *In Camera*). [##] (JX 3, PX 140 "Table 17" *In Camera*). [##] (Hill CX 183D ¶ 9 *In Camera*; Boyer CX 185F ¶ 14; Dellevigne CX 188D ¶ 11 *In Camera*; Weimar CX 192F ¶ 14 *In Camera*).

202. [##] (JX 3, PX 140 "Table 18," "Table 17" *In Camera*).

203. [##] (JX 3, PX 140 "Table 18" *In Camera*). [##] (JX 3, PX 140 "Table 17" *In Camera*).

204. [##] (JX 3, PX 140 "Table 18," "Table 17" *In Camera*).

205. [##] (JX 3, PX 140 "Table 18," "Table 17" *In Camera*).

206. [##] (JX 3, PX 140 "Table 18," *In Camera*). [##] (JX 3, PX 140 "Table 17" *In Camera*).

*D. Effect of the Acquisition on Concentration in the  
Suspension PVC Copolymer Market*

207. The Table below depicts the effect of the acquisition on concentration in the United States suspension PVC copolymer market, based on suspension PVC copolymer operating capacity at the time of the acquisition and 1985 suspension PVC copolymer production.

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Initial Decision

United States Suspension PVC Copolymer  
Market Shares and Rank

| <u>Company</u> | 1986<br>Operating<br><u>Capacity</u> <sup>14</sup> |      | 1985<br><u>Production</u> <sup>15</sup> |      |
|----------------|----------------------------------------------------|------|-----------------------------------------|------|
|                | Share                                              | Rank | Share                                   | Rank |
| Tenneco        |                                                    |      |                                         |      |
| Occidental     |                                                    |      |                                         |      |
| Borden         |                                                    |      |                                         |      |
| Keysor-Century |                                                    |      |                                         |      |
| Vygen          |                                                    |      |                                         |      |
| Total          |                                                    |      |                                         |      |

Pre-Acquisition HHI:

Post-Acquisition HHI: .

Increase in HHI:

Occidental/Tenneco

Combined Share:

Pre-Acquisition CR2:

Post-Acquisition CR2:

Increase in CR2:

Pre-Acquisition CR4:

Post-Acquisition CR4:

Increase in CR4:

208. The acquisition reduced from five to four the number of competitors in the market. By combining the two leading firms in the market, the acquisition established Occidental as the dominant firm in suspension PVC copolymer, with a market share over twice that of the next largest firm.

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<sup>14</sup> JX 3, PX 140 "Table 18" *In Camera*.

<sup>15</sup> JX 3, PX 140 "Table 17" in camera.



209. The acquisition resulted in a substantial increase in concentration in the already highly concentrated suspension PVC copolymer market. HHI concentration in suspension PVC copolymer production increased by 1577 to a level of 4368 and operating capacity HHI increased by 1360 to a level of 3504.

210. Corresponding increases are reflected in two-firm and four-firm concentration ratios. Two-firm concentration in suspension PVC copolymer production and operating capacity increased by 20.27 percent to 83.65 percent and by 19.13 percent to 71.3 percent, respectively. Four-firm concentration in suspension PVC copolymer operating capacity increased by 12.75 percent to a level of 100 percent.

*E. Competitors in the Dispersion PVC Market*

211. [##] (JX 3, PX 140 "Table 13" *In Camera*). [##] (JX 3, PX 140 "Table 12" *In Camera*). [##] (JX 3, PX 140 "Table 24" *In Camera*).

212. [##] (JX 3, PX 140 "Table 12" *In Camera*). [##] (JX 3, PX 140 "Table 13" *In Camera*).

213. [##] (JX 3, PX 140 "Table 13," "Table 12" *In Camera*).

214. [##] (JX 3, PX 140 "Table 13," "Table 12" *In Camera*).

215. [##] (JX 3, PX 140 "Table 13," "Table 12" *In Camera*).

216. [##] (JX 3, PX 140 "Table 13," "Table 12" *In Camera*).

217. [##] (JX 3, PX 140 "Table 13," "Table 12" *In Camera*).

218. [##] (JX 3, PX 140 "Table 13," "Table 12" *In Camera*).

*F. Effect of the Acquisition on Concentration in  
The Dispersion PVC Market*

219. The Table below depicts the effects of the acquisition on concentration in the United States dispersion PVC market, based on operating capacity and production. In addition, concentration in dispersion PVC supply, including both domestic production and imports, is presented.

1010

Initial Decision

United States Dispersion PVC  
Market Shares and Rank

| <u>Company</u> | 1986<br>Operating<br><u>Capacity</u> <sup>16</sup> | 1985<br><u>Production</u> <sup>17</sup> | 1985<br>Production<br>& Imports <sup>18</sup> |
|----------------|----------------------------------------------------|-----------------------------------------|-----------------------------------------------|
|                | Share Rank                                         | Share Rank                              | Share Rank                                    |

Occidental  
Goodrich  
Formosa  
Goodyear  
Tenneco  
Borden  
Georgia Gulf

Total

Pre-Acquisition HHI:  
Post-Acquisition HHI:  
Increase in HHI:

Occidental/Tenneco  
Combined Share:  
Combined Rank:

Pre-Acquisition CR2:  
Post-Acquisition CR2:  
Increase in CR2:

Pre-Acquisition CR4:  
Post-Acquisition CR4:  
Increase in CR4:

Pre-Acquisition CR8:

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<sup>16</sup> JX 3, PX 140 "Table 13" *In Camera*.

<sup>17</sup> JX 3, PX 140 "Table 12" *In Camera*.

<sup>18</sup> JX 3, PX 140 "Table 24" *In Camera*.

220. The acquisition reduced from seven to six the number of competitors in the dispersion PVC market, and established Occidental as the market leader by a wide margin.

221. The acquisition resulted in a substantial increase in concentration in the dispersion PVC market, moving the market from the upper reaches of the moderately concentrated range well into the highly concentrated range. HHI concentration in dispersion PVC operating capacity increased by 331 to a level of 2051, while the HHI for dispersion PVC production increased by 448 to a level of 2201. Adjusting the production concentration level to account for dispersion PVC imports, which peaked in 1984-1985, HHI concentration in total dispersion PVC supply increases by 330 to a level of 1938.

222. Two-firm and four-firm concentration in dispersion PVC operating capacity increased by 6.58 percent to a level of 49.5, and by 8.52 percent to a level of 87.05 percent, respectively. Corresponding increases for dispersion PVC production are 8.68 percent, to a level of 55.14 percent, and 8.67 percent, to a level of 85.18 percent, respectively. Adjusted for 1985 dispersion PVC imports, the increase in two-firm concentration is 8.01 percent, to a level of 52.61 percent, and 7.98 percent, to a level of 80.25 percent, respectively.

*G. There Is a Trend Toward Concentration in the Relevant Markets*

223. In assessing whether the increased concentration resulting from Occidental's acquisition of Tenneco's PVC assets and business contributes substantially to an increased likelihood of anticompetitive behavior in the relevant markets, it is important to consider the trend in concentration in the industry (Kaserman Dkt. 9159, 2297-98). If the concentration trend indicates that industry concentration is decreasing in the long term despite the acquisition, concern over the effects of the acquisition may be somewhat less (Kaserman Dkt. 9159, 2298-99). If the concentration trend reveals that concentration in the industry is increasing, however, concern over the effects of the acquisition on likely industry behavior and performance is increased (*Id.*).

## 1. Mass and suspension PVC

224. Since the mid-1970's, there has been a significant trend toward higher concentration in the mass and suspension PVC market (Goodrich F 54, 56-58; Goodrich, slip op. at 56 "Table III" Kaserman Dkt. 9159, 2301 [##] (Goodrich F 55, F 58; JX 3, PX 140, Table 2 *In Camera*).

225. [##] (Goodrich F 54; JX 3, PX 140, Table 2 *In Camera*). [##] (Goodrich F 54; JX 3, PX 140, Table 2 *In Camera*). [##] (Goodrich F 54; JX 3, PX 140, Table 2 *In Camera*).

226. A series of acquisitions in the market has contributed to the increased concentration in mass and suspension PVC (Goodrich FF 54, 56). In addition, several smaller firms have closed their operations and exited the industry (Goodrich F 55; Dkt. 9159 CX 442B-C). In 1970, Airco, Inc. sold its Chemical and Plastics Division to Air Products & Chemicals, Inc. (Goodrich F 55; Dkt. 9159 CX 323A). Allied Chemical Corporation sold its polyvinyl chloride manufacturing facility at Painesville, Ohio, to Robintech Incorporated in 1973 (Goodrich F 55; Dkt. 9159 CX 325A). [##] (Goodrich F 55; Dkt. 9159 CX 321B *In Camera*; Dkt. 9159 CX 357A *In Camera*; Dkt. 9159 CX 359F). These exits were offset by three new entries into the industry between 1974 and 1975, (Georgia Pacific Corporation, Formosa Plastics Corporation, and Certain Teed Corporation), and the establishment of Shintech, a joint venture between Shin-Etsu of Japan and Robintech, who had acquired Allied Chemicals suspension PVC plant the previous year (Goodrich F 56; Dkt. 9159 CX 344B). By 1975, there were twenty-two firms in the mass and suspension PVC market, up from 19 in 1971 (Goodrich F 55; CPF 239).

227. *De novo* entry has not occurred in PVC production since 1975 (Goodrich, slip op. at 36; Goodrich F 56). From 1975 to the present, new firms have entered the PVC markets only through acquisition (Goodrich F 56). The history of mass and suspension consolidations, acquisitions, and exits is chronicled in the Goodrich case (*See* Goodrich F 56). [##] (Goodrich F 56; Dkt. 9159 CX 317C *In Camera*). In 1977, Union Carbide exited the market after its plant was destroyed by explosion (Goodrich F 57; Dkt. 9159 CX 43B; Dkt. 9159 CX 108Q). [##] (Goodrich F 56; Kaserman Dkt. 9159,

2304; Dkt. 9159 CX 41A *In Camera*; Dkt. 9159 CX 53W; Dkt. 9159 CX 337C *In Camera*; Dkt. 9159 CX 664C,J *In Camera*). Firestone's mass and suspension PVC business was acquired by Occidental Petroleum Corporation in 1980 (Goodrich F 56; Dkt. 9159 CX 307B). [##] (Dkt. 9159 CX 322A, C *In Camera*). [##] (Boyer CX 185A-B ¶ 1-2; Dkt. 9159 CX 318A, D *In Camera*). [##] (Dkt. 9159 CX 300Z6 *In Camera*; See 306B *In Camera*). [##] (See Dkt. 9159 CX 116; Dkt. 9159 CX 561 *In Camera*). In 1984, Pantasote, Inc. closed its suspension - PVC homopolymer plant and exited the market (Dkt. 9159 CX 388 H. Wheeler Dkt. 9159, 1720-21, 1725; See H. Wheeler Dkt. 9159, 1774).

228. These acquisitions and exits have led to a continuous decline in the number of mass and suspension PVC producers since 1977 (Goodrich F 56-57; Kaserman Dkt. 9159, 2301; CPF 239-242). At the time of the Goodrich acquisition, there were seventeen firms in the market (Goodrich F 58). [##] (JX 3, PX 140 "Table 2" *In Camera*).

229. The strong trend toward concentration in the mass and suspension PVC market heightens the probability that Occidental's acquisition of Tenneco's PVC assets and business may have the effect of substantially lessening competition in the market (Kaserman Dkt. 9159, 2304-05). The concentration trend in the mass and suspension PVC market indicates that concentration measurements at the time of the acquisition may in fact understate the current and future potential for exercise of market power by mass and suspension PVC firms.

## 2. Suspension PVC copolymer

230. Since the mid 1970's there has been a significant trend towards higher concentration in the suspension PVC copolymer market. [##] (Dkt. 9159 CX 323, CX 325, CX 330, CX 333-CX 334, CX 342, CX 347; CX 324, CX 326-CX 329, CX 331-CX 332, CX 335-CX 341, CX 343-CX 346, CX 349-CX 350 *In Camera*). [##] (JX 3, PX 140 "Table 17" *In Camera*).

231. [##] (CX 5E *In Camera*).

232. [##] (Dkt. 9159 CX 330G *In Camera*). [##] (Goodrich F 57; Dkt. 9159 CX 336G *In Camera*). [##] (Dkt. 9159 CX 343G *In Camera*; Dkt. 9159 CX 349Q *In Camera*). [##] (Dkt. 9159 CX 318A

*In Camera*; Boyer CX 185A-B ¶ 1-2). Formosa is now in the process of dismantling the plant (CX 165A Table n.3). Air Products ceased copolymer production in 1983, after reportedly encountering significant production problems in its attempts to produce copolymer resin at its Calvert City, Kentucky, plant (Fisher, CX 208B ¶ 2; *See* Lull JX 1, 534-535).

233. The strong trend toward concentration in the suspension PVC copolymer market heightens the probability that Occidental's acquisition of Tenneco's suspension PVC copolymer assets and business may have the effect of substantially lessening competition in the market (*See* Kaserman Dkt. 9159, 2304-05).

### 3. Dispersion PVC

234. [##] (Dkt. 9159 CX 323, CX 325, CX 330, CX 333-CX 334, CX 342, CX 347; CX 324, CX 326-CX 329, CX 331-CX 332, CX 335-CX341, CX 343-CX 346, CX 349-CX 350 *In Camera*; CX 358C-D *In Camera*). [##] (JX 3, PX 140 "Table 12" *In Camera*).

235. [##] (Goodrich F 14; Dkt. 9159 CX 300Z6 *In Camera*; PX 10 at 1183). [##] (Goodrich F 56) (Dkt. 9159, 300Z6 *In Camera*; *See* Dkt. 9159 CX 306B *In Camera*; Dkt. 9159 CX 310D *In Camera*; RX 175A). [##] (Dkt. 9159 CX 340E *In Camera*; Dkt. 9159 CX 349C *In Camera*; Dkt. 9159 CX 350F *In Camera*). [##] (Dkt. 9159 CX 318A *In Camera*; Boyer CX 185A-B ¶ 11-12).

236. The trend toward concentration in the dispersion PVC market heightens the probability that Occidental's acquisition of Tenneco's dispersion PVC assets and business may have the effect of substantially lessening competition in the market (*See* Kaserman Dkt. 9159, 2304-05).

## VII. ENTRY INTO PVC PRODUCTION IS A DIFFICULT AND TIME-CONSUMING PROCESS

237. Entry conditions are those aspects of an industry that (1) delay entry in response to the existence of supracompetitive profits; (2) reduce the magnitude of the entry response; or (3) reduce the probability of entry (Goodrich F 59; Kaserman JX 1, 321 ln. 24 - 322 ln. 10; Kaserman Dkt. 9159, 2311, 2314-15). Conditions of entry

influence the competitive significance of a merger in several ways. If entry is difficult to accomplish, incumbent firms have a greater incentive to collude because they have less concern over with attracting new firms into the industry in response to supracompetitive profits (Kaserman JX 1, 322 ln. 20 - 323 ln. 10; Kaserman Dkt. 9159, 2313-2314). If there is a time lag for an entry response, it provides the incumbent firms with an opportunity to engage in some type of strategic behavior regarding threat of new entry (Goodrich, slip op. at 30 & n. 70; Kaserman JX 1, 324 ln. 25 - 325 ln. 14; Kaserman Dkt. 9159, 2313). Finally, to the extent that conditions of entry delay the entry response, they permit anticompetitive behavior to persist for a longer period of time (Kaserman JX 1, 324 ln. 25 - 325 ln. 14; Kaserman Dkt. 9159, 2313-14).

238. In Goodrich, the Commission found that the mass and suspension PVC market was "characterized by substantial barriers and impediments to new entry" (Goodrich, slip op. at 31). Further, the Commission adopted the ALJ's conclusion that new entry into PVC production is "difficult and takes a long time" (Goodrich ID at 92). The Commission noted the substantial lead time for construction of a PVC plant, and the significant minimum efficient scale and sunk costs that would be associated with construction of a new plant (Goodrich, slip op. at 31-36). It stated that the lack of new entry into PVC production confirmed the assessment that entry into PVC production is "difficult" (Goodrich, slip op. at 36) .

239. New entry into production of dispersion PVC or into production of suspension PVC copolymer is at least, or even more difficult, than entry into production of mass or suspension PVC homopolymer (Flammer CX 184D ¶ 6). Even a firm experienced in suspension PVC homopolymer production would have little advantage, relative to a firm not in the PVC industry, in attempting to enter the suspension PVC copolymer market or the dispersion PVC market (Flammer CX 184D ¶¶ 6, 7; *See* Disch JX 3, PX 8 at 86 ln. 5-23).

240. There are five factors that significantly affect the conditions of entry into production of PVC: (1) the size of a minimum efficient scale plant in relation to total industry demand; (2) the magnitude of sunk costs; (3) the lead time required for planning, obtaining, permits, and construction of new plants; (4) the presence or absence of excess capacity in the industry; and (5) the extent of vertical

integration existing in the industry (Gobdrich F 59; Goodrich ID at 92; Kaserman JX 1, 324 ln. 5-18; Kaserman Dkt. 9159, 2314-15).

*A. Minimum Efficient Scale of PVC Plants is Large  
Relative to the Size of the Relevant Markets*

241. As the Commission found in Goodrich, entry into each of the relevant PVC markets is made more difficult because the size of a minimum efficient scale PVC plant is large in relation to the size of the market (Goodrich, slip op. at 36, n.85; Goodrich F 60- 62; Kaserman JX 1, 326 ln. 23 - 326 ln. 2; Kaserman Dkt. 9159, 2319-21; Schaefer Dkt. 9159, 1132; Schaefer JX 1, 587 ln. 7-17).

242. Minimum efficient scale refers to the size that a new firm would need to achieve in order not to suffer a significant cost disadvantage *vis-a-vis* the other firms in the industry (Kaserman JX 1, 326 ln. 5-22; Kaserman Dkt. 9159, 2315). It is a manifestation of economies of scale in the industry: whether and to what point the costs of production fall as firm size increases (Kaserman JX 1, 326 ln. 5-22; Kaserman Dkt. 9159, 2315). If the minimum efficient scale is large relative to the size of the market and to market growth, then the act of entry at minimum efficient scale is likely to depress industry prices significantly (Kaserman JX 1, 326 ln. 23 - 327 ln. 2; Kaserman Dkt. 9159, 2317-18). This is particularly true when the demand for the product is inelastic (Kaserman Dkt. 9159, 2317-18). Thus, the very act of entry is likely to dissipate the profits that were the basis for the decision to enter in the first place. If a firm enters at a size below minimum efficient scale, in order to avoid disrupting industry prices significantly, it will have a cost disadvantage compared to existing firms, thereby making the entry less profitable or even unprofitable. Potential entrants recognizing the implications of minimum efficient scale are unlikely to attempt entry (Goodrich, slip op. at 39-40; Kaserman JX 1, 328 ln. 9-18). Thus, where the minimum efficient scale is large relative to the size of the market, it may make entry more difficult (Goodrich, slip op. at 39-40; Klass Dkt. 9159, 4446-47, 4635, 4637; Kaserman JX 1, 324 ln. 5-12, 326 ln. 5-22; Kaserman Dkt. 9159, 2314-20).



## 1. Mass and suspension PVC homopolymer

243. The Commission concluded in Goodrich that an optimum scale PVC plant required at least 300 million pounds of annual production capacity (Goodrich, slip op. at 36; Goodrich F 60). The minimum efficient scale today for a mass or suspension PVC homopolymer plant is more likely to be in the over 500 million pounds per year range (JX 3, PX 6 at 74 ln. 20-75 ln. 11; JX 3, PX 15 at 80-81 (optimum scale 600 million pounds); JX 3, PX 18 at 47 (optimum scale is 2-3 times the size of a 300-400 million pound capacity plant); *See* JX 3, PX 10 at 1132 ln. 4-12; *See also* JX 3, PX 11 at 643 ln. 22-644 ln. 7; JX 3, PX 8 at 64 ln. 24-65 ln. 6 (optimal scale plant is 800 to 900 million pounds)). This minimum efficient scale is substantial, with respect to the overall mass and suspension market, so that the construction of a new plant would have a depressing effect on price (Goodrich, slip op. at 36, n.85; Kaserman JX 1, 327 ln. 25-328 ln. 8; Kaserman Dkt. 9159, 2317-18).

244. Industry witnesses in Goodrich, Dkt. 9159, estimated that the minimum efficient scale, at that time, was in the 300-600 million pound per-year range. Mr. Disch estimated the minimum efficient scale to be at least 300 million pounds but noted there were further scale economies in plants larger than 300 million pounds capacity (Disch Dkt. 9159, 644; *See* Disch JX 3, PX 8 at 64-65 (economies of scale persist up to 800 or 900 million pounds of capacity)). In 1981, Diamond Shamrock Chemical Company also estimated a minimum size of 300 million pounds (Goodrich F 60, n. 12; Dkt. 9159 CX 445). Mr. Schaefer concluded that the minimum size was 300 million pounds per year with expansion potential to 500-600 million pounds per year (Schaefer Dkt. 9159, 1132; Goodrich F 60). Dr. DiLiddo stated that there were scale economies in a 550 million pound-per-year plant beyond those in a 300 million pound-per-year plant (Goodrich F 60; DiLiddo Dkt. 9159, 3345). Dr. Eades' estimate was 500 million pounds (Goodrich F 60; Eades Dkt. 9159, 1462-63). Mr. Howard Wheeler concluded that the minimum efficient scale for a mass or suspension PVC plant was 600 million pounds per year but that 750 to 900 million pounds per year was preferable. He viewed a plant of even 300 million pounds per year as being too small (Goodrich F 60; H. Wheeler 1734-35).

245. Dr. DiLiddo's estimate of 200-300 million pounds per year (DiLiddo 3290) incorporated considerations of risk, such as the risk of loading a plant of large size (DiLiddo Dkt. 9159, 3345-47). Because the economic definition of minimum efficient scale is properly a technological concept, rather than one incorporating demand side considerations (Kaserman Dkt. 9159, 2315-16, 2320), this estimate does not correctly apply the definition. Rather, Dr. DiLiddo's estimate is simply a recognition of the fact that entry at a larger scale is difficult and risky, given the conditions of entry in mass and suspension PVC. Furthermore, Dr. DiLiddo stated that a plant of 550 million pounds per year would have scale economies not enjoyed by a plant of 300 million pounds per year (Goodrich F 60; DiLiddo Dkt. 9159, 3345). These additional scale economies were a significant factor in Goodrich's 1979 decision to build a 550 million pound-per-year facility at Convent, Louisiana (Goodrich F 61). 5

246. [##] (Goodrich F 61; Compare Dkt. 9159 CX 302G *In Camera* Dkt. 9159 CX 308E) [##] (Goodrich F 61; DiLiddo Dkt. 9159, 3345; Dkt. 9159 CX 38 *In Camera*).

247. [##] (Goodrich F 62; Dkt. 9159 CX 14F *In Camera*; Dkt. 9159 CX 515). [##] (Dkt. 9159 CX 310D *In Camera*); [##] (Disch Dkt. 9159, 637); [##] (Dkt. 9159 CX 308E); [##] (compare Dkt. 9159 CX 317B,C *In Camera* and McMath Dkt. 9159, 1892). [##] (Dkt. 9159 CX 54Z8-Z10 *In Camera*). This environment makes it more difficult than in the past for a firm to enter at a size below minimum efficient scale. Indeed, it suggests that the minimum efficient scale for a new mass or suspension PVC plant is greater than the 300 million pound estimate used at the time of the Goodrich proceeding. Thus, as discussed supra, current estimates of the minimum efficient scale for a mass and suspension PVC homopolymer plant are over 500 million pounds.

248. [##] (Klass Dkt. 9159, 5303). [##] (JX 3, PX 140 "Table 1" *In Camera*). This is greater than the level that the Commission found in Goodrich would impede entry into PVC (Goodrich, slip op. at 36, n.85), and is similar to the level that the Commission found would impede entry into VCM (Goodrich, slip op. at 39-40).

## 2. Suspension PVC copolymer

249. The minimum efficient plant size for a suspension PVC copolymer plant is at least 50 million pounds per year, and there is evidence that it could be as high as 300 to 400 million pounds per year (JX 3, PX 15 at 80-81; JX 3, PX 20 at 29-30; JX 3, PX 8 at 67 ln. 3-9). Mr. Disch of Tenneco testified that the minimum efficient scale for a grassroots suspension PVC copolymer plant would be 180-200 million pounds (JX 3, PX 8 at 65).

250. [##] (JX 3, PX 140 "Table 17" *In Camera*). [##] (*Id.*). This is significantly higher, as a percentage of the overall market, than the minimum efficient scale of entry into either mass and suspension PVC or VCM, as found in Goodrich (Goodrich, slip op. at 36, n.85, 41).

251. Entry into the suspension PVC copolymer market at the minimum efficient scale would therefore be significant relative to the overall size of the market and would likely depress the price of suspension PVC copolymer (Goodrich, slip op. at 41; Kaserman JX 1, 327 ln. 3-328 ln. 8; Schaefer JX 1, 587 ln. 7-14; JX 3, PX 20 at 29; JX 3, PX 8 at 65-66). This fact makes entry into the suspension PVC copolymer market most difficult (*See* Goodrich, slip op. at 39-41).

252. Mr. Schaefer of Occidental testified that, because of the small size of the suspension PVC copolymer market, Occidental would not consider restarting its Perryville, Maryland plant to produce suspension PVC copolymer resin (Schaefer JX 1, 585 ln. 21-586 ln. 14). He testified further that new entry into suspension PVC copolymer at any scale, because of the depressing effect it would have on prices in that market, would be unprofitable (Schaefer JX 1, 587 ln.7-14; *accord* JX 3, PX 20 at 29). In January 1988, despite the increased prices and profits realized in the PVC industry, Occidental reaffirmed that it has no intention to restart its Perryville plant (CX 1000).

## 3. Dispersion PVC

253. The minimum efficient plant size for a dispersion PVC plant is at least 36 million pounds, and could be as high as 300-400 million pounds (JX 3, PX 8 at 73 ln. 22-74 ln. 23; JX 3, PX 15 at 80-81; JX

3, PX 20 at 29-30). Mr. Disch testified that the minimum efficient scale of a grassroots dispersion PVC plant would be approximately 80 to 100 million pounds (JX 3, PX 8 73 ln. 22 - 74 ln. 23).

254. [##] (JX 3, PX 140 "Table 24" *In Camera*). [##] (*Id.*). This also is a significantly higher, as a percentage of the overall market, than the minimum efficient scale of entry into either the mass and suspension PVC or the VCM market, as found in Goodrich.

255. Entry into the dispersion PVC market through construction of a minimum efficient scale dispersion PVC plant would therefore be a significant move relative to the overall size of the dispersion PVC market, and would likely depress the price of dispersion PVC (Goodrich, slip op. at 41; Kaserman JX 1, 327 ln. 3-328 ln. 8; Schaefer JX 1, 587 ln. 7-17; JX 3, PX 20 at 29). This fact makes entry into dispersion PVC less likely (Goodrich, slip op. at 39-40). Indeed, Tenneco has stated its belief that a grassroots dispersion PVC plant would not be "commercially viable" (JX 3, PX 20 at 29).

*B. The Minimum Efficient Scale of PVC Plants Is  
Large Relative to the Rate of Growth of  
Demand in the Relevant Markets*

256. The significance of the size of a minimum efficient scale plant in relation to the size of the market is affected by the rate of growth of demand (Goodrich F 235; Goodrich ID at 94; Kaserman JX 1, 329 ln. 13-17; Kaserman Dkt. 9159, 2318). If the market demand is growing rapidly, then a new firm might be able to come in, capture a good share of that growth, and run its plant profitably without having a depressing effect on industry prices (Kaserman JX 1, 328 ln. 19 - 329 ln. 4; Kaserman Dkt. 9159, 2318; *See also* Schaefer Dkt. 9159, 1133). Conversely, where demand is growing slowly, the price depressing effect of efficient sized entry is particularly great. In circumstances of slow growth, entry is more difficult (Kaserman JX 1, 328 ln. 19 - 329 ln. 4; Klass Dkt. 9159, 4447, 4637-38; *See* Schaefer JX 1, 585 ln. 2 - 587 ln. 20).

257. In the mass and suspension PVC market, it is the consensus of industry members that the rate of demand growth for mass and suspension PVC, through the 1980's, will be at approximately the rate of growth of GNP (Goodrich, slip op. at 41, n.96; Goodrich F 235;

JX 3, PX 8 at 89 ln. 1-5; JX 3, PX 9 at 125 ln. 15-17; JX 3, PX 10 at 1154 ln. 18 - 1157 ln. 8; Disch Dkt. 9159, 691). Mass and suspension PVC has become a mature product as it reaches the limits of replacement for other materials in a number of applications (Goodrich F 234, F 235; DiLiddo Dkt. 9159, 3324-3325; Schaefer Dkt. 9159, 1155-1157; Becker Dkt. 9159, 1266-1268; Eades Dkt. 9159, 1475; H. Wheeler Dkt. 9159, 1732-1733). The rate of growth of demand for mass and suspension PVC homopolymer is substantially lower than that which occurred in the 1960's and 1970's (Goodrich F 234; DiLiddo Dkt. 9159, 3107-3119; Disch Dkt. 9159, 691-692; Schaefer Dkt. 9159, 1122; Becker Dkt. 9159 1265-1268; Dkt. 9159 CX 64U).

258. The slowdown in the growth of demand for mass and suspension PVC homopolymer makes new entry less likely (JX 1, Kaserman 329 ln. 13-17; Kaserman Dkt. 9159, 2320-21; Eades 1468-69, 1486-87).

259. That slower rate of growth makes entry more difficult is supported by industry experience. Although there have been some recent incremental expansions, no construction of new plants has begun since the downward shift in the rate of growth in demand beginning in 1979 (Goodrich F 216). The slower projected growth was a factor in ICI's decision not to enter (Eades Dkt. 9159, 1468-69, 1486-87).

260. [##] (CX 43L; CX 166; RX 1L *In Camera*; RX 300B; RX 307A; RX 312J; Donnelly CX 176D ¶ 4 *In Camera*; Heath CX 178E ¶ 8 *In Camera*; See CPF 272-274). The long-term rate of 3.4% in the growth of demand for mass and suspension PVC from 1979 through 1988 is consistent with the growth in the economy, and is consistent with the status of a mature industry (compare Dkt. 9159 CX 672Z5 and CX 213C. Goodrich ID at 94; RX 1V; RX 1L; RX 43E; RX 43C; Schaefer Dkt. 9159, 1154 ln. 18 - 1157 ln. 8; Schaefer JX 1, 585 ln. 2 - 587 ln. 20; Becker 1266-67; Eades 1470).

261. [##] (Hornack CX 182C ¶ 7 *In Camera*; Hill CX 183F ¶ 16 *In Camera*; Boyer CX 185G ¶ 16; Schaefer JX 1, 585 ln. 18-586 ln. 14; JX 3, PX 6 at 82 ln. 11-23; JX 3, PX 18 ln. 7-15, 89 ln. 8-10; JX 3, PX 136 at 105 ln. 3-5; JX 3, PX 13 at 452726). [##] (Barlet JX 1, 70 ln. 11-13; Weimar CX 192F-G ¶ 16 *In Camera*; Hill CX 183F ¶ 16 *In Camera*; JX 3, PX 6 82 ln. 11 - 83 ln. 12).

262. The slow decline in the level of demand for suspension PVC copolymer makes new entry unlikely (Kaserman JX 1, 329 ln. 13-17; Flammer CX 184D ¶ 7; Schaefer JX 1, 585 ln. 2- 587 ln. 14; JX 3, PX 136 at 91 ln. 24-92 ln. 20, 95).

263. In dispersion PVC, it is projected that the growth in demand will be flat over the next several years (Boyer CX 185E ¶ 10; JX 3, PX 8 at 89 ln. 1-10; JX 3, PX 9 at 100 ln. 24-101 ln. 8; Schaefer JX 1, 587 ln. 7-20). The demand for dispersion PVC resin was slightly higher in 1986 than it was in previous years (CX 37J). In part, this growth likely reflects the underlying strength in the economy, which has led to strong demand for PVC resins overall. It does not, however, alter the long-term outlook for dispersion PVC demand. Thus, there was testimony and other evidence that demand is expected to grow slowly in most dispersion PVC resin end-use applications, such as flooring, coatings, bottle and cap linings, and other consumer products (*i.e.*, furniture, recreational products) (Barlet JX 1, 70 ln. 14-18; Lore JX 1, 188 ln. 4-6; *See generally* CX 43D). [##] (*See, e.g.*, Boulay CX 189C ¶ 6 *In Camera*). [##] The absence of growth in demand for dispersion PVC makes new entry less likely (Kaserman JX 1, 329 ln. 13-17; Flammer CX 184D ¶ 7; JX 3, PX 9 at 100 ln. 24-101 ln. 8 JX 3, PX 136 at 96 ln. 10-21; Schaefer JX 1, 587 ln. 7-20).

*C. Because Demand for the Relevant Products Is Inelastic,  
Entry at Minimum Efficient Scale Is More Difficult*

264. The significance of the size of a minimum efficient sized plant in relation to the size of the market is also affected by the elasticity of demand (Kaserman Dkt. 9159, 2316-2320; Klass Dkt. 9159, 4633-34). The less elastic the demand for a product is to changes in the price, the more the industry price is likely to be depressed as a result of the entry of a new efficient sized plant (Kaserman Dkt. 9159, 2316-20; Klass Dkt. 9159, 5305-06).

265. [##] (Dkt. 9159 CX 110 *In Camera*).

266. A new entrant bringing a new plant on line "would cut prices very substantially and over a long period of time" (DiLiddo Dkt. 9159, 3255-56; *See also* H. Wheeler Dkt. 9159, 1742-43; Schaefer Dkt. 9159, 1132-33). A new entrant faces a period of both

low prices and low volume as it attempts to load its plant (Schaefer Dkt. 9159, 1132; Schaefer JX 1, 585 ln. 13-20). Mr. Schaefer testified that it would take two to four years to find a market for the suspension PVC copolymer resin that Occidental would produce if it restarted its Perryville plant (Schaefer JX 1, 585 ln. 13-20). A new entrant would expect to incur losses for some period of time after entry (Schaefer Dkt. 9159, 1132; *See also* H. Wheeler Dkt. 9159, 1742-43 (need by new entrant to cut price to load plant would have a "disastrous" effect on profitability)).

*D. The Substantial Sunk Costs Associated with PVC Plants  
Increase the Risk of Entry into the Relevant Markets*

267. Sunk costs are costs of entering an industry which one cannot retrieve upon leaving the industry (Goodrich F 63; Kaserman JX 1, 329 ln. 18 - 330 ln. 2; Kaserman Dkt. 9159, 2321-22). The magnitude of sunk costs affects the riskiness of the investment by a new entrant (Goodrich, slip op. at 36, n.85; Goodrich F 63; Kaserman JX 1, 330 ln. 2-7; Kaserman Dkt. 9159, 2325). The economic literature recognizes the existence of sunk costs as a condition that may make entry more difficult (Klass Dkt. 9159, 4444). High sunk costs may result in anticompetitive entry conditions (Goodrich, slip op. at 41-42, n.97; Klass Dkt. 9159, 4622-23; *See B.A.T. Industries Ltd.*, 104 FTC 852, 935 (1984); *DOJ Merger Guidelines* at Section 33 nm 21).

268. In assessing the magnitude of sunk costs, the relevant data are those costs which are specialized and committed to the industry, rather than the amount received if one were able to sell the plant to someone for retention in the industry. This is because the sales price one could receive is a function of expected prices and profits in the industry and is therefore subject to risk (*See* Kaserman Dkt. 9159, 2323-25).

269. The magnitude of sunk costs for PVC plants in each of the relevant markets is high (Goodrich, slip op. at 36, n.85; Goodrich F 63; Goodrich ID at 92; Kaserman JX 1, 330 ln. 8-18; Kaserman Dkt. 9159, 2325-26; JX 3, PX 8 at 84 ln. 1-9, 74 ln. 18 - 75 ln. 4; Klass Dkt. 9159, 4397, 4521-24; H. Wheeler Dkt. 9159, 1724-25, 1744-45; Schaefer Dkt. 9159, 1219). [##] (Goodrich ID at 92 *In Camera*).

PVC plants are durable and highly specialized (Goodrich, slip op. at 36, n.85; Klass 4397, 4621-24; Disch Dkt. 9159, 686; *See* Disch 652).

270. PVC plants are specialized in that one cannot normally make materials other than PVC in a PVC plant (Goodrich, slip op. at 36, n.85; Goodrich F 63; Disch 686). It is very difficult to convert a PVC plant to another use, and it may be easier to start fresh and build a new plant (Goodrich F 63; H. Wheeler 1724-25, 1744-45). Sunk costs represent 75-80% of the total value of a PVC plant (Goodrich F 63; H. Wheeler 1744-45; Schaefer Dkt. 9159, 1219). Total costs for an efficient sized plant could exceed as much as \$100 million (Goodrich F 63; Schaefer Dkt. 9159, 1211-12; Dkt. 9159 CX 6S).

271. The significance of the specialized nature of PVC plant assets upon the conditions of entry is not merely a theoretical one. The industry recognizes that investment in a new plant entails considerable risk (Goodrich F 63; DiLiddo Dkt. 9159, 3134-3137). Should it become necessary to close the plant, virtually the entire investment could be lost (Goodrich F 63; Liao Dkt. 9159, 1519-22; *cf.* DiLiddo Dkt. 9159, 3396).

272. Theoretically, it is possible that the magnitude of sunk costs required for construction of either a dispersion PVC plant or a suspension PVC copolymer plant could be reduced by conversion of such plant to suspension PVC production, if entry into the intended market proved unsuccessful. However, conversion of a dispersion PVC plant to suspension PVC production would not likely be practical (Boyer CX 185C-D ¶ 5-6). It would require changes in the reactor, changes in raw material tanks and changes in the VCM stripping and recovery system (Boyer CX 185C ¶ 5; *See also* Flammer CX 184C ¶ 5, describing, for the same reasons, the conversion of a suspension plant to a dispersion plant as "economically impractical"). Mr. Boyer also noted that the use of spray-dryers in the resin drying system is specialized to the production of dispersion PVC (Boyer CX 185C ¶ 5). A spray dryer with an annual capacity of 50 million pounds would have a capital cost of approximately \$15-20 million (JX 3, PX 8 at 74 ln. 19 - 75 ln. 4). [##] (Hill CX 183C ¶ 5 *In Camera*; Hornack CX 182B-C ¶ 6 *In Camera*; Flammer CX 184C ¶ 5; JX 3, PX 15 at 83; JX 3, PX 20 at 30). [##] (Hornack CX 182B-C ¶ 6 *In Camera*; Hill CX 183C ¶ 5



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*In Camera*). These investments would be wasted in the event the plant is converted to homopolymer production. In addition, investment in a grassroots dispersion or suspension PVC copolymer plant requires, at a minimum, the same magnitude of sunk investment per pound of capacity that is required of a suspension PVC plant.

*E. Vertical Integration in the PVC Industry Increases the Difficulty of Entry into the Relevant Markets*

273. If complete ownership integration as to VCM and PVC occurs, a new entrant may be required to enter the PVC and VCM industries simultaneously (Kaserman Dkt. 9159, 2338-39). Such a trend could make entry into the relevant PVC markets that much more difficult (Kaserman Dkt. 9159, 2340-41).

274. Vertical integration between two stages of production may make entry into one stage more difficult if (1) the vertical integration makes it necessary to enter both stages rather than just one, and (2) if two-stage entry is more difficult than entry at only one level (Kaserman Dkt. 9159, 2337-40). Two-stage entry might be more difficult because entry at the second stage might be more difficult than at the first (Kaserman Dkt. 9159, 2337-40). For example, where the size of the minimum efficient size plant is larger at the second stage than at the first, the new entrant will have to enter both stages at the larger size (Kaserman Dkt. 9159, 2337-40).

275. In mass and suspension PVC the requirement of simultaneous entry into VCM would make entry more difficult since the size of a minimum efficient sized VCM plant is 800 million to one billion pounds per year, as compared to the 300 to 600 million pounds per year needed for mass or suspension PVC (*See Goodrich, slip op. at 40*). Simultaneous two-stage entry would require entering at both levels at the larger size. This disparity would be even greater for entry into suspension PVC copolymer or dispersion PVC.

276. [##] (Goodrich F 76; Dkt. 9159 CX 667 *In Camera*). [##] (Dkt. 9159 CX 17Z14 *In Camera*; Dkt. 9159 CX 16R *In Camera*; Dkt. 9159 CX 67N *In Camera*; *See* CX 310C *In Camera*; CX 11L *In Camera*; Dkt. 9159 CX 50B; Dkt. 9159 524X *In Camera*; Dkt. 9159 RX 1061L-O). The increase in vertical integration has caused concern that a prospective PVC entrant might also need to enter

VCM in order to secure a VCM supply (Disch Dkt. 9159, 727; *See* Goodrich, slip op. at 78, n.174).

277. [##] (Goodrich F 76; Dkt. 9159 CX 667I-J *In Camera*). However, the degree of vertical integration has increased since the time of the Goodrich proceeding. Occidental's successive acquisition of Tenneco's PVC operations and Shell's VCM manufacturing facilities, has eliminated both Tenneco and Occidental from the ranks of non-integrated PVC producers, and has eliminated Shell as a source of VCM for prospective entrants into PVC manufacture. The increasing degree of vertical integration does act as an additional deterrent to new entry, although to the extent that it is not complete, the deterring effect is reduced (Goodrich ID at 92; Kaserman Dkt. 9159, 2340-41). If the degree of vertical integration were to proceed to completion it would make entry that much more difficult (Kaserman Dkt. 9159, 2340-41).

*F. Entry into the Relevant Markets  
Takes a Long Period of Time*

278. The lead time required for a new entrant to enter the industry and begin production is significant (Kaserman JX 1, 324 ln. 25 - 325 ln. 14; *See* Klass Dkt. 9159, 5289-91). First, this provides incumbent firms with a period of time to profit from anticompetitive behavior without the risk of entry response (Goodrich at 30; Kaserman JX 1, 324 ln. 25 - 325 ln. 8; Kaserman Dkt. 9159, 2326-27). Second, this provides incumbent firms the opportunity to engage in strategic response, measures, increasing the risk of new entry (Goodrich, slip op at 30 & n.70; Kaserman JX 1, 324 ln. 25 - 325 ln. 14; Kaserman Dkt. 9159, 2326-27). [##] (Kaserman Dkt. 9159, 2326-27; Dkt. 9159 CX 14D *In Camera*; DiLiddo Dkt. 9159, 3187-88, 3396; Dkt. 9159 CX 114 *In Camera*).

279. [##] (Goodrich, slip op. at 31; Goodrich F 64; Goodrich ID at 92; JX 3, PX 8 at 76 ln. 13 - 80 ln. 8; JX 3, PX 92; Dkt. 9159 CX 15A *In Camera*; Dkt. 9159 CX 16B-Z 10; Dkt. 9159 CX 182I *In Camera*; Dkt. 9159 CX 196A *In Camera*; Dkt. 9159 CX 439B; Dkt. 9159 CX 446C; *See* DSCC Admission 445, Dkt. 9159 CX 6S *In Camera*). This long lead time increases the likelihood and potential duration for anticompetitive behavior in each of the relevant markets (Kaserman JX 1, 325 ln. 15-17; Kaserman Dkt. 9159, 2328).

280. Actual physical construction of a PVC plant is likely to take as long as two years (Goodrich, slip op. at 32; Goodrich F 65; JX 3, PX 11 653 ln. 4-20; JX 3, PX 8 79 ln. 25 - 80 ln.2; JX 3, PX 18 at 47; JX 3, PX 20 at 30; Schaefer Dkt. 9159, 1134; McMath Dkt. 9159, 1938-40, Disch Dkt. 9159, 653; *See also* Dkt. 9159 CX 446C).

281. In the present governmental climate, it is necessary to obtain environmental permits prior to beginning plant construction<sup>19</sup>

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<sup>19</sup> Air emissions from VCM and PVC resin plants are subject to the restrictions of the Clean Air Act, as amended, 42 U.S.C. 7401-7642. PVC plants are subject to specific air-quality standards restricting vinyl chloride emissions from manufacturing facilities in accordance with the National Emissions Standard for Vinyl Chloride, 40 CFR 61.60-.68, promulgated pursuant to the National Emission Standard for Hazardous Air Pollutants (NESHAP), 42 U.S.C. 7412. In addition, the Prevention of Significant Deterioration (PSD) regulations include vinyl chloride as a pollutant covered under the regulations, with a one ton per year emission rate as the triggering amount. 40 CFR 51.24(b)(23), 52.21(b)(23). New PVC plants, as well as major expansions of existing PVC manufacturing facilities, may otherwise be subject to federal PSD requirements as major potential sources of any of the other air pollutants subject to regulation under the Clean Air Act, including the need to obtain preconstruction permits. 42 U.S.C. 7470-7479; 40 CFR 51.24, 52.21. Federal PSD air emission requirements apply only to sources locating in areas presently meeting the National Ambient Air Quality Standards (NAAQS). 42 U.S.C. 7407(d), 7475. For new or existing sources locating or located in "nonattainment areas," a more stringent set of regulations applies. 42 U.S.C. 7501-7508; 40 CFR 52.24. *See also* 40 CFR Part 51, Appendix S ("Emission Offset Interpretative Ruling").

Effluent discharges from PVC plants are subject to the restrictions of the Clean Water Act, as amended by the Federal Water Pollution Control Act, 33 U.S.C. 1251-1376. Vinyl chloride has been specifically designated by the EPA as a toxic pollutant under the Act (33 U.S.C. 1317; 40 CFR 401.15), and PVC manufacturing facilities have been identified as a category of pollutant discharge point sources (33 U.S.C. 1316(B)(1)(A)). *See* 40 CFR 401.12, 416.10-.15. New and existing PVC manufacturing facilities are therefore subject to the permit requirements of the National Pollutant Discharge Elimination System (NPDES) program as potential sources of the discharge of pollutants (33 U.S.C. 1342). A PVC plant may also be subject to local regulatory authority preconstruction permits, particularly land-use requirements.

Because these pre-permit monitoring requirements are relatively new, few if any firms had to comply regarding new plants constructed in the past. It is, therefore, a factor that is likely to make the lead time for future plants longer than in the past. Furthermore, a longer lead time means a higher cost both for monitoring and in accumulated interest charges on expenses attendant to pre-permit applications.

(Goodrich, slip op. at 32-33; Goodrich F 66; Schaefer Dkt. 9159, 1133; Dkt. 9159 CX 597; Dkt. 9159 CX 642; Dkt. 9159 CX 643; DS Admission 443, Dkt. 9159 CX 6S; Dkt. 9159 CX 4Z23). Securing the necessary permits is a costly and time consuming process (Goodrich, slip op. at 33; Goodrich F 66; JX 3, PX 6 98 ln. 20 - 99 ln. 3; DS Admission 415, Dkt. 9159 CX 6Q). [##] (Goodrich, slip op. at 31; Goodrich F 66; JX 3, PX 92; Schaefer Dkt. 9159, 1133, Dkt. 9159 CX 38V *In Camera*; Dkt. 9159 CX 506B *In Camera*; Dkt. 9159 CX 592 *In Camera*). The time required for securing regulatory permits should be increasing as enforcement of Federal emission standards tightens (CX 162A-B). [##] (Dkt. 9159 CX 196A *In Camera*. See also Goodrich, slip op. at 32- 34; Dkt. 9159 CX 67Z7 *In Camera*; Dkt. 9159 CX 183D *In Camera*).

282. Substantial engineering work must be done prior to applying for necessary regulatory permits because detailed data must be presented in the permit application (Goodrich, slip op. at 31-32 & n.74; Goodrich F 67; DiLiddo Dkt. 9159, 3337). [##] (Goodrich F 67; DiLiddo Dkt. 9159, 3337; Dkt. 9159 CX 183D *In Camera*). The engineering work necessary before filing for permits is likely to take six months (Goodrich, slip op. at 31-32; Goodrich F 67; DiLiddo Dkt. 9159, 3337). In 1980, EPA amended its Prevention of Significant Deterioration Regulations to require that air quality near the site may have to be monitored for a period of time prior to applying for the permits (Goodrich slip op. at 33; Goodrich F 67; 40 CFR 51.24(m), 40 CFR 52.21(m)). This change may add additional time to the process of obtaining permits. DSCC, now part of Occidental, observed that:

On August 7, 1980 EPA amended its Prevention of Significant Deterioration (PSD) Regulations. These Regulations outline the requirements for obtaining a federal air pollution construction permit for grass root plants and plant expansion in attainment areas - areas presently meeting the National Ambient Air Quality Standards.

The major impact of these regulations is the requirements for continuous air monitoring data to be presented prior to the processing of a permit application. This could add up to one year to the time it takes to get a construction permit. This means it will take from one to two years to get a PSD Permit before construction can begin.

(Goodrich, slip op. at 33; Dkt. 9159 CX 446D). A consultant working for Tenneco noted the significance of the new regulations:

[A]n action plan is proposed to ensure that unnecessary delays are not encountered in the permitting stages of the project development. It is important to option the site as soon as possible since prime industrial tracts that satisfy this project's requirements are becoming scarce in the river region.

It is critical that the Prevention of Significant Deterioration (PSD) permit be submitted by early December before the proposed revisions to the PSD regulations are scheduled to be instituted. Under the revised regulations, one year ambient air quality monitoring will likely be required before the preconstruction permit can be submitted.

(Goodrich, slip op. at 33; Dkt. 9159 CX 574J; *See also* Kienholz Dkt. 9159, 803-04).<sup>20</sup>

283. Since the site for the plant must be known at the time of the permit application, the site must be selected prior to filing. Selection of a site is a "complicated" process (Goodrich F 68; *See* DiLiddo Dkt. 9159, 3335-36). [##] (Goodrich F 68; Dkt. 9159 CX 574I & M-U *In Camera*; *See also* Dkt. 9159 CX 193B *In Camera*; Dkt. 9159 CX 643; Dkt. 9159 CX 594A-B; Dkt. 9159 RX 1061 D-E; Dkt. 9159 RX 1304; Dkt. 9159 RX 1308).

284. A new entrant may also need to take time to evaluate and license PVC manufacturing technology. Such work is likely to take approximately one year (Goodrich, slip op. at 32; Disch Dkt. 9159, 645-47; Schaefer Dkt. 9159, 1133).

285. Since entry into any of the relevant markets is a major strategic decision involving substantial amounts of sunk capital, a new entrant is likely to make an extensive study of the market prior to any entry decision (*See* Goodrich F 71; Dkt. 9159 CX 594A-B; Dkt. 9159 CX 53A).

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<sup>20</sup> Because these pre-permit monitoring requirements are relatively new, few if any firms had to comply with it for new plants constructed in the past. It is, therefore, a factor that is likely to make the lead time for future plants longer than in the past. Furthermore, a longer lead time means a higher cost both in monitoring costs and in accumulated interest charges on expenses attendant to pre-permit applications.

286. Given the time required for construction and permitting, and the extensive efforts needed to obtain technology, find a site, conduct the necessary strategic studies, and complete the pre-permit engineering and air quality monitoring, a lead time of four years (two years for construction, one year to obtain permits, and one year for pre-permit engineering, air quality monitoring, site selection, licensing of technology, and strategic analysis) is a fairly conservative estimate of the amount of time required for *de novo* entry (Goodrich, slip op. at 30-31; Goodrich ID at 92).

287. Actual entry experience buttresses the conclusion that the likely lead time to enter any of the relevant markets is about four to five years (Goodrich, slip op. at 34-35). Formosa Plastics began looking for a site for its PVC/VCM complex in the latter half of 1978 (Liao Dkt. 9159, 1523-24), and began full production in the first quarter of 1983 (Goodrich F 70; Liao 1534-35). This time period -- approximately four and one-half years -- does not include any strategic analysis done prior to Formosa's search for a site. Furthermore, Formosa had some advantages over other possible entrants in that it already had its own PVC production technology (Liao Dkt. 9159, 1539), and had prior experience in the United States market through its participation in the Rico Chemicals project (Liao Dkt. 9159, 1519-22; Goodrich F 15).

288. [##] (Goodrich, slip op. at 35; Goodrich F 71; DiLiddo Dkt. 9159, 3337; Dkt. 9159 CX 36S *In Camera*). Prior to its July 1979 announcement, Goodrich had completed an extensive PVC/VCM strategy study over an eight-month time period (Goodrich, slip op. at 35; Goodrich F 71; DiLiddo Dkt. 9159, 3334-35; Dkt. 9159 CX 53A). During these eight months Goodrich had also completed a complicated site relation process and chosen the Convent, Louisiana site (Goodrich, slip op. at 35; Dkt. 9159 DiLiddo 3335-36; *See Weyerhaeuser Co.*, 106 FTC at 287-88 & n. 69). The lead time for the Convent project was likely to be shorter than that for other potential entrants, since Goodrich was utilizing its own technology (DiLiddo Dkt. 9159, 3336), obviating the need for obtaining needed licenses from other companies.

289. In 1981, Diamond Shamrock projected the lead time for a new Diamond Shamrock suspension PVC homopolymer plant at Deer Park, Texas, using existing Diamond Shamrock technology, to be

four to five years (Goodrich, slip op. at 35; Goodrich F 2; Dkt. 9159 CX 439B).

290. [##] (Dkt. 9159 CX 185Z2 *In Camera*; *See also* Dkt. 9159 CX 182I *In Camera*).

291. [##] (Goodrich, slip op. at 36 n. 85; *Cf.* DiLiddo Dkt. 9159, 3162-64; Dkt. 9159 CX 51Y-Z *In Camera*).

292. That long lead times increase the risk that industry conditions will change between the time the decision is made to enter and the completion of a new plant is supported by actual experience in the mass and suspension PVC market. In the late 1970's several firms decided to build new plants, including Goodrich, Borden and Formosa Plastics (*See* DiLiddo Dkt. 9159, 3131; Liao Dkt. 9159 1523-24). [##] (DiLiddo 3187-88, 3396; *Cf.* Dkt. 9159 CX 114 *In Camera*). [##] (Dkt. 9159 CX 302F *In Camera*; Liao 1534-35). [##] (Dkt. 9159 CX 14F *In Camera* [##]).

*G. New Entry into the Relevant Markets Is Unlikely Despite High  
Prices and Profits Realized by Incumbent Firms*

293. Some PVC producers have recently announced expansions to their existing plant capacities, with the greatest expansions on the part of Occidental, Shintech and Formosa, three of the larger mass and suspension PVC homopolymer producers (*See, e.g.,* CX 165A). These expansions would substantially increase the risk of new entry into the mass and suspension PVC market. A potential new entrant would necessarily evaluate the risks and benefits of entry in terms of the likelihood that demand would be strong enough to support current capacity, announced expansions, and the additional capacity that would be added by a new entrant. The announced capacity expansions therefore increase the risk that, with a change in business conditions, entry into the production of PVC would be unprofitable. This factor thus makes new entry into the production of PVC the more unlikely, especially in view of the experience of the PVC industry during the early 1980's.

294. Excess existing capacity in an industry makes new entry less likely by affording incumbent firms the opportunity to deter entry through strategic behavior (Kaserman Dkt. 9159, 2328-29).



295. [##] (Goodrich ID at 92; Dkt. 9159 CX 666H *In Camera*). The magnitude of excess capacity has declined significantly since that time as the industry has recovered from a substantial temporary decline in demand during the recent recession (*See* CX 165A; DiLiddo Dkt. 9159, 3116-18; Eades Dkt. 9159 1471-73). [##] (Donnelly CX 176B-C ¶ 3 *In Camera*; Kulkaski CX 195C ¶ 4 *In Camera*; CX 165A).

296. However, given the excess capacity that as recently as the early 1980's was a significant factor in the PVC industry, the ability of producers in these markets to deter entry through strategic behavior remains enhanced (*See* Kaserman Dkt. 9159, 2328-29). Potential new entrants would probably be unwilling to risk a large amount of the needed sunk capital costs, given the experience of producers who entered into PVC markets in the late 1970's and early 1980's, when growth projections for PVC were optimistic.

297. Announced incremental capacity expansions by Occidental, Shintech, and Formosa, three of the larger-firms in the industry, serve to deter both potential new entry into mass and suspension PVC homopolymer production, and possible larger expansion by smaller mass and suspension PVC producers who might otherwise have sought to attain increased market share.

298. [##] (Goodrich, slip op. at 36 n. 85 (DiLiddo Dkt. 9159, 3151-53; Dkt. 9159 CX 51Z2, Z16 *In Camera*; Dkt. 9159 CX 47B; Dkt. 9159 CX 226I-M)). [##] (DiLiddo Dkt. 9159, 3151-53; Dkt. 9159 CX 51Z2, Z16 *In Camera*; Dkt. 9159 CX 226I-M; Dkt. 9159 CX 47B). Similarly, Occidental's strategy in its planned expansion of its Pasadena plant is to "maintain its position as the recognized market leader" (RX 1L).

299. Industry members recognize that entry into the relevant markets is difficult (Goodrich, slip op. at 36). In developing its preemptive strategy, Goodrich concluded that "[r]elatively high barriers to entry should prevent a large number of expansions or new entries" (Goodrich, slip op. at 36; Dkt. 9159 CX 199Z76; *See also* Dkt. 9159 CX 199Z82). [##] (Dkt. 9159 CX 248E *In Camera*).

300. [##] (Goodrich, slip op. at 36; Goodrich ID at 92; Kaserman Dkt. 9159, 2341-44; Dkt. 9159 CX 664G-W *In Camera*).<sup>21</sup>

301. Three important factors made entry and expansion easier in mass and suspension PVC during the 1970's than exist at present. First, during the 1970's the industry substantially converted from small to large reactor technology (Disch Dkt. 9159, 637-42). New firms entering with modern large reactor plants had a cost advantage over those incumbent firms with old small reactor facilities (Kaserman Dkt. 9159, 2344). Second, extensive EPA and OSHA regulation of the PVC industry was instituted during the 1970's (Goodrich, slip op. 32 n.76; Disch Dkt. 9159, 698-53). One effect of these regulations was to force some plants to shutdown, and to temporarily reduce the effective capacity of many other plants (Disch Dkt. 9159, 652-53; Dkt. 9159 CX 447J; Dkt. 9159 CX 505T; DS Admission 439, Dkt. 9159 CX 6R; Goodrich Admission 396, Dkt. 9159 CX 4Z23). This reduction of capacity created opportunities for new entry and construction of new plants by incumbent firms (Kaserman Dkt. 9159, 2344-45; Klass Dkt. 9159, 5355). Finally, demand for PVC grew rapidly during the 1970's, and this rapid growth created opportunities for entry and for construction of new plants by incumbent firms (Kaserman Dkt. 9159, 2344-45).

302. The conditions that facilitated entry in the 1970's have changed drastically during the 1980's, making entry more difficult. The large reactor technology has become widely diffused through the industry (Goodrich F 198; Klass Dkt. 9159, 5488-89; *See generally* Disch Dkt. 9159, 637-428). Furthermore, the rate of technological change in PVC has become slow, as PVC manufacturing technology has approached its limitations (Goodrich F 197, 232; Dkt. 9159 CX 642Z50-51). Thus, a firm presently seeking to enter any of the relevant markets through new-plant construction would not have a technological or cost advantage over incumbent firms. Moreover, PVC firms have adjusted to the imposition of environmental and safety regulations, and current and planned capacity is sufficiently geared to meet demand (Goodrich F 232; Disch Dkt. 9159, 649-51;

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<sup>21</sup> [##] (Goodrich F. 70 & n. 15, F. 56; CX 318A,D *In Camera*; Liao Dkt. 9159, 1519-22; Dkt. 9159 CX 308D-E; Dkt. 9159 CX 333A; Dkt. 9159 CX 354B).

Dkt. 9159 CX 642Z6, Z49-Z137). Finally, demand growth is slow compared to the 1970's, making entry more difficult (Goodrich F 232, 235-36; CPF 272-278). These changed conditions thus help to explain the lack of *de novo* entry since the mid-1970's (Kaserman Dkt. 9159, 2345-47).

*H. Barriers to New Entry into PVC Production*

303. As the Commission stated in Goodrich, more stringent environmental regulations not only increase the lead time required for new entry into PVC production, but also "may be characterized as a barrier to entry into the PVC market" (Goodrich, slip op. at 35). The difficulty that a new entrant would have in obtaining permits "represent a new cost that incumbent firms did not have to bear" (*Id.*).

*I. Entry into the Suspension PVC Copolymer Market Through Conversion of an Existing Suspension PVC Homopolymer Plant Is Unlikely*

304. An existing producer of suspension PVC homopolymer would have little advantage relative to other firms in attempting to enter the suspension PVC copolymer market (Flammer CX 184D ¶ 6-7; Disch JX 3, PX 8 at 86 ln. 5-23). [##] (Hill CX 183C ¶ 5 *In Camera*; Flammer CX 184C ¶ 5; Fisher CX 208D ¶ 4; Disch JX 3, PX 8 at 68 ln. 14-22; Lull JX 1, 509 ln. 9-510 ln. 13).

305. The minimum efficient size of a suspension PVC copolymer plant converted from a suspension PVC homopolymer plant would be approximately 70-80 million pounds of capacity (Disch JX 3, PX 8 at 67 ln. 3-9).

306. In the suspension PVC copolymer market, a minimum efficient scale of 70 to 80 million pounds would be significant (Kaserman JX 1, 327 ln. 25-328 ln. 8). [##] (Goodrich, slip op. at 41; Kaserman JX 1, 328 ln. 9-18; *See* Boyer CX 185G ¶ 16; Hill CX 183B ¶ 3 *In Camera*; Hornack CX 182C ¶ 7 *In Camera*).

307. [##] (Hornack CX 182C ¶ 7 *In Camera*; Hill CX 183F ¶ 16 *In Camera*; Boyer CX 185G ¶ 16; Flammer CX 184D ¶ 7; JX 3, PX 6 at 82 ln. 11-23; JX 3, PX 8 at 18 ln. 7-15; JX 3, PX 98 at 40885). This projected decline makes it unlikely that a suspension PVC homopolymer producer would enter the suspension PVC copolymer

market (Kaserman 329 ln. 13-17; Boyer CX 185G ¶ 16; Flammer CX 184D ¶ 7; JX 3, PX 8 at 89 ln. 16-90 ln. 2; Schaefer JX 1, 585 ln. 21-586 ln. 14; JX 3, PX 136 at 91 ln. 24-92 ln. 20).

308. Air Products exited the suspension PVC copolymer market because the size of the market was insufficient, in light of the existing capacity and projected decline in demand, to allow Air Products "to produce and sell a sufficient volume of suspension copolymer resin to cover its production costs at the Calvert City plant" (Fisher CX 208B ¶ 2).

309. [##] (Hornack CX 182A ¶ 2 *In Camera*), [##] (Hornack CX 182A-B ¶ 4 *In Camera*). [##] (Hornack CX 182D ¶ 8 *In Camera*). [##] (Fisher CX 208C ¶ 3; *See* Boyer CX 185G ¶ 7; Hill CX 183B ¶ 4 *In Camera*; Flammer CX 184D ¶ 6). [##] (CX 114 *In Camera*). [##] (Disch CX 219E *In Camera*). Tenneco does not shift capacity between suspension PVC homopolymer and suspension PVC copolymer in response to changes in the relative prices of the two resins (Disch JX 3, PX 8 at 32 ln. 7-11). The production of these resins are "two distinct situations" (*Id.*).

310. [##] (Disch CX 219D *In Camera*). [##] (Hornack CX 182D ¶ 8 *In Camera*; Fisher CX 208C ¶ 3). [##] (Fisher CX 208C ¶ 3; Hornack CX 182D-E ¶ 9 *In Camera*). Mr. Boyer agreed that contamination problems would reduce the value of the plant output relative to what would be experienced in a plant that had dedicated capacity (Boyer CX 185G ¶ 15).

311. [##] (CX 126C *In Camera*). [##] (CX 72 *In Camera*; CX 61B *In Camera*). [##] (CX 61B *In Camera*). [##] (CX 125 *In Camera*). [##] (CX 126E *In Camera*). Armstrong, perhaps the largest purchaser of suspension PVC copolymer, would not purchase copolymer resin from a supplier that produced resin on an "intermittent basis" throughout the year, because it is "interested in long-term stable consistent sources of supply" (Beveridge JX 1, 85 ln. 1-7).

312. [##] (Hornack CX 182D ¶ 8 *In Camera*). [##] (Hornack CX 182D ¶ 8 *In Camera*). [##] (Hornack CX 182D ¶ 8 *In Camera*). Mr. Fisher testified that even with thorough cleaning of the reactors, a process which would require shut down of the reactors for a number of days, it is was likely that contamination problems could never be completely avoided (Fisher CX 208C-D ¶ 3). Thus, he noted that frequent swinging of capacity would reduce overall reactor

productivity, resulting in increased production costs (Fisher CX 208D ¶ 3). He further testified that making infrequent switches between copolymer and homopolymer, in an attempt to reduce the cost of swinging, would not likely present a less costly alternative, noting the additional significant inventory carrying and dedicated storage costs (Fisher CX 208D ¶ 3).

313. Mr. Schaefer, an Occidental Vice-President, testified regarding the likelihood of entry through conversion of existing homopolymer facilities. Mr. Schaefer stated that Occidental would not consider reopening a shut-down PVC facility at Perryville, Maryland, to produce suspension copolymer resin, even if the price would increase three or four cents a pound and stayed at that level for a year (Schaefer JX 1, 585 ln. 21-586 ln. 1). This is the exact question the *DOJ Merger Guidelines* asks to assess the likelihood of entry. *DOJ Merger Guidelines, supra*, Section 3.3, 2 Trade Reg. Rep. (CCH) ¶ 4493 at 6879-15. In addition to the one-year period in which Occidental would not even consider entry, there must be added the additional time it would take to enter at Perryville, if Occidental should ever consider it. Mr. Schaefer testified that it would take 18 months to get the shut-down plant up and running, and would take two to four years to find a market for the output of the plant (Schaefer JX 1, 585 ln. 9-15). Under any set of circumstances, the time for entry -- if Occidental were to change its mind and consider entry -- would extend beyond the two-year period set forth in the *DOJ Merger Guidelines, supra*, Section 3.3.

314. [##] (Schaefer JX 1, 585 ln. 21-586 ln. 4; *See also* Flammer CX 184D ¶ 7 *In Camera*). This is consistent with the statement in the *DOJ Merger Guidelines*: "Entry is generally facilitated by the growth of the market and hindered by its stagnation or decline." *DOJ Merger Guidelines, supra*, Section 3.3 n.21, 2 Trade Reg. Rep. (CCH) ¶ 4493 at 6879-15.

315. Mr. Schaefer also testified that Occidental would not convert additional capacity to copolymer at Pottstown, Pennsylvania, where Occidental presently produces copolymer (Schaefer JX 1, 586 ln. 24-587 ln. 3). The reason advanced for not converting additional capacity at Pottstown was again because no additional market existed for the product (Schaefer JX 1, 587 ln. 2-6).

316. Mr. Schaefer also testified generally as to the likelihood of entry into copolymer. He concluded that there was no scale at which a company could profitably enter copolymer as long as the outlook for consumption continued to be one of negative growth (Schaefer JX 1, 587 ln. 7-11). Entry at any scale would have too much of a depressing effect on price (Schaefer JX 1, 587 ln. 12-14; *See also* Harris JX 1, 902 ln. 6-15; Flammer CX 184D ¶ 7; *See* Goodrich, slip op. at 41).

317. Mr. Schaefer's testimony is supported by the testimony of other PVC producers. Air Products is one producer identified by Occidental as having previously had suspension PVC copolymer capacity. Mr. Fisher testified that an increase of less than 30-50% in the price of suspension PVC copolymer, relative to the price of suspension PVC homopolymer, would not induce Air Products to consider entry into the copolymer market (Fisher CX 208C ¶ 3). Similarly, Mr. Boyer of Formosa testified that a 10-percent increase in the price of copolymer resin would not induce Formosa to enter the market (Boyer CX 185G ¶ 16). Formosa's Delaware City plant had previously been used by Stauffer Chemical in the production of copolymer resin (Boyer CX 185G ¶ 15). Mr. Boyer testified that entry by Formosa would, because of the small size of the market, and the declining demand for copolymer resin, create excess supply of resin and drive the market price of the resin down to an unprofitable level (Boyer CX 185G ¶ 16). [##] (Hornack CX 182C ¶ 7 *In Camera*). *See generally* Goodrich, slip op. at 41.

318. [##] (CX 210C *In Camera*). [##] (CX 210D *In Camera*),

319. Long-term, fixed-price contracts between potential entrants and prospective customers, or backward-integration by suspension PVC copolymer customers, would not solve the problem of lack of profitability of entry. Entry would expand the available supply of suspension PVC copolymer in the market, and would drive the post-entry price down to unprofitable levels, notwithstanding the profits currently realized by incumbent firms in the market. PVC customers who have signed a long-term, fixed-price contract to induce entry would be at a severe disadvantage compared with their competitors. For this reason, fixed-price contracts are not observed in the suspension PVC copolymer market (Kaserman JX 1, 340 ln. 5-342 ln. 16).

320. The construction time required for conversion of a suspension PVC homopolymer plant to suspension PVC copolymer production would be approximately 9-10 months, if the plant, or part of the plant being converted, were shut down during such construction (*See e.g.*, JX 3, PX 8 at 66 ln. 18-25 ; Lull JX 1, 517 ln. 7-14; JX 3, PX 98 at 40891, 40909; Schaefer 585 ln. 1-12). [##] (Hill CX 183C-D ¶ 7 *In Camera*). [##] (Hill CX 183D ¶ 7 *In Camera*).

321. The time required for conversion of a suspension PVC homopolymer plant to suspension PVC copolymer production would also include the time required for ordering the necessary equipment. That time would involve at least three to four months (JX 3, PX 8 at 69 ln. 20-70 ln. 1).

322. The time for planning and making the decision with respect to the conversion of a suspension PVC homopolymer plant to suspension PVC copolymer could take as long as two years (JX 3, PX 8 at 76 ln. 20-77 ln. 1, 78 ln. 9-12).

323. New environmental permits, which would add to the lead time required for entry, may also be required, due to the addition of the vinyl acetate in the suspension polymerization process (Goodrich, slip op. at 32-33 & n. 76; *See e.g.*, Lull JX 1, 532 ln. 11-533 ln. 9; JX 3, PX 8 at 77 ln. 24-78 ln. 8; JX 3, PX 98 at 40891). [##] (Hill CX 183C ¶ 6 *In Camera*). [##] (CX 5D-E *In Camera*). [##] (Lull JX 1, 533 ln. 3-9; *See* Hill CX 183C ¶ 6 *In Camera*).

324. It would take a total of two to two and one-half years, including equipment-ordering lead time and environmental permitting, to convert a suspension PVC homopolymer plant to the production of suspension PVC copolymer resin (Flammer CX 184D-E ¶ 8; *See* JX 3, PX 25 at 9, 15, 24 (projects with capital expenditures greater than one million dollars required a minimum of three years, as many as four, from the date of the initial proposal to completion of the project); Schaefer JX 1, 585 ln. 1-17). Essentially only the reactors, boilers, and other infrastructure could be used (Flammer CX 184E ¶ 8).

325. Further, after completion of the physical conversion of the plant, at least 3 to 6 months of trial production operations would be required before a marketable copolymer resin could be produced (Flammer CX 184E ¶ 8).

326. Customer approval of a resin would be required before the copolymer could be sold, which could increase the lead time for entry by a period of three months to over one year (Beveridge JX 1, 84 ln. 16-25; JX 3, PX 8 at 70 ln. 11-71 ln. 2; *See* Friedman JX 1, 129 ln. 7-14). The intention on the part of a copolymer producer to produce both copolymer and homopolymer in the same plant facilities, at different times, could discourage potential customers from even qualifying that producer (Beveridge JX 1, 85 ln. 1-4).

327. The long lead time required for conversion of a suspension PVC homopolymer plant to copolymer production increases the potential for and duration of anticompetitive conduct in the suspension PVC copolymer industry (Kaserman JX 1, 324 ln. 24-325 ln. 14; *See* Goodrich, slip op. at 31).

328. [##] (Fisher CX 208D-E ¶ 4; Hill CX 183C ¶ 5 *In Camera*; Hornack CX 182C ¶ 6-7 *In Camera*; *See* Lull JX 1, 550 ln. 10-17; JX 3, PX 98 at 4010-11; JX 3, PX 8 at 70 ln. 2-9; CX 51 *In Camera*). The most significant portion of this investment would go to the installation of a recovery system designed to recover mixed streams of VCM and vinyl acetate monomer (VAM) (Fisher CX 208D-E ¶ 4). The type of recovery system used to recover these mixed streams is different from the type of recovery system that would be used to recover only VCM (Fisher CX 208D-E ¶ 4). [##] (CX 5D-E *In Camera*). These capital investments could not be recovered if entry by conversion of a suspension PVC homopolymer plant proved unsuccessful (JX 3, PX 8 at 71 ln. 3-7). This sunk cost further reduces the likelihood of entry by conversion into suspension PVC copolymer production (Goodrich, slip op. at 41-42, n.96).

329. [##] (Hill CX 183C-D ¶ 7 *In Camera*, CX 183B-C ¶ 4; Fisher CX 208C-D ¶ 3; Flammer CX 184D ¶ 6; JX 3, PX 6 at 76 ln. 21-78 ln. 3; JX 3, PX 8 at 71 ln. 8-72 ln. 6; Kaserman 327 ln. 18-328 ln. 18). Mr. Lull testified to the technical problems that some PVC producers have had in attempting to produce copolymer resin (Lull JX 1, 534 ln. 16 - 535 ln. 15). Mr. Boyer noted that the production of suspension PVC copolymer by Stauffer Chemical at the Delaware City plant had an overall negative impact on plant operations at the plant, because of inter-product contamination, and because of the corrosive effect of vinyl acetate on plant equipment (Boyer CX 185G ¶ 15). [##] (Boyer CX 185G ¶ 15; *See also* Hill CX 183B-C ¶ 4 *In*



*Camera*). Formosa has explained to one copolymer customer that it stopped manufacture of copolymer resin because of "the problems of manufacturing copolymer resin" (CX 121; *See also* CX 122).

330. [##] (Hornack CX 182D ¶ 8 *In Camera*). Mr. Fisher noted that any production of suspension PVC copolymer at Air Products' Calvert City plant would result in a reduction in total plant production capacity of 20-30 percent (Fisher CX 208D ¶ 3). The cost of a reduction in homopolymer sales increases as the price of homopolymer increases relative to the price of copolymer, as it has over the past year. Thus, the effect on overall plant operations and the opportunity cost of forgone homopolymer sales reduce the likelihood of entry into the suspension PVC copolymer market through conversion of a suspension PVC homopolymer plant (JX 3, PX 6 at 76 ln. 21-78 ln. 3; Harris JX 1, 896 ln. 16-22).

331. As a result of the significant minimum efficient size required, the declining copolymer demand, the magnitude of the sunk costs, the lead time required for entry, and the effect of entry on overall plant operations and production capacity,<sup>22</sup> entry into the suspension PVC copolymer market through conversion of all or a portion of a suspension PVC homopolymer plant is unlikely to occur in response to non-competitive pricing in the suspension PVC copolymer market (Kaserman JX 1, 342 ln. 17-343 ln. 5, 344 ln. 3-7; *See* JX 3, PX 8 at 89 ln. 16-90 ln. 2; *See generally* Goodrich, slip op. at 31-43).<sup>23</sup>

*J. Entry into the Dispersion PVC Through Conversion  
of an Existing PVC Plant Is Unlikely*

332. An existing producer of suspension PVC would have very little advantage relative to firms not in the PVC industry in attempting to enter the dispersion PVC market (Flammer CX 184D ¶¶ 6-7; Disch JX 3, PX 8 at 86 ln. 5-23).

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<sup>22</sup> [##] (CX 210 F-H *In Camera*). [##] (Compare Lull JX 1, 516 ln. 5-24 with CX 51 *In Camera*).

<sup>23</sup> The Ashtabula, Ohio PVC plant purchased by Vygen Corp. from GenCorp, Inc., was already configured to produce, and was used by GenCorp to produce, suspension PVC copolymer resin (Kaserman 470 ln. 13-471 ln. 21).

333. Entry into the dispersion PVC market through conversion of existing suspension PVC capacity would involve primarily the addition of a spray dryer, which is substantially different and more powerful than the dryer used to manufacture suspension resin, grinding equipment for reducing the size of the dispersion PVC particles, different VCM stripping equipment and specialized packaging and conveyance equipment (Boyer CX 185B-C ¶ 3, ¶ 5; Flammer CX 184C ¶ 4-5, 184E ¶ 8 ("Essentially only the reactors, boilers and other infrastructure could be used."); JX 3, PX 8 at 811 ln. 9-18).

334. The minimum efficient size of a dispersion PVC plant would depend on the capacity of the spray dryer that would be added (JX 3, PX 8 at 82 ln. 4-14). A spray-dryer is a major capital investment in a dispersion PVC plant (Boyer CX 185C ¶ 5). It is likely that a dispersion PVC plant created through conversion of former suspension PVC capacity would be scaled at such a size that it would constitute a significant percentage of total market dispersion PVC demand (*See* Boyer CX 185D ¶ 7; JX 3, PX 8 at 81 ln. 1-9, 82 ln. 4-14, 73 ln. 22 - 74 ln. 13).

335. Entry into the dispersion PVC market at a large scale, through conversion, would be likely to have a depressing effect on prices, and, accordingly, entry through such conversion is unlikely (Goodrich, slip op. at 41; Kaserman JX 1, 328 ln. 9-18; *See* JX 3, PX 8 at 119 ln. 7-120 ln. 16).

336. It is projected that, over the next five years, the demand for dispersion PVC will be flat (Flammer CX 184D ¶ 7; Boyer CX 185E ¶ 10; JX 3, PX 8 at 80 ln. 9-81 ln. 2; JX 3, PX 9 at 100 ln. 24-101 ln. 8). The projected flat demand makes it unlikely that a suspension PVC homopolymer producer will, through plant conversion, enter into the dispersion PVC market (Flammer CX 184D ¶ 7; JX 3, PX 9 at 100 ln. 24-101 ln. 8; JX 3, PX 136 at 96 ln. 10-21; Schaefer JX 1, 587 ln. 15-20; *See* Kaserman JX 1, 338 ln. 6-13).

337. The time required for conversion of a suspension PVC homopolymer plant to dispersion PVC production would be at least two to two and one half years (Boyer CX 185D-E ¶ 6; Flammer CX 184D-E ¶ 8; JX 3, PX 136 at 97 ln. 20-24).

338. [##] (Flammer CX 184E ¶ 8; *See* van Haaren CX 187D ¶ 13-14 *In Camera*).

339. A suspension PVC producer converting a plant would also be required to develop a research and development operation, and obtain customer approval for its resin (Boyer CX 185C-D ¶ 8; Flammer CX 184D-E ¶8; JX 3, PX 8 at 82 ln. 19-83 ln. 7). [##] (van Haaren CX 187D ¶13-14 *In Camera*; Boyer CX 185E ¶9; Flammer CX 184D-E ¶8; JX 3, PX 9 at 56 ln. 22-57 ln. 8; Beveridge JX 1, 89 ln. 4-10; JX 3, PX 8 at 83 ln. 8-13; *See* Friedman JX 1, 129 ln. 7-14). Mr. Boyer noted that it would take 6 months to a year before a converted plant could produce high quality dispersion resin (Boyer CX 185E ¶9).

340. The capital cost of converting a suspension PVC plant to dispersion PVC would range from \$20-\$30 million (Disch JX 3, PX 8 at 81 ln. 19-21). A large portion of this capital investment would be for the installation of spray-dryers, equipment specialized to the production of dispersion PVC (Disch JX 3, PX 8 at 84 ln. 1-9; Boyer CX 185C ¶5). This investment would not be recovered if entry by conversion of a suspension PVC plant proved unsuccessful (Disch JX 3, PX 8 at 84 ln. 1-9). This sunk cost would increase the riskiness of an investment by a suspension PVC producer in converting a plant to the production of dispersion PVC, thus reducing the likelihood of such entry (Goodrich, slip op. at 41-42, n.96; Kaserman JX 1, 331 ln. 18-22).

341. A suspension PVC producer would also have to consider the cost of loss of use of the plant during construction (Disch JX 3, PX 8 at 71 ln. 21-72 ln. 5). This cost and the loss of suspension PVC production, and sales attributable to the plant capacity that is withdrawn from suspension PVC use, reduces the attractiveness of conversion of a suspension PVC plant to dispersion PVC, thus further reducing the likelihood of such entry (*See* Kaserman JX 1, 337 ln. 19-338 ln. 5). The cost of lost suspension output increases as the price of suspension PVC resin increases relative to the price of dispersion PVC resin, as it has over the last year.

342. As a result of the significant minimum efficient size required, the declining dispersion PVC demand, the significant lead time required for entry, and the magnitude of the sunk costs and opportunity costs, entry into dispersion PVC through conversion of a suspension PVC plant is unlikely in response to non-competitive

pricing in the dispersion PVC market (Goodrich, slip op. at 31-43; Kaserman JX 1, 342 ln. 17-343 ln. 5, 344 ln. 3-7).

*K. Entry Through Restart of Shutdown PVC Plants Is Unlikely*

343. It is respondents' contention that non-competitive pricing in the relevant PVC markets would likely be defeated by the restart of shutdown PVC facilities. It is unlikely, however, that these plants would be restarted for such purpose.

344. [##] (RX 1N *In Camera*).

345. In a market that is competitive, one would expect that idle plants would be brought on stream were it economical to make the required investment. Occidental, in 1985, studied the possibility of restarting its Perryville, Maryland plant (JX 3, PX 136 at 79 ln. 11-19). At that time, it decided that restart of the plant would not be economical (JX 3, PX 136 at 79 ln. 14-16). Mr. Schaefer testified that the cost of refurbishing the plant would be high, and that "the manufacturing economics there would have not been competitive . . ." (JX 3, PX 136 at 79 ln. 20-24). [##] (CX 1000).

346. [##] (CX 43L; Pflugrath CX 177F ¶ 11 *In Camera*; Donnelly CX 176D-E ¶5 *In Camera*; *See* RX 198B *In Camera*).

347. [##] (Donnelly CX 176D-E ¶5 *In Camera*; CX 43K-L). [##] (*See* Goodrich, slip op. at 32-34; Donnelly CX 176D-E ¶ 5 *In Camera*; *See* CPF 296). The capital investment that would be required in order to bring these plants on stream is an important factor affecting the likelihood of their re-opening (CX 43L).

348. Other than plants owned by Occidental or Goodrich, the shutdown PVC plants identified by Occidental as potential restarters are, in fact, in the process of being dismantled, or are planned soon to be dismantled.

349. [##] (Taylor CX 181C *In Camera*). [##] (Taylor CX 181D *In Camera*). [##] (Taylor CX 181B *In Camera*). [##] (Taylor CX 181C *In Camera*). [##] (Taylor CX 181D *In Camera*). [##] (*See* Taylor CX 181C-D *In Camera*).

350. Borden has dismantled its Leominster, Massachusetts, site, and has transferred equipment from there to other Borden operations throughout the United States (Standly CX 186). It is offering the site for sale as real estate (Standly CX 186). [##] (RX 1N *In Camera*).

351. Of the shutdown plants identified by Occidental, the only plants not already being dismantled are owned by Occidental and Goodrich, respectively. Assuming *arguendo* these plants could be returned to production, the fact remains that Goodrich and Occidental are currently keeping these plants idle notwithstanding skyrocketing PVC prices and supply allocation by PVC producers. Accordingly, the plants are not likely to be a source for defeating collusive price increases in the industry. One cannot rely on the restart or sale to third parties of idle plants by the leading PVC producers to serve the purpose of new entry (*Cf.* Kaserman, Dkt. 9159, 2947-49, 2891-92, 2963-64). Indeed, as the Commission noted in Goodrich, "restarting mothballed capacity will usually constrain the pricing discretion of incumbent firms only if undertaken by a fringe firm that is not likely to be a party to a collusive arrangement" (Goodrich, slip op. at 42, n.97).

352. It is therefore found that it is unlikely that the restart of idle PVC resin plants will deter or defeat non-competitive pricing in any of the relevant markets.

*L. The Potential for Capacity Expansions Does Not Deter  
Non-competitive Pricing in the Relevant Markets*

353. Respondents contend that the potential for new entry through capacity expansion is likely to deter or defeat an attempted exercise of market power in any of the relevant markets.

354. However, capacity expansion is not analogous to new entry, and thus the plant expansions currently being undertaken by a number of PVC producers are not properly analogized to new entry that would thwart an attempted exercise of market power (Goodrich, slip op. at 35). [##] (*See, e.g.,* Pflugrath CX 177F ¶ 11 *In Camera*; Heath CX 178E ¶ 8 *In Camera*). Indeed, capacity expansion by firms already in the relevant markets may deter new entry that would otherwise reduce market concentration. *See* Spence, *Entry, Capacity, Investment and Oligopolistic Pricing*, 8 Bell J. of Econ. 53 (1977). Thus, one cannot rely on expansions by incumbent firms to serve the same purpose as new entry (Goodrich, slip op. at 35; Kaserman Dkt. 9159, 2947-49, 2891-92, 2963-64).

355. The *DOJ Merger Guidelines* recognize that expansion is, in almost all circumstances, not equivalent to new entry. The *DOJ Merger Guidelines* consider expansion equivalent to new entry only in those situations where "fringe firms in the market greatly expand existing capacity." *DOJ Merger Guidelines* Section 3.3 n.20, 2 Trade Reg. Rep. (CCH) ¶4,493 at 6879-15. Clearly this circumstance does not apply in any of the relevant markets.

356. That capacity expansion is not analogous to new entry that would erode or deter non-competitive pricing in the relevant PVC markets is illustrated by the nature of the expansion activity currently being undertaken by PVC producers. Some of the largest producers such as Shintech and Occidental have announced large additions to capacity. Formosa has also announced a relatively large capacity expansion, noting at the same time that it hopes it is doing the expansion "in such a way as not to stir the marketplace up" (CX 165B). Similarly, Vista has noted its intention to make capacity expansions that would match market growth, so as to maintain a constant market share (CX 166).

357. Thus, expansion of PVC capacity is not being undertaken by producers in the relevant markets in order to obtain a larger share of the market, but merely to accommodate expected demand growth and maintain full capacity utilization levels (RX IR). [##] (CX 43C; Donnelly CX 176C-D ¶ 4 *In Camera*; Heath CX 178E ¶ 8 *In Camera*; Kulkaski CX 195C ¶ 4 *In Camera*; Pflugrath CX 177F ¶ 11 *In Camera*).

358. Finally, expansion by existing PVC producers is likely to be difficult and take a long time. Construction of new plants by incumbent firms involves the same obstacles of large minimum efficient scale, high sunk costs, and long lead times as for potential new entrants. An incumbent firm may be able to bring a new plant on stream slightly faster because it may already have the technology and may have an existing and usable site.

359. Smaller expansions of existing plants ("debottlenecking" projects), which generally result in a relatively small addition to industry capacity, and hence do not have a significant competitive effect, can also involve a substantial period of time. For example, there was testimony in the Goodrich proceeding that a plant expansion by Shintech took approximately two years, with unknown

additional time for planning and permitting (McMath Dkt. 9159, 1940).

360. Thus, it is not likely that expansion by existing PVC producers would defeat or deter non-competitive pricing in any of the relevant PVC markets (Goodrich, slip op. at 35).

VIII. OTHER QUALITATIVE FACTORS NEEDED TO  
EVALUATE THE LIKELIHOOD OF COLLUSION  
IN EACH OF THE RELEVANT MARKETS

A. *Because Demand for PVC in Each of the Relevant Markets Is Inelastic, PVC Producers Have a Strong Incentive to Raise Prices Above Competitive Levels*

1. Introduction

361. The fact that mass and suspension PVC, suspension PVC copolymer, and dispersion PVC are each relevant product markets means that demand for each of the relevant products is sufficiently inelastic that firms could profit if they coordinated their actions and engaged in collusion. In other words, if PVC producers in any of the relevant markets increased price by a small but significant and nontransitory amount, the increase in profits due to the higher price would more than offset the decrease in profits due to lower sales (Kaserman JX 1, 252-54).

362. [##] (Goodrich, slip op. at 19-20, 75; Becker Dkt. 9159, 1325-26; Schaefer Dkt. 9159, 1141; Kaserman JX 1, 257, 260-62, 269, 270-71, 345, 357; Kaserman Dkt. 9159, 2381; *accord*, Dkt. 9159 CX 297Z1-Z2 *In Camera*; Dkt. 9159 CX 295Z53-Z54 *In Camera*). The price inelasticity of demand for each of the relevant products increases the incentive to collude in each of the relevant markets (Kaserman JX 1, 345, 357; Kaserman Dkt. 9159, 2353-55, 2381; *See* Goodrich slip op. at 70-71).

363. The price elasticity of demand is the percentage change in the quantity demanded for a product divided by the percentage change in the price of the product (Goodrich slip op. at 70 & n.156; Kaserman JX 1, 254; Kaserman Dkt. 9159, 2348-49). It is a measure of the responsiveness of consumers to changes in the price (Kaserman JX 1, 254; Kaserman Dkt. 9159, 2349). The degree to which demand for a product is elastic or inelastic is a function of the extent

to which other products are close substitutes for the product at a particular price (*See* Kaserman JX 1, 254; Kaserman Dkt. 9159, 2350-51). The more customers will shift to other products for a given price increase, the more elastic is demand. Conversely, to the extent that customers do not switch to other products for a given price increase, the less elastic (or more inelastic) is demand.

364. The lower the elasticity of demand for a product, the more an industry would profit from a price increase resulting from collusion (Kaserman JX 1, 345; Kaserman Dkt. 9159, 2353-55; *See* Goodrich, slip op. at 70-71). The lower the price elasticity of demand, the smaller is the restriction in output necessary to cause a given increase in industry prices (Klass Dkt. 9159, 4268; *See* Kaserman JX 1, 357). In other words, when demand is price inelastic, a small cutback in output or sales by a collusive group will lead to a significant increase in price.

365. In estimating the price elasticity of demand for the relevant PVC products, it is important that each of these is an intermediate (or input) product rather than a consumer good (Goodrich F 95; Goodrich, slip op. at 71-72; Kaserman JX 1, 260, 70; Kaserman Dkt. 9159, 2369). The price elasticity of demand for an intermediate product is a function of three factors: (1) the ease of substitutability between the intermediate product and other inputs in the production of the final product; (2) the cost share of the intermediate product in the production of the final products; and (3) the price elasticity of demand for the final products produced from the intermediate product (Goodrich, slip op. at 72; Kaserman JX 1, 260, 270; Kaserman Dkt. 9159, 2370-71). Where there is no substitutability between the intermediate product and other inputs in the manufacture of the final product, the price elasticity of demand of the intermediate product will necessarily be lower than the price elasticity of demand for the final product (Kaserman Dkt. 9159, 2377. *See* Klass Dkt. 9159, 4267). How much lower is a function of the cost share of the intermediate product used in the manufacture of the final product (Kaserman Dkt. 9159, 2375-76).

366. Analysis of the elasticity of demand for an intermediate product is made more complicated where, as in the case of mass and suspension PVC homopolymer and the case of dispersion PVC resin, there are hundreds of end use products made from the intermediate



product (*See* Kaserman JX 1, 262). The aggregate (or industry) price elasticity of demand for each of the relevant products is the weighted average of the price elasticity of demand for the resin used in each of its end uses. The price elasticity of demand for the resin used in any one end use is a function of the price elasticity of demand for the final end use product and the cost share of the PVC resin in that product. Thus, an end use segment that consumes a large amount of the relevant product is relatively more important in determining the overall elasticity of demand for the relevant product than is a segment that uses a small amount.<sup>24</sup>

367. Analysis of these factors shows that the price elasticity of demand for each of the relevant products is very low. First, there is no substitutability between each of the relevant products and other input products in the manufacture of final products normally made from the respective relevant product (Goodrich F 95; Goodrich, slip op. at 19-20, 72; Kaserman JX 1, 260, 270; Kaserman Dkt. 9159, 2376-77). Second, the cost share of each of the relevant products is only a portion of the total cost of the end product, and very often the proportion is quite low (Goodrich F 96; Goodrich, slip op. at 72-74; Kaserman JX 1, 260, 270-71; Kaserman Dkt. 9159, 2375). Third, the elasticity of demand for final products made from each of the relevant products is low (Goodrich F 97-98; Goodrich, slip op. at 74-75; Kaserman Dkt. 9159, 2373-75; Kaserman JX 1, 270-71). Because there is little substitutability between each of the relevant products and other input products in the manufacture of final products, the price elasticity of demand for each of the relevant products is necessarily lower than the price elasticity of demand for the final products (Goodrich F 96; Kaserman Dkt. 9159, 2377. *See* Klass Dkt. 9159, 4267). The price elasticity of demand for each of the relevant products is significantly less than the price elasticity of demand for the final products due to the low cost share of mass and suspension PVC in many final products (*See* Goodrich F 96; Goodrich, slip op. at 74).

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<sup>24</sup> *In Camera* [##] (Waggoner Dkt. 9159, 3620-21; CX 756Z20; RX 165E *In Camera*). Furthermore, municipal water pipe in small diameters of 4, 6, and 8 inches may be more important in terms of volume demanded than large diameter municipal water pipe of 10 and 12 inches.

2. Mass and suspension PVC homopolymer

*a. There is no substitutability of other inputs for mass and suspension PVC homopolymer*

368. There are no substitutes for mass and suspension PVC homopolymer in the manufacture of mass and suspension PVC end use products (Goodrich, slip op. at 19, 72, 75; Goodrich F 95; Kaserman Dkt. 9159, 2376-77; Kaserman JX I, 260, 270). Generally, PVC resin is the primary raw material input and imparts essential properties to the product (Goodrich, slip op. at 72; Goodrich F 95. *See* H. Wheeler Dkt. 9159, 1751-52). The fabrication process is essentially one of giving the product its necessary shape (Goodrich F 95; *See* Disch Dkt. 9159, 661-662). Furthermore, in many cases, the fabrication equipment for mass and suspension PVC products can process only mass or suspension PVC resins (Goodrich, slip op. at 19-20, 72; Goodrich F 95; H. Wheeler Dkt. 9159, 1751-52; *See* McMath Dkt. 9159, 1922-23; Disch Dkt. 9159, 663).

*b. The cost share of mass and suspension PVC homopolymer in many end-use products is low*

369. Mass and suspension PVC homopolymer accounts for only a portion of the cost of the finished products made from these resins. Value is added to the PVC resin at several stages in the production of the final PVC end product. First, all mass and suspension PVC homopolymer resins are compounded before they are processed (Goodrich, slip op. at 72; Disch Dkt. 9159, 655-56). Compounding involves mixing the resin with various additives, which may include heat and light stabilizers, impact modifiers plasticizers, and pigments (Goodrich, slip op. at 72-73 & n.162; Disch Dkt. 9159, 656-57; *See* Goodrich F 96). The amount of value added at the compounding stage varies. For example, flexible compounds require the addition of plasticizers while rigid compounds do not (*See* Goodrich at 72-13 & n.162; Goodrich F 96; Disch 657-58). As a result of the addition of plasticizers and other additives, flexible compounds may contain no more than 50 to 70 percent resin by weight (*Id.*; *See* Disch Dkt.

9159, 659; DiLiddo Dkt. 9159, 3377; Becker Dkt. 9159, 1308-09). Rigid compounds that require special additives, like UV (ultraviolet) stabilizers for siding or impact modifiers for bottles, are more costly than pipe compounds (*See* Goodrich F 96; Disch Dkt. 9159, 660; Becker Dkt. 9159, 1300). Second, mass and suspension PVC compounds are converted into fabricated products through various production processes that include extrusion, calendering, blow-molding, injection-molding, and compression-molding (Goodrich, slip op. at 72; Goodrich F 96; Disch Dkt. 9159, 661-662). Once again, the value added varies with each PVC product (*See* Goodrich, slip op. at 72-75; Goodrich FF 96-19), for a discussion of the cost share in the various mass and suspension PVC homopolymer end products). Finally, some products must be installed before they can be used. For products such as pipe, siding, and windows, the cost share of the mass and suspension PVC homopolymer resin is a very small portion of the total installed cost of the finished PVC product (*See* Goodrich, slip op. at 73-74 & n.164; Goodrich FF 163, 168, 178). The low cost share of mass and suspension PVC homopolymer resin in end products means that the demand for mass and suspension PVC homopolymer resin is significantly less elastic than the demand for the end products themselves (*See* Goodrich F 96; Goodrich, slip op. at 74; Kaserman Dkt. 9159, 2375-78; Kaserman JX 1, 260, 270).

*c. The price elasticity of mass and suspension PVC  
homopolymer end-use products is low*

370. [##] (*See* Goodrich F 97; Goodrich, slip op. at 73-74; Disch Dkt. 9159, 663-80; Becker Dkt. 9159, 1268-1325; H. Wheeler Dkt. 9159, 1727-28, 1753; Dkt. 9159 CX 591G-K *In Camera*).

371. Because mass and suspension PVC homopolymer is used in so many applications, it is difficult to generalize about why demand for mass and suspension PVC homopolymer products is inelastic and why products made out of other materials are not close substitutes. However, two major reasons can be identified. First, mass and suspension PVC homopolymer products have specific properties that distinguish them from products made from other materials (Goodrich F 98; Yu Dkt. 9159, 2118-2129; Becker Dkt. 9159, 1274-79; DiLiddo Dkt. 9159, 3348-50; Disch Dkt. 9159, 672-77). As a result, mass and

suspension PVC products are often chosen on the basis of their properties, and not on the basis of changes in the prices of the products. Second, where mass and suspension PVC products are chosen because they offer a cost savings to the purchaser, the cost savings are often so substantial that the PVC product would still be far less expensive than alternative products, even if mass and suspension PVC resin prices rose by a small but significant amount (Goodrich, slip op. at 74-75; *Id.*). Thus, customers would continue to buy the PVC product even if mass and suspension PVC resin prices would rise by a small but significant amount (*See* Kaserman JX 1, 260, 270).

(1) Pipe and pipe fittings

372. [##] (Goodrich F 99; Disch Dkt. 9159, 663; *See also* Dkt. 9159 RX 145L *In Camera*; Commission Physical Exhibit 6). PVC pipe fittings, which are used primarily in conjunction with PVC pipe (Goodrich F 99; Becker Dkt. 9159, 1323-24), account for an additional 3% to 4% of PVC resin consumption (Goodrich F 99; Disch Dkt. 9159 663; *See* Commission Physical Exhibit 7). Like other rigid applications for PVC, PVC pipe is a relatively new product, coming into commercial prominence in the late 1960's and 1970's (Goodrich F 99; Becker Dkt. 9159, 1276-78). In the mid-to-late 1960's, only about 134 million pounds of mass and suspension PVC were consumed in the pipe segment of the market (Goodrich F 99; Dkt. 9159 RX 3Z14). [##] (Goodrich F 99; Dkt. 9159 RX 165E *In Camera*; *See generally* Dkt. 9159 CX 756Z19). [##] (*See, e.g.*, Dkt. 9159 CX 244F; Dkt. 9159 CX 49K; Pflugrath CX 177B ¶ 3 *In Camera*; Heath CX 178B-C ¶ 3 *In Camera*; Wilhite CX 179A-C ¶ Z-3 *In Camera* Porter CX 198B-C ¶ 3 *In Camera*; Stuart CX 201A-C ¶ 2-5 *In Camera* Underwood CX 203B ¶ 3 *In Camera*).

373. The PVC pipe market has grown primarily because PVC pipe provides a superior package of properties that make it a substantially better pipe product than pipe made from other materials in many pipe applications (Goodrich F 100; Dkt. 9159 CX 49K; Dkt. 9159 CX 244G). [##] (Goodrich F 100 & n.21 at 27; Pflugrath CX 177B ¶ 3 *In Camera* Heath CX 178B-C ¶ 3 *In Camera*; Wilhite CX

179B-C ¶ 3 *In Camera* Porter CX 198B-C ¶ 3 *In Camera*; Alberti CX 199F-G ¶ 9 *In Camera*).

374. [##] (Goodrich F 101; Pflugrath CX 177B ¶ 3 *In Camera*; Porter CX 198B-C ¶ 3 *In Camera* Stuart CX 201C ¶ 5 *In Camera* McMath Dkt. 9159, 1924-26; Dkt. 9159 CX 591H *In Camera*; Dkt. 9159 CX 247A, L *In Camera*; Dkt. 9159 RX 958A; CPF 391; *See also* Becker Dkt. 9159, 1293-94). [##] (Goodrich F 101; Wilhite CX 179B-C ¶ 3 *In Camera* Alberti 199F-G ¶ 9 *In Camera*; Stuart CX 201B ¶ 3 *In Camera*; Dkt. 9159 CX 247A, L *In Camera*). [##] (Goodrich, slip op. at 74-75; Dkt. 9159 CX 247A *In Camera*). [##] (Dkt. 9159 CX 591H *In Camera*; *See* Goodrich F 101; *See also* Alberti CX 199F ¶ 9 *In Camera*; Wilhite CX 179A-B ¶ 2-3 *In Camera*; Dkt. 9159 CX 566D; Dkt. 9159 CX 244G).

375. PVC pipe is easier to handle and less costly to install than most other types of pipe. PVC pipe is also lighter in weight compared to most traditional pipe material (Yu Dkt. 9159, 2122-23 DiLiddo Dkt. 9159, 3347; Goodrich F 102). The light weight of PVC pipe means that it can often be installed by hand-labor, whereas heavy equipment is required to lay ductile iron pipe or cement pipe into a trench (Goodrich F 102; Stuart 201B-C ¶ 3-4; Yu Dkt. 9159, 2123-24; DiLiddo Dkt. 9159, 3347-48). PVC pipe is made in relatively long lengths compared to pipe manufactured from other materials, such as ductile iron, clay and asbestos cement (Yu Dkt. 9159, 2123-24; DiLiddo Dkt. 9159, 3347; Waggoner Dkt. 9159, 3632). Longer lengths of pipe mean that fewer joints are necessary. PVC pipe generally is joined with a bell joint or with solvents, which tends to be faster and easier than the methods for joining traditional pipe material (Goodrich F 102; Yu Dkt. 9159, 2126-27; Waggoner Dkt. 9159, 3632. *See also* Dkt. 9159 CX 377B). Because there are fewer joints and easier joining procedures, PVC pipe can often be installed more quickly than other pipe products (Goodrich F 102; Yu Dkt. 9159, 2126-27; Waggoner Dkt. 9159, 3632). [##] (Goodrich F 102; Yu Dkt. 9159, 2123-27; Dkt. 9159 CX 247A *In Camera*). [##] (*See* Dkt. 9159 CX 247A *In Camera*). Because the most important cost factor to the pipe end user is usually the total installed cost (DiLiddo Dkt. 9159, 3348; Goodrich F 102 & n.22 at 28), [##] (Dkt. 9159 RX 4V *In Camera*). [##] (Dkt. 9159 CX 566E; Goodrich F 102 & n.22 at 28; *See also* Dkt. 9159 CX 247 A *In Camera*).

376. PVC pipe is resistant to corrosion from chemicals. It will not corrode in acid, alkaline or wet soils, whereas metal pipe may rust and deteriorate (Goodrich F 103; Yu Dkt. 9159, 2121-22; DiLiddo Dkt. 9159, 3348-50; Becker Dkt. 9159, 1274). [##] (Yu Dkt. 9159, 2121-22; DiLiddo Dkt. 9159, 3348-50; Becker Dkt. 9159 1274; Goodrich F 103; *See* Pflugrath CX 177B ¶ 3 *In Camera*; Alberti CX 199F-G *In Camera*). Given the fact that the cost of installation may exceed the cost of the pipe itself, the replacement costs associated with pipe materials that corrode over time can be a major expense, and can add significantly to the actual long-term costs of an installed pipe system (*See* Yu Dkt. 9159, 2112-14, 2121-22).

377. PVC pipe has excellent flow properties. For example, the smooth walls of PVC pipe may allow a 12" PVC pipe to carry as much water at a given pressure-rating as a 14" ductile iron pipe (Yu Dkt. 9159, 2118-21; Goodrich F 104; *See also* Waggoner Dkt. 9159, 3576). Moreover, PVC pipe's smooth walls mean that deposits do not build up on the inside wall (Yu Dkt. 9159, 2118-21; Becker Dkt. 9159, 1276-78; Goodrich F 104). With some traditional pipe materials such as ductile iron, these deposits can build up over time, reducing the effective diameter of the pipe over the life of the pipe (Yu Dkt. 9159, 2118-21; Becker Dkt. 9159, 1276-78; Goodrich F 104). This can have a significant impact on the service life of a pipe under certain conditions, *e.g.*, water conditions with high mineral content (Becker Dkt. 9159, 1277-78).

378. PVC pipe has distinctive properties compared to other plastic pipe which substantially limit the likelihood that other plastics will be used as a substitute pipe material. "PVC is the most versatile and economical of the plastic materials and is used twice as much in piping as all the other thermoplastic materials combined" (Dkt. 9159 RX 3Z13). An A.D. Little study estimating PVC demand growth concluded that PVC pipe had substantial advantages over other plastics in the areas in which PVC pipe is used:

With regard to competition from other plastics, *i.e.*, ABS, polyethylene, polybutylene, etc., we believe that polyvinyl chloride represents a better performance value, has better and more widespread code approval, has the advantage of flame resistance, and can be easily joined and handled in the field. This gives a substantial advantage to PVC. There is also a suitable supply of PVC fittings, whereas polyolefin must suffer from the disadvantages of problems in

joining, lack of suitable fittings, lack of code approval, fallibility restrictions, etc. We therefore believe that PVC pipe will continue its dominance of the field, and that its growth will be rapid as long as there is not an overall disapproval of all plastic pipe in any uses. Major areas of growth that we foresee are in electrical conduit; conduit for telephone lines; drain, waste and vent in single residents housing; its use in large development tract housing; and a substantial increase in non-code areas such as farming. A new development which will enhance growth in drain, waste and vent use is a structural foam pipe being made by Armotech, a joint venture of Robintech U.S.A. and Armosig in France. We foresee continued increase in demand for PVC pipe in the handling of chemicals and other corrosive materials where PVC has the advantage of rigidity, corrosion resistance, and non-flammability. We know of no plastic pipe which will effectively compete with PVC in these areas.

(Dkt. 9159 CX 45S-T (emphasis added)). One significant property that PVC provides in pipe applications is the ability of PVC to withstand internal pressure, a necessary property of the "pressure pipe" applications, such as water pipe and irrigation pipe. A Goodrich product manager explained how the properties of PVC pipe give it a distinct cost advantage among plastics for pressure pipe applications:

A prime example is PVC pressure pipe. The ability to withstand internal pressure in a piping system is dependent upon the physical, chemical and thermal properties of a particular material. When considering PVC and other thermoplastics for use in a pressure piping system, cost effectiveness is the bottom line. To handle a particular pressure, a thinner wall thickness is required for PVC compared to other major thermoplastic materials. So PVC is the most economical material for pressure piping systems.

(Dkt. 9159 CX 457D).

379. The selection of a particular pipe material for use in a given application is a function of the combination of in-use conditions to which the pipe will be subjected, and the suitability of the pipe material for use in that application given the inherent characteristics of the material (*See* Waggoner Dkt. 9159, 3623-28). Thus, despite the distinct performance advantages that PVC provides in most pipe applications, PVC pipe also has a number of characteristics that make it unsuitable for general use in certain applications. For example, PVC lacks the requisite stiffness for use in above-the-ground irrigation applications (Yu Dkt. 9159, 2154; Goodrich F 105). There

is also continuing controversy over the extent to which PVC pipe emits toxic smoke when it burns (*See, e.g.*, Dkt. 9159, CX 45S; Goodrich F 105). As a result, the use of PVC pipe is banned by many building codes for use in drain, waste, and vent (DWV) and conduit applications, particularly in high-rise buildings (*See Waggoner Dkt. 9159, 3638; Goodrich F 105*). PVC pipe also does not have the degree of strength of such materials as ductile iron pipe. Thus, ductile iron pipe may be preferred over PVC pipe in municipal water pipe applications involving rocky or shifting soils, or installation under heavily traveled roads and railroad crossings, (*See Waggoner Dkt. 9159, 3578-79; Goodrich F 105*). To protect it from breakage in rocky or shifting soils, PVC pipe may require a special gravel backfill whereas another kind of pipe may not (*See Waggoner Dkt. 9159, 3578-79; Goodrich F 114*). The cost of this backfill requirement may sometimes eliminate the installation cost advantage of PVC pipe (*See Waggoner Dkt. 9159, 3651-53; Goodrich F 114*). Thus, PVC pipe is not always suitable for use in all piping applications or circumstances.

380. PVC pipe is a relatively new product compared to traditional pipe products. Thus, PVC pipe does not have a long track record on which users and purchasers can rely in judging its long-term performance properties (Yu Dkt. 9159, 2121-22, 2131-33; DiLiddo Dkt. 9159, 3350-51; Waggoner Dkt. 9159 3628-30, 3634-35; Goodrich F 105). This aspect is particularly significant because, in many applications, pipe may be expected to function for 50 years or more (Yu Dkt. 9159, 2122; Waggoner Dkt. 9159, 3630; *See Goodrich F 105*).

381. Overall, the use of pipe is not a single undifferentiated demand with a single set of end use requirements. The distinctive differences in performance properties among PVC pipe products and other types of pipe are of varying importance depending upon the wide variety of circumstances in which the pipe is used. A closer analysis shows that, in most of the applications for which PVC pipe can be used, it has substantial performance and cost advantages over other types of pipe (*See Goodrich, slip op. at 74-75*). Most of the mass and suspension PVC homopolymer used in pipe is accounted for by the following applications: (1) municipal water pipe; (2) rural water pipe; (3) water service and distribution pipe; (4) sewer pipe; (5)



drain, waste and vent pipe; (6) irrigation pipe; (7) communications duct; and (8) electrical conduit (*See* Goodrich F 106; Dkt. 9159 CX 756Z20).

(a) *Municipal water pipe*

382. Municipal water pipe is pipe that carries the municipal, potable (*i.e.*, drinking) water supply from reservoirs, lakes or rivers to treatment facilities, and thence to water mains that distribute the water throughout the community. Municipal water pipe is a pressure pipe application, which means that the pipe conveys water under pressure. The higher performance requirements in pressure pipe applications have implications for the design and cost of pressure pipe products, *i.e.*, the pipe product is engineered and tested to withstand high internal and external pressures, and to provide an assurance of safety and longevity once installed (*See* Yu Dkt. 9159, 2096-99; Goodrich F 107). Municipal water pipe comes in a wide range of diameters; the largest diameter pipes being used to transport water from the reservoir to the treatment center and the main lines (Yu Dkt. 9159, 2114-15; Goodrich F 108). Smaller lines are used to distribute the water through individual subdivisions (Yu Dkt. 9159, 2115-16; Goodrich F 108). Water mains generally vary in size from 4 inches to about 36 inches in diameter (Yu Dkt. 9159, 2115; Goodrich F 108; *See also* Waggoner Dkt. 9159, 3579-80; Dkt. 9159 RX 3Z35). PVC municipal water pipe is generally sold in diameters of 12 inches or less (Yu Dkt. 9159, 2115; Eecker Dkt. 9159, 1278; Waggoner Dkt. 9159, 3580; Goodrich F 108; *See* Dkt. 9159 CX 377A-F). [##] (Dkt. 9159 RX 165E *In Camera*; Goodrich F 109).

383. Purchasers of municipal water pipe are generally the contractors who install the system (Waggoner Dkt. 9159, 3574; Yu Dkt. 9159, 2112; Goodrich F 110). However, the contractor's choice of pipe is limited by the specifications for the project, as prepared by the design or consulting engineer for the municipality (Waggoner Dkt. 9159, 3574-75, 3584-85; Yu Dkt. 9159, 2107-12; Goodrich F 110). These specifications set forth the required diameters, pipe classes, installation methods, and materials that may be used (Waggoner Dkt. 9159, 3586; Goodrich F 110). In some cases, an engineer will approve only one pipe material, such as PVC or ductile iron, in the

specification (Waggoner Dkt. 9159, 3626; Goodrich F 110). In other cases, more than one material will be permitted (Waggoner Dkt. 9159, 3586). In considering what pipe materials to specify, an engineer will take into account a number of factors, including soil conditions, terrain, and the depth of the trench, to determine whether a given kind of pipe can provide the performance required for a particular situation (Waggoner Dkt. 9159, 3585, 3623-26; Goodrich F 110). An engineer may also have a preference for a certain type of pipe based on previous experience (Yu Dkt. 9159, 2132-33; Waggoner Dkt. 9159, 3624, 3629, 3631; DiLiddo Dkt. 9159, 3352-53; Goodrich F 110; *See also* Dkt. 9159 CX 756Z23).

384. [##] (Yu Dkt. 9159, 2116-17; Waggoner Dkt. 9159, 3626-27, 3645-46; Becker Dkt. 9159, 1275; Goodrich F 111; *See* Wilhite CX.179A-C ¶¶ 2-3 *In Camera*; Porter CX 198B-C ¶ 3 *In Camera*). [##] (Goodrich F 111; Wilhite CX 179 A-C ¶¶ 2-3 *In Camera*; *See* Porter CX 198B-C ¶ 3 *In Camera*; Waggoner 3617-18; Yu 2131-32; Becker 1276-78; DiLiddo 3348-53) .

385. PVC pipe has smooth interior walls that remain clean over the life of the pipe (Yu Dkt. 9159, 2118-21; Becker Dkt. 9159, 1276-77; Dkt. 9159 RX 3Z37; Goodrich F 112). In comparison, concrete pipe and ductile iron pipe may accumulate deposits over time on the interior walls, a phenomenon known as tuberculation (Yu Dkt. 9159, 2118-21; Becker Dkt. 9159, 1276-77; Dkt. 9159 RX 3Z37; Goodrich F 112). Over time, the effective pipe diameter may be reduced in such cases, thereby decreasing the useful life of the system (Yu Dkt. 9159, 2118-21; Becker Dkt. 9159, 1276-77). The problem of tuberculation of traditional pipe products can be overcome, but at added cost and weight to the pipe (*See* Dkt. 9159 Waggoner 3577: must add a cement liner to ductile iron pipe; Goodrich F 112). Thus, in areas where the water supply has a high mineral content, PVC pipe may well tend to be the material specified (*See* Dkt. 9159 Becker 1276-77).

386. PVC pipe does not corrode in acid, alkaline, or wet soils (Becker Dkt. 9159, 1274, 1276; Yu Dkt. 9159, 2121-22; Dkt. 9159 DiLiddo 3348-50; Dkt. 9159 RX 3Z37; Goodrich F 113). Ductile iron pipe and steel pipe are subject to corrosion, thus reducing the life of the pipe (Yu Dkt. 9159, 2121-22). Accordingly, PVC may be the preferred material in areas where the soil conditions may cause other

types of pipe to corrode (*See* Yu Dkt. 9159, 2121-22; Goodrich F 113).

387. Ductile iron pipe is stronger than PVC pipe (*See* Waggoner Dkt. 9159, 3575, 3628-29; Goodrich F 115). Ductile iron pipe may therefore tend to be specified in areas with shifting or rocky soils, and where the specifying engineer may be concerned that PVC pipe would break (*See* Dkt. 9159 Waggoner 3631; Goodrich F 115). Ductile iron pipe may also be selected over PVC pipe for a water line running under a major road or railroad crossing. In these circumstances, the pipe may be subject to great stress, so that the high strength characteristics of ductile iron pipe may be preferred (Waggoner Dkt. 9159, 3625; Goodrich F 115). It is not unusual to find instances of a water line of PVC pipe which is interrupted by a length of ductile iron pipe where such circumstances are presented (Waggoner Dkt. 9159, 3625; Goodrich F 115).

388. All of the traditional materials have an advantage over PVC pipe in that they have a longer history of use. Use of PVC pipe in municipal water applications is relatively recent (Yu Dkt. 9159, 2131-32; Waggoner Dkt. 9159, 3626-27). The American Water Works Association only issued a standard covering PVC municipal water pipe as recently as 1975 (Waggoner Dkt. 9159, 3615; Dkt. 9159 CX 756Z23; Goodrich F 116). The issuance of this standard was critical for the market acceptance of PVC pipe, because many communities install only code-approved products (Dkt. 9159 RX 3Z37). Since that time, demand for PVC pipe has grown consistently at the expense of other materials in the diameters in which PVC pipe is used (*See e.g.*, Becker Dkt. 9159, 1276-78; Dkt. 9159 CX 244F; Dkt. 9159 CX 49K). [##] (Underwood CX 203B ¶ 3 *In Camera*; Yu Dkt. 9159, 2122; Goodrich F 116 & n.24 at 32. *See* Waggoner Dkt. 9159, 3628-30, 3634-35). Specifying engineers who have not as yet had experience with PVC pipe, or who are reluctant to forego established materials, may be reluctant to permit the use of PVC pipe in a project (Yu Dkt. 9159, 2131-33; Becker Dkt. 9159, 1280; DiLiddo Dkt. 9159, 3352-53, *See* Waggoner Dkt. 9159, 3524, 3629, 3634-43).

389. Where the specifications in a project permit the use of more than one kind of pipe, the favorable properties of PVC pipe are significant factors affecting its selection. For example, a contractor

may prefer working with PVC pipe based on such factors as ease of installation (*See Waggoner Dkt. 9159, 3627-28*).

390. PVC pipe frequently is easier and less expensive to install than other materials used for municipal water pipe (Yu Dkt. 9159, 2122-27; Dkt. 9159 RX 3Z36-37; CPF 391; *See Goodrich F 111*). [##] (*See Wilhite CX 179B-C ¶ 3 In Camera*; Alberti CX 199F-G ¶ 9 *In Camera*; Stuart CX 201B ¶ 3 *In Camera*; DiLiddo Dkt. 9159, 3348; Yu Dkt. 9159, 2112-14; Goodrich F 102 & n.22 at 28). The cost of installation tends to be a substantial portion of the total cost of a job or project (Yu 2112-14; *See also* Dkt. 9159 RX 3Z36). PVC pipe is approximately 25 percent the weight of ductile iron pipe (Yu Dkt. 9159, 2122-23; *See also* DiLiddo Dkt. 9159 3347; Waggoner Dkt. 9159, 3656). [##] (Stuart CX 201B-C ¶ 4 *In Camera*; Yu Dkt. 9159 2123-24; *See Goodrich F 114*; *See also* Dkt. 9159 RX 3Z36-Z37; DiLiddo Dkt. 9159, 3347). [##] (Stuart CX 201B-C ¶ 4 *In Camera*; Yu Dkt. 9159, 2123-24; *See also* Dkt. 9159 RX 3Z36-37, 54-55). PVC pipe is made in longer lengths, thereby requiring fewer joints (Yu Dkt. 9159, 2124-27; Waggoner Dkt. 9159, 3632; *See Goodrich F 114*). The bell joint or solvent joining systems for PVC pipe also tend to be easier and faster than joining methods used for other materials (Yu Dkt. 9159, 2126-27; Goodrich F 114). PVC pipe can also be cut more easily in the field than can traditional pipe materials (Yu Dkt. 9159, 2127; Goodrich F 114). The extent of any installation cost advantage for PVC pipe will vary from project to project, depending upon the depth of the line, soil conditions, and other factors (Yu Dkt. 9159, 2112-14; Goodrich F 114). For example, in some soil conditions it may be necessary to install a special backfill for PVC pipe (*See Waggoner Dkt. 9159, 3578-79*; Goodrich F 114). The added cost of this requirement may offset the installation cost advantage that would otherwise exist for PVC pipe (Waggoner Dkt. 9159, 3651-53; Goodrich F 114).

391. Ductile iron pipe is not a close substitute for PVC pipe in municipal water applications. In many situations, PVC pipe or ductile iron pipe will be selected on the basis of their respective distinct performance properties rather than the relative prices of the two products. Moreover, PVC pipe is generally less expensive than ductile iron pipe (*See Waggoner Dkt. 9159, 3631, 3635, 3652-53, 3673*; Dkt. 9159 CX 756Z23; Goodrich F 118). The price advantage

of PVC pipe over ductile iron pipe is substantial in small (4-8 inch) diameters (Waggoner Dkt. 9159, 3635-36; Goodrich F 117-18). [##] (Heath CX 178B-C ¶ 3 *In Camera*; Alberti CX 199F-G ¶ 9 *In Camera*; Waggoner Dkt. 9159, 3635-36), [##] (Alberti CX 199F ¶ 9 *In Camera*; CPF 624.; *See, e.g.*, Dkt. 9159 CX 566D; Dkt. 9159 CX 522B *In Camera* -- [##]).

392. Pre-stressed concrete pipe is also not a close substitute for PVC pipe in municipal water applications. PVC pipe is substantially less expensive than pre-stressed concrete pipe in the smaller diameters in which PVC pipe is used (*See* Waggoner Dkt. 9159, 3645; Goodrich F 118). Pre-stressed concrete pipe tends to be even more expensive than ductile iron pipe in small diameters (*See* Dkt. 9159 Waggoner 3645). Concrete pipe is more commonly used in larger diameters (Dkt. 9159, RX 3Z36, Z48, Z50).

393. Asbestos cement pipe is not a significant competitive factor in potable water pipe applications (Waggoner Dkt. 9159, 3626-27). [##] (Underwood CX 203B ¶ 3 *In Camera* *See* Waggoner Dkt. 9159, 3626-27; Goodrich F 118; *See also* Dkt. 9159 CX 756Z34). [##] (RX 72C *In Camera*). Its use is now largely confined to the Texas and Arizona area (*See* Waggoner Dkt. 9159, 3626-27). The use of asbestos cement pipe may eventually be banned in potable water applications (*See* Dkt. 9159 CX 566C, G).

394. Thus, as discussed above, the demand for PVC municipal water pipe is inelastic primarily for two reasons. First, in many situations the choice of pipe material is based on factors other than price. These factors include the needs of a municipality for the distinctive properties of one kind of pipe or another to meet the use conditions presented in a particular area. Another significant factor guiding the selection of pipe materials is the unwillingness of some engineers to specify a relatively new and unproven material such as PVC municipal water pipe. Where the pipe product is selected on the basis of factors other than price, the small change in the price of PVC pipe resulting from a PVC resin price increase will not affect the purchase decision (*See* Kaserman Dkt. 9159, 2373-75; Goodrich, slip op. at 74-75). Second, in cases where price is an important consideration for pipe selection, the total installed cost of a PVC pipe system is often substantially less than that of a system using ductile iron or some other material (Goodrich F 117). For example, PVC

pipe tends to be much less expensive than ductile iron pipe in small (4-8 inch) diameters (Goodrich F 118). In the majority of cases where the installation cost of PVC is lower than that of other materials (*See, e.g.*, Waggoner Dkt. 9159, 3651-53), the cost advantage of PVC pipe will widen even further. Thus, in many cases, even after a small but significant PVC resin price increase, PVC municipal pipe will still be substantially more cost-effective than other materials pipe, particularly on an installed cost basis (*See* Goodrich F 117-18). Given these factors, it is not surprising that industry members observed limited substitution between PVC pipe and other municipal pipe as a result of PVC resin price changes. Regarding the sensitivity of the level of demand for PVC pipe in municipal water applications to changes in the price of PVC resin, Mr. Rodney Becker testified:

I don't think in the time that I was in the plastics business that we ever saw significant shifts on the basis of changes in price.

Typically, PVC resins have varied from 15 cents to 35 cents a pound. In that kind of range I don't think it made very much difference what the price was. When demand is down, it is down and the price is not going to convince a municipality, which doesn't have any money to carry forward the process, to go ahead with it.

(Becker Dkt. 9159, 1281-82; *See generally* Yu Dkt. 9159, 2178-79).

(b) *Rural water pipe*

395. Rural potable water pipe includes pipe used in water wells and Farmers' Home Administration ("FmHA") projects (Dkt. 9159, RX 3Z401; Goodrich F 121; *See also* Dkt. 9159 CX 756Z21-22). PVC pipe is the predominant material used in FmHA projects (Dkt. 9159 CX 756Z22622; Dkt. 9159 RX 3Z41; Goodrich F 121. *See* Dkt. 9159 CX 378A-F).<sup>25</sup> [##] (Dkt. 9159 RX 165E *In Camera*; Goodrich F 121).

396. PVC has a dominant position in the rural water pipe segment because its distinctive properties are particularly suited to the requirements of this application (Goodrich F 122; Dkt. 9159 CX

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<sup>25</sup> PVC pipe is also used as the drop pipe in many wells. However, precise market share data on the well segment is almost nonexistent (CX 756Z21-22).

756Z22; Dkt. 9159 RX 3Z41). Rural water systems can generally employ pipe with a somewhat lower break-resistance safety factor than that required for municipal uses. A lower safety factor is possible in rural areas where the pipe is relatively easier to replace, because replacement would not require digging up a paved street or building (Goodrich F 122; *See* Yu Dkt. 9159, 2099-100, 2133-34). PVC pressure pipe used in rural applications has a large cost advantage over traditional pipe materials (Waggoner Dkt. 9159, 3619-22; *See also* Dkt. 9159 CX 756Z22). The light weight, long lengths and ease of joining factors mean that PVC pipe can be installed quickly and easily by hand labor. This ease of installation adds to the cost advantage of using PVC (*See* Yu Dkt. 9159, 2134, 2112-17). As a result, the vast majority (up to 85%) of PVC water pressure pipe sold on a footage basis is sold for rural water applications (*See* Dkt. 9159 Waggoner 3620-21; Dkt. 9159 CX 756Z20; Goodrich F 122). [##] (Goodrich F 122; Dkt. 9159 RX 3Z41; *See* Stuart CX 201B-C ¶ 4 *In Camera*).

397. Thus, the demand for PVC in rural water pipe applications is inelastic as a result of the distinctive properties of PVC pipe, and because of its large cost advantage on the basis of the cost of the pipe alone, and on an installed cost basis. Thus, even after a small but significant PVC resin price increase, PVC pipe would still be preferred in rural applications, and would remain substantially more cost-effective than other materials used for this purpose.

(c) *Water service and distribution pipe*

398. Water service pipe is used for conveying potable water from water mains to individual homes or buildings (Dkt. 9159 RX 3Z37; Goodrich F 123). Distribution pipe carries water from the water meter to taps and other outlets (Dkt. 9159 CX 3Z37). As with other potable water pipe applications, service and distribution pipes are pressure applications (Dkt. 9159 CX 756Z20; Goodrich F 123). Pressure pipe used in these applications are significantly smaller in diameter than pipes used in water mains: "Pipe diameters are normally one-half to one inch for single family residential use with larger sizes used in multi-family, commercial or other nonresidential

applications" (Dkt. 9159 RX 3Z38; Goodrich F 123). [##] (Goodrich F 123; Dkt. 9159 RX 165E *In Camera*).

399. The most popular traditional material for water service and distribution pipe applications has been copper (Becker 1272-74; Dkt. 9159 RX 3Z38; Dkt. 9159 CX 756Z26; Goodrich F 124). Steel has also been used, but this material corrodes, suffers from deposit build-up, is difficult to join, and is heavy (Dkt. 9159 RX 3Z38; Goodrich F 124). It has, therefore, generally been displaced by other materials (Dkt. 9159 RX 3Z38; Goodrich F 124). Previously restricted by lack of code approval, PVC pipe is now enjoying major growth in the service pipe market (Dkt. 9159 RX 3Z37-40; Dkt. 9159 CX 756Z26-Z27; Goodrich F 125). Among plastics, "PVC is the material of choice because of its strength and low cost" in service pipe applications (Dkt. 9159 RX 3Z38; Goodrich F 125). PVC pipe is also used for distribution pipe, although it is not used for hot water applications because of heat distortion problems (Becker Dkt. 9159, 1272-73; Dkt. 9159 CX 756Z26; Goodrich F 125). (However, CPVC (chlorinated PVC) can be used in hot water applications (Dkt. 9159 RX 3Z39)). [##] (*See* Stuart CX 201B ¶ 3 *In Camera*). A 1983 Goodrich document estimated the manufacturing cost per foot for two inch diameter pipe in the years 1976-82 as follows: [##] (Dkt. 9159 CX 247L *In Camera*; Goodrich F 126). Copper tubing is only slightly less expensive than steel tubing (*See* Dkt. 9159 CX 756Z29, Z31; Goodrich F 126). [##] (*See* Dkt. 9159 RX 247L *In Camera*). [##] (Dkt. 9159 CX 247L *In Camera*; Dkt. 9159 RX 3Z38), [##] (*See* Stuart CX 201B ¶ 3 *In Camera*).

(d) *Sewer and drain pipe*

400. The sewer and drain pipe segment includes sanitary sewers, storm sewers and drainage applications (Dkt. 9159 RX 3Z44 Dkt. 9159 CX 756Z24; Goodrich F 127). While there are some pressure sewer applications, about 90 percent of this application involves gravity sewer systems, which is a non-pressure use (Dkt. 9159 CX 756Z24-Z25; Goodrich F 127; *See* Dkt. 9159 CX 380A-L; Dkt. 9159 CX 383A-L). [##] (Dkt. 9159 RX 165E *In Camera*; Goodrich F 127).

401. The principal materials other than PVC used in sewer and drain pipe are concrete, clay, corrugated iron (Yu Dkt. 9159, 2141



Waggoner Dkt. 9159, 3645-46; Goodrich F 128). [##] (Waggoner Dkt. 9159, 3645; Goodrich F 128; *See* Stuart CX 201B-C ¶ 4 *In Camera*; Underwood CX 203B ¶ 3 *In Camera*). Very small amounts of ductile iron pipe are used in sewer applications, and generally only in pressure situations (Dkt. 9159 CX 756Z25; Goodrich F 128).

402. The distinct properties of PVC pipe are again a significant factor in its selection for use in sewer and drain applications. PVC pipe is not subject to attack and corrosion from hydrogen sulfide gas, as are concrete and asbestos cement pipe (Dkt. 9159 RX 3Z48-49; Goodrich F129). Concrete is therefore likely to be used only where hydrogen sulfide gas is not a problem, such as in storm sewer and drainage applications (Dkt. 9159 RX 3Z48; *See* Goodrich F 129).<sup>26</sup> As with water pipe, the corrosion resistance of PVC pipe makes it particularly well suited for certain types of soils, as compared with corrugated metal pipe (Yu Dkt. 9159, 2142). [##] (Dkt. 9159 CX 756Z24-25; *See* Goodrich F 129; Yu 2142-44; Dkt. 9159 RX 3Z49; Dkt. 9159 CX 300Z7 *In Camera*). Many engineers remain reluctant to specify PVC pipe, as opposed to pipe with which they are familiar and for which performance characteristics are proven (*See* Dkt. 9159 Yu 2146-48; CX 756Z24-25; Goodrich F 130). [##] (Dkt. 9159 CX 300Z7 *In Camera*).

403. [##] (Yu Dkt. 9159, 2142-44; Dkt. 9159 CX 300Z7 *In Camera*; Goodrich F 129).

404. Ductile iron pipe is not a close substitute for PVC pipe in sewer and drain applications. About 90 percent of such applications are non-pressure (Dkt. 9159 CX 756Z25; *See* Goodrich F 131). In non-pressure applications, PVC pipe can be made with thinner walls than that required in pressure applications (Yu Dkt. 9159, 2137-39; Waggoner Dkt. 9159, 3643-44; Goodrich F 131). The cost of PVC sewer pipe is therefore even less than that of PVC municipal water pipe, as illustrated by the prices for these two PVC pipe products furnished given by Mr. Yu of J-M Manufacturing Co., Inc., one of the largest PVC pipe producers in the United States:

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<sup>26</sup> The hydrogen sulfide problem is less acute in pressure sewers since there is little airspace. It is most acute in flat areas, where the sewage is slow moving with large airspaces (*See* RX 3Z48).

Initial Decision

115 F.T.C.

| Diameter<br>(inches) | PVC Water Pipe<br>Class 150 | PVC Sewer<br>Pipe |
|----------------------|-----------------------------|-------------------|
| 8"                   | \$3.90                      | \$1.82            |

(Yu Dkt. 9159, 2105-06, 2140-41; Goodrich F 131). Ductile iron pipe producers sell the same pipe product for both pressure and non-pressure applications (Waggoner Dkt. 9159, 3579, 3644; Goodrich F 131). As PVC pressure pipe is already considerably less expensive than ductile iron pipe in most diameters, the substantial cost disadvantage of ductile iron pipe relative to PVC pipe in municipal water applications becomes an even greater disadvantage in gravity sewer applications (Waggoner Dkt. 9159, 3583; Goodrich F 132). Mr. Waggoner of Griffin Pipe Products Co., a ductile iron pipe producer, agreed that PVC pipe has a significant cost advantage over ductile iron pipe in gravity sewer applications (Waggoner Dkt. 9159, 3643-44). Mr. Waggoner explained:

A gravity sewer application is when you are moving sewage from housing development or from municipality to the treatment plant. A gravity sewer line is where the contractor lays it at an incline or a decline so that the sewage is moving along at its own rate or the lay of the land controls it versus a pressure sewer where there is some pressure exerted to move that sewage along. So for that application we would sell the same piece of ductile iron pipe for that application as we would for a water main application but obviously you don't need the pressure rating or the strengths. PVC has managed to segment that market, they have products that are thinner wall and less pressure rated to handle that type of application. So when we get into the sewer applications, we have a more significant cost disadvantage than we would for a pressure application.

(Waggoner Dkt. 9159, 3644). Thus, ductile iron pipe has but a small fraction of the market in sewer and drain applications (*See* Dkt. 9159, CX 756Z25).

405. [##] (Dkt. 9159 CX 3Z48 *In Camera*; Waggoner Dkt. 9159, 3646; Goodrich F 130), [##] (Wilhite CX 1198-C ¶ 3 *In Camera*; Yu Dkt. 9159, 2142-44; Waggoner Dkt. 9159, 3646; Dkt. 9159 CX 300Z7 *In Camera*; Goodrich F 130). [##] (*See* Dkt. 159 CX 579M, 5 *In Camera*; Goodrich F 130). [##] (Dkt. 9159 CX 525J *In Camera*; Goodrich F 130). [##] (Dkt. 9159 CX 579R *In Camera*; Goodrich F 130). The dramatic rate of replacement of clay pipe by PVC pipe in

sewer applications has occurred because PVC offers substantial advantages in cost and performance over clay pipe (*See* Dkt. 9159 Waggoner 3646; Goodrich F 130).

406. Concrete pipe is also not a close substitute for PVC pipe in sewer and drain pipe applications. The susceptibility of concrete to hydrogen sulfide attack, and the difficulties in sealing joints, has resulted in a distinct disadvantage for concrete pipe for most sanitary sewer uses (*See* Dkt. 9159 RX 3Z48; Goodrich F 132). As in the case of municipal water pipe, concrete is not cost competitive in small diameters, particularly on an installed cost basis (Dkt. 9159 RX 3Z48, Z50; Goodrich F 132). Thus, concrete pipe tends to be used for very large diameter needs, and thus does not compete directly with PVC pipe in most sewer and drain applications (Goodrich F 132; Dkt. 9159 RX 3Z48).

407. Thus, the demand for PVC sewer and drain pipe is inelastic (Becker Dkt. 9159, 1286-87). In many situations, the choice of sewer pipe material is based on factors other than price, such as a preference or demand for the distinctive properties of PVC pipe. In addition, the total installed cost of a PVC sewer pipe system is often substantially less than that of a system using other materials. Thus, even after a small but significant PVC resin price increase, PVC sewer pipe would still be substantially more cost-effective than other materials, particularly on an installed cost basis. Mr. Rodney Becker, former Sales and Marketing Manager for Diamond Shamrock, testified as follows regarding the sensitivity of the level of demand for PVC sewer pipe to changes in the price of PVC resin:

Once again, I would go back to the fact that in the price range that PVC typically has been sold, and I use the broad range of 15 to 35 cents per pound, I don't think it would make very much difference.

For example, . . . the municipality already has a sewer system they have to replace. You can imagine the tearing up of the streets or anything else that is involved. They don't want to replace that system again.

So, if they could be convinced that PVC is going to last longer than whatever was in there before, I think they would even be willing to pay more money for the pipe.

(Becker Dkt. 9159, 1286-87).

(e) *Drain, waste and vent (DWV) pipe*

408. The drain, waste and vent (DWV) pipe segment includes pipe that drains water and waste from buildings into sewer systems (Dkt. 9159 CX 756Z25-Z26; Dkt. 9159 RX 3Z52; Waggoner Dkt. 9159, 3637; Goodrich F 133). These indoor drainage systems include vent pipes to the outside to permit air to vent the system (Dkt. 9159 RX 3Z52; *See* Goodrich F 133). The contents of a DWV system are moved by gravity; it is therefore a non-pressure application (Dkt. 9159 CX 756Z20; Waggoner Dkt. 9159, 3639; Goodrich F 133). Typical diameters are in the 1-2 inch to 8 inch range (*See, e.g.,* Dkt. 9159 CX 379; Goodrich F 133). [##] (Dkt. 9159 RX 165E *In Camera*; Goodrich F 133).

409. [##] (Wilhite CX 179A-B ¶ 2 *In Camera*; Becker Dkt. 9159, 1292; Dkt. 9159 RX 3Z54-55; Waggoner Dkt. 9159, 3637-38; Goodrich F 134). Use of copper has essentially disappeared in DWV applications (Dkt. 9159 RX 3Z54-55; *See* Goodrich F 134).

410. PVC pipe has replaced traditional pipe material in this segment because it offers substantial savings in both the cost of pipe and the cost of installation (Dkt. 9159 RX 3Z54-55; Dkt. 9159 CX 756Z25-Z26; Goodrich F 135). However, cast iron soil pipe provides lower noise conductivity, an attribute that is particularly important in multi-family dwellings; moreover, there remain substantial concerns about the toxicity of smoke emitted by PVC pipe when it burns (Waggoner Dkt. 9159, 3638; Dkt. 9159 RX 3Z54; Goodrich F 135). As a result, the use of PVC DWV pipe is often banned in high-rise structures (*See* Waggoner Dkt. 9159, 3637-39; Dkt. 9159 RX 3Z54; Dkt. 9159 CX 756Z35; Goodrich F 135). Nevertheless, PVC pipe has essentially captured this application in single family dwellings (*See* Dkt. 9159 Waggoner 3637; Goodrich F 135). The significant cost savings offered by PVC pipe suggests that it may continue to displace traditional material pipe to the extent permitted by building codes (Dkt. 9159 RX 3Z55; Dkt. 9159 CX 756Z26; Goodrich F 135).

411. Until about 1973, more ABS pipe was used in DWV applications than PVC pipe (Dkt. 9159 CX 583 Z80; Goodrich F 136). [##] (Wilhite CX 179A-B ¶ 2 *In Camera*; Dkt. 9159 CX 583Z80; Dkt. 9159 RX 3Z55; Goodrich F 136). The development of improved PVC compounds yielded a PVC pipe with properties

comparable to ABS (Dkt. 9159 CX 583Z80; *See* Goodrich F 136). [##] (Wilhite CX 179A-B ¶ 2 *In Camera*; Stuart CX 201C ¶ 5 *In Camera*; Weber Dkt. 9159, 1806-09; Dkt. 9159 CX 583Z80; Dkt. 9159 CX 756Z26; Goodrich F 136). "In single family residential construction PVC has become the dominant material for DWV pipe" (Dkt. 9159 CX 756Z25; *See also* Weber Dkt. 9159, 1806-09). ABS pipe producers have developed a foam core product to cut costs, but it does not significantly alter the wide economic advantage of PVC pipe (Dkt. 9159 CX 756Z26; Goodrich F 136).

412. [##] (Stuart CX 201C ¶ 5 *In Camera*). Goodrich estimates the manufacturing costs for the three type of pipe for the period 1976-82 for a three inch diameter pipe as follows: [##] (Dkt. 9159 CX 247L *In Camera*; Goodrich F 137). Because of easier installation, the cost gap between PVC DWV pipe and cast iron soil pipe is even wider on an installed cost basis.

413. [##] (Wilhite CX 179A-B ¶2 *In Camera*; Becker Dkt. 9159, 1294-95).

(f) *Irrigation pipe*

414. Irrigation pipe is a pressure application (Yu Dkt. 9159, 2099-100; Dkt. 9159 CX 156Z20; Goodrich F 138; *See, e.g.*, Dkt. 9159 CX 378A-F; Dkt. 9159 CX 381A-D). However, pressure ratings for irrigation pipe are lower than those used for municipal water pipe applications, so that a thinner wall PVC pipe may be used for irrigation purposes (Yu Dkt. 9159, 2049-100, 2150-52; Goodrich F 138). Irrigation systems can be divided into three major categories: below-ground systems, above-ground systems, and on-the-ground systems (*See* Yu Dkt. 9159, 2148-50; Goodrich F 138). Below-ground systems can be further divided into sprinkler systems and drip pipe systems (Dkt. 9159 CX 756Z23-Z24; Dkt. 9159 RX 3Z67- 68; Goodrich F 138). [##] (Dkt. 9159 RX 165E *In Camera*; Goodrich F 138).

415. The lower pressure ratings and smaller diameters used mean that traditional materials such as ductile iron and asbestos cement are not significant competitive materials in irrigation applications (*See* Dkt. 9159 CX 756Z23-Z24; Dkt. 9159 RX 3Z68; Yu Dkt. 9159, 2153; *See* Goodrich F 139). Mr. Waggoner of Griffin Pipe explained

that the reason why ductile iron pipe is rarely used in a majority of irrigation applications was because the high strength characteristics of ductile iron would not be needed; and that the pressure ratings and the depth of an irrigation system would cause ductile iron pipe not to be a significant factor in that market (Waggoner Dkt. 9159, 3642; *See* Goodrich F 141 & n.28 at 41). Mr. Waggoner agreed that, because the strength characteristics of ductile iron would not be needed, the cost disadvantage of ductile iron pipe in irrigation applications would be overwhelming: "Yes, we wouldn't even be in the ballpark" (Waggoner Dkt. 9159, 3642; *See* Goodrich F 141 & n.28 at 41).

416. For the large majority of irrigation systems, the only types of pipe used are PVC and aluminum (Yu Dkt. 9159, 2153; Dkt. 9159 CX 756Z24; *See* Goodrich F 139). A small amount of polyethylene is used in drip irrigation systems (Dkt. 9159 CX 756Z24; *See* Goodrich F 141 & n.28 at 41).

417. PVC pipe is becoming the material of choice in below-ground sprinkler systems (Dkt. 9159 CX 756Z24; Goodrich F 139). Almost all PVC pipe used in irrigation is for underground applications (Dkt. 9159 CX 756Z24; Goodrich F 139), where PVC pipe has a significant performance advantage over aluminum pipe in that it has better impact resistance. In diameters over 6 inches, aluminum does not have the requisite impact resistance for below-ground use and may be crushed on installation (Yu Dkt. 9159, 2154; *See* Goodrich F 139). PVC pipe also enjoys a substantial cost advantage over aluminum (Becker Dkt. 9159, 1290; Dkt. 9159 CX 756Z24; Goodrich F 139). [##] (Dkt. 9159 CX 247L *In Camera*).

418. PVC pipe is generally not used in above-the-ground sprinkler systems (Yu Dkt. 9159, 2152-54; Goodrich F 140). In these systems, the pipe is suspended above the ground and is moved across the field on large wheels (Yu Dkt. 9159, 2153-54). PVC pipe does not have the necessary stiffness to be used in this application (Yu Dkt. 9159, 2153-54; Goodrich F 140). [##] (Dkt. 9159 CX 756Z24; Dkt. 9159 CX 300Z7 *In Camera*; *See* Goodrich F 140).

419. Both aluminum and PVC pipe are used in portable on-the-ground systems (Yu Dkt. 9159, 2154), although aluminum has held a commanding position in above and on-the-ground applications (Dkt. 9159 CX 756Z24; Goodrich F 141). The large cost advantage of PVC over aluminum found in on-the-ground systems is not as

great as that in below-ground systems, because of the need to add stabilizers to the PVC compound to protect the PVC pipe from degradation on exposure to heat and light (Dkt. 9159 CX 756Z24 Becker Dkt. 9159, 1289-90; Goodrich F 141). Nevertheless, PVC pipe has a significant cost advantage over aluminum in on-the-ground systems (Dkt. 9159 CX 756Z24; Becker Dkt. 9159, 1290). This cost advantage should widen over time due to projected increases in the price of aluminum versus PVC (Dkt. 9159 CX 756Z24; *See* CPF 467; Goodrich F 140). [##] (Dkt. 9159 CX 300Z7 *In Camera*; *See* Goodrich F 141).

420. Thus, the selection of pipe material for irrigation applications is determined largely by the type of system chosen. Furthermore, the type of irrigation system selected depends primarily upon particular performance needs and requirements of specific systems, rather than the cost of alternative systems (*See* Yu Dkt. 9159, 2150-51, 2152-53; Goodrich F 139). Thus, the demand for PVC pipe in irrigation applications overall is inelastic (Becker 1291). Since PVC pipe is generally not suitable for use in the above-the-ground and drip systems, a PVC resin price increase will not affect PVC pipe demand in those applications. In below-ground systems, the cost advantage of PVC pipe over aluminum is so significant that it would remain significant even after a substantial PVC resin price increase. In addition, PVC pipe has superior impact-resistance characteristics in the larger diameter underground irrigation pipe applications. Finally, the widening gap between PVC pipe and aluminum pipe prices should leave room for increased PVC resin prices without a loss of market share in any of the types of present irrigation systems.

(g) *Communications duct*

421. Communications duct (or conduit) is used to protect telephone cable and wire running to and from telephone company facilities (Becker Dkt. 9159, 1296; Dkt. 9159 RX 756Z27; Goodrich F 142). [##] (Goodrich F 142; Dkt. 9159 CX 756Z20; *See* Alberti CX 199A ¶ 1 *In Camera*). Nearly all communications conduit is buried, and most is made of non-corrosive materials (Dkt. 9159 CX 756Z28; Dkt. 9159 RX 3Z59; *See* Goodrich F 142). [##] (Dkt. 9159 CX

756Z26-26; Dkt. 9159 CX 300Z7-Z8 *In Camera*; Dkt. 9159 CX 3Z59-60). [##] (Dkt. 9159 RX 165E *In Camera*; Goodrich F 142).

422. "In communications conduit, PVC has gained a dominant position" (Dkt. 9159 CX 756Z28; *See* Goodrich F 143). [##] (Dkt. 9159 RX 165E *In Camera*; *See also* Dkt. 9159 CX 756Z28; Dkt. 9159 RX 3Z60-Z62). [##] (Dkt. 9159 CX 300Z7-8 *In Camera*). [##] (Dkt. 9159 CX 300Z7-8 *In Camera*). [##] (Dkt. 9159 CX 241L *In Camera*; *See also* Dkt. 9159 RX 3Z59).

423. PVC communications conduit and concrete and steel conduit each have distinct properties that make each well suited for particular applications (Dkt. 9159 CX 756Z27; Dkt. 9159 RX 3Z59). Moreover, the cost disparity between PVC communications conduit and both concrete and steel communications conduit is so great that PVC communications conduit is very likely to remain substantially more cost-effective than either concrete or steel conduit, even after a substantial PVC resin price increase. Thus, PVC communications conduit will continue to be selected in those applications where it meets the necessary performance requirements notwithstanding PVC resin price fluctuations or increases (*See* Goodrich F 143).

(h) *Electrical conduit*

424. Electrical conduit is used for the protection of bundled wires (Dkt. 9159 CX 756Z27; Goodrich F 144). [##] (Dkt. 9159 CX 300Z7 *In Camera*; Dkt. 9159 CX 756Z27-28; Goodrich F 144). [##] (Dkt. 9159 RX 165E *In Camera*; Goodrich F 144).

425. [##] (Dkt. 9159 RX 3Z62; Dkt. 9159 CX 300Z7-Z8 *In Camera*; *See* Goodrich F 146). These properties of PVC electrical conduit make it particularly well-suited for underground applications (Dkt. 9159 CX 756Z28; Dkt. 9159 RX 3Z61; Goodrich F 146). [##] (Dkt. 9159 CX 247L *In Camera*; *See also* Dkt. 9159 CX 756Z28; Dkt. 9159 CX 300Z7-Z8 *In Camera*). [##] (Dkt. 9159 CX 300Z7-Z8 *In Camera*; *See* Goodrich F 145). In addition, PVC electrical conduit requires the use of a ground wire (Dkt. 9159 CX 756Z28; Goodrich F 146).

426. Steel is the principal material used in most electrical conduit (Dkt. 9159 CX 756Z28; Dkt. 9159 RX 3Z60-Z61; Goodrich F 145). One reason for this is that much electrical conduit is used in



above-ground applications (Dkt. 9159 RX 3Z60), [##] (Dkt. 9159 CX 756Z28; Dkt. 9159 RX 3Z60-Z61; Goodrich F 145; *See also* Dkt. 9159 CX 300Z8 *In Camera*). In addition, the controversy surrounding the toxicity of smoke from burning PVC pipe has caused PVC conduit to be banned by fire and building codes in many areas (Dkt. 9159 CX 756Z28; Goodrich F 146).

427. Thus, PVC and steel have distinct properties that make each well suited for particular applications. In addition, the cost disparity between PVC and steel in electrical conduit is so great that PVC electrical conduit will remain substantially more cost-effective than steel, even after a substantial PVC resin price increase. Thus, while steel may be used in those areas where PVC is barred by codes, or where the strength of steel is required, PVC conduit will continue to be selected in the applications where it is used notwithstanding fluctuations or increases in the price of PVC resin (*See Becker* Dkt. 9159, 1295-98).

(i) *Summary of pipe*

428. Thus, in the applications in which it is used, PVC pipe has distinct performance properties that are an important factor affecting its selection.<sup>27</sup> In many applications, PVC pipe also has a substantial cost advantage over pipe made from other materials (*See Goodrich*, slip op. at 14-75). The fact that PVC pipe products and pipe products made out of other materials are not close substitutes as a result of substantial differences in performance properties and costs is shown by the testimony of the witness representing the only PVC pipe manufacturer to appear in the proceeding, Mr. Yu of J-M Manufacturing Co., Inc., one of the largest PVC pipe producers in the United States (Yu Dkt. 9159, 2091-92). [##] (Yu Dkt. 9159, 2156-58; *See Stuart* CX 201B ¶ 3 *In Camera*). Accordingly, pipe made from materials other than PVC are not close substitutes for PVC pipe.

429. The elasticity of demand for mass and suspension PVC resin is less than the elasticity of demand for PVC pipe because the

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<sup>27</sup> Because the use of PVC pipe fittings follows from the use of PVC pipe, the demand for PVC pipe fittings is inelastic with respect to changes in the price of PVC resin (*Becker* 1323-24).

resin is only a portion of the cost of PVC pipe. The cost share of the resin is about 55% of the cost of PVC pipe sold to distributors (Yu Dkt. 9159, 2104; Goodrich, slip op. at 73 & n.163; Disch Dkt. 9159, 663). [##] (Yu Dkt. 9159, 2106-07; Dkt. 9159 CX 247B-I *In Camera* [##]). Finally, PVC pipe must be installed before it is used. In many cases, the installation cost is a significant portion of the cost (See Yu Dkt. 9159, 2112-14, 2144-45). Thus, on a total installed cost basis, the cost share of the PVC resin is only a small fraction of the total installed cost of a PVC pipe system. This factor further reduces the elasticity of demand for PVC resin sold into the pipe segment (See Goodrich, slip op. at 73 & n.163).

430. It is likely that the elasticity of demand for mass and suspension PVC resin in pipe applications is less than is reflected in the Goodrich record. At that time, it was generally believed that the price of pipe-grade resin could go as high as only 33 or 34 cents per pound before PVC would lose business to alternative materials in pipe applications (See DiLiddo Dkt. 9159 3264). [##] (CX 217E; See Pflugrath CX 177D-E ¶ 7-8 *In Camera*; Alberti CX 199F-G ¶ 9 *In Camera*). [##] (Porter RX 261B ¶ 4, 6 *In Camera*). Thus, although the Commission found in Goodrich that the demand for PVC in pipe was relatively inelastic, Goodrich, slip op. at 88, it is likely that it is even more inelastic than the Commission concluded on the basis of that record.

(2) Wire and cable applications

431. [##] (Disch 663 Goodrich F 147; See also Dkt. 9159 CX 428Z100; Dkt. 9159 CX 126C; Dkt. 9159 RX 145L *In Camera*). [##] (Bendavid CX 194A-B ¶ 2 *In Camera*; Disch Dkt. 9159, 674; Becker Dkt. 9159, 1269-70, 1303; Goodrich F 147). [##] (Dkt. 9159 CX 591I *In Camera* Goodrich F 141; See Dkt. 9159 Commission Physical Exhibits 9 & 12).

432. Mass and suspension PVC homopolymer coatings for wire and cable have long been the established industry standard. Such coatings have been used since World War II, when a shortage of natural rubber occurred (Dkt. 9159 CX 45Y; Goodrich F 148). Rubber, which had been the traditional material used until the war is flammable and gives off a good deal of smoke when it burns

(DiLiddo Dkt. 9159, 3108). Rubber also oxidizes and becomes brittle over time, so that it cracks off the wire, necessitating the replacement of entire wiring systems (Becker Dkt. 9159, 1304-05). In contrast, PVC was found to be flame resistant, an important factor in this application (Disch Dkt. 9159, 676; Goodrich F 148), and to have good weathering capabilities, excellent insulation properties, and flexibility, thus providing an assurance of longevity and good performance once installed (Disch Dkt. 9159, 674-76; Becker Dkt. 9159, 1270; DiLiddo Dkt. 9159, 3108; Goodrich F 148). As a result, the entire output of PVC during World War II was used by the U.S. government primarily for the coating of wire in naval ships (DiLiddo Dkt. 9159, 3107; Goodrich F 148).

433. [##] (Clark CX 193B ¶ 2 *In Camera*; Bendavid CX 194B ¶ 3 *In Camera*; Dkt. 9159 CX 45Z; Becker Dkt. 9159, 1269-70; Goodrich F 149). [##] (Dkt. 9159 CX 126P-Q; Becker Dkt. 9159, 1269; Goodrich F 149), [##] (Clark CX 193B ¶ 2 *In Camera*; Dkt. 9159 CX 45H; Dkt. 9159 CX 126C; *See* Goodrich F 149-50).

434. [##] (Dkt. 9159 CX 300Z8 *In Camera*; Disch Dkt. 9159, 675-76; Goodrich F 150). [##] (Clark CX 193B ¶ 2 *In Camera*; Bendavid CX 194B ¶ 3 *In Camera*; Disch 676; Dkt. 9159 CX 126C; Goodrich F 150). In addition to its flame resistance properties, PVC is also lower in cost than many other potential alternative materials (Dkt. 9159 CX 126C; Dkt. 9159 CX 45H; *See* Goodrich F 150).

435. [##] (Clark CX 193D ¶ 5 *In Camera*; Disch Dkt. 9159, 675; Becker Dkt. 9159, 1305; Goodrich F 151). One reason for this is that the properties of PVC in this end use are very desirable from the standpoint of both wire and cable producers and purchasers (Disch Dkt. 9159, 675; Goodrich F 151). The large volume of mass and suspension PVC homopolymer consumed in the wire and cable market is a result of its inherent flame retardancy, and its historical good performance in this end use (Dkt. 9159 CX 126C).

436. Moreover, as materials used in wire and cable jacketing and insulation are subject to building code approval, meeting the governing standard or specification is the primary purchasing criteria on the part of wire and cable producers (Dkt. 9159 CX 126Z1; Goodrich F 151). Many potential alternative materials lack building code acceptance (Dkt. 9159 CX 45Z; Goodrich F 151). [##] (Clark

CX 193B ¶ 2 *In Camera*; Disch Dkt. 9159, 675; Goodrich F 151 & n.30 at 44).

437. [##] (Goodrich, slip op. at 74; Clark CX 193D ¶ 5 *In Camera*). The single largest cost component is for the copper or aluminum conductor (Becker Dkt. 9159, 1305). PVC resin used in wire and cable applications is also compounded with additives and ingredients that give PVC its preferred properties. As a result, the cost of the PVC resin alone as a percentage of the cost of the wire and cable compound is most likely in the range of 30% to 50%, depending on the specification for the compound (Goodrich, slip op. at 74; Becker Dkt. 9159, 1305-07; *See* Goodrich F 151 & n.31 at 44).

438. Thus, demand for mass and suspension PVC homopolymer resin used in wire and cable applications is inelastic (*See* Goodrich, slip op. at 74).

(3) Packaging film and sheet

439. [##] (Goodrich F 152; *See* Dkt. 9159 CX 591J-K *In Camera*; Dkt. 9159 CX 581A *In Camera*; Dkt. 9159 CX 428Z100. *See also* Disch Dkt. 9159, 663; Dkt. 9159 RX 206A *In Camera*; Dkt. 9159, RX 145LZ32, Z57 *In Camera*). [##] (Dkt. 9159 CX 581A-D *In Camera*; Dkt. 9159 CX 45P; Dkt. 9159 CX 591K *In Camera*; *See* Goodrich F 152; *See also* Disch Dkt. 9159, 679; Becker Dkt. 9159, 1307). [##] (Dkt. 9159 CX 581A-D *In Camera*; Dkt. 9159 CX 45P; Goodrich F 152; *See also* Dkt. 9159 CX 428Z75-Z76; Dkt. 9159 CX 444D). [##] (Becker Dkt. 9159, 1321-25; Dkt. 9159 CX 428Z76; Dkt. 9159 CX 444D; Goodrich F 152; *See also* Dkt. 9159 CX 581D-E, H *In Camera*), [##] (Dkt. 9159 CX 581H-J *In Camera*; Dkt. 9159 RX 145Z30 *In Camera*; Goodrich F 152).

440. [##] (Dkt. 9159 CX 45H; Dkt. 9159 RX 145Z29 *In Camera*; Goodrich F 152). [##] (Disch Dkt. 9159, 679; Becker Dkt. 9159, 1308; McMath Dkt. 9159, 1936; Dkt. 9159 CX 581B *In Camera*; Dkt. 9159 CX 45H; Dkt. 9159 RX 145Z29 *In Camera*; Goodrich F 152). Of particular importance in the packaging of fresh meat and produce is the ability of the packaging material to maintain the freshness of the product and to promote the product's appeal, both of which PVC film accomplishes as a result of its superior breathability characteristics and clarity (Becker Dkt. 9159, 1308, 1310-11;

McMath Dkt. 9159, 1936; Disch Dkt. 9159, 679; Goodrich F 152). [##] (Dkt. 9159 CX 581B *In Camera*; Dkt. 9159 CX 45H; Dkt. 9159 CX 92V; Dkt. 9159 CX 300Z9 *In Camera*; Dkt. 9159 RX 145Z29 *In Camera*; Goodrich F 152). PVC is also preferred for blister packs of non-food items because of its clarity, strength, and tear-resistant properties, and because it is easy to vacuum-form (Becker Dkt. 9159, 1322-24; McMath Dkt. 9159 1921; Goodrich F 152).

441. [##] (Dkt. 9159 CX 300Z9 *In Camera*; Goodrich F 153). [##] (Dkt. 9159 CX 300Z9 *In Camera*; Goodrich F 153), [##] (Becker Dkt. 9159, 1310-11; Disch Dkt. 9159, 680; McMath Dkt. 9159, 1936; Dkt. 9159 CX 300Z29 *In Camera*; Dkt. 9159 RX 39F; Goodrich F 153).

442. The overall demand for mass and suspension PVC homopolymer resin in packaging film and sheet applications is relatively insensitive to fluctuations in PVC resin price for a number of reasons (Becker Dkt. 9159, 1309; Disch Dkt. 9159, 680; *See* Goodrich F 153). First, a strong preference for PVC film and sheet exists in the applications for which it is used as a result of PVC's unique combination of properties (Disch Dkt. 9159, 680; Becker Dkt. 9159, 1309; Goodrich F 153). In addition, PVC is fairly well entrenched in the applications in which it is used because the packaging fabrication equipment has been developed based on PVC (Dkt. 9159 CX 444D; Goodrich F 153; *See also* McMath Dkt. 9159, 1936). [##] (RX 59 *In Camera*).

443. Thus, demand for mass and suspension PVC homopolymer resin used in packaging applications is relatively inelastic (Goodrich, slip op. at 74).

#### (4) Siding

444. Approximately 300 million pounds of mass and suspension PVC resin is consumed annually in the production of vinyl siding and accessories, accounting for about 5% of PVC consumption (Belt Dkt. 9159, 2065; Goodrich F 154; *See also* Disch Dkt. 9159, 664). Vinyl siding consists of extruded panels of compounded PVC resin used as exterior sheeting that is typically installed over the existing walls of a house (Belt Dkt. 9159, 1986-87; Goodrich F 154). Vinyl siding accessories consist of extruded products used to install the vinyl

siding, such as trim, corner posts, soffits and fascia board, and are typically sold in conjunction with the vinyl siding (Belt Dkt. 9159, 2000-01; Goodrich F 154; *See* Commission Physical Exhibit 14). [##](Belt Dkt. 9159, 2002; Dkt. 9159 CX 590B *In Camera*; Goodrich F 154). The remaining 5% to 10% of vinyl siding is sold into the new construction market, which includes both site-built and manufactured homes, such as mobile homes (Belt Dkt. 9159, 2002; Goodrich F 154).

445. Several distinct properties of vinyl siding have led to its increasing popularity. It is light weight and pliable, which makes it easy to install (RX 21G-H). [##] (RX 67C *In Camera*; RX 21G-H; Belt Dkt. 9159, 2010-11; Goodrich F 155). [##] (Belt Dkt. 9159, 2010-11, 1987-88; Dkt. 9159 CX 300Z8 *In Camera*; Dkt. 9159 CX 45H; Goodrich F 155).

446. [##] (Belt Dkt. 9159, 2004-05; Becker 1299; Dkt. 9159 CX 300Z8 *In Camera*; Goodrich F 156). [##] (RX 67C *In Camera*; RX 21G-H; Becker Dkt. 9159, 1299; Dkt. 9159 CX 300Z8 *In Camera*; Dkt. 9159 CX 454H; *See* Goodrich F 158). Vinyl siding has also displaced aluminum as a re-siding material as a result of a number of its superior properties. Unlike aluminum, vinyl siding does not dent and is thus easier to handle and install; vinyl siding is colored completely through the panel, unlike aluminum siding color which is painted on and easily scratched. Vinyl siding is less noisy than aluminum, and is more energy-efficient (RX 21G-H). [##] (Belt Dkt. 9159, 2011; Becker Dkt. 9159, 1299; Dkt. 9159 CX 300Z8 *In Camera*; *See* Goodrich F 157). Compared to steel siding, vinyl siding is much lighter, much easier to install, and generally superior as a siding product (RX 21G-H; Belt Dkt. 9159, 2011-12; *See* Goodrich F 159). [##] (Belt Dkt. 9159, 2011-12; Dkt. 9159 CX 590D *In Camera*; Goodrich F 159).

447. [##] (RX 67C; RX 21G-H; Belt Dkt. 9159, 2011; Dkt. 9159 CX 300Z8 *In Camera*; Goodrich F 160). [##]<sup>28</sup> (Belt Dkt. 9159,

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<sup>28</sup> (Belt 2007-08; CX 590C, *In Camera*; Goodrich F 160 & n.35 at 48). The alternative distribution channel consists of sales from the manufacturer to chain home centers or lumber yards to professional home remodelers or do-it-yourselfers (Belt 2007-08; Goodrich F 160 & n.35 at 48).

2017-18 *In Camera*; Goodrich F 160; *See also* Dkt. 9159 CX 588A-B).

448. The substantial price advantage that vinyl siding has over both aluminum and steel siding is generally acknowledged to be of a permanent nature, stemming from the greater energy costs involved in producing aluminum and steel (Belt Dkt. 9159, 2013-14; Becker Dkt. 9159, 1299-3000; Dkt. 9159 CX 588A-B; *See* Goodrich F 160). [##] (Becker Dkt. 9159, 1299-3000; Belt Dkt. 9159, 2014, 2020; Dkt. 9159 CX 590G, K *In Camera*; Goodrich F 161; *See also* Dkt. 9159 RX 70C *In Camera*; Dkt. 9159 RX 90G *In Camera*).

449. [##] (Belt Dkt. 9159, 2024-25, 1984 *In Camera*; Goodrich F 162). [##] (Belt Dkt. 9159, 2025 *In Camera*; Goodrich F 162; *See* generally Dkt. 9159 CX 559).

450. [##] (Belt Dkt. 9159, 2019; Becker Dkt. 9159, 1302; Dkt. 9159 CX 590K *In Camera*). [##] (Dkt. 9159 CX 590C *In Camera*). [##] (Dkt. 9159 CX 590D *In Camera*). [##] (Dkt. 9159 CX 590B *In Camera*). [##] (Dkt. 9159 CX 590C, G *In Camera*).

451. [##] (Becker Dkt. 9159, 1299-1302; *See* Goodrich F 164; *See also* Dkt. 9159 CX 168B *In Camera*; Dkt. 9159 CX 559).

452. In addition, fluctuations in the price of PVC resin are likely to have very little impact on the demand for vinyl siding because the cost of the PVC resin is only a very small portion of the total price of the installed siding product to the homeowner. To convert PVC resin to siding, the resin is first blended with a variety of additives and ingredients, such as titanium dioxide, impact modifiers, heat stabilizers, lubricants, and waxes, to form a compound (Belt Dkt. 9159, 1995; Becker Dkt. 9159, 1300-01; Goodrich F 163; Goodrich, slip op. at 74). [##] (Belt Dkt. 9159, 1995-96; Dkt. 9159 RX 90Z80 *In Camera*, Goodrich F 163). [##]<sup>29</sup> (Goodrich F 163; *See* Belt Dkt. 9159, 2026-27 *In Camera*; Dkt. 9159 CX 756Z59). [##] (Belt Dkt. 9159, 2017-28 *In Camera*, 1998; Dkt. 9159 CX 756 Z 59; Goodrich F.163). [##] (Belt Dkt. 9159, 2040-41 *In Camera*; Goodrich F 163). [##] (Belt Dkt. 9159, 2041 *In Camera*; Goodrich F 163). Thus, PVC

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<sup>29</sup> Most siding is sold on the basis of "squares", *i.e.*, 100 square feet (Belt 1995, 2004; Goodrich F 163 & n.37 at 50).

resin cost share is an insignificant percentage of the total installed cost of vinyl siding products (*See Goodrich, slip op. at 74*).

453. [##] (Belt Dkt. 9159, 2039 *In Camera*; Goodrich F 164). [##] (Belt Dkt. 9159, 2039-40 *In Camera*; Goodrich F 164; *See also* Belt Dkt. 9159, 2037-39 *In Camera*). [##] (Dkt. 9159 CX 168B *In Camera*; *See generally* Dkt. 9159 CX 590 *In Camera*).

(5) Bottles

454. [##] (Dkt. 9159 CX 158A; Goodrich F 169) [##] (Goodrich F 169; *See* Disch Dkt. 9159, 664; Dkt. 9159 RX 206A *In Camera*; Dkt. 9159 RX 145L, Z35 *In Camera*; Friedman JX 1, 161). [##] (Dkt. 9159 CX 158A-B; Dkt. 9159 CX 92X; Dkt. 9159 RX 145Z35 *In Camera*; Goodrich F 169; *See* Commission Physical Exhibits 1&2). Food-contact applications account for the remaining 25% for products such as cooking oil, vinegar, and mouthwash (Dkt. 9159 CX 158A-B; Goodrich F 169; *See* Commission Physical Exhibit 3).

455. [##] (Friedman CX 191B ¶ 5 *In Camera*; Disch Dkt. 9159, 665-67; Becker Dkt. 9159, 1317; Friedman JX 1, 114-15, 122-23; Dkt. 9159 CX 92X; Dkt. 9159 CX 158C; Goodrich F 170).

456. [##] (Disch Dkt. 9159, 667; Becker Dkt. 9159, 1318; Friedman JX 1, 123; Dkt. 9159 CX 157U *In Camera*; Goodrich F 171).

457. [##] (*See* Dkt. 9159 CX 158A; Dkt. 9159 CX 581K-L *In Camera*; Goodrich F 171). The BATF banned PVC as a liquor packaging material in 1975, and the FDA proposed a ban on PVC in all food-contact applications (Dkt. 9159 CX 158A; Goodrich F 171). [##] (*See* H. Wheeler Dkt. 9159, 1732-33; Dkt. 9159 CX 158A; Dkt. 9159 CX 581K-L *In Camera*; Dkt. 9159 CX 541K-L *In Camera*; Dkt. 9159 CX 157J *In Camera*; Goodrich F 171), [##] (Dkt. 9159 RX 145Z35 *In Camera*; Dkt. 9159 CX 581K *In Camera*; Goodrich F 171). In addition, public opinion resulting from regulations concerning the use of PVC in food-contact bottles is likely to continue to play a role as a demand factor for some time (Dkt. 9159 CX 45¶ -R; Goodrich F 171).

458. [##] (Friedman JX 1, 123-24, 147-48; Becker Dkt. 9159, 1317-18; Dkt. 9159 CX 300Z9 *In Camera*; Goodrich F 172). [##] (Dkt. 9159 CX 92X; *See also* Dkt. 9159 CX 541K-L *In Camera*).



[##] (Becker Dkt. 9159, 1317; Dkt. 9159 CX 541L *In Camera*). [##] (Dkt. 9159 CX 157U-V *In Camera*; *See* Goodrich F 173). [##] (Dkt. 9159 CX 157U-V *In Camera*; *See* Goodrich F 173). [##] (CX 109 *In Camera*). [##] (CX 120N *In Camera*).

459. [##] (Dkt. 9159 CX 158C; Dkt. 9159 CX 157V *In Camera*; *See* Goodrich F 174). [##] (Dkt. 9159 CX 158C; Dkt. 9159 CX 157U *In Camera*; Goodrich F 174). [##] (Becker Dkt. 9159, 1318; Dkt. 9159 CX 157U-V *In Camera*; Dkt. 9159 CX 158C; Goodrich F 174). [##] (Dkt. 9159 CX 158C; Dkt. 9159 CX 581F-G, H, K-L *In Camera*; Goodrich F 174).

460. [##] (CX 117A *In Camera*; *See* RX 150A *In Camera*). Thus, because of these advantages of PVC over PET, the demand for PVC relative to PVC is relatively inelastic.

461. Thus, demand for mass and suspension PVC homopolymer (in the bottle applications where it is used) is relatively insensitive to fluctuations in the price of PVC resin (Friedman JX 1, 118-21; Becker Dkt. 9159, 1319-20; Goodrich, slip op. at 73 & n.163; Goodrich F 177-78). One reason for this is that PVC is selected as a bottle material primarily on the basis of preferences for its physical properties (Dkt. 9159 CX 158B; Friedman JX 1, 116, 122-23; *See* Goodrich F 177). [##] (CX 120Q *In Camera*). [##] (Friedman CX 191B ¶ 5 *In Camera*). [##] (117A *In Camera*; CX 109 *In Camera*; RX 150A *In Camera*).

462. In addition, the unique demands made by PVC bottle manufacturers on PVC as a material to achieve its combined physical characteristics result in the addition of many ingredients such as impact modifiers, to produce the needed PVC bottle compound. As a result, PVC resin accounts for only a small portion, no more than 30% to 50%, of the cost of the PVC compound used to fabricate bottles (Becker Dkt. 9159, 1318-19; Friedman JX 1, 115; *See* Goodrich F 178). The process of fabricating the bottle adds more value and further reduces the significance of the cost share of the PVC resin in the final product to about 20% (Friedman JX 1, 116; *See* Goodrich F 178; Becker Dkt. 9159, 1319-20). Thus, fluctuations in the mass and suspension PVC homopolymer resin price alone have but a minimal effect on the total price of the finished bottle (Friedman JX 1, 118-121; *See* Goodrich F 177).

463. Finally, the ban by the BATF and the proposed ban by the FDA on the use of PVC as a material in food-contact bottle applications have had a profound effect on the demand for PVC in these applications for reasons wholly unrelated to changes in the price of PVC resin.

464. Thus, the demand for mass and suspension PVC homopolymer resin used in bottle applications is relatively inelastic (Friedman JX 1, 116, 118-21). [##] (Friedman CX 191B ¶ 5 *In Camera*). Thus, evidence in this record relating to the perceptions of those involved in the production of PVC bottles to the effect that the degree of competition between PVC and other materials is limited (evidence which was not available in *Goodrich*), shows that the demand for PVC in bottles is more inelastic than the Commission found in *Goodrich* (*Goodrich*, slip op. at 75).

(6) Windows

465. [##] (*Goodrich* F 179) [##]<sup>30</sup> [##]<sup>31</sup> [##] (*See* Belt Dkt. 9159, 2053, 2065; Dkt. 9159 RX 145Z23, Z57 *In Camera*; Dkt. 9159 CX 591I *In Camera*; Dkt. 9159 CX 92Y; Dkt. 9159 RX 90Z73 *In Camera*; *Goodrich* F.180). [##] (Belt Dkt. 9159, 2050-51, 2057 *In Camera*; *See* Commission Physical Exhibits 5 & 15; *Goodrich* F 184 & n.39 at 56).

466. [##] (*See* Belt Dkt. 9159, 1977, 2052, Dkt. 9159 CX 92Y; Dkt. 9159 RX 90G *In Camera*; Dkt. 9159 RX 145Z23 *In Camera*; *Goodrich* F 180). [##] (Belt Dkt. 9159, 2052-53; Dkt. 9159 RX 145Z23 *In Camera*; *Goodrich* F 180).

467. [##] (Belt Dkt. 9159, 2047-48; RX 67D *In Camera*; Dkt. 9159 CX 92Y; *Goodrich* F 181). Windows can be the greatest source of heat loss in a home, apart from the attic (Belt Dkt. 9159, 2047;

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<sup>30</sup> Profile extrusions are rigid or flexible PVC resin compounds extruded into a particular shape and finished with downstream processes (*See, e.g.*, Disch 667-69; Belt 2049; Weber 1807; *See also* Commission Physical Exhibit 4). [##] (*See, e.g.*, Disch 667-69; Dkt. 9159 CX 92Y; Dkt. 9159 CX 45V; Dkt. 9159 RX 90Z73 *In Camera*; Dkt. 9159 RX 145Z57 *In Camera*).

<sup>31</sup> [##] (*See* Dkt. 9159 RX 145Z57 *In Camera*; Dkt. 9159 RX 90Z73 *In Camera*). [##] (*See* Dkt. 9159 CX 45V; Dkt. 9159 RX 145Z57 *In Camera*).

Goodrich F 181), and heightened energy-consciousness has created a strong demand for vinyl replacement windows to improve thermal efficiency, particularly in older homes (Belt Dkt. 9159 2047, 2051-52; Goodrich F 181). [##] (RX 67D *In Camera*; Dkt. 9159 CX 92Y; Dkt. 9159 CX 45V; *See* Goodrich F 182).

468. [##] (Dkt. 9159 CX 300Z8 *In Camera*; Goodrich F 182). [##] (RX 67D *In Camera*; Dkt. 9159 CX 45V; Dkt. 9159 CX 300Z8 *In Camera*; Goodrich F 182). [##] (RX 67D *In Camera*; Belt Dkt. 9159, 2062 *In Camera*; Dkt. 9159 CX 300Z8 *In Camera*; Dkt. 9159 CX 145Z23 *In Camera*; Goodrich F 182).

469. [##] (*See* Dkt. 9159 RX 90G, Z60 *In Camera*; Dkt. 9159 RX 837A-B *In Camera*; Goodrich F 183), [##] (Belt Dkt. 9159, 2062 *In Camera*; Dkt. 9159 CX 756Z118; Goodrich F 183),<sup>32</sup> [##] (Belt Dkt. 9159, 2062 *In Camera*; Dkt. 9159 CX 756Z118; Goodrich F 183). [##] (Belt Dkt. 9159, 2062 *In Camera*; *See* Goodrich F 183).

470. [##] (*See* Belt Dkt. 9159, 2057-61 *In Camera*; Dkt. 9159 CX 756Z118; Dkt. 9159 RX 90Z80 *In Camera*; Goodrich, slip op. at 13 & n.164, 74; Goodrich F 184). [##] (Belt Dkt. 9159, 2058 *In Camera*; Goodrich F 184). [##] (Belt Dkt. 9159, 2059-60 *In Camera*; Goodrich F 184). [##] (Belt Dkt. 9159, 2059-61 *In Camera*; Dkt. 9159 CX 756Z118; Goodrich F 184).

471. As a result of the strong demand for the superior properties of vinyl in a replacement window product, and because PVC resin cost is an insignificant factor in the price of an installed vinyl window to the ultimate purchaser, demand for mass and suspension PVC homopolymer resin in vinyl replacement windows is highly inelastic with respect to changes in the price of PVC resin (Belt Dkt. 9159, 2062-63; Goodrich, slip op. at 73 & n.164 *See* Goodrich F 184).

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<sup>32</sup> Vinyl replacement window fabricators are often the same distributor-dealers that handle other building products, such as vinyl siding (Belt 2050-51, 2054-55; Dkt. 9159 CX 756Z113, Z118-120). The vast majority of replacement windows are installed by home improvement contractors who buy directly from the fabricators (Belt 2054-55; Dkt. 9159 CX 756Z113).

## (7) Medical applications

472. [##] (Dkt. 9159 RX 145Z32 *In Camera*; Goodrich F 189), [##] (Dkt. 9159 RX 206A *In Camera*; Goodrich F 189). [##] (Dkt. 9159 RX 145Z30-231 *In Camera* Disch Dkt. 9159 676-77; Becker Dkt. 9159, 1309-12; Goodrich F 189; *See* Commission Physical Exhibits 10 & 11). [##] (Dkt. 9159 RX 145Z30-Z31 *In Camera*; Goodrich F 189). PVC also has FDA approval for medical applications (Disch Dkt. 9159, 676; Goodrich F 189). Even if another material were technically suitable for medical applications, it could not be used until all the necessary regulatory approvals had been obtained, a process which can take years (Disch Dkt. 9159, 678). As a result, the demand for mass and suspension PVC homopolymer in medical applications is highly insensitive to changes in the price of PVC resin (Disch Dkt. 9159, 677; Becker Dkt. 9159, 1312; Goodrich, slip op. at 74; Goodrich F 189).

## (8) Calendered products

473. Much of the remaining consumption of mass and suspension PVC homopolymer resin is accounted for by a wide variety of rigid and flexible calendered products<sup>33</sup> (*See* Dkt. 9159 CX 45W-Y, Z-Z2, Z3-Z4; Dkt. 9159 CX 428Z100; Dkt. 9159 RX 1325Z65-Z86; Disch Dkt. 9159, 663; Goodrich F 190). End use applications for rigid calendered PVC sheet include decorative laminates and credit card stock (H. Wheeler Dkt. 9159, 1728, 1753; Dkt. 9159 RX 1325Z85-Z86; Goodrich F 190). [##] (Donnelly CX 176E-F ¶ 6 *In Camera*; H. Wheeler Dkt. 9159, 1727-28; Becker Dkt. 9159, 1323-14; DiLiddo Dkt. 9159, 3375-79; Dkt. 9159 CX 45W-Y, Z-Z2, Z3-Z4; Goodrich F 190; *See* Commission Physical Exhibits 16 & 17).

474. The versatility of mass and suspension PVC homopolymer resin as a material is well-illustrated by the broad range of calendered products in which it finds application. The wide use of PVC resin is

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<sup>33</sup> A calendered product is produced by a fabrication technique known as "calendering" in which large heated rolls are used to produce wide sheets of PVC material, which is later turned into a finished product (Becker 1312-13; DiLiddo 3376-77; Goodrich F 190 & n.40 at 58).

possible because, with the addition of compound additives and ingredients, it can be flexible or rigid, strong, tear-resistant, and easy to fabricate and color. PVC also has good printability properties (Becker Dkt. 9159, 1268, 1313-14; DiLiddo Dkt. 9159, 3376-77; Goodrich F 190; *See also* Disch Dkt. 9159, 665). Overall demand for vinyl calendered products is influenced primarily by the general state of economic activity, *i.e.*, the level of demand essentially moves as GNP moves, as opposed to changes in the price of PVC resin (H. Wheeler Dkt. 9159, 1754 Goodrich F 190).

475. [##] (*See* Dkt. 9159 CX 300Z9 *In Camera*; Goodrich F 191). [##] (Dkt. 9159 CX 300Z9 *In Camera*). As stated by Mr. Rodney Becker, former Sales and Marketing Manager for Diamond: "I think there was a time in the mid-seventies when most automotive upholstery was vinyl. That was a typical use . . . , whereas today if you buy a car, most people specify fabric as opposed to vinyl because fabric is more comfortable in the hot weather" (Becker Dkt. 9159, 1267; *See* Goodrich F 191). [##] (*See, e.g.*, Dkt. 9159 CX 45W-X: furniture upholstery, Z-Z2: apparel; Goodrich F 190-91; Donnelly CX 176E-F ¶ 6 *In Camera*), [##] (Becker Dkt. 9159, 1314; Goodrich F 191). [##] (Donnelly CX 176E ¶6).

476. [##] (*See, e.g.*, DiLiddo Dkt. 9159, 3376-79; Goodrich, slip op. at 73-74 & n.165; Goodrich F 193; Donnelly CX 176E-F ¶ 6 *In Camera*). For example, a typical shower curtain could have as much as 25 parts of plasticizer in it per 100 parts of PVC resin, *i.e.*, in a shower curtain weighing approximately 2 pounds, about ½ pound would be plasticizer and about 1½ pounds would be PVC resin by composition (DiLiddo Dkt. 9159, 3377-78; Goodrich F 193). At a PVC resin price of \$.30 per pound, the shower curtain might contain \$.45 worth of PVC resin. The retail price of vinyl shower curtains obviously varies with quality, design, packaging, and other factors. To illustrate the disparity between a possible retail price for a finished vinyl shower curtain and the cost of its PVC resin content, Commission Physical Exhibit 16, a vinyl shower curtain, carries a retail price of \$7.99 (DiLiddo Dkt. 9159, 3378; Goodrich, slip op. at 74; Goodrich F 193). Similarly, a vinyl shower cap weighing approximately 4 ounces might contain 3 ounces of PVC resin, amounting (at a PVC resin price of \$.30 per pound) to less than \$.08 worth of PVC resin in a vinyl shower cap that might retail for, say,

\$1.79 (DiLiddo Dkt. 9159, 3379; Goodrich, slip op. at 74; Goodrich F 193; *See* Commission Physical Exhibit 17).

477. Because the overall demand for PVC calendered products is influenced primarily by the general level of economic activity and by individual tastes and preferences, and because the cost product price can be insignificant, the demand for mass and suspension PVC homopolymer resin in the production of calendered products is relatively inelastic with respect to changes in the price of PVC resin (Becker Dkt. 9159, 1314-15; H. Wheeler Dkt. 9159, 1754).

*d. The record shows that overall demand for mass and suspension PVC homopolymer is inelastic*

478. The record shows that the demand for mass and suspension PVC homopolymer overall is inelastic with respect to changes in price (Kaserman Dkt. 9159, 2378-79; Goodrich, slip op. at 73-75).

479. The demand for mass and suspension PVC homopolymer is inelastic because mass and suspension PVC resins offer a unique package of performance properties. An Air Products document concludes that "PVC's unique properties insulate it from changes in relative price" (Dkt. 9159 RX 34Z2). The document further notes that energy price changes are overshadowed by PVC performance properties affecting PVC use (Dkt. 9159 RX 34Z1). [##] (Klass Dkt. 9159, 4117-19; *See also* DiLiddo Dkt. 9159, 3106-07; Dkt. 9159 CX 40Z3 *In Camera*; Dkt. 9159 CX 428E).

480. [##] (Dkt. 9159 CX 64V; Dkt. 9159 CX 51H *In Camera*; *See also* Dkt. 9159 CX 13L *In Camera*; Dkt. 9159 CX 14F, H, K *In Camera*), [##] (Dkt. 9159 CX 97C *In Camera*; *See also* Dkt. 9159 RX 1151; (Dkt. 9159 CX 186G *In Camera*; *See also* DiLiddo Dkt. 9159 3408-11: 10% PVC resin price increase for 1 year would cause little switching away from PVC and would be profitable).

481. Industry members recognize that alternative materials do not place a substantial constraint on the price of mass and suspension PVC homopolymer resin. Mr. Becker stated that, for the mass and suspension PVC homopolymer market overall, there was very little price sensitivity (Becker Dkt. 9159, 1325-26; *See* Goodrich, slip op. at 73-75 & n.167). [##] (Dkt. 9159 CX 297Z1-Z2 *In Camera*; Goodrich, slip op. at 75 & n.167; *See also* Weber Dkt. 9159,

1810-11). Mr. Schaefer stated that PVC is not a price elastic market (Schaefer Dkt. 9159, 1141; Goodrich, slip op. at 73-75 & n.168). [##] (Dkt. 9159 CX 295Z53-Z54 *In Camera*).

482. [##] (*See, e.g.,* DiLiddo Dkt. 9159, 3408-11; Dkt. 9159 CX 135D *In Camera*).

483. [##] (H. Wheeler Dkt. 9159, 1753-54; DiLiddo Dkt. 9159, 3255; Dkt. 9159 CX 297Z1-Z2 *In Camera*; Dkt. 9159 CX 298P; Dkt. 9159 CX 147B).

484. Industry members do not perceive a threat of displacement of mass and suspension PVC homopolymer by other products. Following its major strategy study in 1979, Goodrich concluded that "[d]espite a great deal of searching, we were unable to find any major threats to PVC" (Dkt. 9159 CX 53H). [##] (Dkt. 9159 CX 512C *In Camera*; *See also* Weber Dkt. 9159 1809-10; Dkt. 9159 CX 64V; Dkt. 9159 CX 200N *In Camera*; Dkt. 9159 RX 132C). The absence of competitive threats reflects the fact that other materials do not operate as close substitutes for mass and suspension PVC homopolymer.

485. Mass and suspension PVC homopolymer producers pay little attention to the prices of other materials in setting their prices for mass and suspension PVC homopolymer resin (McMath Dkt. 9159, 1913, 1926-27, 1930-35; Arp Dkt. 9159, 3558-59; Weber Dkt. 9159, 1810-11). The analysis of other materials that does take place is primarily in the nature of market research, used to identify potential new applications and project long-term demand growth. [##] (*See, e.g.,* DiLiddo Dkt. 9159, 3123-24, 3259-62; Dkt. 9159 RX 145A-Z62 *In Camera*; Dkt. 9159 RX 166A-R *In Camera*).

486. [##] (Schaefer Dkt. 9159, 1143; Disch Dkt. 9159, 714; Liao Dkt. 9159, 1544; *See* Dkt. 9159 CX 35A; Dkt. 9159 CX 575 *In Camera*; Dkt. 9159 RX 1015 *In Camera*). Overall, customers of mass and suspension PVC homopolymer are not significantly concerned about competition from other materials (Weber Dkt. 9159, 1810-11). This attitude reflects not only a lack of concern about competition from other materials but also indicates that demand for mass and suspension PVC homopolymer is inelastic.

487. Based upon his review of the record of Dkt. 9159 and the record compiled in the Commission's investigation of Occidental's acquisition of Tenneco Polymers up until April 1986, Dr. Kaserman

concluded that the demand for mass and suspension PVC homopolymer is inelastic (Kaserman Dkt. 9159, 2373-74; Kaserman JX 1, 254-70; *cf.* Klass Dkt. 9159, 4267).

### 3. Suspension PVC copolymer

#### a. Introduction

488. As demonstrated, *infra*, the fact that suspension PVC copolymer is a product market means that demand for suspension PVC copolymer is sufficiently inelastic so that firms could profit if they coordinated their actions and engaged in collusion. In other words, if suspension PVC copolymer firms increased price by a small but significant and nontransitory amount, the increase in profits due to the higher price would more than offset the decrease in profits due to lower sales. However, demand for suspension PVC copolymer is more inelastic than is sufficient for a finding that suspension PVC copolymer is a product market. Demand for suspension PVC copolymer is inelastic with respect to changes in price (Kaserman JX 1, 345 ln. 2-6; Kaserman Dkt. 9159, 2381). And respondents' economic expert, Dr. Barry Harris agrees with the assessment that the demand for suspension PVC copolymer is inelastic (Harris JX 1, 858 ln. 19-24).

489. On analysis, it is seen that the price elasticity of demand for suspension PVC copolymer is very low. First, there is very limited substitutability between suspension PVC copolymer and other input products, including suspension PVC homopolymer, in the manufacture of final products normally made from suspension PVC copolymer (Kaserman Dkt. 9159, 2376-77; Kaserman JX 1, 258 ln. 2-13). Second, the cost share of suspension PVC copolymer resin is only a portion of the cost of suspension PVC copolymer end-use products, and very often the proportion is low (Kaserman Dkt. 9159, 2375). Third, the elasticity of demand for final products made from suspension PVC copolymer is low (Kaserman Dkt. 9159, 2373-75). Because there is very limited substitutability between suspension PVC copolymer and other input products in the manufacture of final products, the price elasticity of demand for suspension PVC copolymer is necessarily lower than the price elasticity of demand for



the final products (Kaserman Dkt. 9159, 2377; *See* Klass Dkt. 9159, 4267). The price elasticity of demand for suspension PVC copolymer resin is significantly less than the price elasticity of demand for the final products because of the low cost share of suspension PVC copolymer in many final products.

*b. There is limited substitutability of other inputs for suspension PVC copolymer*

490. There is very limited substitution for suspension PVC copolymer resin in its major end-use applications, vinyl floor tile and records (*See* Goodrich, slip op. at 72; Kaserman Dkt. 9159, 2376-77). Generally, suspension PVC copolymer resin is the primary raw material input and imparts essential properties to the product (*See* Goodrich, slip op. at 72). [##] (*See* Goodrich, slip op. at 72; Weimar CX 192C ¶ 5 *In Camera*; Silver CX 190B *In Camera*; Marcus CX 209B ¶ 4 *In Camera*). Thus, substitution to either non-PVC materials or to PVC resins other than suspension copolymer resins in these end-use applications is limited.

*c. The cost share of suspension PVC copolymer in its end-use products is low*

491. Suspension PVC copolymer resins account for only a small portion of the cost of the finished products made from these resins (*See* Goodrich, slip op. at 72-74, 73 n.164). Value is added to the PVC resin at several stages in the production of the final PVC end product. First, all suspension PVC copolymer resins are compounded before they are processed (Disch Dkt. 9159, 655-56). Compounding involves mixing the resin with various additives, which may include heat and light stabilizers, impact modifiers, plasticizers, and pigments (Disch Dkt. 9159, 656-57). Second, suspension PVC copolymer compounds are converted into fabricated products through either a calendaring or compression-molding production process (Disch Dkt. 9159, 661-662). Once again, the value added varies with each of the copolymer products. The low cost share of suspension PVC copolymer resin in PVC end use products means that the demand for suspension PVC copolymer resin is significantly less elastic than the

demand for the products themselves (See Kaserman Dkt. 9159, 2375-78).

d. *The price elasticity of demand for suspension PVC copolymer end-use products is low*

492. As shown in the record, suspension PVC copolymer resin is used to make primarily two different major end-use products, vinyl floor tile and long-playing (LP) phonograph records. To a lesser degree, it is used in some calendered sheet applications, although this is a small and declining end-use application.

493. Suspension PVC copolymer products have specific properties that distinguish them from products made from other materials. As a result, suspension PVC copolymer products are often chosen on the basis of their properties, and not on the basis of changes in the price of the product. Second, where suspension PVC copolymer products are chosen because they offer a cost savings to the purchaser, the cost savings are often so substantial that the PVC product would still be far less expensive than alternative products, even if suspension PVC copolymer resin prices rose by a small but significant amount. Thus, customers would likely continue to purchase the PVC product even if suspension PVC copolymer resin prices would rise by a small but significant amount.

e. *The price elasticity of demand for suspension PVC copolymer in vinyl floor tile is low*

494. [##] (See Dkt. 9159 RX 145Z51 *In Camera*; Dkt. 9159 RX 90Z73 *In Camera*; Dkt. 9159 CX 591I *In Camera*; Dkt. 9159 CX 45P; See also Disch 672). [##] (Dkt. 9159 CX 300Z9 *In Camera*; Dkt. 9159 CX 450; See Commission Physical Exhibit 8).

495. [##] (Weimar CX 192B 4 *In Camera*; JX 3, PX 9 at 34 ln. 9-35 ln. 23; JX 3, PX 136 at 57 ln. 2-7). Copolymer resin, which can be blended with other ingredients and melts at relatively low temperatures, "wets out" the filler material (Weimar JX 1, 31 ln. 21-32 ln. 1; Barlet JX 1, 56 ln. 22-57 ln. 7). Suspension PVC copolymer resin is thus a necessary raw material in the manufacture of vinyl composition tile.

496. Suspension PVC homopolymer does not melt as easily as does copolymer. At lower temperatures, therefore, it does not "wet out" the filler, and thus does not provide the same binding properties. As a result, the substitution of more than small amounts of homopolymer for copolymer in the vinyl composition tile production process would require that more PVC and less filler be used, or that the PVC be blended for longer periods of time at substantially higher temperatures. In either case, the manufacturing cost of the tile is likely to be substantially higher (Weimar JX 1, 32 ln. 9-33 ln. 9; Barlet JX 1, 58 ln. 13-59 ln. 2; *See* JX 3, PX 136 at 57 ln. 23-58 ln. 10; JX 3, JX 9 at 35 ln. 24-36 ln. 17; JX 3, PX 8 at 24 ln. 6-25 ln. 5).

497. Some vinyl composition or resilient tile manufacturers use small amounts of homopolymer in their products. Armstrong, the largest manufacturer of vinyl composition or resilient tile, uses some homopolymer in its flooring products. It uses a much more significant amount of copolymer (Barlet JX 1, 58 ln. 5-12). Armstrong has added homopolymer to its tile products in order to obtain certain desirable properties in the tile, not to obtain a lower production cost (Barlet JX 1, 77 ln. 15-18). Indeed, because using homopolymer resin would require more production effort, in terms of the amount of heat required and the length of the mixing times, it would slow down the production process and reduce the rate of output of the flooring plant, potentially resulting in significantly higher overall production costs (Barlet JX 1, 58 ln. 5 - 59 ln. 2, 62 ln. 7-21; *See* JX 3, PX 136 57 ln. 23 - 58 ln. 10). Thus, Armstrong is at the limit in terms of the amount of suspension PVC homopolymer that it can use in its production of vinyl composition tile (Barlet JX 1, 58 ln. 5-19). [##] (Barlet JX 1, 62 ln. 22-25, 73 ln. 7-13 *In Camera*).

498. [##] (Marcus CX 209B ¶ 4 *In Camera*).

499. [##] (Rawlins CX 197B-C ¶ 4 *In Camera*; Rawlins RX 248B-C ¶ 5 *In Camera*). [##] (Rawlins CX 197B ¶ 4 *In Camera*; Rawlins RX 248B-C ¶ 5 *In Camera*). [##] (Rawlins CX 197B-C ¶ 4 *In Camera*).

500. [##] (Rawlins RX 248C ¶ 6-7 *In Camera*). Mr. Barlet similarly testified that Armstrong has done and continues to do research regarding its tile products, and that, among the many possible developments in its products, there could one day be changes in the composition of its tile products (Barlet JX 1, 78 ln.

5-19 ln. 1). [##] (Weimar CX 192B ¶ 4 *In Camera*; Barlet JX 1, 62 ln. 22-25; Rawlins CX 197B ¶ 3 *In Camera*).

501. [##] (Weimar JX 1, 32 ln. 3-5; Weimar CX 192C ¶ 5 *In Camera*; Barlet JX 1, 62 ln. 22-25, 73 ln. 7-13 *In Camera*; Rawlins CX 197B-C ¶ 4 *In Camera*; JX 3, PX 136 at 60 ln. 21-61 ln. 10).

502. Today, nearly all floor tiles are made out of vinyl, although a small amount of asphalt tile is still produced (Goodrich F 165; Disch Dkt. 9159, 673; Dkt. 9159 CX 450). [##] (Goodrich F 166; Disch Dkt. 9159, 673; Dkt. 9159 CX 300Z9 *In Camera*). [##] (JX 3, PX 4 F 166; Weimar CX 192F-G ¶ 15 *In Camera*, CX 192G-H ¶ 17 *In Camera*; Dkt. 9159 CX 300Z9 *In Camera*; Dkt. 9159 RX 51C *In Camera*). [##] (compare JX 1, Barlet 66 ln. 15-21 with Barlet JX 1, 60 ln. 7-14), [##] (Weimar CX 192G-H ¶ 17 *In Camera*). [##] (Weimar CX 192G-H ¶ 17 *In Camera*).

503. [##] (Goodrich F 167). [##] (Goodrich F 167; Dkt. 9159 CX 450P; Dkt. 9159 CX 756Z76; Dkt. 9159 RX 51C *In Camera*; JX 3, PX 136 at 105 ln. 13-22). [##] (Disch Dkt. 9159, 673; Dkt. 9159 RX 145Z49 *In Camera*; Dkt. 9159 CX 300Z9 *In Camera*). [##] (Weimar CX 192F-H ¶ 15-17 *In Camera*). [##] (Dkt. 9159 CX 300Z9 *In Camera*). While carpeting has aesthetic advantages over vinyl tile, it is not as good a product for kitchens, bathrooms, and other hard use areas in the home (Goodrich F 167; Dkt. 9159 CX 756Z76).

504. The price of suspension PVC copolymer resin as a component of the cost of a finished floor tile is relatively small. About 15% to 20% of the composition of a vinyl floor tile is accounted for by PVC resin content. The rest of the tile consists of fillers, calcium carbonate, and other ingredients (Goodrich F 168; Disch Dkt. 9159, 672). Colors are added, and designs and patterns are embossed or engraved on the tile, which further increases the value of the tile product relative to the cost of PVC resin (Disch Dkt. 9159, 672-73). As explained by Mr. Disch: "The price of the resin going into the tile is about 40 cents a pound. It is 15 percent, 20 percent, you are talking 6 to 8 cents of resin within a volume of tile" (Disch Dkt. 9159, 673; Barlet JX 1, 60 ln. 7-23; Weimar JX 1, 35 ln. 3-16).

505. Because of the limited potential for substitution of suspension PVC homopolymer for suspension PVC copolymer in vinyl floor tiles, because vinyl floor tiles are selected primarily on the basis of

individual tastes and preferences, and because the cost of PVC resin is a small factor in the price of a finished vinyl tile product, the demand for suspension PVC copolymer resin in floor tiles is inelastic (*See* Goodrich, slip op. at 74; Weimar JX 1, 42 ln. 1-4; JX 3, PX 8 at 29 ln. 7-ln. 14; JX 3, PX 136 at 75 ln. 23 - 76 ln. 3).

f. *The price elasticity of demand for suspension  
PVC copolymer in LP records is low*

506. Phonograph records account for a large percentage of United States suspension PVC copolymer consumption (JX 3, PX 8 at 18 ln. 1-5). Phonograph records are produced by the compression-molding of suspension PVC copolymer resin (Disch Dkt. 9159, 678; *See* Dkt. 9159 Commission Physical Exhibit 13).

507. [##] (Goodrich F 186; Hill CX 183E ¶ 13 *In Camera*; Dkt. 9159 CX 45Z4). [##] (Goodrich F 186, 187; Hill CX 183E ¶ 13 *In Camera* JX 3, PX 8 at 13 ln. 6-21; JX 3, JX 9 at 33 ln. 15-22; JX 3, PX 11 at 678 ln. 2-16; JX 3, PX 136 at 56 ln. 18-23; Disch Dkt. 9159, 678; Dkt. 9159 CX 300Z10 *In Camera*). [##] (Hill CX 183E ¶ 14 *In Camera*; JX 3, PX 8 at 13 ln. 6-21; JX 3, JX 9 at 37 ln. 25-38 ln. 7; JX 3, PX 11 at 678 ln. 17-679 ln. 1; JX 3, PX 136 at 56 ln. 24 - 57 ln. 1; *See also* CX 119S-T *In Camera*; Silver CX 190B *In Camera*). Polystyrene has sometimes been used in low-priced applications, such as children's records, where sound quality is not an important factor (Goodrich F 187; Disch Dkt. 9159, 678; Dkt. 9159 CX 45Z4). [##] (Goodrich F 187; CX 119S-T *In Camera*; Hill CX 183E ¶ 14 *In Camera*). Thus, for example, Mr. Schaefer of Occidental has testified that, to his knowledge, there are no substitutes for suspension PVC copolymer resin in record-pressing (JX 3, PX 136 at 56 ln. 24 - 57 ln. 1).

508. Because of the need to use suspension PVC copolymer resin in the manufacture of records, significant increases in the price of copolymer resin would not cause record pressers to shift, in their production processes, from copolymer to either homopolymer or polystyrene (JX 3, PX 136 at 56 ln. 24-57 ln. 1; JX 3, PX 8 at 22 ln. 25-23 ln. 25; JX 3, JX 9 at 42 ln. 17-25).

509. [##] (JX 3, PX 8 at 26 ln. 15-27 ln. 11; JX 3, JX 9 at 40 ln. 20-41 ln. 8; Schaefer JX 3, PX 11 at 678 ln. 10-16; JX 3, PX 136 at

65 ln. 25-66 ln. 9; Disch Dkt. 9159, 678). [##] (Hill CX 183E-F ¶ 15 *In Camera*; JX 3, PX 8 at 27 ln. 1-7). [##] (Hill CX 183E-F ¶ 15 *In Camera*; JX 3, PX 8 at 27 ln. 1-11). [##] (Hill CX 183E-F ¶ 15 *In Camera*).

510. [##] (Hill CX 183F ¶ 16 *In Camera*; JX 3, PX 8 at 18 ln. 16-22; JX 3, JX 9 at 43 ln. 1-7). [##] (Hill CX 183F ¶ 16 *In Camera*). Because it is such a small component of the cost of a record, however, an increase in the price of copolymer resin would not have any substantial effect on the demand for records relative to other PVC sound reproduction products (JX 3, PX 8 at 28 ln. 21-29 ln. 6; JX 3, JX 9 at 42 ln. 12-43 ln. 11; Schaefer JX 3, PX 11 at 679 ln. 2-5; JX 3, PX 136 at 75 ln. 23-76 ln. 3; Disch Dkt. 9159, 679). Thus, as the Commission concluded in *Goodrich*, the demand for suspension PVC copolymer resin in records is definitely inelastic (*See Goodrich*, slip op. at 74).

*g. Summary of the elasticity of suspension PVC copolymer end products*

511. In the two major applications in which it is used, suspension PVC copolymer resin provides distinct performance properties that are important factors affecting its selection as a material, and that tend to make demand for copolymer in these end-use products relatively price inelastic (Kaserman Dkt. 9159, 2373-74; *See Goodrich*, slip op. at 72). The record also shows that purchasers of the finished products in which suspension PVC copolymer is used tend to select products largely on the basis of non-price considerations such as individual tastes and preferences. In applications where finished products are selected largely on the basis of considerations other than price, changes in suspension PVC copolymer resin prices do not impact the volume of suspension PVC copolymer consumed, and demand for suspension PVC copolymer in these applications is therefore price inelastic. Finally, in records and floor tile, copolymer resin provides such a substantial cost advantage over alternative materials and the cost of the resin is such a small component of the total finished product price, that changes in the price of the resin have little or no impact on the volume of finished products. As a result, the price of suspension PVC copolymer resin can be raised significantly with no resulting substantial threat of

substitution. Thus, demand for end-use products made from suspension PVC copolymer resin is relatively price inelastic (Kaserman Dkt. 9159, 2313-75).

h. *The record shows that overall demand for  
suspension PVC copolymer is inelastic*

512. The record shows that the demand for suspension PVC copolymer overall is inelastic with respect to changes in price. Both complaint counsel's and respondents' economic experts have so concluded (Kaserman JX 1, 261 ln. 21 - 262 ln. 2; Harris JX 1, 858 ln. 19 - 859 ln. 2).

513. Industry members recognize that the existence of alternative materials does place a substantial constraint on the price of suspension PVC copolymer resin.

514. Occidental recognized, at the time of the acquisition, that the reduction in the number of suppliers of suspension PVC copolymer resin had the potential to significantly increase profits (JX 3, PX 12).

515. [##] (H. Wheeler Dkt. 9159, 1753-54; DiLiddo Dkt. 9159, 3255; Dkt. 9159 CX 297Z1-Z2 *In Camera*; Dkt. 9159 CX 298P; Dkt. 9159 CX 147B).

516. Suspension PVC copolymer producers pay little attention to the prices of other materials in setting their prices for suspension PVC copolymer resin (JX 3, PX 8 at 31 ln. 21 - 32 ln. 2; JX 3, JX 9 at 26 ln. 14-20; Flammer CX 184E ¶ 9).

i. *Conclusion*

517. Accordingly, it must be found that the demand for suspension PVC copolymer is inelastic. Because suspension PVC copolymer is an intermediate product, the elasticity of demand is a function of: (1) the ability of users of the PVC resin (*i.e.*, fabricators) to substitute other inputs for PVC; (2) the cost share of suspension PVC copolymer resin in the end products in which it is used; and (3) the extent to which users of suspension PVC copolymer products switch to products made from alternative materials in response to changes in the price of PVC copolymer products. The record shows that: (1)

there is no ability of suspension PVC copolymer resin users to employ other materials as an input; (2) the cost share of suspension PVC copolymer is only a relatively small portion of the cost of the products in which it is used; and (3) products made of alternative materials are not close substitutes for suspension PVC copolymer end-use products. As a result of (3), the demand for suspension PVC copolymer end-use products is inelastic. As a result of (1) and (2), the demand for suspension PVC copolymer resin is even less elastic than its end-use products.

518. The fact that demand for suspension PVC copolymer is highly inelastic means that, if industry members collude and raise prices, they would substantially increase their level of profitability. Accordingly, the low price elasticity of demand for suspension PVC copolymer provides producers with both the incentive and the ability to exercise market power.

519. As the record demonstrates, suspension PVC copolymer firms could exercise market power in various ways without significantly affecting the demand for suspension PVC copolymer. Firms could raise prices by a small but significant amount (5-10%) above prices presently in effect, with essentially no product substitutions occurring. And, in fact, firms could raise prices substantially higher than that, before the degree of substitution would make further price increases unprofitable.

#### 4. Dispersion PVC resin

##### a. *Introduction*

520. [##] (Kaserman JX 1, 345; JX 3, PX 136 at 67, 75-76; van Haaren CX 187E ¶ 15 *In Camera*; Boulay CX 189D ¶ 10-11 *In Camera* JX 3, PX 8 at 38-39; JX 3, JX 9 at 55). The price inelasticity of dispersion PVC resin demand provides further incentive for producers to collude (Kaserman JX 1, 260, 270, 345; Kaserman Dkt. 9159, 2353-55, 2381).

521. Because dispersion PVC is an intermediate (or input) product, the price elasticity of demand for dispersion PVC may be assessed by examining: (1) the ease of substitutability between dispersion PVC and other inputs in the production of the final



products; (2) the cost share of dispersion PVC in the production of the final products; and (3) the price elasticity of demand for the final products produced from dispersion PVC (*See* Kaserman JX 1, 260, 270; Goodrich slip op. at 72; Kaserman Dkt. 9159, 2370-71).

b. *There is limited substitutability of other inputs for dispersion PVC*

522. [##] (JX 3, PX 8 at 33, 39-40; Boulay CX 189B-C ¶¶ 3-5 *In Camera*; van Haaren CX 187B-C ¶¶ 6-7 *In Camera*).

523. [##] (*Id.*). [##] (*See, e.g.,* Hill CX 183F-G ¶ 17 *In Camera*; Flammer CX 184B-F; ¶¶ 4-8, 10; Boyer CX 185B-F ¶¶ 3-9, 11). Thus, substitution of other materials, including PVC resins other than dispersion PVC in most end-use applications is severely limited.

c. *The cost share of dispersion PVC in its end-use products is low*

524. [##] (*See* Lore JX 1, 180, 183-84; Mason JX 1, 194-95; Boulay CX 189B ¶¶ 3-5 *In Camera*; JX 3, PX 8 at 39-40, 95-96; JX 3, PX 136 67, 75-76).

525. Value is added to the dispersion PVC resin by the addition of blending PVC resin, plasticizers, stabilizers, and additives before processing (*See, e.g.,* Boyer CX 185B-D ¶ 3-8). [##] (Lore JX 1, 177, 179; Mason JX 1, 192; Barlet JX 1, 62-64; JX 3, JX 9 at 15, 97-98, 104-05. *See* Hill CX 183F-G *In Camera* ¶ 17).

526. Generally, the dispersion PVC resin is blended with a small portion of blending PVC resin, a specialty suspension PVC resin, to impart the necessary properties for each end-use product.

527. Various methods of applying dispersion PVC resin to an end product add further value to the end product. For instance, dispersion PVC resin can be applied to sheet floors and vinyl backed carpet tile by knife coating or reverse roll coating (*See* JX 3, PX 9 at 97-98; Mason JX 1, 192). Reverse roll coating is generally the preferred method for applying vinyl dispersion PVC to cans and sealants (*See* Lore JX 1, 177, 179). Molding applications, including dip molding or rotational molding, use a dispersion PVC paste plastisol or organisol to produce products such as beach balls, tool handles, and dish drainers. Slush molding is also a method of applying a dispersion PVC resin formulation to a molded form (*See*

Lore JX 1, 179; JX 3, JX 9 at 104-05). Each of these dispersion PVC fabrication processes adds value to the final product. These necessary steps for processing dispersion PVC pastes or emulsions insure that the cost share of the dispersion PVC in the final product remains low.

528. The low cost share of dispersion PVC resin in dispersion PVC end use products means that the demand for dispersion PVC resin is significantly less elastic than the demand for the end products themselves (*See* Kaserman Dkt. 9159, 2375-78).

d. *The price elasticity of demand for dispersion  
PVC resin end products is low*

529. [##] (*See, e.g.*, JX 3, PX 138; Baker CX 205A-B ¶ 1-2; van Haaren CX 187A-B ¶ 2 *In Camera*; JX 3, PX 8 at 38-45; Barlet JX 1, 66 ln.22-67 ln.10; Beveridge JX 1, 80-81; Lore JX 1, 177-80; Mason JX 1, 192, 194-95; Boulay CX 189A-B ¶ 1-3 *In Camera*).

530. Dispersion PVC products generally have specific properties that distinguish them from products made from other materials. As a result, dispersion PVC products are often chosen on the basis of their properties and not on the basis of changes in the price of the product. Second, where dispersion PVC products are chosen because they offer a cost savings to the purchaser, the cost savings are sufficiently substantial that the dispersion PVC product would still be less expensive than alternative products, even if dispersion PVC resin prices rose by a small but significant amount. And the record shows that customers would continue to purchase dispersion PVC products even if dispersion PVC prices would rise by a small but significant amount.

e. *Vinyl resilient sheet flooring*

531. Consumers choose flooring for kitchens based on personal preferences. One of the more widely used coverings in a kitchen is vinyl resilient sheet flooring, made with dispersion PVC resin. Vinyl resilient sheet flooring accounts for about 33% to 40% of the consumption of dispersion PVC resin (JX 3, PX 138; Kaserman JX 1, 268; JX 3, PX 8 at 39-40).

532. [##] (*See* van Haaren CX 187C ¶ 7 *In Camera*). A 5-percent increase in the price of dispersion PVC resin would not lead consumers to substitute other flooring products or purchase fewer sheet floors (JX 3, PX 8 at 39). Therefore, the elasticity of demand for vinyl resilient sheet flooring remains low because consumers choose it because of superior properties and personal preference.

533. Additionally, the vinyl dispersion PVC sheet floor is sold to wholesalers at a cost of approximately \$3.50 to \$9.50 a square yard (Barlet JX 1, 66). The value of the dispersion PVC in this formulation accounts for no more than 10% of the value of the vinyl sheet floor. Many sheet floors sell for a price of between \$12 and \$25 a square yard (JX 3, PX 8, 38-40). [##] (*See* Barlet JX 1, 66 ln. 22-67 ln. 8, 68; Kaserman JX 1, 268 ln. 15-20; JX 3, PX 8 at 38 ln. 10-39 ln. 14; van Haaren CX 187C-D ¶ 7, 9-10 *In Camera*; Beveridge JX 1, 80-81). Therefore, a 5-percent increase in the price of dispersion PVC would increase the cost of a vinyl sheet floor by far less than 0.5%, and have essentially no effect on the level of consumption of dispersion PVC in vinyl sheet floors (JX 3, PX 8 at 39).

f. *Molding end-use segments*

534. Major molding end-use segments for dispersion PVC face a low elasticity of demand (Kaserman JX 1, 266 ln. 19-267 ln. 15; 268 ln. 15-20). Can coatings, seals, bottlecap closures, and adhesives and sealants account for about 50% of the dispersion PVC consumed in molding applications, or about 16% of all dispersion PVC consumed in the United States. Vinyl automotive products account for about 7% of all dispersion PVC consumed in the United States (Kaserman JX 1, 266 ln. 19-267 ln. 15; 268 ln. 15-20; *See* JX 3, PX 6 at 44 ln. 2-18, 45 ln. 18-21; JX 3, JX 9 at 95 ln. 8-10; JX 3, PX 138).

(1) *Automotive applications*

535. [##] (Boulay CX 189B-C ¶ 3-5 *In Camera*). [##] (Boulay CX 189D ¶ 11 *In Camera*; Goodrich F 192; Becker 1267-68).

536. [##] (Boulay CX 189D ¶ 11 *In Camera*). [##] (*Id.*). [##] (Boulay CX 189D ¶ 11 *In Camera*).

537. [##] (Boulay CX 189B ¶ 3 *In Camera*). [##] (*Id.*). [##] (*Id.*). [##] (Boulay CX 1898, C, D ¶ 3, 6, 11 *In Camera*; *See* Kaserman JX 1, 268 ln. 15-20).

(2) Vinyl dispersion coating

538. Vinyl dispersion coating principally consists of dispersion PVC resin, but contains additives such as pigments, stabilizers, and solvents (Lore JX 1, 177, 179-80). Vinyl dispersion coating, used for coating cans or sealing gaskets inside bottle caps, offers the attractive feature of costing less money than substitute plastic resins, and creating less air pollution than potential substitute materials (Lore JX 1, 180, 183-84; *See* JX 3, JX 9 at 103-04).

539. Vinyl dispersion coating costs approximately \$12 a gallon, of which only \$3 to \$4 consists of the cost of dispersion PVC resin (Lore JX 1, 183-84). Vinyl dispersion coating has found a niche where it is strongly preferred by purchasers (Lore JX 1, 180).

540. Therefore, a 5-percent increase in the price of dispersion PVC resin would lead to a price increase of between \$.15 and \$.20 a gallon for vinyl dispersion PVC coating (Lore JX 1, 183 ln. 16-184 ln. 4, 184 ln. 24-185 ln. 14). This small increase is not likely to affect the amount of finished cans or sealants or vinyl coated bottle caps sold, and will not affect the level of demand for dispersion PVC in vinyl dispersion coatings (Lore JX 1, 180, 182, 183 ln. 16-184 ln. 4, 184 ln. 24-185 ln. 14; *See* Kaserman JX 1, 268 ln. 13-20.).

g. *Vinyl backed carpet tile*

541. Vinyl backed carpet tile, produced through a roll coating process, accounts for consumption of about 14 million pounds of dispersion PVC annually, or over 10 percent of dispersion PVC resin used in all coating applications (JX 3, PX 138; Mason JX 1, 192). Vinyl backing for carpet tiles, accounts for approximately 3.2% of all dispersion PVC consumed in the United States (JX 3, PX 138, Kaserman JX 1, 268).

542. Vinyl backed carpet tile is used in commercial applications, such as the flooring for offices. The unique physical properties of vinyl-backed carpet tile allow it to retain a stable share of the

commercial flooring market (Mason JX 1, 192; JX 3, JX 9 at 95; JX 3, PX 8 at 35). The dispersion PVC resin accounts for about 20% of the cost of the vinyl-backing used for carpet tile (Mason JX 1, 194-95). Fixed proportions of the dispersion PVC resin formulation are required to maintain the essential properties needed for dispersion PVC-based carpet tiles.

543. Because vinyl backing costs about \$3.50 to \$4.75 a square yard, a 10-percent increase in the price of dispersion PVC resin would raise costs only 3.5 cents to 5 cents a square yard (Mason JX 1, 194-95). Because of the additional value added in transforming the vinyl-backing into finished carpet tile, the corresponding increase in the price of finished vinyl-backed carpet tile would proportionately be substantially less than the increase in the vinyl-backing.

544. Consequently, a 10-percent increase in the price of dispersion PVC would lead to very little loss of sales to alternative carpet tiles, because of the preferred physical characteristics and the low cost share accounted for by dispersion PVC resin in vinyl-backed carpet tile. Therefore, demand in this end-use segment would be relatively insensitive to price changes (Mason JX 1, 192-94, 195 ln. 23-196 ln. 1; Kaserman 268 ln. 13-20).

h. *Coated fabrics*

545. Coated fabrics accounted for almost 25% of dispersion PVC resin consumption prior to the acquisition (Kaserman JX 1, 266 ln. 19-267 ln. 15; JX 3, PX 8 at 43 ln. 16-23). The coated fabric business in the United States has been declining, however, due to a shift away from coated fabrics in automobiles and to imports of apparel products (Goodrich F 192; Becker Dkt. 9159, 1267-68; JX 3, PX 8 at 39-40, 95). Therefore, less dispersion PVC is presently being used in fabric coating (JX 3, PX 8 at 39-40, 95; JX 3, PX 9 at 94). The market for vinyl-backed carpet tile coating applications previously discussed, has not declined.

546. Industry observers acknowledge that the price of dispersion PVC resin has had no impact on the level of imports of finished apparel goods entering this country from the Far East (JX 3, PX 8 at 95; JX 3, JX 9 at 94), and has had no impact on customers' selection of cloth seats over vinyl in new automobiles (Goodrich F 192; Becker

Dkt. 9159, 1267-68). Mr. Disch observed that "large modern capacity has been built overseas to produce coated fabrics, Far East and other places, so I think there is that urgency to move it here" (JX 3, PX 8 at 95). Therefore, a 10-percent increase or decrease in the price of dispersion PVC would not likely affect the level of imports of finished, imported goods (JX 3, PX 8 at 95, 39-40; *See* JX 3, JX 9 at 103).

i. *Overall assessment*

547. Dr. Kaserman observed that: (1) Customers of dispersion PVC cannot vary the proportions of dispersion PVC resin or substitute other raw materials for dispersion PVC; (2) there are few fabricated substitute products to make significant inroads into the use of dispersion PVC-based products; and (3) the cost share of dispersion PVC resin does not account for more than 30% of the cost of any of the dispersion PVC end-uses (Kaserman JX 1, 267 ln. 16-269 ln. 18). Therefore, Dr. Kaserman concluded, a small but sustained nontransitory price increase of 5-percent will probably not affect the demand for dispersion PVC based end products (Kaserman JX 1, 267 ln. 16-269 ln. 18).

548. Due to the inability of most users of dispersion PVC resin to substitute other raw materials for dispersion PVC, the low elasticity of demand for dispersion PVC based finished goods, the inability of other fabricated products to make significant inroads into the sale of dispersion based PVC end products, and the small cost share of finished dispersion based PVC end products accounted for by dispersion PVC resin, a 5-percent price increase is unlikely to significantly affect the level of demand for dispersion PVC finished products, and would have little effect on the level of demand for dispersion PVC (JX 3, PX 136 at 67, 75-76; Kaserman JX 1, 267 ln. 16-269 ln. 18; *See* JX 3, JX 9 at 103).

*B. The Homogeneity of PVC Resins Facilitates Price  
Coordination in Each of the Relevant PVC Markets*

549. In Goodrich, the Commission found, in contrast to VCM, that mass and suspension PVC resins are "relatively heterogeneous"<sup>34</sup> (Goodrich, slip op. at 113). The Commission concluded, on the basis of the record in Goodrich, that the higher degree of heterogeneity of PVC, together with other factors, could make collusion more difficult at the marginal level of moderate concentration presented in Goodrich.

550. Economists generally classify products as either homogeneous or differentiated (Kaserman Dkt. 9159, 2410). If a product is relatively homogeneous, the purchasers of the product view the output of the different firms as being equivalent (Kaserman Dkt. 9159, 2410). They do not value the output of one firm much higher than they value the output of another firm. If the product is differentiated, one firm's output has a much higher value to the consumer than another firm's output (Kaserman Dkt. 9159, 2410). Product homogeneity may also be affected by the extent to which products change over time, the degree to which pricing is complicated by different transportation charges to customers, or the degree to which production is customized (See Scherer, *Industrial Market Structure and Economic Performance*, 200-01 (1980)).

551. It is easier for firms to coordinate their actions when a homogeneous product is involved. If a product is relatively homogeneous, suppliers need to coordinate on fewer dimensions. Because all firms' products are alike, it would be easier to reach agreement on a collusive price. Furthermore, by simplifying coordination, product homogeneity contributes to the likelihood that

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<sup>34</sup> Two Commissioners agreed with the Initial Decision's finding, however, that, within well recognized grades, mass and suspension PVC is a homogeneous product, noting: "PVC is boringly homogeneous." Goodrich, separate statement of Commissioners Azcuenaga and Bailey, concurring in part and dissenting in part, at 7. That mass and suspension PVC was found by the Commission to be "considerably more heterogeneous" than VCM (Goodrich, slip op. at 66; See concurring & dissenting statement at 7), is hardly surprising given the extraordinarily degree of homogeneity of VCM. Dr. Kaserman observed that VCM is the quintessential homogeneous product (Kaserman Dkt. 9159, 2413-18).

firms will be able to maintain a collusive arrangement (Kaserman Dkt. 9159, 2411-12). As the Commission noted in Goodrich, "maintaining a consensus becomes more difficult when it must cover full lines of products of varying qualities, because a firm can disguise its efforts to cheat more easily" (Goodrich, slip op. at 65).

552. No product is perfectly homogeneous in all respects (Kaserman Dkt. 9159, 2412-13). And, a product does not have to be perfectly homogeneous for collusion to occur (Kaserman Dkt. 9159, 2412). The issue is whether the product is relatively homogeneous on the continuum from perfect homogeneity to complete heterogeneity (Kaserman Dkt. 9159, 2412-13).

553. The *DOJ Merger Guidelines* note that there is no objective index or empirical basis for drawing fine distinctions among cases (*DOJ Merger Guidelines* ¶ 4493.411 at 6879-16). Accordingly, except in extreme instances, the factor of product homogeneity or relative heterogeneity is accorded little weight under the *Guidelines* (*Id.*).

554. Mass and suspension PVC resins are sold in different well-established grades, distinguished by recognized differences in particle size, molecular weight, and purity (Goodrich F 85; Disch Dkt. 9159, 632, 634-35; Becker Dkt. 9159, 1255-57). In the purchase of mass and suspension PVC resins, buyers select the grade of resin appropriate to specific production processes and end-use products (Goodrich F 85; Goodrich, slip op. at 67; Disch Dkt. 9159, 634; DS Admission 166, Dkt. 9159 CX 6H).

555. The fact that PVC resins may be sold in a number of grades does not, however, significantly reduce its homogeneity (Kaserman Dkt. 9159, 2415-17). The use of grades has less significance for heterogeneity when, as in the mass and suspension PVC market, they arise from differing requirements by classes of buyers, rather than differences among sellers for the business of any particular buyer (Kaserman Dkt. 9159, 2415-17).

556. Within grades, mass and suspension PVC resins are relatively homogeneous products (Kaserman Dkt. 9159, 2413-17). Mr. Schaefer explained that customers mainly purchased on the basis of price:



JUDGE HOWDER: Are sales made solely on the basis of price? Are there any other considerations such as delivery or some type of customer loyalty?

THE WITNESS: There isn't much of it, I am afraid. There is a price for a quality and that is why we talk about the pipe price for that quality. For general purpose quality or film quality, the prices are different, but it is difficult, let's say, to get any kind of a premium at a given quality level. Now, other things, terms and conditions they are a factor to my mind. They are really just another form of price because there is a cost of money there you can relate right back to the selling price.

JUDGE HOWDER: For example, you have your salesmen making these calls. Do they do so on a regular basis to regular customers?

THE WITNESS: Yes, they do.

JUDGE HOWDER: For example, promise to keep their inventories filled with the proper pipe sizes, this kind of thing and sort of look after their interests?

THE WITNESS: They do. And there is a degree of customer loyalty in this business but I would characterize it more as one that will give you an opportunity to meet the price in most cases rather than a willingness to pay a premium.

(Schaefer Dkt. 9159, 1202-03).

557. As the Commission recognized in Goodrich, most mass and suspension PVC resin grades, such as pipe and general purpose grades, are considered "commodity" products (Goodrich, slip op. at 66; Goodrich F 87; Dkt. 9159, 725; Dkt. 9159 CX 406Z6). Commodity grade resins amount to approximately 75 percent or more of mass and suspension PVC sales (Goodrich, slip op. at 66-67; Goodrich F 87; compare Weber Dkt. 9159, 1795 (75%) and Klass Dkt. 9159, 4055 (increasing dependence on pipe)). The commodity grades are considered to be "me-too" products, with no real claims that one supplier's resin is better than another supplier's resin (Goodrich slip op. at 67; Goodrich F 87; Disch Dkt. 9159, 719, 725; *See also* Becker Dkt. 9159, 1331). Customers will switch suppliers because of small differences in price (Goodrich F87, *See* Disch Dkt. 9159, 707). No supplier can maintain a premium price for its grade over those of other suppliers (Goodrich, slip op. at 67; Goodrich F87; JX 3, PX 6 at 105 ln. 1-13; Becker Dkt. 9159, 1264-65; Schaefer Dkt. 9159, 1139, 1202-03). Occidental recognizes that "[p]rice is the

primary selling tool for suspension resins" (JX 3, PX 13 at 452734). Even Dr. Klass, respondents' economic expert in Goodrich, concluded that commodity grade resins are close to being physically homogeneous (Klass Dkt. 9159, 5363).

558. Some mass and suspension PVC resin grades, such as medical grade resins, are called "specialty" grades in the industry (Goodrich F 88; Becker Dkt. 9159, 1263; H. Wheeler Dkt. 9159, 1750-51). [##] (JX 3, PX 47; JX 3, PX 48; *See* DiLiddo Dkt. 9159, 3374-75; Dkt. 9159 RX 152Z6 *In Camera*). [##] (DiLiddo Dkt. 9159, 3374-75; *See also* Dkt. 9159 RX 152Z6 *In Camera*). ("Specialty" PVC resins are specialty chemicals in a limited sense"). Suppliers are not able to maintain a price premium over the price of a similar grade resin of competing suppliers (Goodrich F 88; JX 3, PX 8, 118 ln. 25-119 ln. 2; Becker Dkt. 9159, 1264-65; H. Wheeler Dkt. 9159, 1750-51).

559. Moreover, mass and suspension PVC resins have become more homogeneous since the close of the record in Goodrich, and are becoming increasingly homogeneous over time. There has been a trend for mass and suspension PVC producers to reduce the number of grades they offer for sale (JX 3, PX 11 635 ln. 10 - 636 ln. 1, 647 ln. 15 - 648 ln. 4). Some firms produce only one grade (JX 3, PX 11, 635 ln. 10-20).

560. Suspension PVC copolymer resins are sold in primarily two grades for its major end-use markets, *i.e.* record grade and flooring grade. Record grade copolymer resin commands a premium over flooring grade (JX 3, PX 9 at 23 ln. 14-24, 18 ln. 15-22). This premium is based primarily on the more stringent quality requirements of purchasers of record grade resin (*Id.*).

561. Suspension PVC copolymer resin is considered to be a commodity product, because there are little differences among competitive products, and because products are available from a number of different suppliers (Beveridge JX 1, 85 ln. 8-10; JX 3, PX 6, 104 ln. 14 - 105 ln. 13; JX 3, PX 7, 13 ln. 7 - 14 ln. 15; JX 3, PX 9, 32 ln. 15-21; JX 3, PX 8, 10 ln. 24 - 11 ln. 12; JX 3, PX 48). Although copolymer resin is sold in two different grades, there is, within grade, little difference among the products offered by different producers in terms of price, and in terms of physical and chemical properties (JX 3, PX 6, 105 ln. 1-6; JX 3, PX 8, 10 ln. 24 - 11 ln. 12,

118 ln. 12-17; JX 3, PX 48). No supplier can maintain a price premium for its grade over an equivalent grade from competing suppliers (JX 3, PX 6 at 105 ln. 7-13; JX 3, PX 9 at 32 ln. 15-21; JX 3, PX 8 at 10 ln. 24 - 11 ln. 12; JX 3, PX 7 at 14 ln. 1-5).

562. Dispersion PVC resins are sold in a number of grades, depending primarily on the requirements needed for various production processes and end-use products (JX 3, PX 9 at 88 ln. 3-15; JX 3, PX 32). General purpose grade dispersion PVC resin accounts for approximately half of all dispersion resin sales (JX 3, PX 7 at 13 ln. 7-18), and the other grades will differ depending upon the end-use in which they are needed (*Id.*).

563. Dispersion PVC resins have also been characterized as commodity products (JX 3, PX 6 at 104 ln. 14 - 105 ln. 13; JX 3, PX 7, 13 ln. 7 - 14 ln. 15). As in the case of mass and suspension PVC resins and suspension PVC copolymer resins, dispersion PVC resin, although it is sold in different grades, is relatively homogeneous within grade (JX 3, PX 32). There is little difference among the products offered by different producers in terms of price, and in terms of chemical and physical properties. No supplier can command a price premium for its dispersion PVC resin over an equivalent grade product of another supplier (Beveridge JX 1, 89 ln. 24 - 90 ln. 2; JX 3, PX 6 at 41 ln. 21 - 42 ln. 7; JX 3, PX 8 at 10 ln. 24 - 11 ln. 12; JX 3, PX 7 at 14 ln. 1-5). Producers selling dispersion PVC for use in a particular end-use application generally charge the same price (JX 3, PX 6 at 41 ln. 21 - 42 ln. 7; JX 3, PX 32). Within an end-use, customers will tend to switch among approved suppliers in response to small differences in price (Mason JX 1, 202 ln. 25 - 203 ln. 4). Thus, although dispersion PVC resins are less homogeneous in nature than mass and suspension PVC resins or suspension PVC copolymer resins, dispersion PVC resin is itself a relatively homogeneous product (JX 3, PX 8 at 10 ln. 24 - 11 ln. 12). In any event, to the extent that dispersion PVC resin is the least homogeneous product among the three relevant product markets, it is likely that, because of the highly concentrated nature of this market, producers would have little trouble overcoming obstacles to coordination that product variations may present (*cf.* Goodrich, slip op. at 77).

564. In Goodrich, the Commission stated that the "crucial point about heterogeneity is that it substantially complicates the determi-

nation and enforcement of consensus prices" (Goodrich, slip op. at 68, n.151). As the Commission noted "[i]nstead of establishing a single price for a single homogeneous product, firms must establish and maintain a whole series of prices for a whole series of product grades" (*Id.*; See *DOJ Merger Guidelines* ¶ 4493.411, at 6879-16).

565. As the Commission has stated, however, "anticompetitive conduct can and has occurred with respect to only certain variables in the overall competitive landscape even when competition remains with respect to other variables" (*Hospital Corp. of America*, 106 FTC 361, 508 (1985)). In *HCA*, the Commission noted that competitors could collude on different aspects of the hospital services market such as, for example, radiology, or could collude to restrict credit terms (*HCA*, 106 FTC at 507-08).

566. Similarly, within each of the relevant markets, producers could collude on certain grades of resin, or could collude on other aspects of competition, such as plant expansions, credit terms or service levels. The Commission therefore, reaffirmed in *Goodrich* that "'agreements as to all aspects of competition are not necessary for effective collusion to take place and to have a negative impact on competition.' *HCA*, 106 FTC at 508; accord *Catalano, Inc. v. Target Sales, Inc.*, 446 U.S. 648-650 (1980) (agreement to refuse to extend credit *per se* illegal)" (Goodrich, slip op. at 70 n.155).

567. [##] (Alberti CX 199B ¶ 2 *In Camera*). [##] (Disch RX 258D-E ¶ 11 *In Camera*; Disch RX 258I-J ¶ 23 *In Camera*; Disch RX 262B ¶ 5 *In Camera*). [##] (RX 258Z83 *In Camera*). [##] (Clark RX 254A-C ¶ 5-8 *In Camera*).

568. Moreover, there are indications in the record that collusion as to certain grades of resin could well be successful in the relevant markets. Mass and suspension PVC resin is primarily sold as pipe-grade, and as a limited number of other commodity grades (CX 85; CX 86; CX 87; CX 88; CX 89; CX 90; CX 92; CX 93A). These resin grades, which together account for the large majority of mass and suspension PVC resin sales, are each sold at one market price (See, e.g., CX 92). Because these resin grades account for the large majority of mass and suspension PVC resin sales, public price announcements are generally limited to the price of these grades (*Id.*). As a result, mass and suspension PVC producers need not regularly maintain and coordinate a schedule of several different

prices for different grades. Instead, producers need only coordinate on the pricing of a limited number of commodity grade resins. Indeed, coordination on the price of only one grade of mass and suspension PVC resin, *i.e.*, pipe-grade resin, would be quite profitable for mass and suspension PVC producers, given that this end-use application is the single largest end use of mass and suspension PVC resin, accounting for over 40% of mass and suspension PVC demand (Goodrich, slip op. at 18; CX 43E). These factors facilitate the coordination of pricing among mass and suspension PVC producers.

569. [##] (RX 95 *In Camera*; JX 3, PX 9, 26 ln. 14-20). As Mr. Stevens, Director of Marketing for Tenneco, testified, "the suspension market is driven strictly by pipe demand" (JX 3, PX 9 at 26 ln. 19-20; *accord* Klass Dkt. 9159, 4062-63). As the price of pipe-grade resin increases, the prices of other grades of resin increase to a level incrementally greater than the price of pipe-grade resin (*See* CX 92; CX 93A; RX 293B; RX 297B; RX 300B; RX 301B; RX 303C, RX 305B-C, RX 306C; RX 310D).

570. Thus, mass and suspension PVC producers need not maintain a complicated schedule of prices for their resins. For example, Georgia-Pacific (now Georgia-Gulf) issued a schedule of prices for 18 different numbered mass and suspension PVC resins, with the distinct numbers designating resins with specified inherent viscosities (CX 93B). The company maintained a total of only three different prices for the 18 different resins, however, with pipe-grade resin the lowest priced resin, general purpose-grade resin priced one cent higher and film-grade resin priced an additional one cent above (*See also* JX 3, PX 27; CX 217A; JX 3, PX 26; JX 3, PX 37). [##] (*See, e.g.*, Dkt. 9159 RX 922A *In Camera*; Dkt. 9159 RX 924A *In Camera*; Dkt. 9159 RX 925A *In Camera*; Dkt. 9159 RX 926A *In Camera*).

571. [##] (RX 197M *In Camera*). [##] (RX 197M *In Camera*). [##] (RX 1S *In Camera*), [##] (RX 1T, 1V *In Camera*). Moreover, the higher profits associated with coordinated pricing across the commodity segment of the overall mass and suspension PVC market would not, because of the higher cost of producing specialty resins in small reactors, be defeated through competition from specialty resins (*See* HCA, 106 FTC at 508).

572. [##] (*See CX 4A-Z518 In Camera*) [##] This situation is directly analogous to the situation in *HCA*, where the Commission found that, because of limited gains in areas other than the area affected by the collusive agreement, such cheating would not dissolve the profits to be garnered from collusion (*HCA*, 106 FTC at 507-08). Here, because the pipe customer would be distinct from the specialty grade customer, there would be no increased sales to pipe-grade customers through offering a lower price for specialty resins, while at the same time colluding on pipe-grade prices.

573. [##] (Trough CX 202A-B ¶ 1-3 *In Camera*).

574. Suppliers sometimes provide technical service in conjunction with the sale of PVC (Goodrich F 89; Becker Dkt. 9159, 1331-32). Service is relatively more significant in the sale of specialty grades than commodity grades (Goodrich F89; Goodrich, slip op. at 66-67; Becker Dkt. 9159, 1330-31; Weber Dkt. 9159, 1794-96). For the mass and suspension PVC market and suspension PVC copolymer markets as a whole, service is relatively unimportant (Goodrich F89; Schaefer Dkt. 9159, 1202-03; Kaserman Dkt. 9159, 2413-14; Dkt. 9159 CX 199U). It is likely that relatively more service is provided in the sale of dispersion PVC, but even in that market, the provision of service is relatively unimportant and does not allow for one supplier to maintain a premium for its products (JX 3, PX 13 at 452717; Beveridge JX 1, 89 ln. 24 - 90 ln. 2; JX 3, PX 6 at 41 ln. 21 - 42 ln. 7; JX 3, PX 8 at 10 ln. 24 - 11 ln. 12; JX 3, PX 7 at 14 ln. 1-5). The providing of service has only a minor effect on differentiating among suppliers in the United States. It may cause a customer to prefer to continue with its regular supplier and give that supplier a chance to meet competitive offers (Goodrich F 89; Becker Dkt. 9159, 1330-32; Schaefer Dkt. 9159, 1202-03). However, a customer will still switch suppliers for relatively small differences in price (Becker Dkt. 9159, 1330-32; Schaefer Dkt. 9159, 1202-03).

575. The Commission expressly rejected the respondents' "commercial heterogeneity" argument, observing that factors such as differences in sales terms among producers, including, price, credit terms, method of delivery, and contract length relate to industry performance rather than structure (Goodrich, slip op. at 70 n.155).

576. The PVC industry is not undergoing significant process or product technological change. Thus, there is no basis for concluding that it is heterogeneous in this fashion (*See* Goodrich, slip op. at 69).

577. [##] (*See, e.g.*, Dkt 9159 RX 243A *In Camera*), [##] (*See, e.g.*, Dkt 9159 CX 578A-C *In Camera*; Dkt. 9159 RX 914; Dkt. 9159 RX 915 *In Camera*; Dkt. 9159 RX 916 *In Camera*; Dkt. 9159 RX 926 *In Camera*) [##] (*See, e.g.*, Dkt. 9159 RX 244 *In Camera*, Dkt. 9159 CX 184). [##] (Heath CX 178D ¶ 6 *In Camera*; JX 3, PX 7 at 153 ln. 23 - 154 ln. 14; *See* JX 3, PX 62-PX 75).

578. The Commission in Goodrich stated that transportation cost differences could make mass and suspension PVC resins a more heterogeneous product (Goodrich, slip op. at 68). As noted by the Commission, PVC resins are generally sold on a delivered price basis, although it is not clear whether the delivered prices are uniform (Goodrich, slip op. at 80; DS Admission 475; Dkt. 9159 CX 6T; Goodrich Admission 432 Dkt. 9159 CX 4Z28).

579. [##] (*See* Dkt. 9159 RX 922A *In Camera*; Dkt. 9159 RX 924A *In Camera*; Dkt. 9159 RX 925A *In Camera*; Dkt. 9159 RX 926A *In Camera*).

580. In any event, to the extent that firms have different costs in transporting resin to customers, these costs are relatively small as a percentage of the delivered price of PVC resins in each of the relevant markets, and therefore would not have a significant effect on the ability of producers in these markets to coordinate pricing (*See* Scherer, *Industrial Market Structure and Economic Performance* 201). Moreover, as discussed, *infra*, overall transportation cost differences among mass and suspension PVC producers have narrowed substantially since the time of the Goodrich case, as PVC producers have closed West Coast and North East PVC plants and concentrated capacity expansions in the Gulf Coast.

581. [##] (Dkt. 9159 CX 304G *In Camera*; Dkt. 9159 CX 317G *In Camera*; Dkt. 9159 CX 182Z9-10 *In Camera*; Dkt. 9159 CX 301E *In Camera*; Dkt. 9159 CX 318H *In Camera*; Dkt. 9159 CX 320D *In Camera*; Dkt. 9159 RX 15; Dkt. 9159 CX 4Z106-27). PVC resins are also sold through brokers (*See* H. Wheeler Dkt. 9159, 1758-59; Dkt. 9159 CX 536A). These transactions include specialty grades (Dkt. 9159 RX 15). These kinds of transactions are possible only where differences among suppliers' products are minimal and, therefore,

show that mass and suspension PVC is a relatively homogeneous product. These arrangements show that neither producers nor consumers consider the differences among products of different producers to be important.

582. [##] (Goodrich F90; Eades Dkt. 9159 1461; Dkt. 9159 CX 518F *In Camera*; Dkt. 9159 RX 34T; Dkt. 9159 RX 501A; Dkt. 9159 RX 54B *In Camera*), [##] (Dkt. 9159 CX 519F *In Camera*; Dkt. 9159 RX 54B *In Camera*), where buyers will switch suppliers over small differences in prices (DiLiddo Dkt. 9159, 3372 [one fourth of a cent]). Mr. Bailey, PVC Product Manager for Occidental, testified that he "would characterize almost all grades of PVC as commodities and that would include homopolymer suspension, copolymer suspension and dispersion" (JX 3, PX 6 at 104 ln. 14-25). Similarly, Goodrich recognizes the PVC "industry" to be a commodity business. Purchasers of PVC resins in each of the relevant markets generally select the lowest priced resin grade suitable for a particular processing or end-use requirement (Goodrich F 90; DS Admission 177, Dkt. 9159 CX 6H).

583. Thus, the variations discussed above would not, in any of the relevant markets, prevent coordinated, collusive pricing by producers that would result in the accumulation of substantial profits.

*C. The Similar Costs of PVC Producers  
Facilitate Anticompetitive Conduct  
In Each of the Relevant Markets*

584. On the basis of the record in Goodrich, the Commission concluded that "PVC production costs vary significantly among producers." The Commission agreed with the findings in the Initial Decision, but concluded that the presence of a substantial amount of small reactor capacity in the mass and suspension PVC market, as well as differences in PVC transportation costs among firms located in different parts of the country, resulted in cost differences among mass and suspension PVC producers that would tend to make it more difficult to reach a collusive consensus price, at least at the existing level of industry concentration (Goodrich, slip op. at 77-81). Thus, given the weak presumption of anticompetitive effects based upon the concentration data, the Commission found the evidence of cost



differences, together with other factors, sufficient to rebut the presumption (Goodrich, slip op. at 112-13).

585. If firms in a market have similar costs they will be more likely to be able to agree on and maintain a profit maximizing collusive price (Kaserman Dkt. 9159, 2404-05). As the Commission noted in Goodrich, differences in cost functions can make it more difficult to "develop a collusive consensus price," (Goodrich, slip op. at 77), although at increased levels of concentration, "cost differences nevertheless may not prevent firms from accepting price or output levels somewhat different from their optimal levels" (*Id.*).

586. Firms in a market need not have identical costs for collusion to become likely (Kaserman Dkt. 9159, 2405). The question is whether firms' costs are similar (Kaserman Dkt. 9159, 2405).

587. A firm's costs are a function of the technology it uses, the price the firm pays for its inputs and the cost of transporting PVC to purchasers (Goodrich, slip op. at 77-78; *See* Kaserman Dkt. 9159, 2405-06). The technology determines the relationship between input quantities and output quantities; it determines the quantities of inputs necessary to produce a given amount of output (Kaserman Dkt. 9159, 2406). Total cost is a function of the quantities of inputs and the price of those inputs (Kaserman Dkt. 9159, 2406).

588. [##] (*See* Dkt. 9159 CX 246 *In Camera*).

589. In each of the relevant PVC markets, firms today have similar costs of converting VCM into mass or suspension PVC. Firms also have similar costs for VCM (Goodrich, slip op. at 78, n.174).

590. In addition, as the Commission recognized in Goodrich, differences in the cost of transporting PVC to customers would be a factor that could contribute to differences in production costs among PVC producers (Goodrich, slip op. at 80-81).

591. As discussed *infra*, the record developed since the Goodrich case reveals that transportation costs are in fact only a small part of the cost of the delivered price of PVC, so that differences in the cost of transporting PVC do not result in significant cost differences among PVC producers.

592. As recognized in Goodrich, firms in the mass and suspension PVC market have access to similar PVC manufacturing technology (Goodrich F 195; *Id.* at 93; Goodrich, slip op. at 78; Kaserman Dkt. 9159, 2406, 2409). The technology is available, there

are no significant patents that would give one firm a significant cost advantage over another (Goodrich F 195; Goodrich, slip op. at 78; Klass Dkt. 9159, 4074-75; Kaserman Dkt. 9159, 2409; Schaefer Dkt. 9159, 1212; DiLiddo Dkt. 9159, 3288-89). Thus, "PVC firms have access to similar cost positions and potentials" (Klass Dkt. 9159, 5488-89).

593. [##] (Goodrich F 196; *cf.* Dkt. 9159 CX 54Z10 *In Camera*). [##] (Goodrich F 197; DiLiddo Dkt. 9159, 3395; Dkt. 9159 CX 54Z10 *In Camera*). VCM is used in a fixed proportion to the amount of PVC produced (Disch Dkt. 9159, 643).

594. PVC is manufactured in the United States today in both large and small reactor plants (Disch Dkt. 9159, 638-640). Small reactors range in size from 2,000 to 5,000 gallons (Schaefer Dkt. 9159, 1213). Large reactors range in size from approximately 18,000 to 40,000 gallons (Disch Dkt. 9159, 638-40; Schaefer Dkt. 9159, 1213-1214). Firms have been building large reactor plants in the United States since the early, 1970's (Goodrich F 198; Disch Dkt. 9159, 641). As the Commission recognized in Goodrich, today large reactor plants are the dominant technology, particularly for mass and suspension PVC (Goodrich, slip op. at 78-79).

595. The Commission found, on the basis of the record in Goodrich, that about two-thirds of mass and suspension PVC capacity was large reactor capacity (Goodrich, slip op. at 79). This estimate is likely to be low today. Many of the small reactor plants identified by the Commission in Goodrich have been shut down, indeed because of their high operating costs relative to large reactor plants. As the Commission noted in Goodrich, Diamond Shamrock closed its Deer Park plants after the acquisition (Goodrich, slip op. at 54).

596. Since the close of the record in Goodrich, the Goodrich Long Beach, California, plant has been shut down, as has Borden's Leominster, Massachusetts, plant and Tenneco's Flemington, New Jersey, plant. Formosa is replacing its small reactor capacity at Delaware City, Delaware, with large reactor capacity at Baton Rouge, Louisiana (CX 165A). [##] (JX 3, PX 13 at 452733; RX 197M *In Camera*). Similarly, the Commission recognized in Goodrich that "[n]o new small reactor plants have been built in the United States since the late 1960's" (Goodrich, slip op. at 79, n.178).

597. Large reactor plants generally are used for commodity grades of mass and suspension PVC (Goodrich, slip op. at 79; Disch Dkt. 9159, 638-40; cf. DiLiddo Dkt. 9159, 3397-98). The use of small reactor plants is confined to making special purpose grades of mass and suspension PVC resin, and to making suspension PVC copolymer resin and dispersion PVC resin (Goodrich, slip op. at 79). Within the spectrum of large reactor plants, costs are similar (Goodrich F 199; JX 3, PX 8 at 77 ln. 7-10; Disch Dkt. 9159, 645; Schaefer Dkt. 9159, 1149). [##] (Goodrich F 199; CX 52N *In Camera*; Klass Dkt. 9159, 4212, 5488-89).

598. Similarly, the wide use of similar small reactor technology among firms in the suspension PVC copolymer market and the dispersion PVC market, respectively, increases the similarity of costs among firms in those markets (cf. JX 3, PX 8 at 73 ln. 22 - 74 ln. 6, 77 ln. 7-10).

599. [##] (RX 197M *In Camera*). As a result, "[t]hose still in operation are competing only in specialty niches" (JX 3, PX 13 at 452734). [##] (RX 197M *In Camera* [7-12 cents higher]).

600. [##] (RX 143Q-R *In Camera*; CX 3B, 3D, 3J, 3K *In Camera*; RX 177Z9 *In Camera*; RX 144H-J *In Camera*). As discussed *supra*, suspension PVC copolymer does not, as a rule, compete in end-use applications with suspension PVC homopolymer. It is therefore, on the demand side, a separate product market.

601. [##] (RX 197M *In Camera*).

602. [##] (Dkt. 9159 RX 1168 *In Camera*; See also CX 52N *In Camera*).

603. Because there are currently no rapid advances in PVC manufacturing technology, it is unlikely that one firm has a significant technological advantage over another.

604. Because VCM is a highly homogeneous product (Goodrich, slip op. at 68-69), it is likely that VCM purchasers pay similar prices for VCM (Goodrich F 203; cf. Kaserman Dkt. 9159, 2410).

605. As the Commission discussed in Goodrich, PVC producers have similar costs for acquiring and transporting VCM (Goodrich, slip op. at 78, n.174).

606. If one appropriately values the costs of VCM for firms that are integrated backward from PVC into VCM, then it is clear that all PVC firms pay similar prices for their VCM feedstock (Goodrich F

203; Kaserman Dkt. 9159, 2406-08). The appropriate economic value for the integrated firm to transfer VCM is the firm's opportunity costs (Goodrich F 203; Kaserman Dkt. 9159, 2407). While firms may expectedly keep their books using accounting costs (Kaserman Dkt. 9159, 2807-08), in making economic decisions they presumably take into account the opportunity costs of those decisions (Klass Dkt. 9159, 4559-61, 5319). Opportunity cost is the value of the product in the next best alternative use (Kaserman Dkt. 9159, 2407). The appropriate economic value of VCM for an integrated firm is, therefore, the amount at which the firm could sell it if it did not consume it internally (Kaserman Dkt. 9159, 2407). Thus, firms vertically integrated into VCM should have no product cost advantage over nonintegrated firms.

607. If vertically integrated firms have access to lower cost VCM, one would expect that integrated firms would drive nonintegrated firms out of business during a time of excess capacity (Kaserman Dkt. 9159, 2815). "If costs were clearly lower for vertically integrated firms one would expect that nonintegrated firms would have quite a time surviving" (Klass Dkt. 9159, 5337). However, this has not been shown to have occurred.

608. Thus, in the mass and suspension PVC market, integrated and nonintegrated firms have similar costs for their VCM feedstocks (Goodrich, slip op. at 78, n.174).

609. [##] (Dkt. 9159 RX 57Z128), [##] (Disch Dkt. 9159, 701-02; Dkt. 9159 CX 199Z34), [##] (Disch Dkt. 9159, 645; Schaefer Dkt. 9159, 1149; Dkt. 9159 RX 57Z128 *In Camera*).

610. Thus, because PVC producers in each of the relevant markets have access to similar technology and similar raw materials, they have manufacturing costs that tend to be similar (Goodrich ID at 93; JX 3, PX 8 at 77 ln. 2-10).

611. The Commission also cited possible differences in transportation costs for shipping PVC resin to customers as a factor that would lead to differences in costs among PVC producers, and would therefore complicate efforts at coordinated pricing (Goodrich, slip op. at 80-81). The Commission noted that, although PVC resin is generally sold on a delivered price basis, which would eliminate price differences based on location, it was unclear from the record whether the delivered prices were actually uniform (Goodrich, slip op. at 80).

612. [##] (CX 54 *In Camera*). [##] (*Id.*). [##] (CX 54 *In Camera*).

613. [##] (CX 137Z45 *In Camera*). [##] (*Id.*). This pattern is not surprising, given the need for a greater level of customer service associated with specialty resin sales, so that producers of these resins locate close to the fabricator customers (Goodrich, slip op. at 67, n.49). High-volume commodity resins, in contrast, are sold with little other service provided, so that producers locate these plants close to the raw material supply (Goodrich, slip op. at 67). Consequently, costs are similar among commodity grade mass and suspension PVC producers, and costs are similar among specialty grade PVC producers.

614. [##] (*See* Dkt. 9159 RX 1204G *In Camera*), [##]

615. [##] (*See* CX 54 *In Camera*).

616. [##] (CX 137Z45 *In Camera*). [##] (*Id.*). [##] (Dkt. 9159 RX 924A *In Camera*; Dkt. 9159 RX 925A *In Camera*; Dkt. 9159 RX 926A *In Camera*).

617. Because of the higher prices prevailing in the dispersion PVC and suspension PVC copolymer markets, transportation costs account for an even smaller percentage of these relatively high priced products than for mass and suspension PVC homopolymer. Moreover, the high level of concentration in both of these markets, suggests that transportation cost differences would not affect the ability of dispersion PVC producers or suspension PVC copolymer producers to develop a price consensus (*See* Goodrich, slip op. at 77).

618. Thus, examination of the issues raised by the Commission in Goodrich, in light of subsequent developments and new evidence in this record, indicates that production costs among producers in each of the relevant markets are in fact relatively similar and are becoming increasingly so, and that whatever cost differences do exist would not be sufficient to prevent a collusive arrangement among producers.

*D. Numerous Small Buyers in Each of the Relevant  
Markets Increase the Likelihood of Collusion*

619. As the Commission found in Goodrich, mass and suspension PVC purchasers could not constrain the exercise of market power by mass and suspension PVC producers (Goodrich, slip op.

at 84). There are a large number of small buyers who make regular, frequent and small purchases in the mass and suspension PVC market (Goodrich, slip op. at 84-85; Goodrich F 216; Goodrich, ID at 93), and in the dispersion PVC market (JX 3, PX 6 at 63 ln. 4-6; JX 3, PX 8 at 111 ln. 19-200; JX 3, PX 9 at 51 ln. 4-21; JX 3, PX 28 at 1-5). And in the suspension PVC copolymer market, where there are fewer buyers, the buyers have no leverage (JX 3, PX 136 at 119 ln. 12-24; Schaefer 595 ln. 4 - 596 ln. 12). The concentration level among suspension PVC copolymer producers, relative to purchasers, is substantially higher than it was in the VCM market in Goodrich (*See* Goodrich, slip op. at 85). The large number of buyers relative to sellers in each of these PVC markets facilitates the likelihood of collusion (Kaserman Dkt. 9159, 2419-21).

620. In addition, buyers in each of the relevant markets tend to purchase from more than one supplier at any given time, which increases the ability of suppliers to monitor competitive activity (JX 3, PX 6 at 62 ln. 15-24; JX 3, PX 11 at 728 ln. 7-22; JX 3, PX 10 at 1140 ln. 21-24; JX 3, PX 8 at 112 ln. 9-15, 116 ln. 6 - 118 ln. 11; JX 3, PX 9 at 86 ln. 20 - 88 ln. 1). Finally, buyers in each of the relevant markets tend to order resin relatively frequently, *i.e.*, on a weekly or monthly basis, in volumes that tend to be regular and small (Goodrich, slip op. at 86-87; Goodrich F 218, n.47; Beveridge JX 1, 93 ln. 4-6; JX 3, PX 11 at 684 ln. 25 - 685 ln. 10; JX 3, PX 9 at 47 ln. 9 - 48 ln. 4; Goodrich F 218 & n.47). Accordingly, the number and size of buyers, and the frequency and regularity of small orders in the relevant markets, reduces the incentives and ability of the remaining firms in the markets to cheat on a collusive arrangement (Goodrich, slip op. at 88).

621. The number and size distribution of buyers and orders in a market influence the incentives to cheat on a collusive agreement (Kaserman Dkt. 9159, 2418-19). If a market is characterized by a large number of small buyers or by a large number of small orders, then the incentive for a seller involved in a collusive agreement to discount the price on a given order is not great, because the increment to total sales is relatively small. Conversely, a seller would have to discount secretly to a large number of buyers or on a large number of orders to increase sales by a significant amount, thus increasing the likelihood that its cheating would be detected by the other firms in

the collusive group. Therefore, the larger the number of buyers or the larger the number of orders in a market, the less likely it is that firms in a collusive group will be tempted to cheat, as it is more likely the cheating will be detected (Goodrich, slip op. at 85-86; Kaserman Dkt. 9159, 2419).

622. Currently there are over 2,000 buyers of mass and suspension PVC resin in the United States (Goodrich F 216; Disch Dkt. 9159, 681; *See also* Eades Dkt. 9159, 1505; Dkt. 9159 CX 53J-K; Dkt. 9159 CX 64 P, 5). In contrast, there are only eleven active producers of mass and suspension PVC resin. The number of buyers of mass and suspension PVC resin is thus considerably larger than the number of sellers in the market.

623. The majority of mass and suspension PVC resin buyers are relatively small in terms of annual volume purchased as a percentage of the total domestic PVC market (Goodrich, slip op. at 86-87; *See* Dkt. 9159 CX 53J-K; Disch Dkt. 9159, 681). [##] (Dkt. 9159 CX 58K *In Camera*; Goodrich F 216 ); [##] (Goodrich, slip op. at 84; Dkt. 9159 CX 64S; Goodrich F 216). [##] (Goodrich, slip op. at 84-85; Dkt. 9159 CX 58K *In Camera*; Dkt. 9159 CX 64S; Goodrich F 216). While the respective percentages of the total mass and suspension PVC market accounted for by resin sales into the various end-use applications has changed slightly over time (Goodrich, slip op. at 85; *See, e.g.*, Disch Dkt. 9159, 663-64), the annual volumes purchased by the majority of mass and suspension PVC resin buyers still account for only a fraction of the total PVC market. Approximately 40% of mass and suspension PVC resins are sold into pipe applications (Goodrich, slip op. at 85; Disch Dkt. 9159, 663). There are over 100 PVC pipe producers in the United States today (Goodrich, slip op. at 85; *See* Disch Dkt. 9159, 683; Yu Dkt. 9159, 2091-92, 2161-62).

624. The top four buyers of mass and suspension PVC resin today are PVC pipe producers, and have been identified as Carlon (a Division of Indian Head Corporation), Certain Teed Corporation, Formosa Plastics Corporation U.S.A. (J-M Manufacturing Co.), and Simpson Timber Co. (Goodrich F 217; Disch Dkt. 9159, 682; Yu Dkt. 9159, 2089, 2092; *See also* Dkt. 9159 CX 53J). It is estimated that these top four companies consume 60% of the total amount of PVC resin used annually in PVC pipe production (Disch Dkt. 9159,

683; Goodrich F 217; *See also* Goodrich, slip op. at 85; Dkt. 9159 CX 756Z40-Z41). The annual volumes purchased by the remaining PVC pipe producers range downward from these four top firms to companies that consume at the 10 million pound level annually, and to regional PVC pipe producers (*See* Disch Dkt. 9159, 683; Yu Dkt. 9159, 2160-62; *See also* Dkt. 9159 CX 756Z40).

625. The annual volume purchased by the firm that is probably the largest single PVC resin buyer, Carlon, is estimated at 250 to 300 million pounds per year (Disch Dkt. 9159, 682; *See also* Dkt. 9159 CX 53J). [##] (*See* JX 3, PX 140 "Table 22" *In Camera*).

626. [##] (Dkt. 9159 682), [##] (*See* JX 3, PX 140 "Table 22" *In Camera*).

627. [##] (Dkt. 9159 CX 303J *In Camera*; Dkt. 9159 CX 308H-I, *In Camera*; *See also* Belt 1991-93 *In Camera*; Yu Dkt. 9159, 2171; Disch Dkt. 9159, 682). [##] (Dkt. 9159 CX 303J *In Camera*), [##]

628. Total consumption of mass and suspension PVC resin by J-M Manufacturing Co., the pipe producing affiliate of Formosa Plastics (Yu Dkt. 9159, 2089), can be estimated at approximately 189 million pounds in 1983 (Yu Dkt. 9159, 2091: 80%, by PVC resin content, of 231 million pounds of domestic PVC pipe sales plus 5 million pounds in export sales), amounting to approximately 3% of the total mass and suspension PVC market. However, actual external purchases are lower, since Formosa Plastics produces some of the PVC consumed by J-M (Liao Dkt. 9159, 1535; Yu Dkt. 9159, 2171).

629. It is estimated that there are close to 200 buyers of dispersion PVC resin in the United States (JX 3, PX 8 at 111 ln. 19-20; JX 3, PX 6 at 63 ln. 4-6). [##] (JX 3, PX140 "Table 12" *In Camera*).

630. It has been estimated that the five or six largest dispersion PVC customers combined account for approximately 50% of the total purchases of dispersion PVC (JX 3, PX 8 at 112, 114). The largest of these companies, Armstrong, accounts for approximately 15% of total industry purchases. The smallest, Becton Dickinson, accounts for approximately 3% (*Id.*).

631. The number of suspension PVC copolymer purchasers is estimated at 20, five times the number of producers (JX 3, PX 8 at 111 ln. 16-18; JX 3, PX 6 at 62 ln. 8-11; JX 3, PX 28). [##] (*See* JX 3, PX 140, "Table 17" *In Camera*). The ratio of purchasers to



producers is higher in this case than it was in the VCM market in Goodrich (compare Goodrich, slip op. at 85).

632. [##] (Disch CX 219F *In Camera*; Disch JX 3, PX 8 at 114). [##] (Disch CX 219F *In Camera*). [##] (*Id.*). [##] (JX 3, PX 8 114 ln. 1; *See* CX 219C-F *In Camera*).

633. Individual mass and suspension PVC resin suppliers have many customers (*See, e.g.*, Disch Dkt. 9159, 681 -- Tenneco has 100 to 150 suspension PVC customers; Weber Dkt. 9159, 1787-88 -- Diamond Shamrock had approximately 100; DiLiddo Dkt. 9159, 3371 -- Goodrich has several hundred). [##] (Dkt. 9159 CX 474A-Z60 *In Camera*).

634. Similarly, dispersion PVC suppliers generally have many customers. Occidental customer files indicate that Occidental sells dispersion resin to approximately 80 customers per month (JX 3, PX 28). Mr. Stevens of Tenneco noted that the company had 25-30 "active term" customers (JX 3, PX 9 at 51). Similarly, Occidental files show that Occidental has at least 15 customers for suspension PVC copolymer resin (JX 3, PX 28).

635. Mass and suspension PVC resin buyers typically split their total purchases among two or more sellers (Goodrich F 218, n.46; *See* Disch Dkt. 9159, 728; Schaefer Dkt. 9159, 1140; Becker Dkt. 9159, 1336-37; McMath 1897-98; Yu Dkt. 9159, 2171; DiLiddo Dkt. 9159, 3371-72). [##] (Dkt. 9159 CX 68 *In Camera*). J-M Manufacturing Co., Inc., the PVC pipe producing affiliate of Formosa Plastics, has also had up to five PVC resin suppliers (Yu Dkt. 9159, 2171).

636. [##] (JX 3, PX 6 at 62; JX 3, PX 8 at 112; *See* CX 4F *In Camera*; CX 4N *In Camera*; CX 4Z *In Camera*; CX 4Z14 *In Camera*; CX 4Z15 *In Camera*; CX 4Z38 *In Camera*; CX 4Z55 *In Camera*; CX 4Z59 *In Camera*; CX 4Z60 *In Camera*; CX 4Z63 *In Camera*; CX 4Z81 *In Camera*; CX 4Z85 *In Camera*; CX 4Z94 *In Camera*).

637. As a result, a seller that might be engaging in a collusive agreement in either the mass and suspension PVC market, the dispersion PVC market, or the suspension PVC copolymer market would only have a fraction of a given buyer's business on which to cheat in order to gain additional sales. To the extent that the potential increment to total sales would thus be relatively small, this factor

tends to diminish the incentive to cheat on a collusive agreement (Kaserman Dkt. 9159, 2419-20).

638. Mass and suspension PVC resin orders are not usually placed for annual volumes. Rather, orders are generally placed on a monthly, and sometimes daily, basis (Goodrich, slip op. at 86-87; Goodrich F 218, n.47; Weber Dkt. 9159, 1803-04; Disch Dkt. 9159, 683-85; DiLiddo Dkt. 9159, 3371-72). Similarly, many dispersion PVC resin orders are placed on a monthly or weekly basis (Beveridge JX 1, 93 ln. 4-6; JX 3, PX 28). [##] (Dkt. 9159 RX 945A-O *In Camera*). These factors further diminish the incentive to cheat on a given order (Kaserman Dkt. 9159, 2420-21).

639. [##] (Beveridge JX 1, 93 ln. 4-6; JX 3, PX 9 at 47 ln. 9 - 48 ln. 4; Weimar CX 192F ¶ 14 *In Camera*). [##] (Weimar CX 192F ¶ 14 *In Camera*). Mr. Beveridge testified similarly as to Armstrong's purchases of dispersion PVC resin and suspension PVC copolymer (Beveridge JX 1, 93 ln. 4-6).

640. Even if a seller would be tempted to cheat on a given PVC resin order by cutting price, there is substantial uncertainty that the seller will invariably gain additional sales and thereby profit by cheating, due to the ongoing customer-supplier relationships that characterize the PVC markets. The buyer to which a discounted price might be offered would be likely to contact a current seller and offer that seller an opportunity to meet the competing offer (Goodrich, slip op. at 87-88; *See, e.g.*, Weber Dkt. 9159, 1798-99; Schaefer Dkt. 9159, 1203). Thus, a seller tempted to cheat on a collusive agreement would risk detection for potential gain that is substantially uncertain, and the collusive group as a whole would lose to the extent that the price of PVC resin in the marketplace is subsequently lowered because the collusive agreement falls apart (Goodrich, slip op. at 85-86; Kaserman Dkt. 9159, 2774-80).

641. As a result, in order to gain a given increment in sales by cheating, a seller would have to discount secretly to a large number of buyers which would increase the likelihood that the cheating would be detected by the other firms in the collusive group (Kaserman Dkt. 9159, 2419). Thus, the large number of buyers in each of the relevant markets facilitates the detection of cheating by increasing the flow of information in the marketplace regarding competitive activity (Goodrich, slip op. at 86).

642. It is recognized in the PVC industry that the large number of small buyers reduces customer leverage. Dr. DiLiddo of Goodrich observed that buyer concentration in the mass and suspension PVC resin market is low enough that buyers have little leverage over price:

We also looked at the [PVC resin] customer base and found that it was very attractive. This customer base is attractive because it is readily identifiable, small enough to be reached by a manageable and economic sales force, yet not so concentrated that one or two customers can put enormous pressure on the suppliers to lower price. The biggest customer in the PVC business (Carlon) accounts for less than 7 percent of the total market. Yet three hundred customers account for some 80 percent of the total market. There are only about 1,000 customers in the United States that buy a carload or more of PVC per year.

(Dkt. 9159 CX 53J-K; Goodrich F 216). Mr. Schaefer of Occidental testified similarly that purchasers of suspension PVC copolymer resin have little leverage (JX 3, PX 136 ln. 12-24; Schaefer JX 1, 595 ln. 4-596 ln. 12).

*E. The High Degree of Repeat Sales in Each of the Relevant Markets Facilitates the Detection of Cheating*

643. The relevant PVC markets are all characterized by a high degree of repeat sales (Goodrich, slip op. at 87-88; Goodrich F 216, F 219; Goodrich ID at 94; Kaserman Dkt. 9159, 2422-23; Kaserman JX 1, 347-348; Friedman JX 1, 132 ln. 2-8; Beveridge JX 1, 91 ln. 2-7; JX 3, PX 8 at 116 ln. 6 - 118 ln. 11; JX 3, PX 9 at 86 ln. 20 - 87 ln. 1; *See also* Klass Dkt. 9159, 4389). The high degree of repeat sales in each of the relevant markets makes collusion more likely in each of these markets (Kaserman Dkt. 9159, 2421-22; Kaserman JX 1, 347-348).

644. Collusion is more likely in markets where customers tend to purchase from the same suppliers over the course of time. If firms in an industry, characterized by a high probability of repeat sales, are engaging in a collusive agreement, and if a firm cheats on the agreement by cutting price to gain sales, other firms can infer from an a normal loss of long-standing customers that someone is cheating. A high probability of repeat sales thus facilitates the policing of a collusive agreement, thereby increasing its stability and the

likelihood of its occurrence (Kaserman Dkt. 9159, 2421-22; Kaserman JX 1, 347-48; *See also* Klass Dkt. 9159, 4389).

645. [##] (Goodrich, slip op. at 86; Goodrich F 219; DiLiddo Dkt. 9159, 3253; Weber Dkt. 9159, 1790; Disch Dkt. 9159, 683-85; *See, e.g.,* Dkt. 9159 CX 151A *In Camera*; Dkt. 9159 CX 152A *In Camera*; Dkt. 9159 CX 156B *In Camera*; Dkt. 9159 CX 72A *In Camera*; Dkt. 9159 CX 73F *In Camera*; Dkt. 9159 CX 76A *In Camera*; Dkt. 9159 CX 77A *In Camera*; Dkt. 9159 CX 80A *In Camera*; Dkt. 9159 CX 81A-D *In Camera*; Dkt. 9159 CX 85A *In Camera*; Dkt. 9159 CX 89A *In Camera*; Dkt. 9159 RX 53B *In Camera*).

646. [##] (Goodrich, slip op. at 88; Goodrich F 219; DiLiddo Dkt. 9159, 3253-54; Disch Dkt. 9159, 685-86; Dkt. 9159 RX 53B *In Camera*).<sup>35</sup> These ongoing, noncontractual customer relationships, described by Dr. DiLiddo of Goodrich as "a handshake type of relationship, one in which we typically would sell to that customer and the customer would typically order from us based on current market conditions," operate in a way that, "when a customer needs resin, they would normally place their order with us or at least part of their business would normally come to us even though we don't have a contract" (DiLiddo Dkt. 9159, 3254).

647. A large percentage of suspension PVC copolymer and dispersion PVC resin sales are also made under contract or in the context of ongoing customer-supplier relationships (Beveridge JX 1, 91 ln. 8-16; JX 3, PX 8 at 115 ln. 2-10, 116 ln. 12-19; JX 3, PX 9 at 79 ln. 14-24, 86 ln. 20 - 87 ln. 13).

648. [##] (Goodrich, slip op. at 88; Yu Dkt. 9159, 2159; DiLiddo Dkt. 9159, 3371-72; H. Wheeler Dkt. 9159, 1747-48; Beveridge JX 1, 84 ln. 16-25, 88 ln. 24 - 89 ln. 10; van Haaren CX 187D ¶ 14 *In Camera*; Dellevigne CX 188C-D ¶ 10 *In Camera*; Boulay CX 189C ¶ 7 *In Camera*). Thus, there would be hesitancy on the part of a customer to switch suppliers if competitive prices were the same (Goodrich, slip op. at 88).

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<sup>35</sup> Noncontractual PVC resin sales can occur as ongoing relationships, or as spot sales (*See, e.g.,* DiLiddo Dkt. 9159, 3253-54). To the extent that export sales tend to be spot sales (*See* DiLiddo 3274), an even greater percentage of domestic sales are characterized by ongoing relationships.

649. [##] (Goodrich, slip op. at 87-88; Goodrich F 237; Friedman JX 1, 134 ln. 1-8; JX 3, PX 6 at 150 ln. 16 - 151 ln. 3; JX 3, PX 8 at 114 ln. 22 - 116 ln. 11; JX 3, PX 9 at 82 ln. 1-25; Disch Dkt. 9159, 683-85; Schaefer Dkt. 9159, 1136-37, 1203; Weber Dkt. 9159, 1790, 1791-94; H. Wheeler Dkt. 9159, 1749; DiLiddo Dkt. 9159, 3254-55; Dkt. 9159 CX 464; Dkt. 9159 CX 466; *See* JX 3, PX 61; JX 3, PX 62; JX 3, PX 64; JX 3, PX 70; JX 3, PX 111; JX 3, PX 112; JX 3, PX 114; JX 3, PX 93 at 103582; JX 3, PX 94 at 226942; Dkt. 9159 CX 29B *In Camera*; Dkt. 9159 CX 84C, E, G *In Camera*). [##] (*See* CX 112A-B *In Camera*; CX 113A-B *In Camera*; Dkt. 9159 CX 78B-C, G, K *In Camera*; Dkt. 9159 CX 80B *In Camera*; Dkt. 9159 CX 73G *In Camera*).

650. The fact that buyers give their PVC suppliers the opportunity to meet competing offers is another indication that they would prefer to continue to purchase the resin from a given supplier (Kaserman Dkt. 9159, 2423).

651. [##] (JX 3, PX 8 at 116 ln. 20-22; JX 3, PX 6 at 62 ln. 25 - 63 ln. 3; Schaefer Dkt. 9159, 1135; Becker Dkt. 9159, 1248-49; H. Wheeler Dkt. 9159, 1747-48; McMath Dkt. 9159, 1897-98, 1901-02 *In Camera*; DiLiddo Dkt. 9159, 3124-28; *See* generally CX 4 *In Camera*). PVC salesmen frequently have access to their customers' facilities, can observe competitors' railcars at the site, and have knowledge of the customers' level of business (Weber Dkt. 9159, 1797-98; Becker Dkt. 9159, 1248-49). This information assists suppliers in detecting the competitive activity of other PVC resin suppliers.

*F. The Ready Availability of Price Information Facilitates  
Collusion in the Relevant Markets*

652. The Commission found in Goodrich that the transaction characteristics of the mass and suspension PVC market "increase the likelihood of anticompetitive effects from the acquisition in that market" (Goodrich, slip op. at 88).

653. In particular, the Commission found that contract clauses and ongoing customer-supplier relationships, together with the frequency and size of most transactions, allowed suppliers regularly

to obtain reliable price information in the market (Goodrich, slip op. at 87-88; Goodrich F 211-15, 219-21; Goodrich ID at 93-94).

654. Record evidence in this case, as discussed *infra*, confirms that reliable price information is available to PVC producers in each of the relevant markets.

*G. Price Protection Classes in Each of the Relevant PVC Markets  
Reduce the Incentive To Cheat on a Collusive Agreement*

655. Most contracts in each of the relevant PVC markets contain two forms of price protection clauses: meeting competition clauses and clauses requiring advance notice of price increases (Goodrich, slip op. at 86; Goodrich F 237-38; Goodrich ID at 94). These clauses facilitate collusion by reducing the incentive to cheat on a collusive agreement (Goodrich, slip op. at 86).

656. "Price protection" clauses include most-favored-nations clauses, and meeting competition clauses (also known as meet-or-release clauses) (Goodrich F 237; *See* Klass Dkt. 9159, 5695, 5704). They also include clauses requiring advance notice of price changes. As a matter of economic theory, these price protection clauses can facilitate collusion by reducing the potential gain from cheating on a collusive arrangement (*See* Klass Dkt. 9159, 5695-5704).

657. Most contracts in the PVC industry contain meeting competition clauses (Goodrich, slip op. at 87; Goodrich F 211, F 237). Furthermore, in most supplier-customer relationships without written contracts, customers bring competitive offers to other suppliers in the same way as would occur under a meeting competition clause (Goodrich, slip op. at 87-88; Goodrich F 237).

658. The existence of meeting competition clauses deters cheating because it encourages the customer to transmit information regarding a competitive offer to its regular supplier. Thus, the clause leads to detection of discounts (Goodrich, slip op. at 87; *See* Kaserman Dkt. 9159, 2394-96; *See also* Hirschleifer, *Price Theory and Applications*, 309-311 (1984); Salop, "Practices That (Credibly) Facilitate Oligopoly Coordination," *New Developments in the Analysis of Market Structure* 280 (Stiglitz, ed. 1986).

659. Most contracts in the PVC industry contain clauses requiring advance notice of price increases (*e.g.*, 30 days) (Goodrich

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659. Most contracts in the PVC industry contain clauses requiring advance notice of price increases (*e.g.*, 30 days) (Goodrich

F 238). These clauses formalize the practice of giving advance notice of price increases. By giving advance notice, a supplier is able to ascertain whether its competitors are following a price increase prior to its effective date. Absent the advance notice, a period of time is necessary for other firms to discover and react to the price increase. During this lag time, the supplier that initiates a price increase may lose sales to those suppliers who have yet to react and raise prices. Thus, absent advance notice, there is an incentive not to be the first supplier to raise price and, therefore, an incentive against price increases occurring (*See Areeda, Antitrust Analysis* 274 (1981); Posner, *Antitrust Law: An Economic Perspective* 61 (1976); Stigler, *The Organization of Industry* 42-43 (1976); F.M. Scherer, *Industrial Market Structure and Economic Performance* 222-25 (2d ed. 1981); J. Bain, *Price Theory* 273-283 (1952)).

*H. Anticompetitive Conduct in the Relevant PVC Markets Would  
Not Be Threatened By Rapid Technological Change*

660. Market power may be harder to exercise or less likely to endure in the face of rapid technological change. New technology may signal that the market is being transformed, which may result in new entry, declining concentration, or unstable market shares.<sup>36</sup> Conversely, the absence of rapid technological change in a market may decrease the threats to the maintenance of a collusive agreement, and may thereby increase the likelihood that collusion will endure should it occur (*See* Klass Dkt. 9159, 5426-29).

661. None of the relevant PVC markets is currently undergoing rapid technological change (Goodrich ID at 94; Goodrich F 232; JX 3, PX 8 at 86 ln. 24 - 87 ln. 7; CPF 719-720). [##] (Goodrich F 223-226; *See* H. Wheeler Dkt. 9159, 734-35; Dkt. 9159 CX 515G; Dkt. 9159 RX 639H, R *In Camera*), and the development and implementation of vinyl chloride emission control technology to comply with newly-instituted environmental and worker safety regulations (Goodrich F 227-231; *See* Dkt. 9159 CX 642 U-V; Dkt. 9159 CX 597 A-E). Today, these changes have been largely implemented (Goodrich F 232).

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<sup>36</sup> *FTC Merger Statement*, (CCH) ¶ 4,516 at 6,901-3.



662. The initial growth and development of mass and suspension PVC as a product in the 1950's and 1960's occurred as flexible (plasticized) PVC resin found markets in wire and cable, calendered sheet, and specialty applications (Goodrich F 222; *See* DiLiddo Dkt. 9159, 3106-08; Dkt. 9159 CX 53D). [##] (Goodrich F 222; Dkt. 9159 RX 639H *In Camera*).

663. [##] (Goodrich F 223; Dkt. 9159 RX 639H *In Camera*; *See* Eades Dkt. 9159, 1464-65; McMath Dkt. 9159, 1893, 1922; Dkt. 9159 RX 639H *In Camera*). [##] (Goodrich F 223; Dkt. 9159 RX 639H, P *In Camera*). As demand for mass and suspension PVC resin shifted toward large volume, commodity grade end-use applications, PVC producers began to install large reactors of 18,000-35,000 gallon capacity to serve this demand; accompanying technology, such as computerization to ensure consistency in resin quality and efficiency in resin production using large-batch processes, was also developed (Goodrich F 223; Dkt. 9159 Disch 641, 648-53).

664. [##] (*See* Dkt. 9159 CX 42A-Z64 *In Camera*; Dkt. 9159 RX 639H, *In Camera*). [##] (Eades Dkt. 9159, 1464-65; Dkt. 9159 RX 639H *In Camera*).

665. Large reactors in use in the United States today range in size from 18,000 gallons to about 40,000 gallons in capacity; reactors of 50,000 gallon capacity are in use in Europe (Goodrich F 224; *See* Disch Dkt. 9159, 638-40; Schaefer Dkt. 9159, 1213-14). Small reactors range in size from 2,000 to 5,000 gallons in capacity (Goodrich F 229; Schaefer Dkt. 9159, 1213).

666. Large reactor technology increased the efficiency of PVC production, reduced labor costs, and provided economies of scale above that available from small reactor technology (Goodrich F 225; Disch Dkt. 9159, 643; Schaefer Dkt. 9159, 1140; *See* Dkt. 9159 CX 515G). The cost disadvantage of using a small reactor production configuration compared to that of a large reactor production configuration can be quite significant for commodity applications (Goodrich F 225; *See, e.g.,* H. Wheeler Dkt. 9159, 1734; Eades Dkt. 9159, 1463-65).

667. [##] (Goodrich F 226; *See* H. Wheeler Dkt. 9159, 1720-21, 1725; Dkt. 9159 RX 639D, H *In Camera*; Dkt. 9159 CX 515G; *See also* Eades Dkt. 9159, 1479-80). Many of the remaining small reactor PVC plants are still used to manufacture specialty PVC resin

grades (H. Wheeler Dkt. 9159, 1757-58; Schaefer Dkt. 9159, 1078-79; Becker Dkt. 9159, 1263- 64). However, it is unlikely that new small reactor capacity would be built by a producer today (Goodrich, slip op. at 79, n.178; Goodrich F 226; H. Wheeler Dkt. 9159, 1758; Disch Dkt. 9159, 640).

668. [##] (Schaefer Dkt. 9159, 1212; H. Wheeler Dkt. 9159, 1735-36; Dkt. 9159 RX 53I *In Camera*).

669. The mid-to-late 1970's were also a period of fundamental changes in the regulatory environment facing the PVC and VCM industries, a factor which had a profound effect on the technological design, siting, and operation of plants, capital costs, and the structure of the markets (Goodrich F 227; *See* Dkt. 9159 CX 642Z5-Z6; Dkt. 9159 CX 504D-O; Dkt. 9159 CX 597A-E; Dkt. 9159 CX 505S-U). While regulations promulgated by both federal and state agencies during this period affected all aspects of the PVC and VCM businesses, environmental regulations had the greatest overall impact (Goodrich F 227; *See* Dkt. 9159 CX 597C). Following the finding that VCM was a specific cause of liver cancer, the Occupational Health and Safety Administration (OSHA) promulgated a standard in 1975 to reduce occupational exposure to VCM; in 1976, the Environmental Protection Agency (EPA) promulgated a standard to reduce atmospheric VCM emissions (Goodrich F 227; *See* Dkt. 9159 CX 642U). Additional environmental regulations affecting other aspects of PVC and VCM/EDC production facilities were subsequently promulgated, (Goodrich F 227; Dkt. 9159 CX 597C-D; Dkt. 9159 CX 642Z164-Z177).

670. [##] (Goodrich F 228; Dkt. 9159 CX 200L *In Camera*; Dkt. 9159 CX 642Z5). Most of the requirements regarding VCM control technology pertain to PVC plants because these facilities contribute proportionately more emissions than VCM/EDC plants as a result of characteristics inherent in the batch process (Goodrich F 228; Dkt. 9159 CX 842).

671. Changes brought about by the promulgation of the VCM emissions standard were felt most acutely by the older PVC plants that had to retrofit their processes with new controls (Goodrich F 229; Dkt. 9159 CX 642Z5). As a result of the stringent requirements, seven PVC plants were forced to close down, three on a permanent basis (Goodrich F 229; Dkt. 9159 CX 642Z6). [##] (CX 5D-E *In*

*Camera*). Several PVC and VCM/EDC plants were still in the design phase during development of the regulation, and the engineering had to be altered to accommodate the new requirements (Goodrich F 229; Dkt. 9159 CX 642Z5; *See, e.g.*, Dkt. 9159 CX 505 S-U; Dkt. 9159 CX 504D-O). PVC producers also noted a 10% to 12% average loss in capacity as a result of compliance requirements (Goodrich F 229; Dkt. 9159 CX 642Z5; *See e.g.*, Dkt. 9159 CX 447J). This capacity loss was mainly due to the time needed to clean reactors and purge systems after each batch in an effort to reduce VCM emissions (Goodrich F 229; Dkt. 9159 CX 642Z5 - Z6).

672. The total cost of compliance for producers affected by the federal VCM atmospheric emissions standard alone for the 10-year period 1977 to 1986 is estimated to be \$765.7 million (in 1977 dollars), including investments, capital, operating, and maintenance costs for new and existing plants (Goodrich F 230; Dkt. 9159 CX 642Z5).

673. The technological trend in the PVC industry throughout the 1970's toward large reactors, automation, computerized control of production, and decreased emphasis on the production of specialty PVC resins was partly promoted by, and greatly facilitated compliance with, the various environmental regulations (Goodrich F 231; Dkt. 9159 CX 642Z6, Z49-Z137). Current technology is well-established and stable (Goodrich F 232; Dkt. 9159 CX 642Z50-Z51). At the present time, nearly all PVC plants have completed the modifications necessary for compliance (Goodrich F 232; Dkt. 9159 CX 642Z6).

674. Thus, product and process technology is now considered to be stable and unlikely to undergo any significant change in the mass and suspension PVC market, the suspension PVC copolymer market and the dispersion PVC market (JX 3, PX 8 at 86 ln. 24 - 87 ln. 7; *See* Goodrich, slip op. at 78).

675. Because rapid change in process, environmental, or product technology in each of the relevant markets is unlikely to occur in the foreseeable future (*See* Klass Dkt. 9159, 5427-29), collusive behavior is less likely to be threatened by new entry and therefore more likely to endure should it arise.

*I. The Declining Rate of Growth in Demand for Each of the  
Relevant Products Facilitates Anticompetitive Pricing*

676. In markets where demand growth is rapid, a firm can cheat on a collusive agreement by discounting price to capture the new orders and new customers, made available as demand increases, without signaling this fact to other members of the collusive group, because they will not detect a loss of existing customers (Kaserman Dkt. 9159, 2424). In markets where demand growth has slowed, however, there will no longer be a large inflow of new buyers to which secret discounting can be directed. Additional sales must be gained at the expense of other firms in the market, thus making it easier for members of a collusive group to detect cheating. A slower rate of growth in demand facilitates the monitoring of cheating on a collusive agreement, and thus contributes to its stability (Kaserman Dkt. 9159, 2424).

677. A slower rate of growth in demand can also operate to change the expectations of incumbent firms with respect to new entry. If demand growth has slowed, is stable, or is declining, incumbent firms may be less concerned with the threat of entry of new firms than if demand growth were rapid, and may therefore be more inclined to engage in anticompetitive behavior (Kaserman Dkt. 9159, 2425, 2429-30).

678. Thus, a slower rate of growth in demand in a market tends to promote the formation and maintenance of collusive agreements (Kaserman Dkt. 9159, 2425, 2429-30).

679. The overall rate of growth in demand for mass and suspension PVC resin is expected to be much lower in the 1980's and in the future than it was in the 1960's and 1970's (Goodrich slip op. at 90, 94; Goodrich F 233; Goodrich ID at 94; DiLiddo Dkt. 9159, 3107-14, 3119; Disch Dkt. 9159, 691-92; Schaefer Dkt. 9159, 1122 Becker Dkt. 9159, 1265-68; Dkt. 9159 CX 64U; *See also* Liao Dkt. 9159, 1518-19).

680. [##] (Goodrich, slip op. at 90; Goodrich F 234; *See* Dkt. 9159 CX 64U; Dkt. 9159 CX 185D *In Camera*). [##] (Goodrich, slip op. at 90; Goodrich F 234; *See* DiLiddo Dkt. 9159, 3110; Becker Dkt. 9159, 1265-66; Dkt. 9159 CX 14F *In Camera*; Dkt. 9159 CX 67Z8 *In Camera*). [##] (Goodrich F 234; *See* Dkt. 9159 RX 639H *In*

*Camera*). [##] (Goodrich, slip op. at 90; Goodrich F 234; *See* DiLiddo Dkt. 9159, 3109-10; Dkt. 9159 CX 67Z8, *In Camera*). Rapid growth through the 1960's and early 1970's was sustained as more and more uses were found for PVC. Its versatility as a product also enabled PVC to replace traditional materials in a multitude of applications (Goodrich F 234; Disch Dkt. 9159, 719; Schaefer Dkt. 9159, 1154-55; DiLiddo Dkt. 9159, 3108; Becker Dkt. 9159, 1268-70; Dkt. 9159 CX 53D). Beginning in 1979, however, actual average growth rates declined to the 3%-4% range (Goodrich, slip op. at 90; Goodrich F 234; *See* H. Wheeler Dkt. 9159, 1731-32; Becker Dkt. 9159, 1265-66; *See also* Eades Dkt. 9159 1471).

681. [##] (Goodrich, slip op. at 90; Goodrich F 235; Goodrich, ID at 94; Becker Dkt. 9159, 1266-67 Eades Dkt. 9159, 1470; L. Wheeler Dkt. 9159, 941; DiLiddo Dkt. 9159, 3112-14, 3324-25; Dkt. 9159 CX 16Z11 *In Camera*; Dkt. 9159 CX 513C *In Camera*; Dkt. 9159 CX 374E-G, L *In Camera*; Schaefer JX 1, 585 ln. 2 -587 ln. 20; JX 3, PX 8 at 18 ln. 7-15, 80 ln. 20-24, 89 ln. 1-5; JX 3, PX 9 at 100 ln. 24 - 101 ln. 8; 125 ln. 15-17; JX 3, PX 6 at 82 ln. 11-23; JX 3, PX 10 at 1154 ln. 18 - 1157 ln. 8; JX 3, PX 11 at 691 ln. 15-23; JX 3, PX 13 at 452726 ). As observed by Dr. DiLiddo of Goodrich, "The world is changing, the PVC business is maturing, the opportunities for new markets . . . have been defined to a very large degree" (Goodrich F 235; DiLiddo Dkt. 9159, 3324-25).

682. [##] (CX 43E; RX 1L *In Camera*). [##] (CX 43L; CX 166; RX 1L *In Camera*; RX 300B; RX 307A; RX 312J; Donnelly CX 176D ¶ 4 *In Camera*; Heath CX 178E ¶ 8 *In Camera*). Demand for both suspension PVC copolymer and dispersion PVC is expected to grow at a slower rate than growth in demand for mass and suspension PVC (JX 3, PX 6 at 82 ln. 11-23; JX 3, PX 8 at 89 ln. 1-10; JX 3, PX 9 at 100 ln. 24 - 101 ln. 8).

683. [##] (RX 1L *In Camera*; CX 43G-I). This does not suggest, however, that demand for PVC resin in the relevant markets will grow in the future at a rate close to the rate at which it grew in the 1960's and 1970's. On the contrary, the rate of growth in demand for PVC resin in the relevant markets for the decade and beyond is, as Mr. Disch and others have testified, likely to be much closer to GNP than it is to a much higher level (Disch Dkt. 9159, 691; *See* CPF 725).

684. Increases in demand observed in recent years in the relevant markets reflect recovery of the PVC industry from the recession of the early 1980's. Also, the PVC industry has benefitted from strength in particular segments of the economy. While, in addition, PVC has grown in a limited number of newer applications, this growth is clearly of a much lesser magnitude than the type of explosive growth that the PVC industry enjoyed in the 1960's and 1970's, as noted in the Goodrich proceeding (Goodrich F 234).

685. From 1979 to 1987, aggregate PVC demand grew at a compound annual rate of 3.4 percent (compare CX 213C and Dkt. 9159 CX 672Z5). [##] (*See* RX 1L, RX 1V *In Camera*; RX 43C, RX 43E *In Camera*).

686. (Goodrich F 236; *See* Liao Dkt. 9159, 1517-19; Dkt. 9159 RX 639H *In Camera*). The slower rate of growth since 1979 discouraged entry into the relevant markets (Goodrich F 236; *See* Eades Dkt. 9159, 1468-69).

687. Moreover, the perception by PVC producers that demand for PVC will grow only slowly in each of the relevant PVC markets is acknowledged by producers in the industry to have an impact on their expectations regarding new entry (Goodrich F 236; *See, e.g.*, Schaefer JX 1, 585 ln. 2 - 587 ln. 20; Schaefer Dkt. 9159, 1133; H. Wheeler Dkt. 9159, 1736; *See also* Eades Dkt. 9159, 1486-87).

688. Thus, a slower rate of growth in demand in the future for PVC resin in each of the relevant markets will make entry less likely to occur, affects the expectations of incumbent firms regarding new entry, and thereby tends to increase the likelihood of collusion (Kaserman JX 1, 322 ln. 20 - 323 ln. 10; Kaserman Dkt. 9159, 2429-30).

## IX. MARKET CONDUCT

### A. Monitoring Activity

689. [##] (Goodrich F 215; Klass Dkt. 9159, 4358; *See also* Weber Dkt. 9159, 1791-1803; Becker Dkt. 9159, 1246-48; Dkt. 9159 CX 138; Dkt. 9159 CX 141; Dkt. 9159 CX 143; Dkt. 9159 CX 148; Dkt. 9159 CX 163 *In Camera*; Dkt. 9159 CX 169I; Dkt. 9159 CX 228; Dkt. 9159 CX 234; Dkt. 9159 CX 238; Dkt. 9159 CX 239; Dkt.

9159 CX 241; Dkt. 9159 CX 242; Dkt. 9159 CX 243). As a result, these producers have a working knowledge of competitors' prices and price changes, and are aware of price changes in the industry (Goodrich F 215; JX 3, PX 136 at 116 ln. 17 - 117 ln. 4; JX 3, PX 10 at 1199 ln. 5-11, 1135 ln. 5 - 1137 ln. 18; JX 3, PX 8 at 116 ln. 8 - 118 ln. 11; JX 3, PX 7 at 157 ln. 10 - 160 ln. 23; JX 3, PX 9 at 77 ln. 5 - 79 ln. 73, 84 ln. 2 - 85 ln. 1; H. Wheeler Dkt. 9159, 1749-50, 1768; Schaefer Dkt. 9159, 1199; Becker Dkt. 9159, 1338). Producers obtain competitive price information quickly (H. Wheeler Dkt. 9159, 1749; Weber Dkt. 9159, 1799). [##] (Goodrich F 215; Becker Dkt. 9159, 1248-49; Schaefer Dkt. 9159, 1135-37; H. Wheeler Dkt. 9159, 1747-48; McMath Dkt. 9159, 1897-98, 1901-09 *In Camera*; DiLiddo Dkt. 9159, 3124-27, 3128 *In Camera*).

690. Knowledge that a competitor is reducing price would facilitate collusive behavior in each of the relevant markets, by allowing rivals to detect and discipline any cheating on a collusive agreement, thus discouraging such cheating (Goodrich F 204; Kaserman JX 1, 346 ln. 15 - 347 ln. 14). [##] (*See, e.g., CX 67A In Camera; CX 66A-B In Camera; CX 62 In Camera; CX 133 In Camera; CX 134 In Camera; CX 68B In Camera*).

691. [##] (*See CX 4A-Z518 In Camera; Goodrich F 215; JX 3, PX 136 at 119 ln. 25 - 120 ln. 9; JX 3, PX 9 at 78 ln. 12 - 79 ln. 13; JX 3, PX 10 at 1135 ln. 8 - 1137 ln. 18; JX 3, PX 8 at 117 ln. 9 - 118 ln. 11; JX 3, PX 7 at 160 ln. 7-22; See, e.g., JX 3, PX 58; JX 3, PX 59; JX 3, PX 60; JX 3, PX 62; JX 3, PX 72; JX 3, PX 122; JX 3, PX 21; JX 3, PX 63; JX 3, PX 65; JX 3, PX 66; JX 3, PX 67; JX 3, PX 73; JX 3, PX 74; JX 3, PX 75; JX 3, PX 117; JX 3, PX 119; JX 3, PX 120; JX 3, PX 124*). [##] (Kulkaski RX 255C ¶ 6 *In Camera*). By bringing competitive offers to their regular suppliers, pursuant to meeting competition clauses or in non-contract situations, buyers provide information about the prices of competitors (Goodrich F 212; Disch Dkt. 9159, 728; Becker Dkt. 9159, 1246-48; Weber Dkt. 9159, 1798-99; Schaefer Dkt. 9159, 1136-37; H. Wheeler Dkt. 9159, 1747-48).

692. [##] (*See, e.g., Goodrich F 213; RX 106 In Camera; RX 111B In Camera; RX 100 B In Camera; RX 105A In Camera; RX 139B In Camera; RX 141A In Camera; RX 169B In Camera; RX 216D In Camera; RX 216F In Camera*), [##] (*See CX 85; CX 86; CX*

87; CX 88; CX 89; CX 90; CX 91; CX 92; CX 93; Goodrich F 213; Wheeler 1800; Dkt. 9159 CX 30Z7; Dkt. 9159 CX 32V-X; Dkt. 9159 CX 99 *In Camera*; Dkt. 9159 CX 124; Dkt. 9159 CX 127; Dkt. 9159 CX 131C-D; Dkt. 9159 CX 140; Dkt. 9159 CX 142C; Dkt. 9159 CX 144; Dkt. 9159 CX 145; Dkt. 9159 CX 128B-E; Dkt. 9159 CX 149; Dkt. 9159 CX 231; Dkt. 9159 CX 463; Dkt. 9159 CX 464; Dkt. 9159 CX 470; Dkt. 9159 CX 578 *In Camera*). [##] (Stuart CX 201C ¶ 6 *In Camera*).

693. [##] (Goodrich F 211, F 238; *See, e.g.*, Dkt. 9159 CX 73H *In Camera*; Dkt. 9159 CX 76C *In Camera*; Dkt. 9159 CX 78B *In Camera*; Dkt. 9159 CX 84E *In Camera*; Dkt. 9159 CX 89C *In Camera*; Dkt. 9159 CX 152B *In Camera*). Suppliers usually give advance notice of price increases (Goodrich F 211). This practice permits rivals to determine, prior to the effective date, whether competitors are following the proposed increase, thereby reducing the risk of losing sales as a result of increasing prices. Although the information obtained from customers is not perfect, most information is considered to be reliable (Goodrich F 215; Becker Dkt. 9159, 1338; H. Wheeler Dkt. 9159, 1749-50, 1768). Sales and marketing personnel are trained to probe and check to improve the accuracy of the information received (Goodrich F 215; Schaefer Dkt. 9159, 1136-37; Weber Dkt. 9159, 1797-98; Becker Dkt. 9159, 1246-47). The incentive for a customer to provide inaccurate information is tempered by the fact that the customer risks its relationship with a supplier if caught (DiLiddo Dkt. 9159, 3258-59). Because of the large number of buyers and the regularity and frequency of transactions, suppliers are able to gauge the accuracy of particular items of information to spot trends in prices and the behavior of particular rivals (H. Wheeler Dkt. 9159, 1749-50, 1768; Schaefer Dkt. 9159, 1135-37).

694. PVC producers in each of the relevant markets monitor the trade press for price information. Price increases are routinely announced in the trade press one or two months in advance of their effective date, allowing rivals an opportunity to react to such increases, and to make similar announcements to their customers (CX 8; CX 9A; CX 168; Goodrich F 214; Dkt. 9159 Weber Dkt. 9159, 1799-1800; Dkt. 9159 Becker Dkt. 9159, 1248; Dkt. 9159 CX 98; Dkt. 9159 CX 131; Dkt. 9159 CX 139E; Dkt. 9159 CX 409; Dkt.



9159 CX 410; Dkt. 9159 CX 411; Dkt. 9159 CX 413; Dkt. 9159 CX 436; Dkt. 9159 CX 532; Dkt. 9159 CX 563; Dkt. 9159 CX 711; Dkt. 9159 CX 714; Dkt. 9159 CX 715; Dkt. 9159 CX 718; Dkt. 9159 CX 719A).

695. Monthly trade reports often report on market pricing, and, based on discussions with PVC producers, forecast prices into the near future, providing an effective vehicle which producers in each of the relevant markets can use as a basis for communication and possible agreement (*See* CX 45A; CX 46A; CX 18G; CX 21G; CX 22G; CX 23G; CX 24G; CX 25G; CX 26G; CX 27G; CX 28G; CX 29G; CX 30G; CX 31G; CX 32G; CX 33H; CX 34G; CX 35G).

696. Industry consultants are also a mechanism through which PVC producers in each of the relevant markets obtain price information. Producers regularly tell such consultants what they believe the market price is or should be, or whether the price should increase, and consultants, in turn, report this information to other producers (JX 3, PX 45; JX 3, PX 81).

697. [##] (*See* CX 95B *In Camera*). A Vista call report recounts a meeting between a Vista salesman and an Occidental salesman, in which the Occidental salesman "called on" a customer while the Vista salesman was there. At this meeting, the Occidental salesman "confirmed Oxy's \$0.32 lb market price announcement for pipe grade resin effective March 1" and "related that Oxy's intentions are to move to a \$0.34 lb market price for pipe grade resin on April 1" (CX 129A-B).

698. A Formosa call report recounts a meeting among sales and management personnel from a number of PVC producers at a golf outing held by one PVC customer. One subject of discussion at this meeting was the share of the customer's business held by each supplier (CX 123A). This particular gathering of PVC producers is an annual one (CX 123B).

699. In addition, vertically integrated PVC producers also exchange price information, which is routinely communicated to marketing management (JX 3, PX 53; JX 3, PX 55; JX 3, PX 56; JX 3, PX 57).

700. In addition, as the Commission demonstrated in Goodrich, PVC producers in the relevant markets may be able to obtain price information through their VCM "supply interrelationships" with

integrated PVC producers (Goodrich, slip op. 107).<sup>37</sup> (DiLiddo Dkt. 9159, 3310, 3315-16 *In Camera*; Schaefer Dkt. 9159, 1223 *In Camera*). [##] (DiLiddo Dkt. 9159, 3316 *In Camera*; See Schaefer 1223 *In Camera*).

701. In determining the price of VCM, Goodrich and Occidental must first agree on the appropriate reference price for PVC. Indeed, as witnesses in Goodrich testified, the price of PVC is "the determinant of what the selling price for VCM is . . ." (DiLiddo Dkt. 9159, 3308, 3309 ("So, the price of PVC is driving the price of VCM")). [##] (*See CX 79A In Camera*).

702. These raw material supply relationships between the principal competitors in the mass and suspension PVC market, coupled with the agreement by producers to link higher VCM prices to higher PVC prices, increase the likelihood of coordinated price increases. As the Commission recognized in Goodrich, vertically integrated VCM/PVC producers "could create power over price in the PVC market by in effect creating an involuntary PVC cartel; that is, by forcing producers to raise price in a coordinated fashion, whether or not a voluntary PVC cartel could have formed" (Goodrich, slip op. at 104 n.220, 111-12 n.241).

703. Indeed, historical price data shows that, since the acquisition, PVC producers have succeeded in raising mass and suspension PVC prices by approximately twice the increase in VCM prices (CX 45A; CX 46A; CX 175). This suggests that the formula regarding VCM and PVC pricing (*i.e.*, the "Dow Air Products" formula) has not broken down.

704. [##] (Dkt. 9159 CX 252 *In Camera*; Dkt. 9159 CX 474 *In Camera*; Dkt. 9159 RX 35 *In Camera*), [##] (CX 54 *In Camera*), [##] (RX 258Z83 *In Camera*), [##] (CX 118 *In Camera*), [##] (CX 134 *In Camera*; CX 62 *In Camera*), [##] (RX 290B; RX 299B) [##] (CX 107 *In Camera*; Dkt. 9159 CX 30; Dkt. 9159 CX 31; Dkt. 9159 CX 32; Dkt. 9159 CX 215; Dkt. 9159 CX 424; Dkt. 9159 RX 296; Dkt. 9159 RX 297; Dkt. 9159 RX 298; Dkt. 9159 RX 299; Dkt. 9159 RX 302; Dkt. 9159 RX 303; Dkt. 9159 RX 304; Dkt. 9159 RX 311; Dkt.

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<sup>37</sup> See Motion and Supporting Arguments of Occidental Petroleum Corporation and Occidental Chemical Corporation for Reconsideration of Intent to Release *In Camera* Information, filed in Goodrich, Dkt. 9159, February 17, 1988.

9159 RX 314). The availability of this non-price market information enables competitors in each of the relevant markets to assess and predict the competitive strategies of their rivals, and facilitates the reaching and maintaining of an industry consensus with regard to market activities.

*B. Signaling Activity*

705. [##] (CX 66B *In Camera*). [##] (CX 67A *In Camera*). [##] (RX 93A *In Camera*).

706. [##] (Goldstein CX 180C ¶ 4 *In Camera*; Clark CX 193C-D ¶ 4 *In Camera*; Bendavid CX 194B-C ¶ 4 *In Camera*; Kulkaski CX 195B ¶ 3 *In Camera*; Alberti CX 199B ¶ 3 *In Camera*; Donnelly CX 176C ¶ 4 *In Camera*; Gmach CX 200C ¶ 3 *In Camera*). [##] (CX 133 *In Camera*).

707. In addition, PVC producers are quoted in the trade press or in monthly consultants' reports regarding their beliefs as to the likelihood that PVC prices will increase in coming months, thus signaling to their rivals their intention to maintain current prices or to support increased prices (CX 9; CX 18G-H; CX 27G-H). One "Contact Report," received by Occidental from an industry consultant, reported on a meeting between the consultant and Conoco Chemicals' General Manager for Plastics: "Conoco believes a price of 41 cents per pound for pipe resin is too high for C900 pipe and that 37 cents is an acceptable level for this type of pipe in 6 to 8 inch diameters" (JX 3, PX 82). The report goes on to note that "Conoco believes PVC volume and prices will be less depressed in 1984 than in 1983" (JX 3, PX 82).

708. The President of Occidental Chemical, Mr. J. Roger Hirl, has been quoted in the trade press as stating that "We're not willing to price below the perceived market to get share, but we do aggressively try to get accounts" (CX 44C). In addition, Occidental, as noted *supra*, receives "Contact Reports" from one industry consultant relating, in detail, conversations that consultant had with other producers. One "Contact Report" received by Occidental, reporting on a meeting with Georgia-Pacific PVC management, noted that "GP's current strategy is non-aggressive and conservative" (JX 3, PX 79). In another such "Contact Report," Occidental was

informed of Borden management's view that the problem in the PVC industry is the inability of PVC producers to move prices to the "published industry consensus" (JX 3, PX 45). According to the report, Borden attributed this problem to the fact that "Polymer producers continue to struggle to maintain market share as a quantity rather than being satisfied with maintaining a percentage of the market" (JX 3, PX 45). Occidental was similarly informed that "Conoco wishes other producers would not use aggressive pricing in periods of low demand in futile campaigns to increase market share. Mr. Flammer deplores the failure of intelligent people to use history and available statistics to their own advantage and for the good of the industry" (JX 3, PX 82).

709. PVC producers also provide signals to their competitors with regard to other non-price market activities. For example, producers announce their schedules for temporary plant shutdowns and scheduled maintenance (RX 290B; RX 299B). In addition, during 1987, some producers have announced to the trade press the projected magnitude of their anticipated incremental capacity expansions (*See, e.g.*, CX 165A; CX 166).

### *C. Competitive Performance in the Relevant Markets*

710. During the early to mid 1980's, PVC producers exported PVC resin at a price lower than that at which they sold it in the United States, in order to avoid disrupting the domestic price structure (Schaefer Dkt. 9159, 1208; Schaefer JX 1, 587 ln. 21-25; 589 ln. 1-14).<sup>38</sup> [##] (Alberti CX 199C ¶ 4 *In Camera*). [##] (CX 132 *In Camera*). [##] (CX 10 *In Camera*), [##] Industry newsletters document the pervasiveness of such economic discrimination in the mass and suspension PVC market (*See* RX 288F; RX 289F; RX 290F; RX 291F; RX 292F; RX 293F; RX 294F; RX 295F; RX 297F; RX 298F; RX 299H; RX 300J; RX 301F; RX 302F). [##] (CX 11 *In Camera*).

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<sup>38</sup> As a result of the decline in the value of the dollar relative to other currencies, PVC producers are today able to export PVC at a price significantly above the domestic price.

711. [##] (CX 112C *In Camera*; CX 113A *In Camera*; JX 3, PX 94; Cf. RX 206A *In Camera*). [##] (Lewis CX 204B ¶ 4 *In Camera*).

712. PVC producers in each of the relevant markets take care to assure that their pricing activity will not be perceived by their competitors as disruptive or aggressive, and exercise restraint in responding to efforts by their competitors' customers to seek a competitive source of supply. [##] (CX 44C), [##] (CX 57 *In Camera*). [##] (CX 57 *In Camera*; *See also* CX 56 *In Camera*). [##] (CX 12A *In Camera*).

713. In order to avoid competitive reactions from their rivals, PVC producers do not generally look to increase market share, or gain substantial amounts of new business in market segments in which they do not participate, or at accounts they have not traditionally served. Thus, for example, Vista pointed out to one customer that was interested in purchasing pipe-grade resin that "Vista is not currently trying to expand pipe grade resin sales and that we would not aggressively compete with his current suppliers" (CX 130B). [##] (CX 36B *In Camera*). [##] (CX 77B *In Camera*; *See also* CX 76A *In Camera*). Similarly, an Occidental memorandum following the company's acquisition of Firestone Plastics noted, "Price increases have been implemented in all PVC product lines in an effort to improve profit margins and outpace raw material price increases" (JX 3, PX 50 at 150572).

714. [##] (*See* Pflugrath CX 177F ¶ 9 *In Camera*; Heath CX 178D ¶ 6 *In Camera*; Wilhite CX 179C-D ¶ 4 *In Camera*; Bendavid CX 194B-C ¶ 4 *In Camera*; Rutland CX 196A-B ¶ 3 *In Camera*; Alberti CX 199C-D ¶ 5 *In Camera*; Gmach CX 200C ¶ 3 *In Camera*; Donnelly CX 176B-C ¶ 2 *In Camera*; Underwood CX 203D ¶ 8 *In Camera*; Hamilton CX 206F ¶ 10 *In Camera*). [##] (Wilhite CX 179D ¶ 4 *In Camera*). [##] (Alberti CX 199C ¶ 5 *In Camera*). [##] (Alberti CX 199C-D ¶ 5 *In Camera*). [##] (Heath CX 178D ¶ 6 *In Camera*). [##] (Pflugrath CX 177E ¶ 9 *In Camera*; *See also* Heath CX 178F ¶ 9 *In Camera*; Wilhite CX 179D ¶ 3 *In Camera*). [##] (Kulkaski RX 255C ¶ 6 *In Camera*). [##] (*See* RX 110A *In Camera*; RX 106 *In Camera*; RX 124 *In Camera*; RX 206A *In Camera*).

715. [##] (RX 1L *In Camera*). [##] (RX 1L *In Camera*).

716. [##] (CX 43C; Donnelly CX 176C-D ¶ 4 *In Camera*; Heath CX 178E ¶ 8; Kulkaski CX 195C ¶ 4 *In Camera*). [##] (Donnelly CX 176C-D ¶ 4).

717. [##] (CX 100 M *In Camera*). [##] (CX 49D-E *In Camera*) and B.F. Goodrich. [##] (Hamilton CX 206F ¶ 10 *In Camera*). Moreover, the fact that idle capacity is held by the two largest producers allows these firms to hold this capacity as a potential threat against any other producers that may consider making substantial expansions in the market.

718. [##] (CX 95B *In Camera*), [##] (CX 95A *In Camera*). [##] (CX 137Z61 *In Camera*).

719. [##] (CX 95D *In Camera*). [##] (Donnelly CX 176B ¶ 3 *In Camera*). Thus, PVC recognize the degree to which they are able to maintain firm prices at relatively low levels of capacity utilization, without a significant degree of price discounting (*See* Dkt. 9159 CX 220C; Schaefer Dkt. 9159, 1123-24; H. Wheeler Dkt. 9159, 1745).

720. [##] (Pflugrath CX 177E-F ¶ 10 *In Camera*; Heath CX 178F-G ¶ 10 *In Camera*; Goldstein CX 180C ¶ 4 *In Camera*; Clark CX 193C-D ¶ 4 *In Camera*; Bendavid CX 194B-C ¶ 4 *In Camera*; Kulkaski CX 195B ¶ 3 *In Camera*; Porter CX 198B ¶ 2 *In Camera*; Alberti CX 199D ¶ 6 *In Camera*; Gmach CX 200C ¶ 3 *In Camera*; Donnelly CX 176C ¶ 4 *In Camera*; Hamilton CX 206F-G ¶ 10-11 *In Camera*).

721. [##] (Pflugrath CX 177E-F ¶ 10 *In Camera*). [##] (Donnelly CX 176C ¶ 4 *In Camera*). [##] (Clark CX 193C-D ¶ 4 *In Camera*).

722. [##] (Clark CX 193D ¶ 4 *In Camera*). [##] (Gmach CX 200C ¶ 3 *In Camera*). [##] (Gmach CX 200C ¶ 3 *In Camera*; *See also* Alberti CX 199D ¶ 6 *In Camera*).

723. [##] (CX 96B *In Camera*; *See also* JX 3, PX 13 at 452726). Similarly, Occidental has described the profitable pricing levels that exist in the dispersion PVC market (JX 3, PX 13 at 452717). [##] (Flammer CX 84E ¶ 9; Hoyer CX 185E-F ¶ 11; Hill CX 183D-F *In Camera*).

724. [##] (CX 100 L *In Camera*). [##] (CX 100 K *In Camera*).

725. [##] (*See* CX 100 A-N *In Camera*; CX 100O). [##]

726. [##] (Goldstein CX 180C ¶ 4 *In Camera*; Donnelly CX 176A-B ¶ 2 *In Camera*; Heath CX 178D-E ¶ 7 *In Camera*; Alberti CX 199B ¶ 3 *In Camera*; Wilhite CX 179B ¶ 2 *In Camera*; Pflugrath CX

177D ¶7 *In Camera*; Clark CX 193B-C ¶3 *In Camera*; Porter CX 198A-B ¶2 *In Camera*; Underwood CX 203D ¶7 *In Camera*; Hamilton CX 206B-C ¶5 *In Camera*). [##] (Donnelly CX 176B ¶ 2 *In Camera*). [##] (Heath CX 178E ¶ 8 *In Camera*; RX 292B *In Camera*). [##] (Donnelly CX 176B ¶2 *In Camera*; Pflugrath CX 177E ¶8 *In Camera*).

727. [##] (CX 100 F *In Camera*).

728. [##] (CX 100 E *In Camera*). [##] (Baker CX 205C ¶ 4 *In Camera*).

729. [##] (CX 45A *In Camera*; *See also* CX 175; Donnelly CX 176B ¶ 2 *In Camera*). [##] (CX 79A *In Camera*; *See also* CX 143I; CX 144I; CX 145I).

730. The following graph, CX 175, illustrates the increases in mass and suspension PVC prices relative to VCM prices, and the resulting increases in the PVC/VCM margin. [##]

731. Moreover, while Occidental appears to argue that PVC price increases in the United States may be attributable to world supply and demand conditions, the record reveals that the PVC/VCM margin has in fact increased substantially more in the United States than it has in Europe. Market prices for suspension PVC homopolymer and for VCM in the United States and Europe, respectively, as reported by Tecnon's "Price Monitor," are recorded in the table below (RX 288F; RX 289F; RX 290F; RX 291D; RX 292F; RX 293F; RX 294F; RX 295F; RX 297F; RX 298F; RX 299H; RX 300J; RX 301F; RX 302F; RX 303F; RX 304F; RX 305H; RX 306F; RX 308F; RX 309F; RX 310H). Based on the range of reported prices for suspension PVC homopolymer ("U.S.; Actual" and "European") and VCM ("U.S.; Actual" and "European; Contract") (*See Id.*), margins realized respectively by United States and European PVC producers can be calculated. These margins, presented in the right-hand column of the tables, are stated as a range, with the minimum value for each month measured as the difference between the highest reported VCM price and the lowest reported PVC price for that month, and the maximum value measured as the difference between the lowest reported VCM price and the highest reported PVC price for that month.

TECNON "PRICE MONITOR"  
 Reported VCM and Suspension PVC Homopolymer Prices  
 in U.S. Currency  
 May 1986 through January 1988  
 (\$/Ton Prices Converted to Cents/Pound)

UNITED STATES

| MONTH | YEAR | VCM<br>LOW | VCM<br>HIGH | PVC<br>LOW | PVC<br>HIGH | MARGIN       |
|-------|------|------------|-------------|------------|-------------|--------------|
| May   | 1986 | 15         | 15.5        | 28.5       | 28.75       | 13 - 13.75   |
| June  | 1986 | 16         | 16.5        | 28.5       | 32.5        | 12 - 16.5    |
| July  | 1986 | 16         | 16.5        | 28.5       | 32.5        | 12 - 16.5    |
| Aug   | 1986 | 16         | 16.5        | 28.5       | 32.5        | 12 - 16.5    |
| Sep   | 1986 | 15         | 15.5        | 28.5       | 32.5        | 13 - 17.5    |
| Oct   | 1986 | 15         | 15.5        | 30         | 33          | 14.5 - 18    |
| Nov   | 1986 | 15.5       | 16          | 31         | 32          | 15 - 16.5    |
| Dec   | 1986 | 15.5       | 16          | 31         | 32          | 15 - 16.5    |
| Jan   | 1987 | 15.75      | 16          | 32         | 34          | 16 - 18.25   |
| Feb   | 1987 | 16         | 16.25       | 32         | 34          | 15.75 - 18   |
| Mar   | 1987 | 16.5       | 17          | 32         | 34          | 15 - 17.5    |
| Apr   | 1987 | 17         | 17.5        | 33         | 35          | 15.5 - 18    |
| May   | 1987 | 17.25      | 17.5        | 34         | 35          | 16.5 - 17.75 |
| June  | 1987 | 17.25      | 17.5        | 34         | 35          | 16.5 - 17.75 |
| July  | 1987 | 18         | 18.25       | 33         | 35          | 14.75 - 17   |
| Aug   | 1987 | 18.25      | 18.5        | 35         | 36          | 16.5 - 17.75 |
| Sep   | 1987 | 19         | 19.5        | 35         | 37          | 15.5 - 18    |
| Oct   | 1987 | 19         | 19.5        | 38         | 39          | 18.5 - 20    |
| Nov   | 1987 | 20         | 20.5        | 39         | 41          | 18.5 - 21    |
| Dec   | 1987 | 20         | 20.5        | 39         | 42          | 18.5 - 22    |
| Jan   | 1988 | 20.5       | 21          | 39         | 42          | 18 - 21.5    |



Initial Decision

115 F.T.C.

EUROPE

| MONTH | YEAR | VCM<br>LOW | VCM<br>HIGH | PVC<br>LOW | PVC<br>HIGH | MARGIN    |
|-------|------|------------|-------------|------------|-------------|-----------|
| May   | 1986 | 19.9       | 22.0        | 32.5       | 33.5        | 10.5-13.6 |
| June  | 1986 | 19.4       | 21.4        | 31.6       | 32.6        | 10.2-13.3 |
| July  | 1986 | 19.8       | 21.9        | 32.3       | 33.3        | 10.4-13.5 |
| Aug   | 1986 | 21.0       | 23.1        | 33.5       | 35.3        | 10.4-14.3 |
| Sep   | 1986 | 21.0       | 23.2        | 33.1       | 35.3        | 9.9-14.4  |
| Oct   | 1986 | 21.6       | 23.9        | 35.3       | 36.4        | 11.4-14.8 |
| Nov   | 1986 | 21.1       | 23.3        | 33.3       | 35.5        | 10.0-14.5 |
| Dec   | 1986 | 21.7       | 24.0        | 34.2       | 36.5        | 10.3-14.8 |
| Jan   | 1987 | 22.5       | 24.9        | 35.5       | 37.9        | 10.7-15.4 |
| Feb   | 1987 | 22.0       | 25.7        | 36.0       | 39.2        | 10.3-17.1 |
| Mar   | 1987 | 22.0       | 25.7        | 37.2       | 39.2        | 11.5-17.4 |
| Apr   | 1987 | 22.6       | 26.4        | 38.3       | 40.3        | 11.9-17.6 |
| May   | 1987 | 25.5       | 26.5        | 38.7       | 40.7        | 12.2-15.3 |
| June  | 1987 | 25.0       | 26.0        | 38.8       | 41.4        | 12.8-16.3 |
| July  | 1987 | 26.0       | 27.0        | 37.6       | 39.6        | 10.6-13.6 |
| Aug   | 1987 | 25.3       | 26.3        | 36.6       | 38.5        | 10.4-13.3 |
| Sep   | 1987 | 26.6       | 27.6        | 40.6       | 41.9        | 13.0-15.2 |
| Oct   | 1987 | 28.7       | 29.7        | 39.6       | 40.9        | 9.9-12.1  |
| Nov   | 1987 | 31.8       | 32.9        | 44.4       | 45.2        | 11.5-13.5 |
| Dec   | 1987 | 31.6       | 32.7        | 44.1       | 44.6        | 11.5-13.0 |
| Jan   | 1988 | 32.2       | 33.3        | 45.0       | 45.8        | 11.7-13.6 |

SOURCE RX 288F; RX 289F; RX 290F; RX 291D; RX 292F; RX 293F;  
RX 294F; RX 295F; RX 297F; RX 298F; RX 299H; RX 300J;  
RX 301F; RX 302F; RX 303F; RX 304F; RX 305H; RX 306F.

732. Comparison of United States and European margins for suspension PVC homopolymer in the table below, reveals that United States PVC margins have historically exceeded margins in Europe and that the gap between United States and European margins has increased since the acquisition.

733. European suspension PVC homopolymer margins have remained relatively stable over time while suspension PVC homopolymer margins in the United States have risen dramatically in recent years. Thus, in May 1986, minimum margins in the United States exceeded European minimum margins by 2.5 cents (13 cents vs. 10.5 cents) while maximum PVC margins in the United States exceeded maximum calculated European margins by 0.15 cents

(13.75 cents vs. 13.6 cents). By January 1988, minimum PVC margins in the United States exceeded those in Europe by 6.3 cents per pound (18 cents vs. 11.7 cents), while maximum PVC margins in the United States exceeded those in Europe by 7.9 cents per pound (21.5 cents vs. 13.6 cents).

734. Suspension PVC homopolymer margins in Europe showed little change between May 1986 and January 1988, while minimum margins in the United States increased over this period by 38% (18 cents in January 1988 vs. 13 cents in May 1986) and maximum calculated margins in the United States increased by 56% (21.5 cents in January 1988 vs. 13.75 cents in May 1986).

Suspension PVC Homopolymer/VCM Margins  
in the United States and Europe  
Calculated from Tecnon "Price Monitor"  
Reported VCM and Suspension PVC Homopolymer Prices  
in U.S. Currency  
May 1986 through January 1988  
(\$/Ton Prices Converted to Cents/Pound)

| <u>MONTH</u> | <u>YEAR</u> | <u>UNITED STATES<br/>MARGIN</u> | <u>EUROPEAN<br/>MARGIN</u> |
|--------------|-------------|---------------------------------|----------------------------|
| May          | 1986        | 13 - 13.75                      | 10.5 - 13.6                |
| June         | 1986        | 12 - 16.5                       | 10.2 - 13.3                |
| July         | 1986        | 12 - 16.5                       | 10.4 - 13.5                |
| Aug          | 1986        | 12 - 16.5                       | 10.4 - 14.3                |
| Sep          | 1986        | 13 - 17.5                       | 9.9 - 14.4                 |
| Oct          | 1986        | 14.5 - 18                       | 11.4 - 14.8                |
| Nov          | 1986        | 15 - 16.5                       | 10.0 - 14.5                |
| Dec          | 1986        | 15 - 16.5                       | 10.3 - 14.8                |
| Jan          | 1987        | 16 - 18.25                      | 10.7 - 15.4                |
| Feb          | 1987        | 15.75 - 18                      | 10.3 - 17.1                |
| Mar          | 1987        | 15 - 17.5                       | 11.5 - 17.2                |
| Apr          | 1987        | 15.5 - 18                       | 11.9 - 17.6                |
| May          | 1987        | 16.5 - 17.75                    | 12.2 - 15.3                |
| June         | 1987        | 16.5 - 17.75                    | 12.8 - 16.3                |
| July         | 1987        | 14.75 - 17                      | 10.6 - 13.6                |
| Aug          | 1987        | 16.5 - 17.75                    | 10.4 - 13.3                |
| Sep          | 1987        | 15.5 - 18                       | 13.0 - 15.2                |
| Oct          | 1987        | 18.5 - 20                       | 9.9 - 12.1                 |
| Nov          | 1987        | 18.5 - 21                       | 11.5 - 13.5                |
| Dec          | 1987        | 18.5 - 22                       | 11.5 - 13.0                |
| Jan          | 1988        | 18 - 21.5                       | 11.7 - 13.6                |

SOURCE RX 288F; RX 289F; RX 290F; RX 291D; RX 292F; RX 293F;  
RX 294F; RX 295F; RX 297F; RX 298F; RX 299H; RX 300J;  
RX 301F; RX 302F; RX 303F; RX 304F; RX 305H; RX 306F;  
RX 308F; RX 309F; RX 310H.

735. The graph below plots minimum calculated margins for suspension PVC homopolymer in the United States relative to those in Europe, based on the Tecnon VCM and suspension PVC homopolymer price data.

736. The next graph plots maximum calculated margins for suspension PVC homopolymer in the United States relative to those in Europe, based on the Tecnon VCM and suspension PVC homopolymer price data.

Minimum Margin Between Suspension PVC Homopolymer and  
VCM Prices In U.S. and European Markets

GRAPH FROM PAGE 218 GOES HERE

Note: Minimum PVC Margin in each market is calculated by subtracting maximum VCM prices from the minimum PVC prices reported in RX288-RX310

Maximum Margin Between Suspension PVC Homopolymer  
and VCM Prices In U.S. and European Markets

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Note: Maximum PVC Margin in each market is calculated by subtracting minimum VCM prices from the maximum PVC prices reported in RX288-RX310

737. Regardless of whether minimum or maximum margins are considered, the increase in United States suspension PVC homopolymer margins relative to European margins, provides strong evidence that the increase in PVC prices in the United States are not explainable by cost increases or world-wide market forces.

738. Thus, it is not surprising that over the past year PVC producers have reported large profits from their PVC operations. Borden reported in September, 1986, that its operating income from the sale of PVC resins was "more than double last year's level" (CX 142I). BF Goodrich reported operating income from "PVC and Intermediates" of \$49.9 million for the nine months ended September 30, 1986 and \$107.7 million for the nine months ended September 30, 1987 (CX 146L). Goodrich also noted that third quarter operating income "increased to \$46.8 million, 2.5 times last year's income of \$18.8 million" (CX 146M). It noted that the increase in operating income "was largely attributable to increased volume combined with margin improvements resulting from significantly enhanced domestic pricing and a stronger sales mix" (CX 146M). Goodrich has recently announced plans to dispose of its interest in Uniroyal Goodrich Tire Company, in order to focus its resources, long-term, on its chemical and aerospace businesses (CX 167). "Analysts say the prospects for Goodrich's key polyvinyl chloride business are strong" (CX 167). Vista reported income from operations for the first three quarters of 1987 of \$79.4 million, an improvement of \$15.4 million over income for the same period of 1986. It noted that the "improvement primarily reflects higher PVC margins resulting from the higher prices along with lower ethane feedstock cost" (CX 145I; *See also* CX 143I; CX 144I; CX 139I-S).

739. Consideration of fixed costs and operating costs, as well as VCM feedstock costs, reveals an even more dramatic increase in PVC producer profits over the past year than that reflected in the Tecnon data. One monthly trade report has reported that PVC producers' margins were 8.1 cents per pound in 1987 compared to 2.1 cents in 1986, an increase of approximately 300 percent (CX 214E).

740. [##] (CX 13A *In Camera*).

X. THE ACQUISITION'S PROBABLE EFFECTS ON COMPETITION  
IN THE RELEVANT MARKETS

741. The ultimate inquiry under Section 7 of the Clayton Act is whether the effect of the acquisition "may be substantially to lessen competition." 15 U.S.C. 18. The test is one of reasonable probability. Section 7 is concerned with the probability, and not the certainty, of anticompetitive effects.

742. It has long been recognized that a horizontal acquisition in an industry characterized by few firms and high market shares may increase the market power held by the industry leaders and the joining parties. One of the principal dangers of concentration of market power is that the top firms will collectively use their market power to pursue "parallel policies of mutual advantage." The likely result is higher prices.

743. The Commission's task in a Section 7 case is to determine whether the facts of a particular acquisition are indicative of a probable future lessening of competition. This acquisition resulted in a major restructuring of the producer side of the relevant markets. It significantly increases concentration in the markets; it eliminated a substantial competitor in each of the markets; and it has increased the likelihood of collusion in each of the markets.

744. It is well settled that statistics reflecting the shares of the market controlled by the industry leaders and the parties to the merger are the primary indicia of market power. Such statistics are not conclusive, but they are entitled to great weight.

745. Under the *DOJ Merger Guidelines*, an HHI below 1000 suggests an unconcentrated market, an HHI between 1000 and 1800 suggests a moderately concentrated one, and an HHI above 1800 suggests a highly concentrated market. Where the post-merger market would be in the moderately concentrated range, a merger that increases the HHI by more than 100 points will, absent other factors, present serious antitrust difficulties. Where the post-merger market would be highly concentrated, an increase of only 50 points in the HHI will present serious difficulties. If the increase in the HHI exceeds 100 in a highly concentrated market, the acquisition is substantially likely to lessen competition except in "extraordinary" cases. *DOJ Merger Guidelines, supra*, at ¶ 4493.101 at 6,879-12.

746. Applying the standards of the *DOJ Merger Guidelines* and judicial precedent, the proposed acquisition raises major antitrust concerns in all three relevant markets. In the mass and suspension PVC market the combined market share is 18.0.<sup>39</sup> (18.2)<sup>40</sup> percent, the post-acquisition four-firm and eight-firm concentration ratios are 60.9 (62.7) percent and 95.8 (95.0) percent respectively, the HHI increases by 156 (158) points and the post acquisition HHI stands at 1278 (1305). In the dispersion PVC market the combined market share is 34.5 (27.9) percent, the post-acquisition four-firm and eight-firm concentration ratios are 85.2 (87.1) percent and 100 (100) percent respectively, the HHI increases by 448 (331), and the post-acquisition HHI is 2201 (2051). Finally, in the highly concentrated suspension PVC copolymer market the combined market share is 59.2 (52.2), the post-acquisition four-firm concentration ratio is 100 (100) percent, the HHI index increases by 1577 (1360) and the post acquisition HHI is 4368 (3504).

747. The levels of market concentration in the concentrated mass and suspension PVC market and in the highly concentrated dispersion PVC and suspension PVC copolymer markets are sufficient to bring into play the presumption of illegality recognized in the *DOJ Merger Guidelines, supra*, (CCH) ¶ 4493 at 3.11(c). (*See* Goodrich, slip op. at 63).

748. [##] (CX 53A *In Camera*), [##] (CX 53A *In Camera*; CX 55 *In Camera*).

749. At the time of the acquisition, Tenneco was a significant and substantial competitor in each of the three relevant markets. Tenneco was a large producer and was perceived as being an aggressive supplier (*See* Weimar JX 1, 36 ln. 25-27 ln. 7; Friedman JX 1, 127 ln. 10-24; 145 ln. 5-146 ln 12; JX 3, PX 8 at 97 ln. 3-12; JX 3, PX 9 at 44 ln. 21-45 ln. 2, 48 ln. 17-49 ln. 1, 50 ln. 15-19, 128 ln. 4-129 ln. 10, 130 ln. 4-22). [##] (Heath CX 178F ¶ 9 *In Camera*). [##] (Kilkaski CX 195B ¶ 3 *In Camera*). [##] (Underwood CX 203E ¶ 9 *In Camera*). [##] (CX 115 *In Camera*). [##] (CX 127 *In Camera*). [##] (RX 265 *In Camera*). [##] (*compare* RX 265 *In Camera* with

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<sup>39</sup> Based on United States 1985 Production.

<sup>40</sup> Figures in parentheses are based on United States 1986 Operating Capacity.



RX 268 *In Camera*; See CX 50 *In Camera*; CX 75B *In Camera*; CX 74B *In Camera*; CX 69 *In Camera*). [##] (Clark RX 254C ¶ 10 *In Camera*). [##] (Clark RX 254C ¶ 10 *In Camera*).

750. Tenneco has also maintained a strong reputation for providing high quality products and good technical service (JX 3, PX 8 at 97 ln. 21-98 ln. 7, 120 ln. 17-121 ln. 7; JX 3, PX 9 at 44 ln. 21-45 ln. 14). Tenneco's Pasadena PVC plant is a modern, low-cost, efficient plant (JX 3, PX 104 at 3227-28; JX 3, PX 132; See JX 3, PX 8 at 59 ln. 8-20). Tenneco's Burlington PVC facility is a well-maintained facility and was the subject of substantial capital improvement by Tenneco in the years immediately preceding the acquisition (JX 3, PX 104 at 3222-3223; JX 3, PX 8 at 77 ln. 15-23; JX 3, PX 9 at 45 ln. 19-46 ln. 11). Both the Pasadena and Burlington PVC operations were profitable to Tenneco (JX 3, PX 104 at 3219; JX 3, PX 9 at 150 ln. 12-19, 128 ln. 18-129 ln. 10).

751. [##] (Pflugrath CX 17-7D ¶ 7 *In Camera*; See CPF 812). [##] (See Pflugrath CX 177C-F ¶ 6-10 *In Camera*; Heath CX 178D-G ¶ 7-10 *In Camera*; Wilhite CX 179C-D ¶ 4 *In Camera*; Bendavid CX 194B-C ¶ 4 *In Camera*; Rutland CX 196A-B ¶ 3-4 *In Camera*; Alberti CX 199C-D ¶ 5 *In Camera*; Gmach CX 200C ¶ 3 *In Camera*; Donnelly CX 176B-C ¶ 3 *In Camera*; Hamilton CX 206A ¶ 10 *In Camera*).

752. [##] (Pflugrath CX 177E-F ¶ 10 *In Camera*; Heath CX 178F ¶ 10 *In Camera*; Alberti CX 199D-E ¶ 6 *In Camera*; Wilhite CX 179C ¶ 4 *In Camera*; Clark CX 193C-D ¶ 4 *In Camera*; Goldstein CX 180C ¶ 4 *In Camera*; Porter CX 198A-B ¶ 2 *In Camera*; Kulkaski CX 195B ¶ 3 *In Camera*; Bendavid CX 194B-C ¶ 4 *In Camera*; Gmach CX 200C ¶ 3 *In Camera*; Donnelly CX 176C ¶ 4 *In Camera*; Hamilton CX 206F-G ¶ 10-11 *In Camera*). [##] (Alberti CX 199D ¶ 6 *In Camera*). [##] (Heath CX 178G ¶ 10 *In Camera*). [##] (Bendavid CX 194C ¶ 4 *In Camera*). [##] (CX 179C ¶ 4 *In Camera*), [##] (Alberti CX 199D-E ¶ 6 *In Camera*), [##] (Porter CX 198B ¶ 2 *In Camera*). [##] (Stuart CX 201D ¶ 7 *In Camera*). [##] (Stuart RX 256A-B ¶ 3 *In Camera*). [##] (Stuart CX 201D ¶ 7 *In Camera*), [##] (Stuart CX 201D ¶ 7 *In Camera*). [##] (CX 138J *In Camera*). As higher mass and suspension PVC homopolymer prices raise the costs of Carlon's competitors, Carlon gains an increased cost advantage over its rivals, and exploits this advantage by increasing its profit

margin on PVC pipe products. It is not surprising that this customer would be in favor of, and testified in support of, the acquisition.

753. [##] (*See CX 39 In Camera; CX 40 In Camera; CX 41 In Camera; CX 42 In Camera*). [##] (*CX 16 In Camera*). [##] (*Truog CX 202B ¶ 3-4 In Camera*).

754. [##] (*See CX 78 In Camera; CX 131 In Camera*). [##] (*CX 59C In Camera*). [##] (*Silver CX 190C In Camera; Beveridge JX 1, 93 ln. 17 - 94 ln. 8, 96 ln. 15 - 97 ln. 7; Weimar JX 1, 36 ln. 6-13; Friedman JX 1, 136 ln. 25-137 ln. 7*).

755. PVC producers also forecast an increase in PVC resin prices as a result of the acquisition. Occidental itself saw, as a benefit of the acquisition, the reduction in the number of suppliers of suspension PVC copolymer resin, which, Occidental noted, would "significantly enhance the profitability of the Pottstown suspension plant" (JX 3, PX 12). Not surprisingly, Occidental has not otherwise noted among the perceived benefits of the acquisition the prospect of reduced competition and higher pricing. Other producers, however, have done so. Mr. Stevens, Director of Marketing for Tenneco Polymers (JX 3, PX 9 at 7 ln. 5-6) testified that in his view the acquisition would offer suspension PVC copolymer producers an improved position to seek price increases (JX 3, PX 9 at 55 ln. 1-7). One unnamed producer quoted in the trade press, in an article published subsequent to the consummation of the acquisition, noted: "When the [Federal Trade Commission] asked whether we had any arguments against Oxy buying Tenneco, we said 'No!', we needed somebody to stand up to Goodrich and put some backbone into the industry" (CX 44C). That producer went on to note that the benefits of the acquisition have been confirmed, "with the recent fourth quarter price increases" (CX 44C).

756. PVC producers and market observers noted, in other reports, prior to the consummation of the acquisition, the benefit of reduced competition that would result from the acquisition. One Drexel Burnham study of the PVC industry noted that "Producers of polyvinyl chloride resin look favorably upon Occidental Chemical's acquisition of Tenneco's PVC assets. One less producer means more market discipline" (CX 38L). One trade journal, *Monthly Petrochemical Statistical Analysis*, in an issue dated January of 1986,

reported that it saw the acquisition "as a beneficial change for the industry" (CX 28G). [##] (CX 28G; *See* CX 127 *In Camera*).

757. Occidental intended to gain a role as a market leader with the acquisition (JX 3, PX 12 at 151333), and has gained such a role. As a result of the acquisition, Occidental significantly enhanced its position in all of the relevant PVC markets (JX 3, PX 12 at 151333). Occidental management recognized that the acquisition of the Tenneco PVC operations would allow Occidental to assume a "leadership" role in the PVC businesses (JX 3, PX 12 at 151333). [##] (RX 1K *In Camera*). [##] (RX 1L *In Camera*). Other producers see Occidental as having obtained a leadership position as a result of the acquisition (CX 44C; CX 38L). [##] (Donnelly CX 176C ¶ 4 *In Camera*). [##] (Donnelly CX 176C ¶ 4 *In Camera*).

758. The acquisition eliminated, in each of the relevant markets, a significant independent competitive entity and substantially increased the concentration of market power and the likelihood that this market power will be exercised in an anticompetitive manner. The suspension PVC copolymer and dispersion PVC markets were highly concentrated at the time of the acquisition. The mass and suspension PVC market is substantially more concentrated than it was at the time of Goodrich. Thus, the presumption of anti-competitive effects is higher in each of these markets than it was in Goodrich (*See* Goodrich, slip op. at 63). In addition, record evidence in this case shows that cost differences among producers and PVC product heterogeneity, the structural factors identified by the Commission in Goodrich as making anticompetitive effects unlikely in the mass and suspension PVC market as a result of that acquisition, are today of less significance in the mass and suspension PVC market, and are not significant factors in the suspension PVC copolymer market or the dispersion PVC market.

759. Market conduct among PVC producers in each of the relevant markets strongly suggests that the markets are not in fact competitive. Indeed, the large increases in the price of PVC resin that have occurred during the period since the acquisition, and the wide perception of customers and competitors that the increases are a result of the acquisition, strongly suggest that these increases are in large part a result of the acquisition.

760. Consideration of all of these factors leads to the conclusion that the acquisition is likely substantially to lessen competition in the mass and suspension PVC market, the suspension PVC copolymer market, and the dispersion PVC market.

#### XI. CONCLUSIONS OF LAW

1. The Commission has jurisdiction over the subject matter of this proceeding and over respondents Occidental Petroleum Corporation and Occidental Chemical Corporation (collectively "Occidental") and over respondents Tenneco Inc., and Tenneco Polymers, Inc. (collectively "Tenneco").

2. Occidental was, at all times relevant herein, a corporation engaged in or affecting commerce, as "commerce" is defined in the Clayton Act, as amended, and in the Federal Trade Commission Act, as amended.

3. Tenneco was, at all times relevant herein, a corporation engaged in or affecting commerce, as "commerce" is defined in the Clayton Act, as amended, and in the Federal Trade Commission Act, as amended.

4. On or about April 30, 1986, Occidental acquired from Tenneco, Tenneco's polyvinyl chloride ("PVC") assets and business, including a suspension PVC homopolymer plant located at Pasadena, Texas, a suspension PVC plant located at Burlington, New Jersey, and a dispersion PVC plant located at Burlington, New Jersey, certain assets and equipment from Tenneco's shutdown PVC plant at Flemington, New Jersey, and other assets relating to the manufacture and sale of PVC.

5. An appropriate line of commerce within which to evaluate the competitive effects of the acquisition is the production of mass and suspension PVC.

6. An appropriate line of commerce within which to evaluate the competitive effects of the acquisition is the production of suspension PVC copolymer.

7. An appropriate line of commerce within which to evaluate the competitive effects of the acquisition is the production of dispersion PVC.

8. The appropriate section of the country within which to evaluate the effects of the acquisition in each of the relevant lines of commerce is the United States as a whole.

9. Prior to and at the time of the acquisition, Occidental and Tenneco were actual competitors in the United States mass and suspension PVC market.

10. Prior to and at the time of the acquisition, Occidental and Tenneco were actual competitors in the United States suspension PVC copolymer market.

11. Prior to and at the time of the acquisition, Occidental and Tenneco were actual competitors in the United States dispersion PVC market.

12. The effect of this acquisition has been or may be substantially to lessen competition or tend to create a monopoly in the aforesaid product and geographic markets in violation of Section 7 of the Clayton Act, as amended, and Section 5 of the Federal Trade Commission Act, as amended, in the following ways:

a. It eliminates Tenneco as a significant competitive entity in the production of mass and suspension PVC in the United States;

b. It eliminates substantial actual competition between Occidental and Tenneco and between Tenneco and others in the production of mass and suspension PVC in the United States;

c. It significantly increases already moderately high levels of concentration in the United States mass and suspension PVC market;

d. By raising significantly the level of concentration in the United States mass and suspension PVC market, it significantly enhances the likelihood of collusion or interdependent coordination in this market;

e. It eliminates Tenneco as a significant competitive entity in the production of suspension PVC copolymer in the United States;

f. It eliminates substantial actual competition between Occidental and Tenneco and between Tenneco and others in the production of suspension PVC copolymer in the United States;

g. It significantly increases already high levels of concentration in the United States suspension PVC copolymer market;

h. By raising significantly the level of concentration in the United States suspension PVC copolymer market, it significantly

enhances the likelihood of collusion or interdependent coordination in this market;

i. It significantly enhances the likelihood of dominant firm behavior to increase price in the suspension PVC copolymer market;

j. It eliminates Tenneco as a significant competitive entity in the production of dispersion PVC in the United States;

k. It eliminates substantial actual competition between Occidental and Tenneco and between Tenneco and others in the production of dispersion PVC in the United States;

l. It significantly increases already high levels of concentration in the United States dispersion PVC market;

m. By raising significantly the level of concentration in the United States dispersion PVC market, it significantly enhances the likelihood of collusion or interdependent coordination in this market;

13. The order entered hereinafter is appropriate to remedy the violation of law found to exist.

## XII. ORDER

### I.

#### DEFINITIONS

*It is ordered,* That for purposes of this order the following definitions shall apply:

A. "*Occidental*" means Occidental Petroleum Corporation and Occidental Chemical Corporation, two corporations organized under the laws of California with their principal places of business in Los Angeles, California, and their directors, officers, agents, and employees, and their subsidiaries, divisions, affiliates, successors, and assigns;

B. "*Tenneco*" means Tenneco Inc. and Tenneco Polymers, Inc., two corporations organized under the laws of Delaware with their principal places of business in Houston, Texas, and their directors, officers, agents, and employees, and their subsidiaries, divisions, affiliates, successors, and assigns.

C. The "*acquired PVC assets*" means the suspension PVC homopolymer manufacturing facility located at Pasadena, Texas, the suspension PVC manufacturing facility located at Burlington, New Jersey, the dispersion PVC manufacturing facility located at Burlington, New Jersey, and all assets, titles, properties, interests, rights and privileges, tangible and intangible, related to the PVC business that were acquired by Occidental from Tenneco, together with all improvements thereto.

D. "*PVC*" means any vinyl chloride homopolymer with the repeating unit  $\text{CH}_2=\text{CHCl}$ , and any copolymer of vinyl chloride with varying amounts of other chemicals, including vinyl acetate, ethylene, propylene, vinylidene chloride, or acrylates.

E. "*Mass PVC*" means PVC produced from vinyl chloride by the mass (also referred to as "bulk") process.

F. "*Suspension PVC homopolymer*" means PVC homopolymer produced from vinyl chloride by the suspension process.

G. "*Suspension PVC copolymer*" means any copolymer of vinyl chloride and vinyl acetate, that is produced by the suspension process and contains over 50 percent by weight vinyl chloride.

H. "*Dispersion PVC*" means PVC produced by the emulsion or dispersion process.

## II.

*It is ordered,* That within twelve (12) months from the date this order becomes final, Occidental shall divest, absolutely and in good faith, at no minimum price, the acquired PVC assets that Occidental acquired on or about April 30, 1986, together with all assets, title, properties, interest, rights and privileges, of whatever nature, tangible and intangible acquired by Occidental as a result of its acquisition of the acquired PVC assets or acquired by Occidental from Tenneco in connection with Occidental's acquisition of the acquired PVC assets, and all additions and improvements to the acquired PVC assets added by Occidental.

The purpose of the divestiture is to reestablish the acquired PVC assets, either singly or separately, as ongoing, viable enterprises engaged in the manufacture, distribution, sale, research and development of suspension PVC homopolymer, suspension PVC

copolymer, and dispersion PVC; and to remedy the lessening of competition resulting from the acquisition of the acquired PVC assets by Occidental. The divestiture(s) shall be made only to an acquirer or acquirers, and only in a manner, that receives the prior approval of the Federal Trade Commission.

Pending divestiture, Occidental shall take all measures necessary to maintain the acquired PVC assets in their present condition and to prevent any deterioration, except for normal wear and tear, of any part of the acquired PVC assets, so as not to impair the acquired PVC assets's present operating viability or market value.

### III.

*It is further ordered,* That at the time of the divestiture required by this order, Occidental shall provide to the acquirer of the acquired PVC assets, on a nonexclusive basis, all PVC technology (including patent licenses and know-how) used by Occidental, or developed by Occidental for use in connection with the acquired PVC assets; and

For a period of one (1) year following the divestiture required by this order, Occidental shall provide the acquirer of the acquired PVC assets, if the acquirer(s) so requests, such additional know-how as may reasonably be required to enable such acquirer(s) to manufacture and sell suspension PVC homopolymer, suspension PVC copolymer, and dispersion PVC. Occidental shall charge the acquirer no more than its own costs for providing such additional know-how.

### IV.

*It is further ordered,* That at the time of the divestiture required by this order, Occidental shall provide to the acquirer(s) of the acquired PVC assets,

A. A list of all Occidental's respective customers for suspension PVC homopolymer, suspension PVC copolymer, and dispersion PVC who have purchased PVC from Occidental during the three years prior to the date this order becomes final; and

B. An assignment of all VCM supply agreements; all PVC sales, toll, or exchange agreements; and all PVC customer records and files



relating to PVC produced in (or supplied by Occidental at any time since January 1, 1986 from) the acquired PVC assets.

V.

*It is further ordered,* That if Occidental has not divested the acquired PVC assets within the twelve-month period provided in paragraph II of this order, the Federal Trade Commission may appoint a trustee to effect the divestiture. The trustee shall be a person with experience and expertise in acquisitions and divestitures. Neither the appointment of a trustee nor a Commission decision not to appoint a trustee under this paragraph V of the order shall preclude the Commission from seeking civil penalties and other relief available to it, including a court-appointed trustee, for any failure by Occidental to comply with this order.

Any trustee appointed by the Commission pursuant to this paragraph V shall have the following powers, authority, duties, and responsibilities:

A. The trustee shall have the exclusive power and authority, subject to the prior approval of the Commission, to divest the acquired PVC assets. The trustee shall have twelve (12) months from the date of appointment to accomplish the divestiture. If, however, at the end of the twelve-month period, the trustee has submitted a plan of divestiture or believes that divestiture can be accomplished within a reasonable time, the divestiture period may be extended by the Commission.

B. The trustee shall have full and complete access to the personnel, books, records and facilities of the acquired PVC assets, and Occidental shall develop such financial or other information relevant to the acquired PVC assets as the trustee may reasonably request. Occidental shall cooperate with the trustee, and shall take no action to interfere with or impede the trustee's accomplishment of the divestiture. Any delays in divestiture caused by Occidental or Tenneco shall extend the time for divestiture under this paragraph V in an amount equal to the delay, as determined by the Commission.

C. The power and authority of the trustee to divest shall be at the most favorable price and terms available consistent with this order's

absolute and unconditional obligation to divest at no minimum price, and with the purposes of the divestiture as stated in paragraph II of this order, subject to the prior approval of the Commission.

D. The trustee shall serve, without bond or other security, at the cost and expense of Occidental on such reasonable and customary terms and conditions as the Commission may set. The trustee shall have authority to retain, at the cost and expense of Occidental, such consultants, attorneys, investment bankers, business brokers, accountants, appraisers, and other representatives and assistants as are reasonably necessary to assist in the divestiture. The trustee shall account for all monies derived from the divestiture and for all expenses incurred. After approval by the Commission of the account of the trustee, including fees for his or her services, all remaining monies shall be paid to Occidental, and the trustee's power shall be terminated. The trustee's compensation shall be based at least in significant part on a commission arrangement contingent on the trustee divesting the acquired PVC assets.

E. Occidental shall indemnify the trustee and hold the trustee harmless against any losses, claims, damages, or liabilities arising in any manner out of, or in connection with, the trustee's duties under this order unless the Commission determines that such losses, claims, damages, or liabilities arose out of the misfeasance, gross negligence, or the willful or wanton acts or bad faith of the trustee.

F. Promptly upon appointment of the trustee and subject to the approval of the Federal Trade Commission, Occidental shall, subject to the Federal Trade Commission's prior approval and consistent with provisions of this order, transfer to the trustee all rights and powers necessary to permit the trustee to effect the divestiture required by this order.

G. If the trustee ceases to act or fails to act diligently, the Commission may appoint a substitute trustee.

H. The Commission may on its own initiative or at the request of the trustee issue such additional orders or directions as may be necessary or appropriate to accomplish the divestiture required by this order.

I. The trustee shall have no obligation or authority to operate or maintain the acquired PVC assets.

J. The trustee shall report in writing to Occidental and to the Commission every sixty (60) days concerning the trustee's efforts to accomplish divestiture.

#### VI.

*It is further ordered,* That for a period of ten (10) years from the date this order becomes final, Occidental shall not directly or indirectly acquire -- other than the acquisition of manufactured product in the ordinary course of business -- all or any part of the stock or assets of, or any interest in, any producer of mass PVC, suspension PVC homopolymer, suspension PVC copolymer, or dispersion PVC located in the United States without the prior approval of the Federal Trade Commission.

#### VII.

*It is further ordered,* That Occidental shall, within sixty (60) days after the date this order becomes final and every sixty (60) days thereafter until it has fully complied with the provisions of paragraph II of this order, submit in writing to the Commission a report setting forth in detail the manner and form in which it intends to comply, is complying, or has complied with these provisions. Such compliance reports shall include, among other things that may be required from time to time, a full description of all contacts and negotiations relating to the divestiture of the acquired PVC assets, including the name and address of all parties contacted, copies of all written communications to and from such parties, and all internal memoranda, reports and recommendations concerning divestiture; and Occidental shall submit such further written reports of its compliance as the staff of the Commission may from time to time request in writing.

#### VIII.

*It is further ordered,* That Occidental, upon written request and on reasonable notice, for the purpose of securing compliance with

this order, and subject to any legally recognized privilege, shall permit duly authorized representatives of the Commission or of the Director of the Bureau of Competition:

A. Reasonable access during the office hours of Occidental, which may have counsel present, to inspect and copy books, ledgers, accounts, correspondence, memoranda, reports, and other records and documents in the possession or control of Occidental that relate to any matter contained in this order; and

B. Subject to the reasonable convenience of Occidental, an opportunity to interview officers or employees of Occidental, who may have counsel present, regarding such matters.

#### IX.

*It is further ordered,* That Occidental, shall notify the Federal Trade Commission at least thirty (30) days prior to any proposed corporate change, such as dissolution, assignment or sale resulting in the emergence of a successor corporation, the creation or dissolution of subsidiaries or any other change in the corporation, which may affect compliance with the obligations arising out of this order.

#### OPINION OF THE COMMISSION

BY AZCUENAGA, *Commissioner*:

The complaint in this matter challenges the acquisition by Occidental Petroleum Corporation, through its subsidiary Occidental Chemical Corporation ("Occidental"), of the polyvinyl chloride business of Tenneco Polymers, Inc., a subsidiary of Tenneco, Inc. At the time of the acquisition, Occidental owned polyvinyl chloride plants in Pottstown, Pennsylvania, Addis, Louisiana, and Burlington, New Jersey; Tenneco owned polyvinyl chloride plants in Pasadena,

Texas, and Burlington, New Jersey.<sup>1</sup> The complaint alleges that the acquisition may substantially lessen competition in the manufacture and sale of polyvinyl chloride in the United States in violation of Section 7 of the Clayton Act and Section 5 of the Federal Trade Commission Act.

The administrative law judge identified three relevant product markets: mass and suspension polyvinyl chloride ("PVC") homopolymer, suspension PVC copolymer, and dispersion PVC. He concluded that the relevant geographic market for all three products is the United States. The administrative law judge found a violation in each of these markets and entered an order requiring divestiture.

Occidental appealed the decision of the administrative law judge in each of the three markets. In the first market, mass and suspension PVC homopolymer, Occidental asserts on appeal that the decision of the administrative law judge is "flatly inconsistent" with the decision of the Commission in *B.F. Goodrich Co.*, Docket 9159, 110 FTC 207 (1988), *appeal dismissed by stipulation*, Nos. 86-4065 & 86-4066 (2d Cir. April 24, 1989), *modified final order*, 112 FTC 83 (1989), and "should be set aside." R.A.B. at 2.<sup>2</sup> In *Goodrich*, the Commission concluded that B. F. Goodrich's January 1982 acquisition of the mass

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<sup>1</sup> Tenneco also owned a plant in Flemington, New Jersey. Occidental obtained an option to and later did acquire equipment from this plant. At the time of the Initial Decision, Tenneco was awaiting state approval of its clean up plan before dismantling the plant and selling the property. I.D. at 3 n.4.

<sup>2</sup> We use the following abbreviations in this opinion:

|        |                                     |
|--------|-------------------------------------|
| I.D.   | Initial Decision                    |
| I.D.F. | Initial Decision Finding            |
| R.A.B. | Respondents' Appeal Brief           |
| R.R.B. | Respondents' Reply Brief            |
| C.A.B. | Complaint Counsel's Answering Brief |
| Tr.    | Transcript.                         |

Citations to the record in *B.F. Goodrich Co.*, Docket 9159, 110 FTC 207 (1988), incorporated by stipulation of the parties, are marked "Goodrich." The record also includes testimony and exhibits from *FTC v. Occidental Petroleum Corp.*, Civ. No. 86-0900 (D.D.C. Apr. 29, 1986), *vacated as moot*, No. 86-5254 (D.C. Cir. Oct. 23, 1986), marked as Joint Exhibits ("JX") and further identified by transcript page number, Plaintiff's Exhibit ("PX") or Defendants' Exhibit ("DX"), as appropriate.

and suspension PVC business of Diamond Shamrock Chemicals Company was not unlawful, relying primarily on conclusions concerning product heterogeneity, transportation and production cost differences among producers and the elasticity of demand of finished vinyl products.<sup>3</sup> See 110 FTC at 339. Occidental asserts that the market characteristics on which the Commission relied in *Goodrich* have not changed and that "simple adherence to Commission precedent," R.A.B. at 1, requires the same result in this case.

In addition, Occidental asserts on appeal that suspension PVC copolymer is not a relevant product market but should be included in the mass and suspension PVC homopolymer market, because of supply side substitutability. R.A.B. at 60. Finally, Occidental claims that the administrative law judge improperly overlooked imports and relevant structural factors in finding a violation in the dispersion PVC market. R.A.B. at 11. We affirm the decision of the administrative law judge.<sup>4</sup>

#### I. MARKET DEFINITION

Section 7 of the Clayton Act prohibits acquisitions that may substantially lessen competition or tend to create a monopoly. The analysis of competitive effects focuses on whether the acquisition is likely to create or enhance the ability of a firm or firms to exercise market power, that is, to raise prices. *Hospital Corporation of America v. FTC*, 807 F.2d 1381, 1386 (7th Cir. 1986), *cert. denied*, 481 U.S. 1038 (1987). The first step in the analysis is to identify the relevant product and geographic markets in which to assess competitive effects. *United States v. E.I. du Pont de Nemours & Co.*, 353 U.S. 586, 593 (1957); *Goodrich*, 110 FTC at 288.

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<sup>3</sup> The Commission held that *Goodrich's* acquisition violated Section 7 of the Clayton Act in the related market of vinyl chloride monomer. 110 FTC at 347-48.

<sup>4</sup> We adopt the findings and conclusions of the administrative law judge to the extent that they are not inconsistent with this opinion.

*A. Product Markets*

Product markets are defined by "the reasonable interchangeability of use or the cross-elasticity of demand" between a product and its possible substitutes. *Brown Shoe Co. Inc. v. United States*, 370 U.S. 294, 325 (1962). When the cross-elasticity of demand or supply between products is high, the products ordinarily are in a single market. Because cross-elasticity data rarely are available, product markets usually are defined by reference to other relevant evidence. Such evidence may include patterns of substitution between and among products, similarities or differences in use, design, physical composition and technical characteristics, price similarities or dissimilarities that are not attributable to common trends and the perceptions of industry members that the products are or are not substitutes. See *Goodrich*, 110 FTC at 290; *Grand Union Co.*, 102 FTC 812, 1038-42 (1983).

*1. Polyvinyl Chloride*

Polyvinyl chloride is a thermoplastic resin that is combined with additives, such as stabilizers and coloring agents, and then converted by heat and pressure to a variety of finished vinyl products. I.D.F. 12. Products made from other materials compete with finished vinyl products -- cast iron pipes, for example, compete with pipes made from PVC, and wood siding competes with vinyl siding -- but there are no substitutes for PVC in vinyl products.

PVC is produced as a white powder or granules by four different processes: suspension, mass or bulk, dispersion and solution.<sup>5</sup> I.D.F. 15-16. Each of the four processes involves polymerization (a chemical reaction) of the raw ingredient vinyl chloride monomer

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<sup>5</sup> PVC made by the solution process is not involved in this case. I.D. at 5 n.5.

("VCM").<sup>6</sup> A second monomer, vinyl acetate, is added to produce suspension PVC copolymer. The suspension process is by far the most common, and PVC produced by the suspension process accounts for more than 85% of the PVC produced in the United States.<sup>7</sup> I.D.F. 17.

PVC homopolymer resins made by the mass and the suspension processes are comparable in appearance and properties and are interchangeable for many end uses, such as pipe and pipe fittings, wire and cable, packaging film and sheet, siding and bottles. Mass PVC homopolymer is more suitable than suspension PVC homopolymer for products requiring greater optical clarity, such as packaging materials.<sup>8</sup> I.D.F. 17, 18 & 57; *Goodrich*, 110 FTC at 291. The parties agree that mass and suspension PVC homopolymer constitutes a relevant product market. I.D.F. 55; *See Goodrich*, 110 FTC at 290-92.

Suspension PVC copolymer resin ("copolymer"), made from vinyl chloride and vinyl acetate, has different characteristics from

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<sup>6</sup> In layman's terms, PVC is made by cooking VCM and other ingredients in a large pot under heat and pressure. The resulting wet product is then dried. PVC made by the mass and suspension methods resembles sugar; dispersion PVC resin resembles flour or talcum powder. Lull, JX1(I), Tr. 504-06. PVC resin is combined with other ingredients to make finished vinyl products. Disch, JX1(IV), PX11 at 655-56. The various processes for making PVC are described in notes 7-9 & 14 *infra*.

<sup>7</sup> Suspension PVC homopolymer is made by mixing the ingredients -- VCM, demineralized water, suspending agents and catalysts -- in a reactor or large pot: "The order of addition and temperature of ingredients [are] important and [are] regulated by computer control." The mixture is stirred to start the polymerization process, which takes 10-18 hours, depending on the grade of homopolymer being produced: "Reactor temperature, pressure, and other conditions are constantly monitored and controlled by the computer." After polymerization, the wet product (or "slurry") is removed from the reactor, excess VCM is removed, the slurry is "de-watered" in a centrifuge and the resulting "wetcake" is dried in heated air chambers. The dried resin particles are moved to large silos and sorted by type and quality before shipment. JX1(III), PX18, Ex.16-H(1); Disch, JX1(IV), PX11 at 627-28.

<sup>8</sup> In the mass process, VCM is polymerized without water. Disch, JX1(IV), PX11 at 629; *Goodrich* I.D.F. 23. Occidental, Goodrich and Certain Teed are the only PVC producers with mass PVC production facilities. RX197Z *In Camera*.



other PVC resins and is used to make different products.<sup>9</sup> I.D.F. 19 & 69 (portion *In Camera*). Copolymer is recognized by industry members as a separate product from the demand side. It is sold in "distinct end-use markets." I.D.F. 69-78 (portion *In Camera*).<sup>10</sup> The price of copolymer moves independently of the price of homopolymer resins, implying that the two are not in the same market.<sup>11</sup> I.D.F. 72. Mr. Disch, formerly of Tenneco and then with Occidental,<sup>12</sup> and Mr. Schaefer, Senior Vice President of Occidental PVC Resins and Compounds Division, testified that suspension homopolymer and copolymer prices are unrelated, I.D.F. 73, and a comparison of Occidental's actual prices for suspension homopolymer and copolymer bears this out. *See* I.D. at 21 (chart). The administrative law judge concluded that suspension PVC copolymer constitutes a separate product market. I.D.F. 81. Occidental disputes this conclusion and maintains that, because of supply side substitutability, suspension copolymer is part of the mass and suspension PVC

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<sup>9</sup> "The basic recipe . . . for all copolymer resins [is] various quantities of VCM, VAM [vinyl acetate monomer], suspending agents, catalysts, buffer and demineralized water." JX1(III), PX18, Ex. 16-H(2) at 2; *See* CX5A. The ingredients are combined in a reactor; polymerization starts when the demineralized water is added. The reactor cycle for a batch of suspension copolymer is 12-15 hours. The slurry is transferred to a stripping vessel, where the unreacted monomers are removed (1.5-2 hours), then to holding tanks, where up to seven individual batches are continuously blended to ensure product uniformity. The slurry is next pumped through a centrifuge, then dried in a rotary dryer. Finally, the resin is passed through a screener to remove oversize product and transferred to a bagging operation or bulk storage facilities before shipment to customers. JX1(III), PX18, Ex.16-H(2) at 2-3.

<sup>10</sup> According to Occidental, "[t]he copolymer market is about 192 [million] pounds, with 53% going into flooring; records and calendering [pressing between rollers] consume the rest." RX197L *In Camera*.

<sup>11</sup> When two products are in the same market, the prices of each ordinarily will respond to changes in the price of the other. Although the prices of copolymer and homopolymer move independently of one another, both presumably reflect changes in the price of their common raw material, vinyl chloride monomer.

<sup>12</sup> Mr. Disch was a vice president at Tenneco; before the acquisition, Occidental announced that Mr. Disch would become director of national accounts at Occidental. JX1(IV), PX8 at 109.

homopolymer market. R.A.B. at 61.<sup>13</sup> In part I.A.2 below, we explain our conclusion that suspension PVC copolymer is a relevant market.

PVC made by the dispersion process accounts for about 7% of PVC sold in the United States.<sup>14</sup> RX197H *In Camera*. Dispersion resin is finer than other PVC resins and is used for vinyl resilient sheet flooring,<sup>15</sup> coatings and molded plastic products. I.D.F. 20 & 30-33. The parties agree with the administrative law judge that dispersion PVC is a relevant product market. I.D.F. 82 & 105.

## 2. Production Substitution

Productive capacity that could be modified economically within a year to produce the relevant product constrains the ability of incumbent firms to increase prices and, therefore, should be included in the product market. On appeal, Occidental maintains that productive capacity devoted to suspension PVC copolymer should be counted as part of the mass and suspension PVC homopolymer market, because of the ease of production substitution. R.A.B. at 61. According to Occidental, "[a]ny copolymer plant can produce

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<sup>13</sup> Suspension PVC copolymer was not at issue in Goodrich.

<sup>14</sup> The "basic recipe" for dispersion PVC resin is VCM, demineralized water, emulsifier and catalyst. The ingredients are weighed and mixed, pumped through an homogenization system and then moved to reaction towers. The reaction process is controlled by "use of 'cooling tower' and 'refrigerated' water circulating through the tower jackets. The reaction is considered complete when the tower pressure decreases to a preset level." After the unreacted VCM is removed, the mixture is moved through blend tanks to rotary vacuum filters for dewatering and through a hot air drying system. The product is then spray dried to obtain a very fine particle size; another resin and alcohol may be added "to achieve the proper rheological characteristics." Dispersion PVC is bagged in 50-pound bags for shipment. JX1(III), PX18, Ex.16-H(2), at 5-7; Disch, JX1(IV), PX11 at 630. A dispersion PVC copolymer resin is made but is not at issue in this case.

<sup>15</sup> Different types of PVC are used for different types of vinyl flooring and are not interchangeable in these end uses. Dispersion PVC is used for vinyl sheet flooring. Suspension PVC copolymer is used as a binder for inexpensive filler in vinyl resilient floor tile. Solid vinyl tile, made from suspension PVC homopolymer, is 30 times more expensive than copolymer tile. See CX192 A-D; CX197B *In Camera*; CX205B; CX209 *In Camera*; JX3, PX9 at 34-35 & 97-98.

homopolymer resins with the simple turn of a valve," and "[h]omopolymer plants can be converted to copolymer production quickly and profitably in response to copolymer price increases." *Id.* This assertion involves two different issues: whether a suspension copolymer plant can easily and economically switch to the production of suspension homopolymer and whether a suspension homopolymer plant can easily and economically switch to production of suspension copolymer. We discuss each separately below.

We agree that a suspension copolymer plant could be modified with relative ease to produce suspension homopolymer.<sup>16</sup> It is because of the ease of substitution that the administrative law judge included suspension copolymer capacity in measuring the market for mass and suspension homopolymer. I.D.F. 56 (portion *In Camera*).<sup>17</sup> It is not so clear that this substitution could be accomplished economically, because of substantial production cost differences between suspension copolymer and homopolymer plants. *See* I.D.F. 56 (portion *In Camera*). Suspension copolymer is made in small reactors or vessels; most suspension homopolymer is made in large reactors at lower cost.<sup>18</sup> The cost of making suspension PVC homopolymer in a small reactor is as much as 6 cents per pound higher than in a large reactor.<sup>19</sup> According to Occidental business

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<sup>16</sup> According to Tenneco, a suspension copolymer plant can be modified to produce suspension homopolymer by "a change to the process controls of the reactor. The change can be accomplished in less than 10 days." JX1(III), PX18 at 49.

<sup>17</sup> The parties do not challenge this finding.

<sup>18</sup> Small reactors are 2500-10,000 gallons; large reactors are "at least" 18,000 gallons. Bailey, JX3, PX6 at 98; *See Goodrich*, 110 FTC at 321 n.177. Small reactor suspension plants are older and, in general, have been displaced by more efficient, large reactor suspension plants. According to Mr. Schaefer of Occidental, "[i]n the early 1970's, . . . a real technological breakthrough . . . consist[ed] of these very large reactors which are used to make commodity grade PVC resin. And as the [PVC] business has grown and become more commodity oriented, a number of producers invested in large reactor capacity in order to maintain a competitive position in the commodity business." JX1(I), Tr. 560-61.

<sup>19</sup> JX1-4, PX131 at 1349 (4 cents per pound); CX43P (4 cents per pound); Goodrich RX875V-W (6.3 cents per pound). If the price of pipe grade homopolymer PVC is 29 cents, the cost disadvantage of small reactor plants is 14% to 22% of the price.

planning documents, because of this cost disadvantage, suspension PVC homopolymer made in small reactors cannot economically compete in the general purpose sectors.<sup>20</sup> RX197M *In Camera*. Occidental (and other producers) sell their small reactor suspension PVC homopolymer in "specialty niches" that "are priced approximately \$.07-\$.12 above General Purpose resins and therefore deliver a return over their high costs."<sup>21</sup> RX197M *In Camera*; See I.D.F. 56 (portion *In Camera*); CX183B; CX182B-D *In Camera*. For these reasons, switching production from suspension copolymer to suspension homopolymer appears uneconomic, unless the copolymer producer could identify a "specialty niche" for his high cost homopolymer.<sup>22</sup> We conclude, therefore, that it is not necessary to include suspension copolymer capacity to measure the mass and suspension homopolymer market. Still, because of the ease of substitution and with an abundance of caution, we include suspension copolymer capacity in the mass and suspension homopolymer market for the purposes of this case.

It is possible that suspension copolymer capacity may constrain the pricing of suspension homopolymer producers but that the pricing constraint does not run in the opposite direction, from homopolymer capacity to copolymer producers. If this is the case, then it is appropriate to include suspension copolymer capacity in measuring the suspension homopolymer market, as we have decided to do, but not to include homopolymer capacity in measuring the suspension

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<sup>20</sup> Occidental also said in its business planning documents that "[n]umerous old small [suspension] reactor operations have closed down over recent years due to their inability to compete on a cost/performance basis. Those still in operation are competing only in specialty niches." RX197S *In Camera*. Mr. Schaefer of Occidental said that "the old small reactors that are still left can produce copolymer and at least compete in the business, whereas you cannot produce . . . homopolymer in those reactors." JX1(III), PX 136 at 83.

<sup>21</sup> Occidental in its business plans said that the "specialty resin [*i.e.*, small reactor suspension PVC homopolymer] competition consists of domestic producers with small reactor facilities. O[ccidental], Georgia Gulf, B.F. Goodrich, and Keyser comprise 90% of the market." RX197M *In Camera*.

<sup>22</sup> Suspension homopolymer specialty resins might constitute a relevant product market, but that argument was not made in this case.

copolymer market. We therefore turn to the second production substitution issue: whether a suspension PVC homopolymer plant can easily and economically be converted to production of suspension PVC copolymer.

Conversion of a suspension homopolymer plant to produce copolymer would require capital investment for additional equipment for vinyl acetate, including vinyl acetate feed lines, storage tanks and a recovery system, as well as different meters and gauges for vinyl acetate. Hill, CX183C; Flammer, CX184C; Fischer, CX208D; Disch, JX3, PX8 at 68; Lull, JX1(I), Tr. 509-10. Such a conversion would cost several million dollars and would take approximately two to two and one-half years, including time for planning, construction and new environmental permitting that may be required because of the addition of vinyl acetate to the polymerization process. I.D.F. 320-24 (portion *In Camera*) & 328 (portion *In Camera*).<sup>23</sup> Additional time -- three months to a year -- would be required after physical conversion for production trials, followed by customer trials. I.D.F. 325-26. The administrative law judge concluded that producers of homopolymer would not modify plants to produce copolymer in response to even "significant increases" in the price of copolymer, because plant conversion would be difficult and unprofitable. I.D.F. 79-80 (portion *In Camera*), 304-31 (portion *In Camera*). We agree.

According to an Occidental document of December 1985, "[t]he conversion of a small reactor Suspension [homopolymer] Resin plant to produce 50 [million] pounds per year of Copolymer is estimated to cost \$2 [million] to \$2.5 [million]." CX51.<sup>24</sup> Mr. Hill of Keysor-Century Corporation, a producer of copolymer, estimated that conversion would cost \$3 million and would take one to two years, if the plant remained in operation during the process. CX183C. Mr.

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<sup>23</sup> Deciding whether to convert a plant to copolymer could extend the time considerably. Mr. Disch reported that Tenneco took about 2 years to decide to replace the reactors at its Burlington plant (planning began in 1982; the new reactors did not come into production until July 1985, JX1(III), PX20 at 32-34) and that a decision to convert a plant to copolymer would be more complicated. JX1(IV), PX8 at 76 & 78-79.

<sup>24</sup> Memorandum from F.A. Sacks, Occidental Director of Marketing, Dec. 13, 1985.

Flammer of Vista Polymers, Inc., estimated that conversion of a homopolymer plant to produce copolymer would take 2 to 2.5 years. CX184D & E. Tenneco reported that the cost of converting its Flemington, New Jersey, plant from homopolymer to copolymer, completed in 1975, was \$5 million, JX1(III), PX18 at 36, and that subsequent improvements to increase Flemington's copolymer capacity by 10 million pounds (to 95 million pounds per year) cost \$3.2 million and took 3 years, from planning in early 1978 to production in the first quarter of 1981.<sup>25</sup> JX1(III), PX20 at 34-35.

Against this evidence from Occidental, Tenneco and other industry members, Occidental relies on an estimate prepared in anticipation of this litigation at the direction of Mr. Lull, Occidental's Director of Manufacturing for PVC. The estimate was that conversion of a suspension homopolymer plant to produce 50 million pounds of copolymer would cost about \$1 million to \$1.5 million and would take approximately 42 weeks. Lull, JX1(I), Tr. 516-17 & 531-38; RX182. Given the circumstances in which this estimate was developed and its inconsistency with other figures in the record, we do not find Occidental's estimate persuasive.<sup>26</sup>

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<sup>25</sup> In light of this experience with Flemington, the basis for Tenneco's 1986 estimate (in a document prepared for the Commission's review of this acquisition) that "major process items needed" to convert a plant from homopolymer to copolymer would cost \$250,000 to \$750,000, "depending on scope of work," and that installation would take 3 to 9 months, "depending on scope of work," is not clear. JX1(III), PX18 at 50.

<sup>26</sup> Occidental asserts that the cost of conversion could be reduced by eliminating a new recovery system, identified in the April 1986 estimate prepared for Mr. Lull as costing \$685,000. R.A.B. at 62-63. A recovery system recovers, separates, purifies and recycles unreacted monomers (VCM and vinyl acetate ("VAC")) after polymerization. Mr. Lull said that a new recovery system was not necessary, that the combined VCM and VAC could be collected in the same recovery system used for recovering VCM used in making homopolymer. Lull, JX1(I), Tr. 514. Other copolymer producers disagreed and testified that new monomer recovery systems would be needed for conversion to copolymer. Hill, CX183B-C (VCM and VAC must be separated to reuse VCM and for waste water purification); Hornack, RX177 C-D *In Camera*; JX1(III), PX18 at 50 (Tenneco identified "recovery, purification, and recycle facilities" for VAC as a "major process item needed" for conversion); *See also* Flammer, CX184C; Fisher, CX208D-E & RX264B-C; Bailey, JX3, PX6 at 76-77.

Even if technically feasible,<sup>27</sup> conversion of a suspension homopolymer plant to produce copolymer is highly unlikely, because of the declining demand for copolymer.<sup>28</sup> Every witness who testified on the subject said that modifying a homopolymer plant or reopening a closed plant to produce copolymer would be uneconomic.<sup>29</sup> Mr. Schaefer, a vice president of Occidental, testified

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The recovery system identified in Mr. Lull's estimate is a carbon adsorption system that may be less expensive than other recovery systems. *See* Fisher, RX264B-C ("comparative costs" not studied). The carbon system generates a "crudely purified" VCM and "somewhat more contaminated" VAC. RX182B. Care is necessary in using recovered VCM and VAC, because of the risk of contamination. According to Tenneco, use of recovered monomer must be limited to prevent "batch 'set-up,'" in which a batch of copolymer becomes unuseable chunks or a mass in the reactor, instead of discrete particles. JX1(III), PX18 at 50. Vygen believed that imperfectly purified VCM (*i.e.*, VCM contaminated by VAC) was the most likely source of contamination in its homopolymer resin. CX125 *In Camera*. When recovered VCM and VAC are separated, vessels, pumps and piping should be upgraded from carbon to stainless steel, because of the corrosive effects of VAC. Lull, JX1(I), Tr. 533-34. This upgrade would bring Mr. Lull's estimate to about \$1.5 million. RX182B.

The estimate prepared for Mr. Lull assumed full "compliance with all government (Federal/State) regulations," including emissions standards, RX182A, and did not identify the cost of complying with environmental regulations for vinyl acetate. These costs may be substantial. Occidental claimed to be "one of the few companies that has spent the capital to install the necessary environmental equipment specific to handling vinyl acetate monomers." CX5E *In Camera* (emphasis added). According to Occidental, "most PVC producers have dropped their copolymer lines instead of investing the capital to comply" with the "tough environmental regulations." CX5D-E *In Camera*.

<sup>27</sup> It is worth noting that the evidence addresses only the conversion of a small reactor suspension homopolymer plant to copolymer production. Conversion of a large reactor plant appears to be even less likely. Some witnesses questioned whether copolymer could be produced in large reactors, *e.g.*, Hill, CX183B; Flammer, CX184C; others testified that producing copolymer in large reactors, even if possible, would not be economically feasible. Bailey, JX3, PX6 at 77-78; Disch, JX3, PX8 at 72-73.

<sup>28</sup> The demand for copolymer for vinyl floor tile is flat, and the demand for copolymer for phonograph records is declining rapidly. *See, e.g.*, Hill, CX183F; Bailey, JX3, PX6 at 82.

<sup>29</sup> Mr. Lull said that he considered only the technical feasibility of conversion and did not consider the economic feasibility. JX1(I), Tr. 535 & 538.

that Occidental would not reopen its closed Perryville, Maryland, suspension PVC homopolymer plant to produce copolymer, even if the price of copolymer increased three cents or four cents a pound (approximately a 10% increase), because of insufficient demand for copolymer. JX1(I), Tr. 585-86. Mr. Schaefer also testified that Occidental would not consider expanding copolymer capacity at its Pottstown plant: "As long as the outlook for consumption continues to be one of negative growth" for copolymer, any additional production capacity "would depress the price." *Id.* at 587.<sup>30</sup> Mr. Disch said that conversion to produce copolymer was unlikely because of declining demand, and Tenneco in 1982 or 1983 reduced its copolymer capacity because of declining demand. JX3, PX8 at 59 & 66-67.

Air Products exited the copolymer market in 1983, because of declining demand for copolymer, and believes that reentry would be uneconomic.<sup>31</sup> Fisher, CX208B-C. Formosa has not made copolymer since 1981 and would not reenter copolymer production even if prices increased by 10%. Mr. Boyer of Formosa, like Mr. Schaefer of Occidental, said that entry by Formosa would create excess

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<sup>30</sup> The copolymer capacity of Occidental's Pottstown plant is limited by the size of the vinyl acetate recovery system. Lull, JX1(I), Tr. 539. Although Occidental asserts on appeal that the cost of such a recovery system "could be brought as low as \$685,000," R.A.B. at 63, citing Lull, JX1(I), Tr. 516, this figure tells us nothing about the economic feasibility of investing in additional copolymer capacity. Like Occidental, Vygen could expand its copolymer capacity by upgrading its vinyl acetate recovery and wastewater discharge systems, but, according to the president of Vygen, this "would require a substantial capital expenditure by Vygen" that is "not economically justifiable," given the level of demand and projected growth for copolymer. Hornack, RX177 D *In Camera*. Even a sustained price increase of 10% would not induce Vygen to dedicate additional capacity to copolymer production. Hornack, CX182C *In Camera*.

<sup>31</sup> Air Products maintained separate production lines for homopolymer and copolymer until, in 1983-84, when the plant was closed for 15 months, it "reconfigured the plant to dedicate both reactor trains" to suspension homopolymer. Fisher, CX208B. Air Products exited the copolymer market because it believed that its sales of copolymer would be insufficient to cover production costs: "The price of suspension PVC copolymer resin would have to increase by 30-50% relative to the price of suspension PVC homopolymer before re-entry into copolymer production would be economic for Air Products." Fisher, CX208C.



copolymer capacity and drive price down to a level that would make entry unprofitable. Boyer, CX185G. Mr. Flammer of Vista Polymers and Mr. Hill of Keysor-Century also testified that additional copolymer capacity would be "economically impractical," because of declining demand. CX184D; CX183F *In Camera*. Mr. Bailey of Occidental said that "there is no economic benefit to producing copolymer as opposed to homopolymer." JX1(IV), PX6 at 77. Mr. Disch, who moved from Tenneco to Occidental, testified that demand for copolymer is not sufficient to attract new entry and predicted that expansion or conversion to produce copolymer might occur only if demand for copolymer were to increase over a period of years. JX1(IV), PX8 at 67 & 89-90.

Conversion of a suspension homopolymer plant to produce both homopolymer and copolymer also is unattractive, because of the costs of switching production between the two products. These costs result from the problem of cross-contamination between the two products and from the downtime required to clean the production system before beginning production of a different product.<sup>32</sup> Mr. Fisher testified that Air Products would not swing its production capacity between homopolymer and copolymer because of the additional costs involved: product contamination could reduce the saleability or the price of resins, and production of copolymer could reduce the overall capacity of the plant by 20% to 30%. CX208C-D.<sup>33</sup> Mr. Boyer of Formosa testified that copolymer production "had an overall negative impact on the operations of the plant," because problems with contamination resulted in off-grade

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<sup>32</sup> Tenneco (at Burlington), Occidental (at Pottstown) and Borden have swing capacity to produce either copolymer or specialty homopolymer resins. Switching is costly. Switching between copolymer and homopolymer requires closing down and thoroughly cleaning the reactors, dryers and other equipment. Tenneco estimates the downtime for each production switch is about 8 hours. JX1(III), PX18 at 50. Downtime for product changeovers at Occidental's Pottstown plant in 1984 "amount[ed] to 13.9 [million] pounds of lost production." RX230A *In Camera*.

<sup>33</sup> This estimate appears to be consistent with Occidental's experience at Pottstown. See note 32 *supra*. Mr. Lull of Occidental testified that the number of different resins produced at a plant should be reduced to "absolutely minimize down time, maximize productivity and decrease costs." JX1(I), Tr. 548 & 526; See also JX1(III), PX15 at 21; RX230A *In Camera*.

batches of both homopolymer and copolymer, reducing the value of total plant output. CX185G. Mr. Hornack of Vygen said that switching production between homopolymer and copolymer is not economically feasible, because of the loss of production and because any contaminated copolymer is a total loss. According to Mr. Hornack, contaminated homopolymer can be sold as an off-grade product at a price 20% to 30% below that of prime resin, but contaminated copolymer cannot be sold at any price. CX182D *In Camera*.<sup>34</sup>

The record shows that conversion of a homopolymer plant to produce copolymer is costly and time-consuming and that such conversion is unlikely to occur within one year in response to an increase in the price of copolymer. We hold that supply-side considerations do not warrant including capacity devoted to the production of suspension homopolymer resin in measuring the suspension PVC copolymer market.

#### B. Geographic Market

The relevant geographic market includes those suppliers that constrain the ability of the merged firm to raise price or restrict output, *i.e.*, those firms to which buyers could turn in the event of a price increase. *FTC v. Elders Grain Inc.*, 868 F.2d 901, 907 (7th Cir. 1989); *Hospital Corporation of America* 106 FTC 361, 466 (1985), *aff'd*, 807 F.2d 1381 (7th Cir. 1986), *cert. denied*, 481 U.S. 1038 (1987). Price movements, shipping patterns, transportation costs and

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<sup>34</sup> Contamination may continue to occur long after a production line switch. Occidental experienced contamination in the first 5 to 8 batches of copolymer after switching from homopolymer. RX94C *In Camera* (a batch of copolymer is about 13,000 pounds; the reactor cycle for a batch is 12 to 15 hours, JX1(III), PX18, Ex.16-H(2) at 2-3). Occidental identified "a whole host of possibilities" for contamination on swing equipment, including reactors, drop lines and stripping vessels, blend tanks, dryer feed lines and dryers, dust collectors, conveying systems, silos, loading lines and railcars or trucks. In June 1985, Occidental noted that "contamination is a real problem and we must eliminate it in future shipments." CX72; *See also* CX73; CX124-126 *In Camera*. In January 1986, Occidental attributed its failure to meet 1985 copolymer sales goals to its "inability to supply uncontaminated resin." CX60 (copolymer sales 20% below plan).

the existence of excess capacity outside the tentatively identified geographic market are relevant to identify the geographic market. *Elders Grain Inc.*, 868 F.2d at 906-07; *Goodrich*, 110 FTC at 289; *Hospital Corporation of America*, 106 FTC at 466-69.

The administrative law judge concluded that the relevant geographic market for each of the three relevant products is the United States. I.D.F. 147, 154 & 165. Occidental claims that the relevant geographic market for mass and suspension PVC "is at a minimum, North America." R.A.B. at 21 n.17. Occidental also claims that imports of dispersion PVC and the ability of foreign producers to increase imports in the event of a noncompetitive price increase show that the market for dispersion PVC is broader than the United States. R.A.B. at 11 & 72-80.

#### 1. PVC Imports

The Commission observed in *Goodrich* that "imports are a small proportion of domestic PVC consumption and, absent extraordinary conditions, do not appear to constrain domestic prices." 110 FTC at 300. In the intervening years, PVC imports to the United States have remained only a minor part of total domestic supply. Despite a strong price increase for PVC in the United States between 1984 and 1988 (from 23 cents per pound in November 1984 to 40 cents per pound in January 1988), imports declined from between approximately 4% and 5% of domestic supply in 1984-1985 to 2.7% of domestic supply in 1986 and to 1.5% of domestic supply in the period from December 1986 through November 1987. I.D.F. 119-24 (portion *In Camera*); See I.D. at 36-37 (charts).<sup>35</sup> By mid-1986, imports of PVC to the United States had "plunged" and exports had "soared." RX164A; RX22A *In Camera*; RX23F *In Camera*.

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<sup>35</sup> One approach for identifying geographic markets suggests that an area is a "strong market" if imports and exports are less than 10% of supply. Elzinga & Hogarty, "The Problem of Geographic Market Delineation in Antimerger Suits," 18 Antitrust Bull. 45, 75 (1973); "The Problem of Geographic Market Delineation Revisited: The Case of Coal," 23 Antitrust Bull. 1 (1978). Under this standard, the United States clearly is a relevant geographic market for PVC.

The relative increase in PVC imports in 1984 and 1985 -- although imports were still only a minor part of total domestic supply -- appears to have been related to currency exchange rate fluctuations that had the effect of increasing the price of PVC in the United States as compared to foreign prices.<sup>36</sup> *Goodrich*, 110 FTC at 300; I.D.F. 140-41; I.D. at 45; CX174D; RX21L; RX168Z42 *In Camera*; JX1-4, PX104 at E-4; *See* Schaefer, JX3, PX10 at 1130; Stevens, JX3, PX9 at 59; Disch, JX3, PX8 at 90; JX1-4, DX13 at 2 *In Camera*. This suggests, as Occidental claims, that imports are responsive to domestic price increases, but the degree of responsiveness does not appear sufficient to defeat a collusive price increase in the United States.

The increased value of the dollar relative to other currencies between 1980 and 1984 in effect increased domestic PVC prices by 66%, as compared to foreign prices. *Goodrich*, 110 FTC at 300; I.D.F. 137. Even with the combined effects of this price increase and the weather-related domestic shortages, *See* note 36 *supra*, imports of mass and suspension homopolymer PVC in 1984 were less than 3.8% of total U.S. supply, suggesting that a collusive price increase by domestic producers would be profitable. I.D.F. 137-41.<sup>37</sup>

An analysis by complaint counsel's expert witness confirms that imports are not likely to be sufficiently responsive to price changes to defeat the profitability of a domestic price increase. Kaserman, JX1(I), Tr. 296-303; JX1-4, PX141. According to complaint counsel's expert witness, a 10% increase in domestic prices would generate only a 20% increase in imports: for example, if imports were 5% of domestic supply, a 10% domestic price increase would

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<sup>36</sup> In *Goodrich*, the Commission attributed the increase in imports in 1984 to exchange rate fluctuations and to domestic shortages resulting from severe weather conditions in 1983-84 that closed several domestic PVC plants. 110 FTC at 300.

<sup>37</sup> The value of the dollar against other currencies, as measured by the Federal Reserve Board, continued to increase in the first quarter of 1985 and then fell below 1984 levels in the last quarter of 1985. CX174B & C. Imports of PVC were greatest in the last quarter of 1984 and the first quarter of 1985, when the value of the dollar was highest, and imports declined thereafter as the dollar fell. *See* I.D. at 45 (chart). A regression analysis prepared by Tenneco in 1985 also found a strong correlation between the value of the dollar and imports of PVC. JX1-4, DX13 at 3-9 *In Camera*; *See* I.D.F. 116 *In Camera*.

increase imports to only 6% of domestic supply. JX1-4, PX141; I.D.F. 114-17. Applying this analysis, for 1987, when imports were only 1.5% of domestic supply, a 10% domestic price increase would increase imports to only about 1.8% of domestic supply. I.D.F. 117. This clearly would be insufficient to constrain a domestic price increase.

Other considerations limit the ability of imports to constrain domestic prices. Tariff and transportation costs may make imports uneconomic. *E.g.*, CX14; CX46A; JX1-4, DX13Z *In Camera*. Imports of PVC from most countries are subject to a 10.1% tariff. I.D.F. 143 (portion *In Camera*). Except for imports from Mexico and Canada, imported PVC faces freight costs for ocean transportation. Mexico and Canada have been the principal sources of imports into the United States. In 1986 and the first half of 1987, duty-free imports from Mexico accounted for 45% to 60% of all PVC imports, but these imports diminished considerably with the elimination of duty-free status for imports from Mexico. I.D.F. 126. Canada accounted for about 45% of imports of PVC in 1985. I.D.F. 127. The principal source of these imports is B.F. Goodrich, a leading domestic producer of PVC, the largest producer in Canada and a major producer in Mexico. *Id.* We agree with the administrative law judge that Goodrich has few incentives to undermine a domestic price increase by increasing imports from its Canadian and Mexican plants. *See Goodrich*, 110 FTC at 300-01; I.D.F. 127-28 (portion *In Camera*).<sup>38</sup>

In addition, the ability of PVC producers to export is limited by demand for PVC in their home markets. For example, by the end of 1986 and through 1987, PVC was in short supply worldwide. Lull, RX1Q *In Camera*; I.D.F. 129 (portion *In Camera*); RX310D & E. Suppliers in the United States and elsewhere were rationing PVC to

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<sup>38</sup> As the administrative law judge pointed out, including Goodrich's Mexican and Canadian plants in the domestic market does not change market share and concentration data in any meaningful way. I.D.F. 126-28 (portion *In Camera*).

their domestic customers, and little PVC was available for export.<sup>39</sup> In general, domestic and foreign producers of PVC sell in export markets on an opportunistic basis. Schaefer, J X1(I), Tr. 589 & JX1(IV), PX10 at 1208; Bailey, JX1(IV), PX6 at 29; Friedman, JX1(I), Tr. 135; CX44C; Harris, JX1(II), Tr. 915. Mr. Schaefer testified that export sales are the "last pounds out of [the] plant."<sup>40</sup> JX1-4, PX136 at 149. This suggests that imported PVC is unlikely to provide a stable source of supply for domestic users.

Other evidence indicates that imports have not been a major restraint on domestic prices. Mr. Schaefer testified in 1986 that imports had not placed pressure on Occidental's PVC prices, JX1-4, PX136 at 145, and that Occidental does not track PVC production outside the United States. JX1(I), Tr. 577-78. In addition, domestic PVC supply contracts typically limit the obligation to meet lower prices to prices offered by domestic producers, implying that firms in the domestic market do not regard imported PVC as a significant competitive presence. *E.g.*, CX112C; JX1-4, PX94 at 2; Lewis, CX204B.<sup>41</sup>

Although some domestic PVC customers have bought imported PVC from time to time, in general, they decline to rely on imports as a regular source of supply because of the need for timely and frequent deliveries, consistent quality and technical support. *See, e.g.*,

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<sup>39</sup> In April 1987, PVC was "red hot": "Producers have had to put their customers on sales control to make sure all their customers were given their fair share of available production," and foreign buyers offering 5 cents per pound over domestic PVC prices found "few takers." CX31G & H.

<sup>40</sup> Mr. Schaeffer explained that U.S. producers typically sell at lower prices in export markets to "cover . . . variable costs and get something extra back. . . . Now, if he [a PVC producer] started selling product at the same price in the U.S., he's just going to collapse the whole [domestic] pricing structure . . . and lose a lot of money." JX1-4, PX136 at 149. According to one industry journal, "Oxy chose to pour PVC into export markets" instead of cutting price in the United States. CX44C (Chemical Business, Feb. 1987).

<sup>41</sup> The differences between domestic and export prices also are consistent with the conclusion that the United States is a relevant geographic market. *See, e.g.*, RX299H. Domestic producers usually sell in export markets at a lower price than they could obtain domestically. Schaeffer, JX1-4, PX136 at 147; *See* JX1(I), Tr. 569.

Pflugrath, CX177C *In Camera*; Dellevigne, CX188D; Baker, CX205B; Gmach, CX200D; Wilhite, CX179D; Weimar, RX249A-B & CX192F; Goldstein, CX180C; CX15; Friedman, CX120H-J *In Camera*; Lewis, CX204B. Delivery from overseas can be unpredictable, and shipments can be delayed in customs. Weekly or biweekly deliveries, which some customers require, are virtually impossible from overseas; larger volume import shipments would mean increased storage costs. Domestic PVC usually is shipped in bulk; imported PVC usually is shipped in bags, which imposes additional handling costs.<sup>42</sup> Some customers have found that imported resin is not of comparable or consistent quality, and foreign producers are not in a position to offer technical assistance to domestic purchasers or to replace a low grade shipment in a timely manner. *See* Friedman, JX1(I), Tr. 134-35 & 150; Mason, JX1(I), Tr. 196; Schaefer, JX1-4, PX136 at 148. For these reasons, foreign producers do not provide an alternative to domestic suppliers for regular, long-term supplies of PVC.<sup>43</sup>

## 2. Dispersion PVC Imports

The administrative law judge found that imports of dispersion PVC are a minor factor in the United States, that neither domestic producers nor customers regard imports of dispersion PVC as a significant source of supply and that domestic producers have been

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<sup>42</sup> The additional cost of bagging PVC would not apply to dispersion PVC, which almost always is shipped in bags.

<sup>43</sup> In 1988, fourteen European PVC producers were found by the European Commission to have fixed prices for PVC between 1980 and 1984. Decision of 21 December 1988, 32 O.J. Eur. Comm. (No. L74) 1 (1989). The Commission has appealed the nullification of its decision (vacated on procedural grounds *sub nom. BASF AG v. Commission* (EC Ct. 1st Inst. Feb. 27, 1992), *reported in* 62 Antitrust & Trade Reg. Rep. (BNA) 294 (1992), *appeal pending, reported in* "EC Commission Opens New Probe of Cartel Behavior in PVC Market," 63 Antitrust & Trade Reg. Rep. (BNA) 179-80 (1992)). To the extent they have a propensity to fix prices or to follow an anticompetitive price increase, European firms may be unlikely "guarantors of competition," *Olin Corporation*, Docket 9196, slip op. at 27 (June 13, 1990), *aff'd*, No. 90-70452 (9th Cir. Feb. 26, 1993), in the event of a collusive price increase in the United States.

able to increase the prices of dispersion resin without attracting any import response. He concluded that the United States is an appropriate relevant market for dispersion PVC. I.D.F. 155-65 (portion *In Camera*). Occidental asserts that this conclusion is incorrect, that foreign producers "would be well-positioned to divert additional dispersion PVC to the United States if domestic producers attempted to increase prices." R.A.B. at 76.

The volume of dispersion PVC imports to the United States must be estimated, because available data do not provide disaggregated information concerning dispersion PVC. Complaint counsel's expert witness estimated that 1985 imports of dispersion PVC were 36.1 million pounds or approximately 8% of total domestic supply. JX1-4, PX140, Table 24. This estimate was derived by including all imported PVC priced over 35 cents per pound.<sup>44</sup> Because this is a low price for dispersion PVC, this estimate may overstate actual imports.<sup>45</sup> Occidental's estimate of imports of dispersion PVC, 30 to 40 million pounds, is similar and is similarly derived. *See* note 44 *supra*; I.D.F. 155. Occidental's projections for dispersion imports in its 1985-88 Strategic Plan, 49 million pounds in 1985, 41 million pounds in 1986 and 46 million pounds in 1987, also are similar. JX1(II), DX12 at 102633 *In Camera*. And in October 1985, Occidental estimated that 1985 imports of dispersion PVC would be 38 million pounds and that 1986 imports would be 33 million pounds. JX1-4, PX76 at 351555-56. These estimates are consistent with

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<sup>44</sup> More precisely, complaint counsel's expert included as dispersion PVC "imports from countries for which the value of imports exceeded \$0.35 per pound for the entire year." JX1-4 PX140, Table 24; *See* R.R.B. at 76-77. The method is very similar to that used by Occidental. Sacks, JX1(IV), PX7 at 119-20 (Occidental estimate based on "Department of Commerce statistics, and which we have tried to cull down by due to country of origin and relative price levels and et cetera that would identify the product as dispersion and feel that it is a reasonably good estimate in that 30 to 40 million pound range"). We find that the estimate of complaint counsel's expert is reasonable.

<sup>45</sup> In 1985, Occidental's lowest mean actual sales price for dispersion PVC was 48.5 cents per pound (June 1985), JX1(III), PX15, Table 18A; Tenneco's mean selling price for dispersion PVC was about 47 cents per pound (June 1985), JX1(III), PX18 at 39 & PX20 at 28.



identifying the United States as the relevant geographic market for dispersion PVC.<sup>46</sup>

Other evidence in the record is consistent with the conclusion that domestic prices for dispersion resin are not constrained by imports. In October 1986, after the acquisition of Tenneco, Occidental "embark[ed] upon a program to bring up the pricing" for low end dispersion resins by 2 cents to 4 cents per pound, about a 5% to 10% price increase. CX39-42. In June 1987, domestic producers increased the price of dispersion PVC by 3 cents per pound, CX205C, and Occidental observed that its "dispersion business continues to remain very strong. The June 1 price increase appears to be holding . . . ." CX36A.<sup>47</sup> These price increases apparently did not attract increased volumes of imported dispersion resin (or finished vinyl products) to the United States in sufficient quantity to defeat the price increase. Instead, in January 1988, domestic producers increased dispersion PVC prices by another 3 cents per pound. RX311A; CX205C.

The administrative law judge found that the level of dispersion imports likely declined after 1985. This is consistent with Occidental's analysis, *See* JX1-4, PX76 at 351556, and PVC imports generally declined between 1985 and 1987. Tenneco's sales manager testified in March 1986 that "over the past six months we have seen a drying up of [dispersion] imports as the dollar value has declined." Stevens, JX3, PX9 at 59. If dispersion imports declined at the same rate as PVC imports generally, 1987 imports of dispersion resin

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<sup>46</sup> If we apply to dispersion imports the analysis of complaint counsel's expert (*i.e.*, a 10% domestic price increase would evoke a 20% increase in imports of dispersion resin, Kaserman, JX1(I), Tr. 296-303; JX1-4, PX141), we can calculate that imports would be between 9.6% and 13.2% of domestic supply in the event of a 10% domestic price increase. Under this analysis, domestic suppliers would lose only 1.6% to 2.2% of domestic sales to imports in the event of a 10% price increase.

<sup>47</sup> The ability to increase the price for dispersion PVC may have been related to the acquisition: Tenneco had been "very aggressive pricewise" for dispersion resins, according to Occidental. CX78.

would be 11.6 million pounds, less than 3% of domestic production. I.D.F. 157-58.<sup>48</sup>

Officers of Occidental and Tenneco testified that they did not consider imports of dispersion resin in making pricing decisions for domestic dispersion resin. Mr. Schaefer of Occidental testified in 1986 that imported dispersion resin has "relatively little" effect on the price of domestic resin. JX1-4, PX136 at 145. He added that "imported dispersion resins sell at some discount from the U.S. dispersion price." *Id.*; *See also* Bailey, JX3, PX6 at 29. Mr. Disch of Tenneco and later of Occidental identified only domestic producers as Tenneco's competitors for sales of dispersion PVC. JX3, PX8 at 38.

Dispersion PVC imports are subject to the same tariff and transportation costs that apply to other types of PVC, and the same considerations that limit the attractiveness of imported PVC to domestic consumers -- concerns about availability, delivery, storage costs, quality, cost and technical support -- limit the ability of imports of dispersion PVC resins to defeat a domestic price increase. Concerns about quality, delivery and technical support may be more important for dispersion PVC than for mass and suspension PVC, because, according to Occidental, dispersion resins "require advanced technology, stringent quality control, and good customer service." RX197C *In Camera*.<sup>49</sup>

Because of these concerns, neither customers nor producers of PVC view imported dispersion resin as a substitute for domestic resin in most end uses. I.D.F. 160; Stevens, JX3, PX9 at 55-57; Baker, CX205B-C. Instead, imported dispersion PVC is used primarily in low end applications, such as toys or traffic cones, in which the particular characteristics of the resin are not critical to the

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<sup>48</sup> There is some evidence that dispersion PVC imports may not have declined at the same rate but "continue[d] to come in because they are needed." RX164A (Chemical Week, Dec. 17, 1986). Also in 1986, Formosa and Goodyear expanded their U.S. dispersion production capacity. CX185E; RX127 A *In Camera*; RX237T *In Camera*.

<sup>49</sup> Occidental also said that "[I]t is these qualities which enable Dispersion resin to maintain profitable pricing levels." RX197C *In Camera* (Occidental 1986-1989 Strategic Plan).

performance of the end product. I.D.F. 161; Disch, JX3, PX8 at 43-44; Stevens, JX3, PX9 at 56. Domestic producers maintain higher prices for dispersion resin sold for critical applications than for dispersion resins sold for low end applications. I.D.F. 161.

Almost one-quarter of dispersion imports were accounted for by B.F. Goodrich, the second largest dispersion producer in the United States and the only dispersion PVC producer in Canada. I.D.F. 156. Goodrich would have few incentives to undermine a price increase in the United States by selling its Canadian dispersion resin at a lower price. In addition, demand in Canada limits Goodrich's ability to export to the United States. *See CX137X In Camera*.

Occidental asserts that "[p]roducers and customers of dispersion PVC recognize that imports would be a feasible alternative source of supply if domestic producers increased prices, citing statements from various witnesses. R.A.B. at 77. An examination of these cited statements does not support Occidental's claim. For example, Occidental quotes the statement of Mr. Boyer of Formosa "that dispersion PVC imports have 'influenced the slow downward trend [of dispersion PVC prices] over the past 3 years.'" *Id.* In the same paragraph, however, Mr. Boyer said that "[i]mported dispersion PVC resin is not currently a significant source of supply in the domestic market for dispersion PVC resin, and the level of imports is not likely to increase in response to a sustained ten-percent increase in the price of domestic dispersion PVC resin."<sup>50</sup> CX185F. Mr. Boyer also said that "the return on investment for dispersion PVC resins is good -- good enough that Formosa was in 1986 expanding the capacity of its

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<sup>50</sup> According to Mr. Boyer, although "[d]ispersion PVC resin pricing is relatively stable," prices declined from about 55 cents to about 45 cents per pound between 1983 and 1986. CX185E- F. Other evidence shows little decline in price between 1984 and 1986. Georgia Gulf's average dispersion price declined \$.004 between January 1984 (52.6 cents) and January 1986 (52.2 cents). RX179Z11 *In Camera*. Occidental's mean actual price for dispersion resin declined \$.017 between January 1984 (50.1 cents) and January 1986 (48.4 cents). JX1(III), PX15, Table 18A; CX100H. Domestic producers increased dispersion PVC prices beginning in October 1986. *See CX39-42; CX17; CX36A; CX205C*.

Delaware plant to produce dispersion PVC. CX185E; *See also* RX237T *In Camera*.<sup>51</sup>

Occidental also cites the testimony of Mr. McClellan, president of Plast-o-merics, Inc., a purchaser of PVC resins, "that he would increase his use of foreign PVC if the price of domestic PVC increased 5%." R.A.B. at 77. Mr. McClellan's testimony was not so unequivocal. In fact, he said that if the price of domestic resin increased 5%, his company "probably would to some extent" increase its use of foreign resin, but, he added, "[s]o much of it would depend upon circumstances." JX1(II), Tr. 725D. Even so, Mr. McClellan's experience is unusual. Most customers said that they could not rely on imported dispersion resin.

Occidental also cites the testimony of "a former Tenneco official . . . that imports would begin to displace domestic dispersion PVC if domestic prices were to increase." R.A.B. at 77. This characterization of the testimony is incomplete. The witness, Mr. Disch, formerly with Tenneco and now with Occidental, *See* note 12 *supra*, did say that consumption of dispersion resin for low end uses, such as toys and "other non-critical miscellaneous items," would tend to decline if price increased. JX3, PX8 at 42-43; *See* I.D.F. 161. For other end uses of dispersion resin, however, Mr. Disch testified that customers "would find it difficult" to substitute away from domestic dispersion PVC. JX3, PX8 at 44. For these more critical applications, Mr. Disch said, customers are "very particular" about the qualities of the resin used, *Id.* at 38, and their fabricating equipment is specialized to domestic resins. *Id.* at 44. Mr. Stevens of Tenneco also testified that imported dispersion resin is used in the "low end dispersion markets, the traffic cone type of thing," in which "there is very little technology involved." JX3, PX9 at 55-56. In the high end markets, such as flooring, according to Mr. Stevens, technology is "very sophisticated," and domestic customers would find substitution of imported dispersion resins difficult and costly. *Id.* at 56-57. This evidence is consistent with Occidental's analysis that most applications of dispersion resin are "specialty applications and

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<sup>51</sup> In 1986, Goodyear also increased its dispersion production capacity (by 15 million pounds to 115 million pounds) at its Niagara Falls, New York, plant. RX127A *In Camera*.

processes [that] require advanced technology, stringent quality control, and good customer service. It is these qualities which enable Dispersion resin to maintain profitable levels." RX197C *In Camera*.<sup>52</sup>

Occidental points also to its Strategic Plan for 1985-88 that allegedly "projected that foreign dispersion PVC producers could 'continue to depress prices and/or gain market share.'" R.A.B. at 77. This was not a "projection" but one of a number of hypothetical "Risks" that Occidental identified under the general heading, "Opportunities and Risks." JX1(II), DX12 at 102637-38 *In Camera* (1985-88); *See also* RX197G-H *In Camera* (1986-89). Despite these "Risks," Occidental concluded in its business plans for 1985-88 and for 1986-89 that "[d]ue to the profitability that Dispersion provides, the only acceptable strategy is to grow." JX1(II), DX12 at 102638 *In Camera*; RX197 H *In Camera*; *See also* RX197D *In Camera*.

Finally, Occidental relies on the testimony of James Beightol, a PVC broker, "that if domestic dispersion PVC producers attempted to raise prices above competitive levels, imports would increase dramatically." R.A.B. at 77.<sup>53</sup> Mr. Beightol's estimates of dispersion PVC imports were anecdotal and unsupported. For example, Mr. Beightol's estimate of imports from Canada was based on his "poll[ing] the audience" in the courtroom "during the break": "I asked people from Oxy that were there . . . ." JX1(II), Tr. 694-95. For his estimate of imports from Germany, Mr. Beightol relied on his recollection of a chance meeting with an employee of an American importer "at a plastic show in Chicago last year. . . . I just asked him what kind of volume they were bringing in from Germany." *Id.* at 697. Mr. Beightol displayed no special knowledge of dispersion

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<sup>52</sup> Occidental's statement that dispersion PVC requires a high degree of customer service, R.A.B. at 81-82 (portion *In Camera*), undermines its assertion that imported dispersion resin is readily substitutable for domestic dispersion resin. *See* R.A.B. at 77.

<sup>53</sup> Mr. Beightol's statement appears to be inconsistent with that of Mr. Boyer of Formosa, a producer of dispersion resin, who said that imports of dispersion PVC are "not likely to increase in response to a sustained ten-percent increase in the price of domestic dispersion PVC resin." CX185F.

imports,<sup>54</sup> his estimates were inconsistent with others in the record<sup>55</sup> and we decline to rely on his testimony.

At their peak in the mid 1980's, when the dollar was high relative to other currencies, imports of dispersion PVC may have been as much as 8% to 11% of domestic supply. The record indicates that imports were limited to the low end, lower priced uses of dispersion resin and did not affect most of the domestic dispersion market. Even so, Occidental in October 1986 was able to increase prices of its low end dispersion resins, and the industry increased domestic dispersion prices generally in 1986 and 1987. We conclude that the record fully supports the conclusion of the administrative law judge that the United States is a relevant geographic market for dispersion PVC, and we affirm his conclusion.

## II. ENTRY

If entry into the relevant market is easy, incumbent firms will be unable to sustain any exercise of market power. Entry into the relevant product markets is difficult. The Commission in *Goodrich* identified "substantial barriers and impediments to entry" into the mass and suspension PVC market: four or five years to plan and build a new plant or expand an existing plant, including one to two years to obtain environmental permits, additional time to evaluate and obtain technology licenses and the need to comply with newly enacted environmental regulations. *Goodrich*, 110 FTC at 297-300. According to a Goodrich document, the "lead time required for plant expansions and constructing grass root PVC plants . . . is now four to five years vs. the three years formerly required due to the increasing number of local and federal restrictions and necessary approvals." Goodrich CX196A. Requirements of scale and sunk costs also may impede entry into the mass and suspension PVC market. I.D.F.

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<sup>54</sup> Mr. Beightol said that he "kept abreast" of dispersion imports by traveling "to those countries" in which foreign producers are located. JX1(II), Tr. 648-49.

<sup>55</sup> Complaint counsel's expert estimated that dispersion imports were 36.1 million pounds, JX1-4, PX140, Table 24; Occidental's estimate was 30-40 million pounds. I.D.F. 155; See note 44 *supra*. In contrast, Mr. Beightol thought that dispersion imports were 60 million pounds. JX1(II), Tr. 690.

237-48, 267-71 & 278-92; *Goodrich*, 110 FTC at 300 n.85.<sup>56</sup> Sunk costs represent 75% to 80% of the total cost of a suspension PVC plant, and total costs for an efficient-sized plant could exceed \$100 million. I.D.F. 270.

Entry into either the copolymer market or the dispersion PVC market would be similarly difficult. I.D.F. 239, 249-55. A copolymer or dispersion PVC plant requires a greater investment per pound of capacity than is required for a suspension homopolymer PVC plant.<sup>57</sup> In addition, requirements of scale and sunk costs are significant impediments to entry into these markets.<sup>58</sup> I.D.F. 249-55, 267-72 (portion *In Camera*). The copolymer and dispersion markets are relatively small as compared to the minimum efficient scale of entry, which enhances the price-depressing effect of minimum scale entry. Demand for copolymer is declining so that entry would be unprofitable. I.D.F. 41 & 262; Schaefer, JX1(I), Tr. 586-87; Disch, JX1(IV), PX8 at 18. Dispersion PVC is considered a mature market, with demand flat or growing only slightly, which reduces the attractiveness of entry. I.D.F. 42 & 263; Disch, JX1(IV), PX8 at 80; CX185E; RX197H *In Camera* ("little or no growth").

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<sup>56</sup> The administrative law judge also concluded that vertical integration in the PVC industry increases the difficulty of entry into all three product markets. I.D.F. 273-77. Because we conclude, based on other evidence, that entry would be delayed for a period of years, we find it unnecessary to consider the effect of vertical integration on entry.

<sup>57</sup> Occidental estimated that a mass or suspension homopolymer plant would cost 30-40 cents per pound of annual capacity; for a copolymer plant, the cost would be 50-70 cents per pound and for a dispersion plant, 80 cents to \$1 per pound. JX1(III), PX15 at 75-76. Occidental believed that *de novo* entry, from initial planning to production, would take 30-36 months, *Id.* at 83; actual construction (after permitting) would take 18-24 months. *Id.* at 76.

<sup>58</sup> Occidental argues that these considerations are irrelevant, that "the Commission has recognized that a declining market does not create a barrier to entry." R.A.B. at 67-68, citing *Echlin Manufacturing Co.*, 105 FTC 410, 488-89 (1985). Considerations of scale requirements and sunk costs in a declining market are not barriers to entry in the Stiglerian sense, as the Commission recognized in *Echlin*, but merger analysis properly is concerned with conditions, in addition to barriers, that delay entry and permit market power to be exercised in the interim, See 105 FTC at 486-87, or that decrease the likelihood that entry will occur.

Expansion may be easier to accomplish than *de novo* entry, but expansion still requires a considerable amount of time and a substantial capital investment. Occidental's plans for expanding homopolymer capacity at Pasadena, for example, anticipated that production would not begin until two years after the expenditure had been authorized by management. RX1N *In Camera*. The estimated cost of the project was approximately \$37 million. RX1Z16 *In Camera*. Tenneco estimated that any "major expansion would require two to three years to go through the permitting and construction phases." JX1-4, PX104 at E4.<sup>59</sup>

### III. MARKET SHARE AND CONCENTRATION

The fewer the competitors in a market, the easier it becomes for firms to coordinate price and output decisions. As the number of firms in an industry declines and concentration increases, the likelihood of anticompetitive effects from an acquisition also increases. *United States v. Philadelphia National Bank*, 374 U.S. 321, 363 (1963); *Elders Grain, Inc.*, 868 F.2d at 905-07; *Hospital Corporation of America*, 807 F.2d at 1387; *FTC v. PPG Industries, Inc.*, 798 F.2d 1500, 1503 (D.C. Cir. 1986); *Goodrich*, 110 FTC 303; *Weyerhaeuser Co.*, 106 FTC 172, 278 (1985). When a market is

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<sup>59</sup> Expansion by the incumbent firms may not have the same procompetitive effect as new entry but may simply maintain the status quo. Formosa said that "we hope we are doing this [expansion] in such a way as not to stir the marketplace up." CX165B (Chemical Week, Nov. 4, 1987, at 58); RX222B. Vista announced that it was "tailoring [its] resin expansion program to match anticipated growth so that Vista will maintain its current 10% share of the overall PVC market." RX236A (J. Commerce, Dec. 14, 1987). Tenneco in a business plan said that "[t]he preferred method of expansion would be via acquisition as this offers increased market participation with no increase in total industry capacity." JX1-4, PX104 at E8. Occidental in 1987 said that anticipated expansions by incumbent firms "will enable industry capacity to keep pace with the demand growth" and that its proposed expansion of Pasadena "is necessary for OxyChem to maintain its position as the recognized market leader." RX1L *In Camera*.



moderately concentrated,<sup>60</sup> the Commission has said that an "especially careful review of a number of industry characteristics in addition to concentration" is necessary to assess the likely competitive effects of the transaction. *Weyerhaeuser*, 106 FTC at 280. When a market is highly concentrated, the Commission examines the particular characteristics of the industry to determine whether the presumption of anticompetitive effects that arises from the market share and concentration data is rebutted, *Olin Corporation*, Docket 9196, slip op. at 22 (June 13, 1990), *aff'd* No. 90-70452 (9th Cir. Feb. 26, 1993), but the Commission has said that "relatively strong evidence from other factors is needed to rebut that presumption." *Goodrich*, 110 FTC at 314.

*A. Mass and Suspension PVC*

Occidental's acquisition of Tenneco's PVC business increased the Herfindahl-Hirschmann Index ("HHI") in the moderately concentrated mass and suspension PVC market by 156 points to 1278, based on 1985 actual production (including PVC homopolymer and copolymer production), and increased the four-firm concentration ratio from approximately 54% to about 61%.<sup>61</sup> In terms of operating capacity, the acquisition increased the HHI by 158 points to 1305 and

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<sup>60</sup> Herfindahl-Hirschmann Index ("HHI") thresholds of 1000 and 1800 correspond roughly to four-firm concentration ratios of 50% and 70%, respectively. Department of Justice, *Merger Guidelines* Section 3.1 (1984). Markets for which the HHI is between 1000 and 1800 points are considered moderately concentrated, and markets for which the HHI is more than 1800 points are considered highly concentrated. See *Goodrich*, 110 FTC at 305; *Grand Union Co.*, 102 FTC at 1055.

<sup>61</sup> When actual imports are included, the acquisition increases the HHI by more than 140 points to between 1164 and 1187 (depending on the number of import producers), and the four-firm concentration ratio increases from 51% to 58%. JX1-4, PX140, Table 23. Imports play a much smaller role in subsequent years: by 1987, when the record closed, imports accounted for less than one-third of the market share recorded in 1985 and were continuing a rapid decline. See text at notes 35-36 *supra*; I.D.F. 123-25. In any case, imports were excluded from concentration and market share calculations in *Goodrich*, 110 FTC at 306-11, so that for purposes of direct comparison, the figures in the text are appropriate.

the four firm concentration ratio from about 56% to about 63%. I.D. at 59-60; JX1-4, PX140, Tables 1 & 2.<sup>62</sup>

Occidental argues that the finding of liability in the mass and suspension PVC market must fail, because the market share and concentration data "cannot be distinguished meaningfully from those in other litigated cases in which the Commission found no Section 7 violation," because the postacquisition HHI "is still comfortably in the lower half of the 'moderately concentrated' range established in the Guidelines" and because "[t]he Commission has never held an acquisition unlawful in the Guidelines era where the HHI was as low as it is here and increased by such a small amount." R.A.B. at 16-17.

These arguments ignore the principle that each case must be decided on its own facts. Market share and concentration data are important preliminary surrogate measures of market power, not infallible predictors of competitive effects. They are "an important starting point in merger analysis, [but] not conclusive in determining the legality of a merger under Section 7." *American Medical International Inc.*, 104 FTC 1, 200 (1984); *Goodrich*, 110 FTC at 305; *See also Weyerhaeuser*, 106 FTC at 278; *Hospital Corporation of America*, 106 FTC at 474; 1992 Merger Guidelines Section 1.51 ("a useful indicator of the likely potential competitive effect of a merger"). The next step is consideration of other characteristics of the market to assess likely competitive effects. *See Weyerhaeuser*, 106 FTC at 278. In each of the two cases cited by Occidental, *Weyerhaeuser* and *Goodrich*, the Commission recognized a "rebuttable presumption of anticompetitive effects" from market share and concentration data. *Goodrich*, 110 FTC at 305; *See Weyerhaeuser*, 106 FTC at 278. In each case, the Commission then reviewed the particular characteristics of the markets involved. In neither case were market share and concentration data dispositive of the issue of competitive effects. The point of the analysis is not

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<sup>62</sup> These data include the capacity of higher cost, small reactor plants unable to undercut the cartel price of lower cost, large reactor plants that constitute by far the majority of mass and suspension capacity. *See text at notes 18-21 supra & I.D.F. 597-602 (portion In Camera)*. In addition to the cost disadvantage, small reactor plants are, for the most part, owned by the same firms that own the large reactor plants and would have incentives not to undercut the cartel price. *See RX197L & M In Camera*.

whether the numbers are different, as Occidental asserts, but whether the particular facts of the case indicate that anticompetitive effects are or are not likely.

Occidental asserts several objections to the calculations of market share and concentration data cited in the Initial Decision. Occidental's principal objection is that the data cited by Judge Howder do not include practical production data, which, according to Occidental, were described by the Commission in *Goodrich* as "the most relevant measure of capacity." R.A.B. at 18, *citing Goodrich*, 110 FTC at 327. This is incorrect.<sup>63</sup> In *Goodrich*, the Commission cited and applied three measures of capacity and production -- nameplate capacity, practical production capacity and actual production -- to calculate market share and concentration, and it did not select one set of data over any other for this purpose.<sup>64</sup> We reject Occidental's claim that the administrative law judge erred in this respect.<sup>65</sup>

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<sup>63</sup> Occidental quotes this phrase out of context: The Commission in *Goodrich* said that practical production capacity was "the most relevant measure of capacity" to assess capacity utilization levels in the industry, not to calculate market share and concentration. 110 FTC at 327. To buttress its argument that the Commission has a "clear preference for the practical production capacity measure," R.A.B. at 19, Occidental also cites the Commission's statement that "[p]ractical production capacity . . . provides a better measure of actual production constraints" than does nameplate capacity. R.A.B. at 18-19, *citing Goodrich*, 110 FTC at 306 n.118. This statement did not select one measure over another as the most relevant but rather described a difference between two of the three measures that the Commission cited and applied in *Goodrich*: nameplate (or design) capacity, practical production capacity and actual production.

<sup>64</sup> All three measures yielded comparable results: the *Goodrich* acquisition increased the nameplate capacity HHI by 113 points to 1098 and the practical production capacity HHI by 112 points to 1079; the Commission estimated that the HHI for actual production increased by 110 points to 1020. 110 FTC at 309-10.

<sup>65</sup> Occidental attempts in this appeal to present new market share and concentration data and claims that Tenneco erroneously overstated its production capacity. R.A.B. at 20 n.16. Occidental had the opportunity to present these data at the hearing, when complaint counsel could examine and test them, and it failed to do so. In any event, Occidental's proffered data, which purport to show that the acquisition increased the HHI for practical production capacity by 137 points to 1250 (or by 144 points to 1255, if Tenneco's data are used), are of the same order of magnitude as those cited by the administrative law judge. *See* note 66 *infra*.

Occidental also argues that the numbers in this case are "indistinguishable" from those in Goodrich, suggesting that the complaint should, therefore, be dismissed. The postacquisition HHIs in this case, however, are approximately 200 points higher than in Goodrich.<sup>66</sup> Occidental attempts to understate the difference between the numbers here and those in Goodrich by assigning to the Goodrich acquisition the capacity of plants that were not acquired by Goodrich but were closed by the acquired firm. R.A.B. at 16 & n.12. Occidental's attempted comparison is factually incorrect. In Goodrich, the Commission declined to attribute the plant closures to the Goodrich acquisition and instead analyzed the acquisition on the basis of only those plants actually acquired by Goodrich. 110 FTC at 347.<sup>67</sup>

Even if the market share and concentration data were identical, it does not necessarily follow that we should reach the same result -- dismissal of the complaint -- in both cases. Market share and concentration data are "an important starting point in merger

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<sup>66</sup> For actual production, the HHI is 1278, 258 points higher than the 1020 points in Goodrich. Using Occidental's practical production figures, *See* note 65 *supra*, the HHI is 1250 points, compared to 1079 in Goodrich. For operating (nameplate) capacity, the HHI is 1305, compared to 1098 in Goodrich (although these figures are not strictly comparable, *See* C.A.B. at 45 (portion *In Camera*)).

<sup>67</sup> Occidental asserts that "[t]he Goodrich Commission indicated that the acquisition would be upheld even if Diamond Shamrock's closing of four other PVC plants . . . was attributed to the acquisition." R.A.B. at 16 n.12. This is incorrect. In discussing the presumption of anticompetitive effects based on market share evidence in Goodrich, the Commission compared the evidence in the record with that in Weyerhaeuser. The Commission said (1) that the increase in and level of HHI resulting from the acquisition (apart from the Deer Park and Delaware City plant closures) were about 100 points less than in Weyerhaeuser; (2) that, "[a] *fortiori*, the concentration data . . . create an even weaker presumption of anticompetitive effects" than in Weyerhaeuser; and (3) that, therefore, the rebuttal evidence "need not be as strong as it was in Weyerhaeuser." 110 FTC at 311. The Commission in Goodrich also observed that "[e]ven if" the Deer Park plant closures were attributed to the acquisition, the changes in HHI levels would be "barely comparable" to those in Weyerhaeuser, but the Commission did not determine that the plant closures should be attributed to the acquisition (Goodrich maintained that they should not, *Id.*), and it did not speculate about what its conclusion concerning liability might have been had the plant closures been attributed to Goodrich. *See also* 110 FTC at 309 n.125 & 311 n.130.

analysis," *Goodrich*, 110 FTC at 305, *quoting American Medical International*, 104 FTC at 200, not infallible predictors of competitive effects. Occidental's numerical approach would make market shares dispositive of liability under Section 7, an approach that the Commission specifically has declined to follow. *E.g.*, *Goodrich*, 110 FTC at 305; *Weyerhaeuser*, 106 FTC at 278.

*B. PVC Copolymer*

Occidental's acquisition of the PVC business of Tenneco increased the HHI for operating capacity in the PVC copolymer market by 1360 points to 3504. The combined firm has approximately 52% of the market, and the four firm concentration ratio is 87%. Based on actual production, the acquisition increased the HHI by 1577 points to 4368, the combined firm has 59% of the market and the four firm concentration ratio is 100%. I.D.F. 201-10; I.D. at 63 (chart). This market is highly concentrated.<sup>68</sup>

*C. Dispersion PVC*

The acquisition increased the HHI for operating capacity in the dispersion PVC market by 331 points to 2051. The combined firm has almost 28% of the market, and the four firm concentration ratio is 87%. Based on actual production and including imports, the acquisition increased the HHI by 330 points to 1938; Occidental is the largest firm with almost 32% of the market and the four firm

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<sup>68</sup> Occidental's own documents suggest the same conclusion. In planning for the acquisition, Mr. Schaeffer, Occidental's Executive Vice President responsible for PVC, reported:

In the copolymer business [after the acquisition], there would essentially be only two major producers: Occidental and Borden. This [acquisition] would provide us with almost half the market together with the major supply position to the record industry. This would significantly enhance the profitability of the Pottsdown suspension plant.

concentration ratio is 80%. I.D.F. 219-22; I.D. at 66-67.<sup>69</sup> By Occidental's reckoning, the acquisition increased the HHI for the dispersion market by 336 points to 1746, the combined firm has about 30% of the market and four firm concentration is about 76%. R.A.B. at 79. Occidental's computations are flawed, and the HHI calculated in the Initial Decision appears better supported by the evidence.<sup>70</sup> We find that the dispersion PVC market is highly concentrated.

#### IV. INDUSTRY CHARACTERISTICS

The question in any Section 7 case is whether the acquisition creates or enhances market power or facilitates its exercise. In this case, because Occidental likely could not exercise market power unilaterally, the question is whether the acquisition creates, enhances or facilitates the ability of firms in the market to collude, either tacitly or expressly. *See Hospital Corporation of America*, 807 F.2d at 1386. Because market share and concentration data are only imprecise predictors, we examine other characteristics of the markets to determine whether anticompetitive effects are likely.<sup>71</sup>

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<sup>69</sup> Based on actual domestic production, without including imports, the acquisition increased the HHI by 448 points to 2201.

<sup>70</sup> For example, Occidental's computation double-counts B.F. Goodrich's Mexican production, treating it separately as an import after it already had been included in the market share assigned to Goodrich. Compare R.A.B. 79 with Beightol, JX1(II), Tr. 692, and JX1-4, PX140, Table 24 ("B.F. Goodrich figure includes dispersion imports from [its] Canadian and Mexican affiliates as reported in [its] subpoena return"). Eliminating this double-counting from Occidental's computations boosts the post-acquisition HHI to the highly concentrated range (over 1800), as Occidental virtually concedes. R.R.B. at 81 n.58. Any additional adjustments to replace Mr. Beightol's assumptions with more credible estimates, *See* text at notes 53-55 *supra*, would further increase the post-acquisition HHI calculated by Occidental.

<sup>71</sup> "The more compelling the prima facie case [based on market share and concentration data], the more evidence the defendant must present to rebut it successfully." *United States v. Baker Hughes, Inc.*, 908 F.2d 981, 991 (D.C. Cir. 1990); *See Goodrich*, 110 FTC at 305-06; *Grand Union Co.*, 102 FTC at 1055.

Collusion is easier to establish and maintain and, therefore, more likely to occur in a market that is concentrated on the seller side and in which products are homogeneous, demand is inelastic, conditions are stable, sellers have similar costs, buyers are unable to constrain prices, transactions are numerous and frequent and information about price and other competitive variables is readily available. See *Goodrich*, 110 FTC at 315- 28; R.A. Posner, *Antitrust Law, An Economic Perspective* 55-71 (1976) ("Posner"). In *Goodrich*, the Commission concluded that conditions in the market for mass and suspension PVC are conducive to collusion, except for product homogeneity (*i.e.*, with respect to product quality and transportation costs), production costs and the elasticity of demand for vinyl products. Occidental is referring to these conditions when it asserts that "there is no evidence that these factors have changed significantly in the short time since the Commission considered them in *Goodrich*." R.A.B. at 46. Each of these conditions is discussed below.

*A. Product Homogeneity*

Collusion is facilitated when the relevant product is relatively homogeneous and undifferentiated, because the number of dimensions on which the members of the cartel must agree is reduced.<sup>72</sup> See Posner at 59-60. Collusion may be more complicated and, therefore, more difficult when products are less standard, when

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<sup>72</sup> "Product homogeneity implies that the offerings of rival sellers are . . . virtually perfect substitutes [and] there remains only one dimension along which rivalrous actions and counteractions can take place: price." F.M. Scherer, *Industrial Market Structure and Economic Performance* 200 (2d ed. 1980). In some circumstances, sellers with market power may collude on product dimensions other than price, *e.g.*, product quality or service, but the theory in this case focuses on price.

a schedule of prices may be more complex.<sup>73</sup> When collusion is likely to be more difficult, it is less likely to occur or to persist.

The degree to which the relevant product is homogeneous is important here, because the Commission in *Goodrich* concluded that mass and suspension PVC homopolymer was "relatively heterogeneous" (as compared to vinyl chloride monomer), *Goodrich*, 110 FTC at 347, based on the different grades of PVC, a perception of quality differences within grade, and different transportation and production costs among producers. *Id.* at 316. The "crucial point" about these differences, according to the Commission in *Goodrich*, was that determining and enforcing a consensus price could be complicated: "Instead of establishing a single price for a single homogeneous product, firms must establish and maintain a whole series of prices for a whole series of product grades." *Id.* at 316 n.151. These "complicating factors," together with the possible constraining effect of the price elasticity of demand for vinyl end use products, were deemed sufficient to "refute the weak presumption of anticompetitive effects in the [mass and suspension] PVC market created by the concentration data." 110 FTC at 347.

Occidental maintains that "there is no evidence that these factors have changed significantly in the short time since the Commission considered them in *Goodrich*, R.A.B. at 46,<sup>74</sup> and, therefore, the conclusion of the administrative law judge that mass and suspension PVC is a homogeneous product must be incorrect. Based on additional evidence that was not in the record in *Goodrich*, we agree with the administrative law judge.

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<sup>73</sup> Product homogeneity is likely to be important in assessing the likelihood of collusion only when the relevant product is very heterogeneous, *e.g.*, a custom product that is different from order to order. See Posner at 59-60. It is unlikely to be important over a significant middle range of product variation. See *Hospital Corporation of America v. FTC*, 807 F.2d at 1390 ("there is no established threshold of complexity beyond which [collusion] is infeasible").

<sup>74</sup> The complaint in this case was issued a year after the evidentiary record in *Goodrich* was closed, and the record in this case, which was closed three years after the record in *Goodrich* was closed, includes extensive documents and testimony that were not available in *Goodrich*.



The analysis of the Commission in *Goodrich* emphasized that the market share and concentration data for the mass and suspension PVC market in that case "create[d] only a weak presumption of competitive injury" and, therefore, that the evidence to rebut that presumption need not be as strong as would be required if the market were more concentrated. 110 FTC at 311; *See also Grand Union*, 102 FTC at 1055 ("In general, the higher the concentration levels . . . the greater the evidence the Commission will require to rebut the *prima facie* showing."). If the same analysis were applied here, because the mass and suspension PVC market is somewhat more concentrated than it was in *Goodrich*, the presumption of competitive injury would be somewhat stronger than that in *Goodrich*, and the evidence to rebut that presumption also would need to be somewhat stronger than it was in *Goodrich*; given the greater concentration, the same evidentiary showing that sufficed to rebut the *prima facie* case in *Goodrich* would not necessarily be sufficient in this case. We need not and do not attempt to weigh the relative strengths and weaknesses of the evidence in *Goodrich* against the market share and concentration data in this proceeding, because evidence that was not in the record in *Goodrich* shows that mass and suspension PVC homopolymer is not heterogeneous in any sense relevant to the ability to collude.

#### 1. Product Quality

The primary indicia of homogeneity among products are the substitutability among products of different producers and the inability of any producer to obtain a premium price for his product. Documents and testimony that were not in the record in *Goodrich* show that even for the more sophisticated grades of PVC, substitutions can be and are readily made and no producer can obtain a premium price for his resin as compared to that of any other producer.

The Commission in *Goodrich* regarded the evidence concerning the homogeneity of mass and suspension PVC homopolymer as "mixed." 110 FTC at 315. The Commission found that "commodity grades" of PVC, homogeneous products sold primarily on price, accounted for about 75% of mass and suspension PVC sales. The

Commission also concluded that "it is difficult to charge a premium for any given grade of PVC," *Id.* at 316, implying a substantial degree of homogeneity. Despite this evidence, the Commission thought that the existence of different grades of PVC and the perception of some quality differences within grade among different producers implied some degree of heterogeneity that would require a cartel to establish a number of different prices instead of a single collusive price. *Id.* at 316 n.151.

Mass and suspension PVC homopolymer is produced in three different grades, pipe grade, general purpose grade and specialty grade, each of which has different properties and is used to make different end products.<sup>75</sup> Pipe grade and general purpose grade mass and suspension PVC homopolymer is made in large reactor plants. Specialty homopolymer resins are made in small reactor plants, which comprise a diminishing part of the total suspension homopolymer market.<sup>76</sup> Copolymer and dispersion PVC also are produced in different grades that have different properties and are used to make different end products. Copolymer is made in flooring grade, calendering grade and record grade. JX1(IV), PX9 at 18. The grades of dispersion PVC are general purpose grade, copolymer dispersion grade and flooring grade. *See* JX1(IV), PX9 at 88; JX1(IV), PX32.

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<sup>75</sup> The various properties that distinguish the different grades of PVC, such as molecular weight and particle size, are achieved by controlling the temperature, pressure and chemical additives in processing batches of PVC. JX1(IV), PX8 at 10; *See Goodrich*, 110 FTC at 316.

<sup>76</sup> The Commission in *Goodrich* believed that small reactor suspension PVC capacity constituted about 1/3 of total capacity. 110 FTC at 321. Because a number of small reactor plants have been closed over time, small reactor capacity should be a smaller proportion of total capacity today. I.D.F. 595-96 (portion *In Camera*).

The record shows that all three types of PVC are homogeneous within grade.<sup>77</sup> Occidental and Tenneco officials testified in 1986, in this proceeding,<sup>78</sup> that PVC made by different producers is a commodity product, readily interchangeable within grade with no significant quality differences among producers, and that no producer can obtain a premium price. Mr. Schaefer of Occidental testified in April 1986 that suspension PVC homopolymer is a commodity business: the product "is largely interchangeable from supplier to supplier, sold in high volumes, price being a very major factor in the purchasing decision." JX1-4, PX136 at 11; *See also* JX1(I), Tr. 559-61. Mr. Bailey of Occidental testified in 1986 that "almost all grades of PVC a[re] commodities," that the PVC resins of different producers are "essentially interchangeable" and that Occidental cannot obtain a price premium for any of its PVC resins, "whether it be dispersion, copolymer or homopolymer." JX1(IV), PX6 at 42, 104-05. Mr. Sacks of Occidental testified in 1986 that "[a]lmost all of the PVC business is commodity" with "little differences between competitive products" and "very little difference in pricing." JX1(IV), PX7 at 13-14. Mr. Disch of Tenneco testified in 1986 that "in most instances resins can be interchangeably used by customers." JX1(IV), PX8 at 11. Mr. Stevens, Tenneco's director of marketing, testified in 1986 that suspension PVC homopolymer produced in large reactors "is the most classic commodity product that I have

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<sup>77</sup> *See United States v. Container Corp. of America*, 393 U.S. 333, 336 (1969) ("While containers vary as to dimensions, weight, color, and so on, they are substantially identical, no matter who produces them, when made to particular specifications."); *FTC v. Bass Brothers Enterprises, Inc.*, 1984-1 Trade Cas. (CCH) ¶ 66,041, at 68,612 (N.D. Ohio 1984) ("Carbon black is a homogeneous, fungible product. Although it is produced in numerous different grades . . . in fact all of the producers produce basically the same grades and types.").

<sup>78</sup> This testimony, which was given approximately a year after the record in Goodrich had closed, was not in the Goodrich record and was not considered by the Commission in its decision in Goodrich.

seen,"<sup>79</sup> that the copolymer resins produced by different firms are "very similar" and that prices of PVC resins within grade "are the same." JX1(IV), PX9 at 13 & 32.

Customers also testified in 1986 and in 1987 and 1988 that PVC from different domestic producers is interchangeable. *E.g.*, Stuart, RX245B ("PVC resin is a commodity product that basically has uniform quality among all producers."); Marcus, RX242C *In Camera* ("all suppliers' copolymer resins are uniform in quality"); Byrnes, JX1(II), Tr. 624-27; Beveridge, JX1(I), Tr. 85, 88-89 (copolymer and dispersion resins of different suppliers can be used interchangeably); Witsken, JX1(I), Tr. 602-03 (the major suppliers "all provide a product that is acceptable"); Bailey, JX1(IV), PX6 at 62; Stevens, JX1(IV), PX9 at 112. Customers prefer to maintain several regular sources of supply for PVC, implying that PVC is a homogeneous product, not a differentiated one.<sup>80</sup> *See, e.g.*, Byrnes, JX1(II), Tr. 624-25; Beveridge, JX1(I), Tr. 91 (copolymer and dispersion); Gmach, RX252B; Boulay, CX189C; David, CX194A-B; van Haaren, CX187D; Weimar, CX192E; Hamilton, CX206B; Pomerantz, RX244A-B *In Camera*; Baker, CX205C (dispersion); Stuart, RX245B & CX201D.<sup>81</sup>

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<sup>79</sup> Occidental documents also describe suspension PVC homopolymer as a commodity. According to Occidental, "[p]rice is the primary selling tool for Suspension [homopolymer] resins": although "[p]erformance has impact in some higher end markets . . . production technology is similar throughout the industry to force pricing to be the main sales tactic." JX1(III), PX13 at 452734 (1985-1988 Strategic Plan).

<sup>80</sup> Multiple sources of supply are preferred even for purchases for a single plant. *Compare, e.g.*, Beveridge, JX1(I), Tr. 84-85, 88-89 (uses resins of different suppliers interchangeably), *with Goodrich*, 110 FTC at 326 (customers "fill their requirements for a given plant from one supplier"), and *Goodrich* I.D.F. 220-21.

<sup>81</sup> One customer that buys PVC from five domestic suppliers also buys a "unique" copolymer from a foreign source. Rutland, JX1(I), Tr. 733-36. The existence of one or a few resins uniquely qualified for a particular customer's use does not change our conclusion that the vast majority of mass and suspension homopolymer, copolymer and dispersion PVC is homogeneous. These few unique resins need not complicate the ability to collude but instead could be outside any cartel. *See Hospital Corporation of America v. FTC*, 807 F.2d at 1390.

Reports of sales calls from Occidental and other suppliers show that customers often buy their PVC requirements from more than one supplier. *E.g.*, RX218Z23, Z36, Z64-65, Z88, Z110, Z128-29, Z135, Z204 & Z206; RX216H. The willingness of customers to use PVC from more than one supplier suggests that customers do not perceive important quality differences among the PVC from different suppliers.<sup>82</sup> The willingness of suppliers to meet lower prices offered by their competitors implies that customer threats to switch suppliers are credible.<sup>83</sup> These threats would not be credible if important quality differences (or perceived quality differences) among the PVC of different suppliers deterred customers from changing their sources of supply.<sup>84</sup>

Many customers prefer to buy PVC from more than one supplier, to ensure a steady supply and to protect their ability to negotiate on

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<sup>82</sup> The Commission in *Goodrich* said, based on the evidence of record in that case, that "switching suppliers of a given grade entails significant costs," 110 FTC at 316, and that customers would not switch "when competing prices are identical." *Id.* at 326. As discussed below, the record in this case shows that most PVC buyers prefer to buy from several suppliers and that the costs of switching are for most buyers not significant.

<sup>83</sup> *E.g.*, RX217Z (customer ordered after Occidental met "competitive price"); RX218Z237 (Occidental reduced price ½ cent to meet offer and "obtain order"); RX218Z83 (Occidental reduced price 2 cents to meet offer for "large-scale plant trial"); RX218Z258 (Occidental reduced price 1 cent to meet offer and "regain business we lost in July re-price"); RX218Z77 (1 cent reduction to meet Tenneco price and "regain business"); RX218Z24 (meet competitive price to "reestablish ourselves at this account"); RX216M ("Occidental lost two bulk truckloads [of business] keeping price at 33 cents/lb" instead of 32 cents).

<sup>84</sup> Occidental and other PVC suppliers frequently offer their customers volume rebate incentives, *e.g.*, a one cent rebate for purchases of 13 million pounds during the year, to gain business. *E.g.*, RX217Z39-40; RX173A *In Camera*; RX217Z42. If customers were tied to a particular supplier for all their PVC needs -- because the product was uniquely qualified for the customer's purposes and the cost of switching suppliers was high, *See Goodrich*, 110 FTC at 326 -- customer demand would be predictable, and there would be no need to offer volume purchase discounts to retain a customer's business.

price.<sup>85</sup> *E.g.*, Marcus, RX242B & E *In Camera*; Byrnes, JX1(II), Tr. 624-25. Documents in the record indicate that "qualifying" or testing PVC resins from different suppliers is a regular and frequent part of business. Occidental's monthly reports reflect frequent product testing by both prospective and existing customers. For example, in June 1986, sixteen firms were testing Occidental PVC resins. RX217Z19-22; *See also* RX217X-Z. This experience also is reflected in the documents of other PVC producers. *See, e.g.*, RX166A *In Camera*; RX173A *In Camera*.<sup>86</sup>

Occidental witnesses testified that product trials often can be run quickly and easily. Carlon, which buys 224 million pounds of PVC pipe resin annually from a number of producers (including Occidental and Tenneco), tests a new resin in the laboratory and then "run[s] it through a production line to determine that its use does not impair the smoothness of our operation." JX1(II), Tr. 626. These trials, "from notification to a vendor that we would like to test their resin" through completion of the testing, "can all be done in a matter of days -- certainly much less than a week." *Id.* at 627.<sup>87</sup> Another witness, a PVC compounder that buys homopolymer, copolymer and dispersion PVC resins, testified that general purpose resins can be qualified by "plug[ging] it into the computer." In "some instances," qualifying a new resin "could take a few hours in the lab." For "certain applications and perhaps certain types of resins it might take hours,

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<sup>85</sup> PVC customers assert "meeting competition" and "favored nation" clauses in PVC supply contracts to ensure that they get the best prices from their suppliers. *E.g.*, Stuart, RX245C. The clauses, which typically apply only to PVC of "equal quality," *See* JX1-4, PX94 at 2 & PX93 at 4, would have little meaning unless other suppliers offered PVC of comparable quality.

<sup>86</sup> A PVC producer may run tests to analyze and match a resin used by a potential customer. *E.g.*, RX174A-B *In Camera*.

<sup>87</sup> In July 1985, Carlon cancelled its supply contracts with its PVC suppliers and began relying on monthly negotiations to keep suppliers "a little hungrier." The negotiations "may extend over a two-week period every month." JX1(II), Tr. 624-25.

if not days, of laboratory work to qualify a resin." JX1(II), Tr. 725B & C.<sup>88</sup>

Another PVC compounder testified that "an internal resin quality check that will give us information" about the chemical and physical characteristics is sufficient to place the new resin in a compound "most of the time." Rutland, JX1(II), Tr. 734. "On the rare occasions when a critical U.V. evaluation would have to be made, we may have to run samples in equipment to accelerate-age it and to obtain data before we take a chance on submitting it to the marketplace." These tests normally would be completed in "a couple of weeks" at a cost of about \$500 to \$1000. *Id.* at 734-35.<sup>89</sup>

Other evidence is consistent with the conclusion that PVC is a homogeneous product. Occidental and Tenneco both published catalogues describing their PVC resins. CX84A-Z34 & RX211Q-W (Occidental); CX111A-G (Tenneco).<sup>90</sup> These catalogues suggest that customers can meet their needs from the stock products listed and are inconsistent with the notion that "the industry is producing a custom product in the sense relevant to the feasibility of collusion." Posner at 60. Occidental also published charts showing for its PVC resins the equivalent products of other PVC producers. *E.g.*, JX1(IV), PX47

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<sup>88</sup> After the acquisition of Tenneco, Occidental required many of its customers to qualify "new" resins, because Occidental changed the sourcing plant of those customers: In October 1986, Occidental reported that "[a]ll customers affected by the change-over from [Occidental's] Addis to [Tenneco's] Pasadena are being advised and sampled [sic] the proper resins for approval." RX220Z6. This suggests that the cost of switching suppliers (*i.e.*, the production source of resin) is not high. This is consistent with Occidental documents showing the willingness of customers to change suppliers. *See* text at notes 80-85 *supra*.

<sup>89</sup> Other tests can be more expensive. One buyer of PVC for use in flooring said that product qualification tests can take up to a year and cost as much as \$20,000. These costs do not restrict the ability of these customers to buy from more than one supplier, however, because the resins of most major domestic producers already are qualified with these customers. *E.g.*, Marcus, RX242B, C & E *In Camera*; Boulay, CX189C.

<sup>90</sup> The Occidental Data Sheets provide a "General Description" of the resin and list "Typical Applications" and "Typical Properties," including viscosity, specific gravity and particle size. For example, Occidental "FPC 9418 is a medium molecular weight PVC homopolymer resin primarily designed for rigid PVC applications," such as siding, pipe and conduit and windows. CX84Z20.

at 228496-97 ("Competitive Homopolymer Resins"); JX1-4, PX4B at 200339-40 ("Competitive Copolymer Resins"). These charts, which were intended to be used as sales tools by its salesmen, show that Occidental viewed its PVC products as interchangeable with the PVC of other producers.

Even the so-called specialty mass and suspension homopolymer resins are not custom products. The Commission observed in *Goodrich* that it is difficult to charge a premium price even for these specialty grades.<sup>91</sup> 110 FTC at 316. According to Occidental, the "specialty resin competition consists of domestic producers with small reactor facilities." JX1(II), DX12 at 102643 *In Camera*. The fact that fewer suppliers make specialty resins -- Occidental in 1985 estimated that four producers, Occidental, Georgia Gulf, Formosa and Keysor, "comprise 90% of the [specialty suspension homopolymer] market, with no one being particularly dominant," JX1(II), DX12 at 102643 *In Camera* -- would tend to make collusion with respect to the specialty homopolymer resins easier than for the nine producers of commodity homopolymer resins.

We conclude that PVC is a homogeneous product within grade, with no significant quality differences among the PVC made by domestic producers.

## 2. Pricing

The Commission in *Goodrich* believed that collusion in the mass and suspension PVC market would be complicated to some extent by the existence of different grades of PVC. The Commission said that "[i]nstead of establishing a single price for a single homogeneous product, firms must establish and maintain a whole series of prices for a whole series of product grades." 110 FTC at 316 n.151. Evidence that was not available in *Goodrich* shows that PVC producers do not maintain complicated pricing schedules for different

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<sup>91</sup> Occidental suggested the possibility of some customized specialty resins in its 1986-1989 Strategic Plan: "we believe there is a custom segment where major users have resins tailored to their specific requirements." RX197M *In Camera*. This limited evidence of some custom products does not change the homogeneity of the vast majority of PVC.



grades of PVC. Instead, the prices of mass and suspension homopolymer resins (the "commodity" resins that account for more than 85% of PVC produced in the United States) are keyed to the price of a single grade -- pipe grade PVC, the lowest priced resin<sup>92</sup> -- with other grades generally one or two pennies higher. I.D.F. 570. This practice would tend to simplify collusion.<sup>93</sup>

General purpose mass and suspension homopolymer PVC usually is priced a penny higher than pipe resin, and film grade resin is a penny or two higher than that. For example, a price announcement by one producer shows pipe grade resin at 33 cents, general purpose resin at 34 cents and film grade resin at 35 cents. CX93A.<sup>94</sup> Tenneco, in a contemporaneous announcement, also priced its pipe grade resin at 33 cents and general purpose grades at 34 cents. CX92. B.F. Goodrich announced that its pipe grade resin would increase to 33 cents and general purpose resin would increase to 34 cents, effective the same date. CX87 & CX91; *See also* CX9A; RX293B. In early 1986, an industry journal reported:

another round of polyvinyl chloride price increases, producers say. . . . [B.F. Goodrich's] January pipe grade price is 30 cents per pound, while general purpose resin firms to 31 cents. Special purpose and wire and cable grades are at 32 cents per pound, . . . and film grades are one cent higher. Shintech Inc. has posted similar prices . . . Tenneco Inc. has also raised its pipe grade price to 30 cents per pound. . . .

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<sup>92</sup> Pipe grade resin accounts for about 40% of annual consumption of mass and suspension PVC homopolymer. I.D.F. 372 (portion *In Camera*).

<sup>93</sup> The use of fixed price differentials simplifies collusion by eliminating any need to agree on a complicated schedule of prices. Collusion need not be either complex or perfect to raise prices, benefit the colluding firms and harm consumers. *See* 1992 Merger Guidelines Section 2.11.

<sup>94</sup> The pricing of PVC resins tends to be consistent within grade. For example, one producer price sheet shows only three prices for three resin grades comprising eighteen different product numbers: one pipe grade resin, priced at 33 cents, ten general purpose grade resins, all priced at 34 cents, and seven film grade resins, all priced at 35 cents. CX93B; *See also* JX1(IV), PX27, PX30, PX37 & PX45 ("published industry consensus" on price); JX1-4, PX78 at 900132.

RX209A.<sup>95</sup> This evidence is consistent with B.F. Goodrich's observation that "[t]he majority of G[eneral] P[urpose] grades and even specialty grades are sold at traditional differentials related to the base price of commodity pipe grade resin." Goodrich RX639I; *See also* Goodrich Tr. 1750-51 (H. Wheeler).<sup>96</sup>

The same pricing practice applies for copolymer and dispersion resins. Copolymer PVC is sold in three grades, flooring, calendering and record grades, with prices keyed to the lowest priced grade: "From flooring to calendering is a penny up charge and from calendering to records a penny." Stevens, JX3, PX9 at 23, 18; *See also* CX69; CX68B. Within grade, the prices of copolymer resins produced by different producers are "the same." JX3, PX9 at 32; Weimar, CX192E. Dispersion resin prices also generally follow three levels, depending on grade. Stevens, JX3, PX9 at 88; JX1(IV), PX32 at 204187; *See also* CX70A-B; CX67A; JX1-4, PX55 at 200148-49, PX56 at 200150-53, PX57 at 200170.

Based on this evidence, we conclude that the pricing of PVC is not complex and that the existence of different grades of PVC is not likely to complicate collusion.

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<sup>95</sup> Another example is a newsletter report, also in 1986, that PVC producers were increasing prices "to 29-30 for pipe grade with general purpose at 30-31 cents and specialty/film grades at 32-33 cents." RX293B (Tecnon, Oct. 1986).

<sup>96</sup> According to Occidental, specialty homopolymer resins "are priced approximately \$.07-\$.12 above General Purpose resins." RX197M *In Camera*. The "specialty resin" referred to in RX197M is suspension PVC homopolymer that is made in small reactors and "cannot economically compete in the general purpose sectors" of the PVC market. *Id.* In other contexts, the term "specialty resin" may have a different connotation. For example, the term sometimes is used to distinguish between mass and suspension homopolymer resins made in large reactors ("commodity resin") and dispersion, copolymer and small-reactor suspension homopolymer resins. *See* RX197K *In Camera* (Occidental's "specialty resins" are solution, copolymer, small-reactor suspension homopolymer and blending resins). The term also is used to refer to large-reactor mass and suspension homopolymer resins that are "higher end" or "higher return," as compared to pipe grade resin. *See* RX197T *In Camera*.

## 3. Transportation Costs

The Commission in *Goodrich* also said, based on the evidence of record in that case, that transportation cost differences among PVC producers could "complicate the determination and enforcement of consensus prices," because PVC producing plants are "scattered all over the country." 110 FTC at 316-17 & n.152. The record in *Goodrich* showed that mass and suspension PVC is sold on a delivered price basis, but it did not show whether that price was uniform throughout the United States. *Id.* at 317 n.152 & 322.<sup>97</sup> The record in this case shows that PVC is sold on a uniform delivered price basis throughout the United States, usually with a two cent premium for customers west of the Rockies. *See, e.g., CX90.*

The costs of PVC producers to ship to customers will vary, depending on the location of the shipping plant, the location of the customer and the volume of PVC shipped, but transportation costs are a small part of the selling price of PVC, and transportation cost differences would necessarily be even less.<sup>98</sup> To reach a consensus on price, PVC producers would not need to make complicated, transaction-specific adjustments for transportation costs or allocate markets on the basis of natural freight advantages but could establish a single benchmark delivered price.

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<sup>97</sup> The Commission in *Goodrich* said that uniform delivered pricing can have the effect of eliminating price differences based on location. 110 FTC at 322.

<sup>98</sup> One analysis estimated that PVC market prices "generally include \$0.015-\$0.020 per pound for transportation costs." RX21U-V (Dean Witter Reynolds, June 16, 1987) (5%-7% of selling price). In 1986, Tenneco's freight costs were about 7.7% of its average selling price of PVC resins. CX47Z14 *In Camera*. Air Products' 1985 average distribution costs were about 9% of selling price (1.8 cents to 2.6 cents per pound). RX178Z13 *In Camera*. CX54 shows 1983 shipping costs ranging from 0.6 cents per pound from New Jersey to New York to 2.67 cents per pound from Oklahoma City to New Jersey; shipments from Louisiana and Mississippi to New Jersey cost 2.45 cents and 2.06 cents per pound, respectively. Assuming that pipe grade resin sold for 22 cents per pound in 1983 (*See Goodrich Tr.* at 2161), these freight costs were 2.7% to 12% of the delivered price of PVC. B.F. Goodrich's average PVC freight costs in 1982, weighted by customer and volume, ranged from less than one cent to about 2.5 cents per pound. *Goodrich RX245M & N.*

The locational differences among PVC producing plants do not appear to be significant. See I.D.F. 612-16 (portion *In Camera*). Each of the eight PVC producers that, according to Occidental, comprise 99% of the [suspension PVC homopolymer] market" -- Occidental, Goodrich, Shin-Tech, Georgia Gulf, Vista, Borden, Formosa and Air Products -- has a large reactor plant in the Gulf Coast area. RX197S-U *In Camera*; See RX168Z45-46 *In Camera*.<sup>99</sup> In general, these firms share the same locational advantages or disadvantages with respect to PVC buyers.<sup>100</sup> Only Goodrich has large reactor suspension PVC homopolymer plants both in the Gulf Coast area and elsewhere in the United States.<sup>101</sup> Goodrich may have some locational advantages with respect to some customers who are closer to its plant in New Jersey than they are to the Gulf Coast producers,<sup>102</sup> but any advantage with respect to shipping PVC may

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<sup>99</sup> Three PVC producers do not have Gulf Coast plants: Keysor-Century, which makes specialty PVC homopolymer and copolymer in a small reactor plant in California, RX144B & K *In Camera*; Goodyear, which makes dispersion resins at Niagara Falls, New York, RX148C-D *In Camera*; and Vygen, which makes homopolymer and copolymer in a small reactor plant in Ashtabula, Ohio. RX177Z1 & Z12 *In Camera*; See RX168Z46 *In Camera* (map).

<sup>100</sup> Some PVC pipe producers, the major purchasers of commodity suspension homopolymer resin produced in large reactor PVC plants, have moved their plants from the midwestern United States to the "Sun Belt" region, particularly Texas, to be closer to the areas of demand. RX38E *In Camera*.

<sup>101</sup> Goodrich has large reactor capacity in New Jersey and Texas. RX180Z1 & Z24 *In Camera*. Goodrich's plant in Louisville, RX180H *In Camera*, and a Borden plant in Illiopolis, Illinois, RX143X *In Camera*, have reactors slightly smaller than the 18,000 gallon minimum usually cited to define large reactors. See note 18 *supra*.

<sup>102</sup> A locational advantage does not necessarily mean a price advantage. Borden, with a plant in Illinois, was the high bidder (at 30 cents a pound) for a PVC customer in Northbrook, Illinois. Two other producers bid 28 cents, and one bid 29 cents. RX142A *In Camera*.

be offset by the cost of shipping VCM, the principal input for PVC.<sup>103</sup> In addition to the fact that its New Jersey plant does not have a clear cost advantage, because it has a plant in the Gulf Coast area, Goodrich would have substantial incentives to avoid undercutting any cartel price.

A number of PVC plants are clustered in the northeast.<sup>104</sup> I.D.F. 613 & 616 (portion *In Camera*). Most of these are small reactor plants that make specialty resins (specialty homopolymer, copolymer and dispersion PVC, for example) that do not compete with suspension PVC homopolymer made in large reactors.<sup>105</sup> Because these plants make products that do not compete with suspension PVC homopolymer, their location as compared to the Gulf Coast plants is irrelevant. To the extent that they compete with one another, the locational differences among them are minor: no small reactor PVC plants are located in any other part of the country, except for Keysor-Century in California.

We conclude that transportation cost differences, to the extent that they may exist, are not sufficient to complicate collusion and thereby to decrease the likelihood of anticompetitive effects stemming from this acquisition.

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<sup>103</sup> An Occidental document shows that the PVC freight advantage for a PVC producer in the northeast over a Gulf Coast producer with respect to a customer in the northeast is offset by the additional cost of shipping VCM from the Gulf Coast to the northeast. The cost for shipping VCM from Louisiana to New Jersey is \$0.0230 per pound; the cost for shipping PVC from Louisiana to New Jersey is \$0.0245 per pound. CX54.

<sup>104</sup> In 1983, 55% of all PVC was consumed within 350 miles of New York City, according to Occidental. CX54.

<sup>105</sup> These include Formosa's Delaware City, Delaware, plant, RX168Z63 *In Camera*; Occidental's Burlington, New Jersey, and Pottstown, Pennsylvania, plants; and Georgia Gulf's Delaware City, Delaware, plant. RX179T, U & Z1 *In Camera*. Goodrich has small reactor capacity at plants in Avon Lake, Ohio, Henry, Illinois, and Pedricktown, New Jersey. RX180 *In Camera*. Borden has small reactor capacity at Illiopolis, Illinois. RX143U *In Camera*. See also note 101 *supra*.

*B. Production Costs*

Large reactor PVC plants have comparable manufacturing costs. *See* Goodrich, 110 FTC at 321. These are the most efficient, low-cost plants in the industry, and they produce the lower priced, high volume, commodity grades of suspension homopolymer PVC.<sup>106</sup> According to Occidental, "[t]he domestic Suspension [homopolymer] market is dominated by high volume/low cost producers." RX197S *In Camera*.<sup>107</sup>

Evidence that was not available in Goodrich shows that small reactor plants that have higher production costs have turned to production of grades of PVC that are sold as specialty grades, as compared to pipe and general purpose grades, for higher prices. RX197M *In Camera*. Occidental reported in its 1986-1989 Strategic Plan that "[n]umerous old small reactor operations have closed down over recent years due to their inability to compete on a cost/performance basis. Those still in operation are competing only in specialty niches." RX197S *In Camera*.<sup>108</sup> According to Occiden-

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<sup>106</sup> In 1982, Occidental estimated that the costs to seven producers of manufacturing suspension PVC homopolymer ranged only from 22.1 cents to 23.6 cents per pound. CX52G *In Camera*. The administrative law judge found that the cost of converting VCM to PVC varied only \$.004 among 7 of 9 large reactor plants and less than \$.012 among 8 of 9 large reactor plants identified in Goodrich RX1168A. I.D.F. 602 (portion *In Camera*). Conversion costs are derived from Goodrich RX1168A by subtracting the cost of VCM from the operating costs for each plant. This approach is consistent with CX52G *In Camera*, which assumes that all producers have the same cost for VCM.

<sup>107</sup> Mr. Schaefer of Occidental (JX1(I), Tr. 560-61) attributed the increasingly commodity nature of the PVC industry to large-reactor technology:

In the early 1970's, there was a real technological breakthrough, which . . . consists of these very large reactors which are used to make commodity grade PVC resin. And as the business has grown and become more commodity oriented, a number of producers invested in large reactor capacity in order to maintain a competitive position in the commodity business. . . . [W]e are talking about something that maybe started in the early seventies and ran through the late seventies and perhaps the very early eighties.

<sup>108</sup> As a result of the closing of small reactor plants over time, small reactors likely represent a smaller proportion of total capacity today than at the time of the Goodrich decision. *See* note 76 *supra*.

tal, the suspension PVC resins produced at small reactor plants, "due to very high manufacturing costs associated with small reactors, cannot economically compete in the general purpose sectors." RX197M *In Camera*. Instead, the specialty PVC resins made at small reactor plants are "priced approximately \$.07-\$.12 above General Purpose resins and therefore deliver a return over their high costs." *Id.* Also according to Occidental, "[t]he specialty resin competition consists of domestic producers with small reactor facilities. O[ccidental], Georgia Gulf, B.F. Goodrich, and Keysor comprise 90% of the market . . . ." *Id.*

In this industry, then, the difference in reactor size has led to two tiers of products, a lower cost, commodity tier and a higher cost, specialty tier, rather than disparate costs among producers.<sup>109</sup> PVC that is made in the higher cost, small reactors is not in a position to undercut the price of PVC produced in the large reactors. In addition, most of the small reactor capacity remaining in the industry is owned by the same firms that also are the major, large reactor producers and would have incentives to avoid undermining a collusive price.

### C. Elasticity of Demand

The price elasticity of demand for a product measures the extent to which an increase in the price of the product will produce a decrease in demand for it. When the price elasticity of demand is low, the price of a product can be increased without losing a significant quantity of sales."<sup>110</sup> The administrative law judge made detailed findings concerning the price elasticity of demand for PVC and for the vinyl products made from PVC and concluded that the elasticity of demand for PVC is low. I.D.F. 361-548 (portion *In Camera*). We agree.

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<sup>109</sup> Tenneco estimated that the cost of producing suspension homopolymer PVC is 25.2 cents per pound in a "world scale large reactor plant" and 29.2 cents per pound in a "typical small reactor plant." JX1-4, PX131 at 1349; *See* notes 18 & 19 *supra*.

<sup>110</sup> Because PVC is a raw material used to manufacture other products, its price elasticity will increase to the extent that other raw materials can be substituted for it and to the extent that consumers can substitute away from finished vinyl products.

The Commission in Goodrich observed that the price elasticity for mass and suspension PVC resin is relatively low, for three reasons. First, there are no practical substitutes for PVC in the manufacture of vinyl products. Second, with the exception of pipe made from PVC, PVC resin accounts for only a small proportion of the cost of finished vinyl products. Third, although the elasticity of demand for finished vinyl products varies substantially, it is relatively low for most finished vinyl products. Goodrich, 110 FTC at 318-20. The Commission nevertheless concluded that "although the price elasticity of demand for PVC is, on balance, relatively low, an effort on the part of PVC producers to raise PVC prices to supracompetitive levels may be constrained to some degree by the higher price elasticity of demand for many PVC end use products, and made more difficult by variations in price elasticity from one PVC end product to another." 110 FTC at 339. At the same time, the Commission in Goodrich concluded that "the demand for PVC is sufficiently inelastic to make it likely that an increase in VCM prices can profitably be passed along to PVC customers." 110 FTC at 338.

Evidence that was not in the record in Goodrich suggests that the price elasticity of demand for finished vinyl products is less than the Commission then believed."<sup>111</sup> In Goodrich witnesses testified that when the price of pipe grade resin reached 33 cents to 34 cents, PVC pipe would lose business to pipes made from other materials. I.D.F. 430 (portion *In Camera*). PVC price increases in subsequent years have shown this prediction to be incorrect. Although the price of pipe grade PVC resin increased from 23 cents per pound in January 1986 to approximately 38 to 40 cents per pound in January 1988, Wilhite, CX179B; Porter, CX198A-B *In Camera*; RX310D, the sales

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<sup>111</sup> In Goodrich, the Commission found that the price elasticity of demand for finished vinyl products is lowest in the wire and cable, packaging film and sheet, phonograph record and medical products segments (21%-23% of PVC consumption). With respect to the PVC pipe, siding, floor tile and window frame segments (53%-55% of PVC consumption), the Commission said that the elasticity of demand is higher but still relatively low, citing a Goodrich study that concluded that "PVC pipe manufacturers appear to have plenty of room for price increases before approaching the price levels of most competing materials." The elasticity of demand for rigid and flexible calendered products and bottles (21%-27% of PVC consumption) was thought to be "considerably higher." 110 FTC at 319-20.



of PVC resin "in the pipe sector . . . remained remarkably good despite some fears that PVC pipe penetration would slow down due to competition from other types of pipe." RX309D; RX308C (with pipe grade PVC prices at 38-40 cents, "[s]o far there are no signs that PVC pipe prices are moving too far ahead of the competition"). Another trade journal, observing the increase in pipe grade resin sales in 1987, predicted that sales of PVC pipe grade resin would "remain strong," because of continuing expenditures on municipal water and sewage treatment systems. RX307A. The replacement of "outdated water pipe made from asbestos cement, steel or clay with PVC . . . provides a demand for large diameter pipe which helps to compensate for any losses elsewhere." RX304C. Pipe manufacturers attributed the absence of substitution away from PVC pipe to its lower installed cost, as compared to pipe made of other materials. Wilhite, CX179A-C; Porter, CX198B-C *In Camera*; Alberti, CX199F-G *In Camera*; Pflugrath, CX177B *In Camera*; Heath, CX178B. The cost advantage of PVC pipe historically is reduced in some applications, primarily larger diameter pipes, because the walls of PVC pipe must be thicker. For these applications, some pipe producers thought that "further significant increases in the price of suspension PVC homopolymer resin could result in some substitution to other [pipe] materials." Alberti, CX199F *In Camera*; Porter, RX261B *In Camera*; Heath, CX178B-C. But, in August 1988, almost eight months after the price of pipe grade PVC resin had reached 40 cents per pound, that substitution had not occurred. Porter, RX261C *In Camera*.<sup>112</sup>

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<sup>112</sup> Mr. Porter signed two affidavits, seven months apart. In January 1988, Mr. Porter said that his company, Porter Plastics, a PVC pipe producer, was paying 40 cents per pound for pipe grade PVC resin; that, despite the price increase, PVC pipe was "still priced substantially below the price of alternative materials"; and that the price "increases ha[d] not significantly affected the choice on the part of Porter Plastics' customers of PVC relative to other materials." CX198A-B *In Camera*. In August 1988, Mr. Porter told the respondent's counsel that PVC pipe "cannot compete on a cost basis with cast iron pipe in diameters of 10 inches or greater when pipe grade PVC resin reaches . . . around 37 cents per pound" and that because pipe grade resin prices "have only recently gone above 37 cents per pound, . . . the effect of that pricing" on large-diameter pipe "has yet to occur." RX261C *In Camera*. Notwithstanding these predictions, Mr. Porter also said in August 1988 that because of the shortage of domestic resin, he was buying imported resin at 52 cents per pound and finding it profitable to do so. RX261B *In Camera*.

Evidence in this case indicates that the price elasticity of demand for PVC used for calendering and bottles is lower than the Commission in Goodrich believed. One PVC customer testified that the "demand for PVC in the bottle applications in which it is used and preferred is relatively insensitive to increases in the price of PVC resin." Friedman, CX191B. Occidental identifies PVC bottle compound as a "specialty niche [that] . . . permit[s] premium pricing." RX197Y *In Camera*. This ability to obtain a price premium for PVC bottle compound suggests that the price elasticity of demand for PVC for this purpose is low.

Specialty PVC homopolymer and copolymer resins are used in calendering applications. RX197L-M *In Camera*. According to Occidental, homopolymer resin for calendering obtains a premium price over general purpose homopolymer resin (7 cents to 10 cents per pound) and "therefore deliver[s] a return over [its] high cost." RX197M *In Camera*. The price for copolymer resin used for calendering "averages from \$.05 to \$.10 above General Purpose [resin] pricing." RX197L *In Camera*. The ability to obtain a price premium for PVC sold in the calendering segment is consistent with the conclusion that the price elasticity of demand for PVC is low. *See* I.D.F. 475 (citing testimony from manufacturer that "passed through to purchasers of the calendered products it produces, the [PVC] price increases . . . implemented throughout 1987 and 1988," with "no substitution [by its customers to end use products made] of alternative materials" occurring "by reason thereof"); I.D.F. 476-77.

The additional evidence in this record leads us to conclude that the elasticity of demand for PVC is lower and varies less among end use products than the Commission in Goodrich thought. We agree with the administrative law judge that the price elasticity of demand for PVC is sufficiently low that a collusive price increase would be profitable.

#### *D. Other Considerations*

Other characteristics of a market also are relevant to the ability of firms to collude. These include the number and nature of buyers, the nature of transactions and the availability of information. We hold

that these characteristics in the three relevant product markets are likely to facilitate collusion.

The concentration of the market on the buying side is relevant to whether buyers may have the ability to constrain the exercise of market power by their suppliers. In all three relevant product markets, the large number of customers relative to the small number of producers facilitates the likelihood of collusion. I.D.F. 619-42 (portion *In Camera*). In Goodrich, the Commission concluded that PVC purchasers likely could not, "by virtue of their size, constrain the exercise of market power by PVC producers." 110 FTC at 324. The record in this case also shows that customers in the mass and suspension PVC homopolymer market and the dispersion market are relatively small and numerous, and copolymer buyers, although fewer in number, lack any leverage against their suppliers. I.D.F. 619-42 (portion *In Camera*).

Collusion also is facilitated when transactions are numerous and frequent, because the incentives for cheating on the cartel in any single transaction are reduced and the opportunities for detecting and retaliating against cheating are increased. PVC resin orders generally are placed on a monthly, weekly and sometimes daily basis, and the size of individual orders is small compared to the total market. I.D.F. 638.<sup>113</sup> Long term customer-supplier relationships in the PVC industry and the high probability of repeat sales are likely to enhance the ability of producers to police a collusive agreement, increasing its stability and, therefore, its likelihood. I.D.F. 643-51 (portion *In Camera*). The Commission in Goodrich concluded that longterm customer-supplier relationships and "the frequency and size of transactions in the PVC market increase the likelihood of anticompetitive effects from the acquisition," 110 FTC at 326, and

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<sup>113</sup> PVC supply contracts may not specify the quantity of PVC resin to be supplied (although they may specify a maximum or estimated quantity and may contain volume purchase incentives, *See* note 84 *supra*). Buyers typically predict their needs for the following month and then place their orders on an as-needed basis. Contracts usually specify a price based on the prevailing "market price," require suppliers to give 30-days' notice of price increases, and give buyers price protection clauses, such as most-favored nation clauses and meeting-competition clauses. *See* I.D.F. 655-69; *Goodrich*, 110 FTC at 325; JX1-4, PX61 at 103592 & 595, PX93 & PX94.

the record in this case supports a similar conclusion for each of the three relevant markets. I.D.F. 643-51 (portion *In Camera*).

The ready availability of price information in the industry, I.D.F. 652-59, stable technology, I.D.F. 660-75 (portion *In Camera*), and the declining rate of growth, I.D.F. 676-88 (portion *In Camera*), also are likely to facilitate collusion. Producers of PVC actively monitor the prices of other producers in each of the relevant product markets. *See, e.g.*, JX1(IV), PX32. Customers are a major source of pricing information, and one of the responsibilities of sales representatives is to obtain from customers pricing and other information about other PVC producers. I.D.F. 689-93 (portion *In Camera*); *See, e.g.*, RX217Z36-38 (Occidental memo, "Latest Input on Industry pricing"); JX1-4, PX7B at 900132. The "meeting competition" clauses in PVC sales contracts "ensure that PVC sellers quickly discover price concessions offered by competing firms."<sup>114</sup> *Goodrich*, 110 FTC at 325. This information enables PVC producers to identify the prices offered by other suppliers and to identify the suppliers that are not "supporting" announced price increases. *E.g.*, RX218Z98; RX218Z168 ("maintain market pricing to avoid spiral down"); RX218Z60; RX218Z206-207."<sup>115</sup>

The trade press and industry consultants are additional sources of price information, both for current and forecast prices. PVC producers routinely announce price increases in advance of their effective dates, allowing other producers an opportunity to respond. *E.g.*, CX161B; CX168; CX9A-B; CX8; JX1(IV), PX45 ("published industry consensus" on price increase); RX209A; RX310D;

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<sup>114</sup> "Meeting competition clauses" permit buyers to cancel purchases if they get a lower price from another supplier but require buyers to give contract suppliers the opportunity to meet the lower price. *See Goodrich*, 110 FTC at 325.

<sup>115</sup> The administrative law judge found that certain evidence "strongly suggests" that post-acquisition increases in the price of PVC "are in large part a result of the acquisition." I.D.F. 759. Occidental disputes this finding. R.R.B. at 18-26. The finding is not necessary to our conclusion that the acquisition violated Section 7 of the Clayton Act, and we do not reach the question.

RX311A-B.<sup>116</sup> These mechanisms allow producers to communicate effectively without explicit collusion. PVC producers also can use these channels to communicate other important information about plant expansions or closings,<sup>117</sup> export activities<sup>118</sup> and other plans with respect to PVC supply. *E.g.*, CX161A (inventory); I.D.F. 689-709 (portion *In Camera*). This ready availability of competitive information contributes to the stability and predictability of the market.

PVC producers take care that their pricing activity is not perceived by their competitors as aggressive or disruptive, "to avoid competitive reaction and subsequent market impact." CX12A; CX56; CX57. This is evidenced by their willingness to meet but not undercut the pricing of other producers. I.D.F. 711-14 (portion *In Camera*). Similarly, recent capacity expansions have been announced to maintain market position, not to upset the competitive apple cart. *See* RX1L *In Camera*; note 117 *supra*. All these characteristics of the market evidence conditions conducive to collusion.

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<sup>116</sup> "At press time, Formosa Plastics and Occidental Chemical had issued 3 cent/lb increases for their PVC dispersion resins, effective Jan. 1 [1988]. Goodyear Chemical announced it would raise dispersion-resin prices by 4 cents/lb this month. Other suppliers say they had already raised their prices and that announcements from Formosa and Occidental merely brought their prices in line with the rest . . . [S]ources at Occidental say the company plans to remove all spot discounts from g[eneral]-p[urpose] homopolymer and pipe suspension resins this month. Occidental sources say this move will result in a nominal 2 cent/lb increase. Sources at major suppliers indicate that 2-3 cents/lb across-the-board hikes are likely this month or Feb. 1." RX311A-B.

<sup>117</sup> *See, e.g.*, RX222A (list of announced and contemplated expansions); RX312J (Modern Plastics, Jan. 1988, at 76: "Formosa Plastics Corp. plans to add 600 million lb. to its reactor capacity. Shintech says it will raise its stake by 500 million lb.; and Occidental has announced a 200 to 400 million lb./yr. expansion project."); RX222B (Formosa said, "We hope we are doing this [expansion] in such a way as not to stir the marketplace up."); RX236A (announcing expansion, Vista said, "We're tailoring our PVC resin expansion program to match anticipated growth so that Vista will maintain its current 10% share of the overall PVC market."); RX1L *In Camera* (Occidental review of announced expansions: "The sum of these expansions . . . will enable industry capacity to keep pace with the demand growth."); CX166; CX214E; CX29H; CX9B.

<sup>118</sup> CX163B; CX165A; CX165B.

## V. CONCLUSION

We affirm the decision of the administrative law judge that the acquisition by Occidental of the PVC business of Tenneco is likely substantially to lessen competition in the markets for mass and suspension PVC homopolymer, copolymer, and dispersion PVC in the United States. Divestiture of the acquired assets is the appropriate remedy for a violation of Section 7 of the Clayton Act. *United States v. E.I. du Pont de Nemours & Co.*, 366 U.S. 316, 331 (1961); *See also Ford Motor Co. v. United States*, 405 U.S. 562, 573 (1972).

Divestiture of Tenneco's Pasadena plant is appropriate to remedy the violation in the mass and suspension homopolymer market, and divestiture of Tenneco's Burlington plant is appropriate to remedy the violation in the copolymer and dispersion markets.<sup>119</sup> The attached order is intended to remedy the anticompetitive effects of the acquisition by requiring Occidental to divest the Pasadena, Texas, and Burlington, New Jersey, PVC plants that it acquired from Tenneco.

STATEMENT OF COMMISSIONER DEBORAH K. OWEN  
CONCURRING IN PART AND DISSENTING IN PART

I agree with the majority in this matter that the acquisition by Occidental Petroleum Corporation ("Occidental"), of the polyvinyl chloride ("PVC") business of Tenneco, Inc. ("Tenneco") may substantially lessen competition in the manufacture and sale of suspension PVC copolymer and dispersion PVC in the United States, in violation of Section 7 of the Clayton Act, 15 U.S.C. 18, and Section 5 of the Federal Trade Commission Act, 15 U.S.C. 45. I also concur in the decision of the majority to order the divestiture of the former Tenneco plant in Burlington, New Jersey, to remedy the violations in these markets.

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<sup>119</sup> Counsel for Occidental maintained in *FTC v. Occidental Petroleum Corp.*, Civ. No. 86-0900 (D.D.C. 1986), in defending against the imposition of a preliminary injunction, that "any aspect of this acquisition [of Tenneco] can be divested without trouble." JX1(II), Tr. 973.

I respectfully dissent, however, with respect to the majority's finding of a similar violation in the market of mass and suspension PVC homopolymer in the United States, and consequently, with respect to their decision to order divestiture of the former Tenneco plant in Pasadena, Texas. I adopt the reasoning of the majority, except to the extent that it may be inconsistent with the analysis herein.

### I. INTRODUCTION

Section 7 of the Clayton Act, prohibits acquisitions<sup>1</sup> where the effect "in any line of commerce or in any activity affecting commerce . . . may be substantially to lessen competition, or to tend to create a monopoly." 15 U.S.C. 18. Such activity may also violate Section 5 of the FTC Act, if it constitutes an "unfair method of competition." 15 U.S.C. 45. The "unifying theme" of merger analysis is that "mergers should not be permitted to create or enhance market power or to facilitate its exercise." U.S. Department of Justice & Federal Trade Commission Horizontal Merger Guidelines ("Merger Guidelines"), Section 0.1, reprinted in 4 Trade Reg. Rep. (CCH) ¶ 13,104.<sup>2</sup> Market power is "the ability profitably to maintain prices above competitive levels for a significant period of time," *Id.*, or to "lessen competition on dimensions other than price, such as product quality, service, or innovation." *Id.* at n.6; *See also Owens-Illinois, Inc.*, Dkt. No. 9212 (Feb. 26, 1992), slip op. at 4-5 (quoting 1984 U.S. Department of Justice Merger Guidelines).

Evaluating whether a merger may result in market power necessitates determining, first, the relevant product and geographic market, the level of concentration in that market, and the change in concentration from the merger. However, that is only the starting point. Given that market structure, the Commission must determine

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<sup>1</sup> The terms acquisitions and mergers are used interchangeably in this opinion to refer to any transaction subject to Section 7 of the Clayton Act.

<sup>2</sup> The Merger Guidelines "update the Merger Guidelines issued by the U.S. Department of Justice in 1984 and the Statement of Federal Trade Commission Concerning Horizontal Mergers issued in 1982." Merger Guidelines, Section 0. n.4.

also: (1) whether potential anticompetitive effects are demonstrable; (2) whether entry into the market would be timely, likely and sufficient to counteract the potential for anticompetitive effects; (3) whether there are any efficiency gains specific to the merger, and if so, their magnitude; and (4) whether, absent the merger, one of the firms will fail and exit from the market. *See generally* Merger Guidelines, Section 0.1 and *passim*; Owens-Illinois, *passim*.

Applying these principles, I reach a different conclusion from the majority in one market. While I agree that the manufacture and sale of mass and suspension PVC homopolymer is a relevant market, I believe that the level of concentration in that market, and the increase in concentration due to the merger, may be less than the majority calculates. In my view, the acquisition increases concentration to just above the threshold that potentially raises competitive concerns,<sup>3</sup> and is, thus, truly a marginal case based on market structure alone. I therefore agree with the majority that additional analysis beyond market concentration is necessary to determine actual competitive effects.

When I analyze the potential competitive effects of this merger, I find, on balance, that anticompetitive effects are unlikely in the mass and suspension PVC homopolymer market; therefore, an examination of entry, efficiencies, or business failure is unnecessary. I conclude that the acquisition does not violate Section 7 of the Clayton Act or Section 5 of the FTC Act in the mass and suspension PVC homopolymer market.

## II. SETTING THE FRAMEWORK FOR THE ANALYSIS

### A. The Relevant Market

Relevant markets are markets in which the parties to the merger compete, or which in some way may be affected by the merger at

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<sup>3</sup> Merger Guidelines, Section 1.51(b). The Guidelines presume that the merger is likely to create or enhance market power or facilitate its exercise only when the post-merger Herfindahl-Hirschmann Index ("HHI") exceeds 1800, and the increase in the HHI due to the merger exceeds 100. *Id.*, Section 1.51(c). This case is not close to those levels.



issue, the area of "effective competition." *United States v. E.I. du Pont de Nemours & Co.*, 353 U.S. 586, 593 (1957); *Brown Shoe Co. v. United States*, 370 U.S. 294, 324 (1962). Relevant markets must be economically meaningful. An economically meaningful market is one in which market power may be exercised, *i.e.*, "any grouping of sales whose sellers, if unified by a hypothetical cartel or merger, could raise prices significantly above the competitive level." *Owens-Illinois*, slip op. at 4 (quoting *H.J., Inc. v. International Telephone & Telegraph Corp.*, 867 F.2d 1531, 1537 (8th Cir. 1989)).

The willingness and ability of customers to switch to other products determines whether sellers could significantly raise prices, and ultimately defines the extent of the market. *Id.* at 5. The extent to which customers will switch products, and thus the extent of the product market, may be defined "either in terms of the 'cross-elasticity of demand' or the 'reasonable interchangeability of use' between the product in question and potential substitutes." *Olin Corporation*, Dkt. No. 9196 (June 13, 1990), slip op. at 5 (quoting *Grand Union Co.*, 102 FTC 812, 1041-42 (1983)), *aff'd*, No. 90-70452 (9th Cir. Feb. 26, 1993).

Based on these criteria, I agree with the majority that one relevant market in which to analyze this acquisition is the production and sales of mass and suspension PVC homopolymer in the United States.

#### *B. Market Concentration*

"A merger is unlikely to create or enhance market power or to facilitate its exercise unless it significantly increases concentration and results in a concentrated market. . . ." Merger Guidelines, Section 1.0. To determine the level of concentration, it is necessary to identify the participants in that market and the extent of their involvement. "Participants" include all firms that are now producing or selling in the relevant market. Merger Guidelines, Section 1.31. In addition, if "suppliers not presently producing the product are likely to redirect existing facilities . . . to supply the product, their short-run output may prevent price from rising." *Owens-Illinois*, slip op. at 5. To the extent that suppliers would, within one year, redirect existing facilities in the event of a small but significant, nontransitory price increase, and without the expenditure of significant sunk costs,

such suppliers should be included in the market. Merger Guidelines, Section 1.32.

Using the now familiar Herfindahl-Hirschmann Index to measure concentration, the majority calculates a post-merger HHI of 1278, based on 1985 actual production, and 1305, based on operating capacity, with an increase due to the merger of 156 and 158, respectively. Slip op. at 27. Included in these calculations are suspension PVC copolymer plants that could instead produce suspension PVC homopolymer. The majority observes that such switching is unlikely and, therefore, including these plants in the market is unnecessary. Slip op. at 7-8. This suggests that the HHI understates concentration in the mass and suspension PVC homopolymer market.

I disagree and believe the HHI calculations overstate the level of concentration. First, I find it necessary, and not an act of discretion, to include producers of suspension PVC copolymer in the relevant market. There has been switching of capacity, in fact, at the existing premerger price levels, between copolymer and homopolymer production. *See, e.g.*, slip op. at 12 n.32. Second, I believe that existing imports of mass and suspension PVC homopolymer should be included in the market and in the calculation of the HHI.<sup>4</sup>

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<sup>4</sup> As the majority notes, slip op. at 27 n.61, in *B.F. Goodrich*, the Commission likewise did not include imports of mass and suspension PVC in the relevant market, *See* 110 FTC at 307- 309, Tables I and II, having determined that imports did not significantly constrain domestic pricing discretion. *Id.* at 301. While that conclusion may be sufficient to limit the geographic market to the United States, I do not believe that it is appropriate to ignore the imports that are currently entering the country when calculating market shares and concentration.

The Merger Guidelines support including imports in the market share calculations by including as participants in the market all firms that currently produce or sell in the relevant market. Section 1.31. The Merger Guidelines then calculate a market share for all participants "based on the total sales or capacity currently devoted to the relevant market. . . ." Section 1.41. In this case, that should include current import sales.

The Merger Guidelines approach is consistent with the Commission's treatment of import sales in *Owens-Illinois*, which included import sales in the calculation of market share even though the geographic market was limited to the continental United States. *See Owens-Illinois*, slip op. at 26-27 (adopting the Initial Decision which (at 45) shows import sales included in the calculation of market concentration).

Including the sales of imported mass and suspension PVC, the post-acquisition HHI is between 1164 and 1187, with an increase of over 140. Slip op. at 27 n.61. Finally, in a result in which I concur, the majority orders the divestiture of the former Tenneco plant in Burlington, New Jersey. Although its share of the mass and suspension PVC homopolymer market is relatively small, the divestiture of this plant will further lower the post-merger HHIs.<sup>5</sup> These three adjustments -- greater emphasis on suspension PVC copolymer, inclusion of imports, and exclusion of the Burlington plant -- lower the HHI appreciably. Nevertheless, even after these adjustments, the post-acquisition HHI still exceeds 1100 and the increase exceeds 100, thus necessitating a review of the potential competitive effects of the merger.

### III. THE STANDARDS FOR DETERMINING THE LIKELY COMPETITIVE EFFECT

#### A. *The Significance of Market Concentration*

Measuring market concentration is the first step in identifying the effects of an acquisition on the relevant market. *See, e.g., United States v. Philadelphia National Bank*, 374 U.S. 321 (1963). As a general principle, "[a]s . . . industry concentration increases . . . the

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<sup>5</sup> I believe it appropriate, and consistent with Commission practice, to take the Burlington divestiture into account in assessing the remainder of the acquisition. For instance, the Commission regularly considers the impact of partial divestitures in considering whether proposed settlements of merger cases are sufficient to protect the public interest in competition.

At the oral argument, Occidental urged this approach, arguing that with the ordered divestiture of the New Jersey plant, the transaction should be treated as an acquisition solely of the Pasadena, Texas plant. This, according to Occidental, would result in a post-acquisition HHI of 1218, with a change in the HHI due to the merger of 105, based on practical production capacity; a post-acquisition HHI of 1267, with a change in the HHI due to the merger of 121, based on operating capacity; and a post-acquisition HHI of 1138, based on actual production plus imports. Transcript of Oral Argument (March 29, 1990) at 72-73. It is unclear how Occidental arrived at these numbers, and I have been unable to replicate them completely. Without knowing the identity of the purchaser of the divested plant, the resulting HHI cannot be precisely calculated; however, it is clear that it will fall somewhat.

likelihood of anticompetitive effects from an acquisition consequently increases as well. . . ." *Owens-Illinois*, slip op. at 27 (quoting *B.F. Goodrich*, 110 FTC at 303); *See also* Merger Guidelines, Section 1.51 ("Market concentration is a useful indicator of the likely potential competitive effect of a merger."). Increases in concentration magnify the likelihood of collusive behavior since "[t]he fewer the competitors in a market, the easier it becomes for the firms to coordinate price and output decisions." *Olin* slip op. at 21; *See also* Merger Guidelines, Section 2.0. However, while market concentration is a screen that helps identify mergers that may reduce competition, it is not always a precision tool.

The Merger Guidelines divide markets into three categories according to concentration. Markets with a post-merger HHI under 1000 are unconcentrated; markets with a post-merger HHI between 1000 and 1800 are moderately concentrated; and markets with a post-merger HHI over 1800 are highly concentrated. Merger Guidelines, Section 1.51. In this case, as in *B.F. Goodrich*, 110 FTC at 310, the mass and suspension PVC homopolymer market, is moderately concentrated, as the majority notes. Slip op. at 27.

Within each category, the Guidelines also look to the amount of increase resulting from the acquisition. In a moderately concentrated market, an increase of less than 100 in the HHI is "unlikely to have adverse competitive consequences." Merger Guidelines, Section 1.51(b). An increase of more than 100, however, "potentially raise[s] significant competitive concerns" depending on how likely it is that there will be a lessening of competition through coordinated interaction or unilateral effects, and factors relating to entry, efficiencies, and business failure. *Id.* In this case, there were no allegations of unilateral anticompetitive effects from the acquisition, therefore our focus is on whether the acquisition increases the likelihood of coordinated actions or collusive anticompetitive behavior.

The bright-line division between unconcentrated and moderately concentrated markets is somewhat illusory. As the Merger Guidelines observe, "[a]lthough the resulting regions provide a useful framework for merger analysis, the numerical divisions suggest greater precision than is possible with the available economic tools and information." Merger Guidelines, Section 1.5. The imprecision

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of the numbers is further complicated where they fall "just above and just below a threshold." In that event, other things being equal, "comparable competitive issues" are presented. *Id.* Had the concentration level in this case fallen below the threshold dividing unconcentrated and moderately concentrated markets, it is unlikely that the acquisition would have had an adverse competitive effect. In such a case, there ordinarily would be no further investigation after the concentration level was determined. *Id.* at Section 1.51(a). The acquisition in this case left the market concentration just above the threshold separating unconcentrated and moderately concentrated markets, with an increase in the HHI just exceeding 100. Such a concentration level does not permit us to dismiss the acquisition as competitively insignificant without further analysis, but at the same time, the marginal level of concentration tells us relatively little about the likely competitive effect of a merger. The concentration as I have calculated it here is comparable, although not identical, to the market at the time of B.F. Goodrich. Then, the mass and suspension PVC homopolymer market after the acquisition was moderately concentrated, "but only by the barest of margins." 110 FTC at 310. The increase in the HHI was over 100 (110-113), "barely exceed[ing]" the Guidelines' threshold. The Commission held that such concentration created "only a weak presumption of competitive injury." *Id.* at 310-11.<sup>6</sup> I would apply the same standard here.

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<sup>6</sup> The Commission in B.F. Goodrich noted the 1984 Justice Department Guidelines in its discussion of market concentration. 110 FTC at 310-11. In 1984, the Department was "likely to challenge mergers in [the moderately concentrated] region that produce an increase in the HHI of more than 100 points" unless, based on the totality of factors, the Department concluded that the acquisition "is not likely substantially to lessen competition." 1984 Department of Justice Merger Guidelines ("1984 DOJ Guidelines"), Section 3.11(b), *reprinted in* 4 Trade Reg. Rep. (CCH) ¶13,103 at 20,561 (emphasis in original). Under the Merger Guidelines since adopted by the Commission, such a merger "potentially raise[s] significant competitive concerns" depending upon other factors discussed therein. Section 1.51(b).

*B. Weighing the Significance of Other Factors*

In order to find a violation, we must determine that the effect of the acquisition "may be substantially to lessen competition." 15 U.S.C. 18. Where we fear coordinated activity, as opposed to the unilateral exercise of market power, "the ultimate issue is whether the challenged acquisition is likely to facilitate collusion." *Hospital Corp. of America v. FTC*, 807 F.2d 1381, 1386 (7th Cir. 1986), *cert. denied*, 481 U.S. 1038 (1987). While the level of market concentration is the starting point to determine the likelihood of collusion, many other factors also affect the likelihood of collusive behavior. When the concentration only marginally suggests a competitive problem, as in this case, the anticompetitive theory and the supporting facts must be examined with particular care.

The Commission has previously examined mergers where the increase in concentration was marginal, although within the moderately concentrated range. In *Weyerhaeuser Company*, the increase in the HHI was 211 points, resulting in a post-merger HHI of 1166. The Commission observed that an "especially careful review of a number of industry characteristics in addition to concentration" was necessary. 106 FTC 172, 280 (1985). As previously noted, in *B.F. Goodrich*, the Commission found that concentration levels comparable to those here "at the lower end of the 'moderately concentrated' range . . . create only a weak presumption of anticompetitive effects. . . ." 110 FTC at 338. Accordingly, the amount of evidence needed to rebut the "presumption" is not great. *See, e.g., United States v. Baker Hughes, Inc.*, 908 F.2d 981, 991 (D.C. Cir. 1990).<sup>7</sup>

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<sup>7</sup>The B.F. Goodrich approach requires, as concentration increases, a greater quantum and quality of evidence to rebut any presumption created by concentration; similarly, it requires less evidence at lower levels of concentration. This approach should be distinguished from the notion that, as the HHI increases, there is less likelihood that any such presumption can be overcome, and therefore, that an analysis of competitive effects is unnecessary. The need to analyze those factors exists in all cases above the unconcentrated range, irrespective of how concentrated the market is, and the extent of the increase in concentration. Thus, the 1992 Merger Guidelines, quite rightly in my view, remove the suggestion from the 1984 Guidelines that factors relating to the ease and profitability of collusion, "[w]here

Successful collusion, or coordinated interaction, by competitors "entails reaching terms of coordination that are profitable to the firms involved and an ability to detect and punish deviations that would undermine the coordinated interaction." Merger Guidelines, Section 2.1. Therefore, we must examine the conditions in the market for mass and suspension PVC homopolymer, and reach a judgment concerning the likelihood that firms in the market could arrive at terms of coordination or police a collusive agreement. Because the increase in concentration is marginal, I would have to find that the industry is one where conditions are very conducive to collusion in order to conclude that this marginal increase in concentration meaningfully increases the likelihood of collusion. If even some market characteristics make it difficult to reach and police mutually profitable terms of coordination, then this acquisition likely will have no effect on competition. I now turn to the other evidence concerning the likelihood of such collusive pricing.

#### IV. THE EVIDENCE ON THE COMPETITIVE EFFECT

In B.F. Goodrich, the Commission concluded that mass and suspension copolymer is "relatively heterogeneous;" that costs vary significantly because of differing reactor sizes, resin production emphases, and transportation costs; that the price elasticity of demand for PVC end products might constrain efforts to collude; and that these industry characteristics made it unlikely that the acquisition had anticompetitive effects in the market. 110 FTC at 347. The B.F. Goodrich record is part of the record in this case. However, the majority concludes, based primarily on post-B.F. Goodrich record evidence, that the industry has changed sufficiently with respect to these characteristics to warrant reaching a different conclusion with

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relevant, . . . are most likely to be important where the Department's decision whether to challenge a merger is otherwise close." 1984 DOJ Guidelines, Section 3.4 (emphasis supplied). It is therefore not correct to say that this provision in the 1984 Guidelines is equivalent to the B.F. Goodrich approach adopted by the Commission and, in my view, reflected in the 1992 Guidelines. See Merger Guidelines, Section 1.51.



respect to each factor, as well as on the ultimate proposition that anticompetitive effects are unlikely. I disagree.<sup>8</sup>

*A. Product Homogeneity -- Quality and Prices*

Coordination among firms need not be universal in terms of industry participants or dimensions of competition in order to have an anticompetitive effect. Merger Guidelines, Section 2.11. However, as products in the relevant market become more differentiated, collusion becomes "more complex" because it is then "necessary to establish and enforce a complex schedule of prices corresponding to gradations in actual or perceived quality attributes among the competing products." *B.F. Goodrich*, 110 FTC at 315 (quoting 1984 DOJ Guidelines at ¶ 3.411 (footnote omitted)); *See also* Merger Guidelines, Section 2.11 ("[R]eaching terms of coordination may be limited or impeded by product heterogeneity. . . ."). Heterogeneity "substantially complicates the determination and enforcement of consensus prices. Instead of establishing a single price for a single homogeneous product, firms must establish and maintain a whole series of prices for a whole series of product grades." *B.F. Goodrich*, 110 FTC at 316 n.151.

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<sup>8</sup> Occidental argues that *B.F. Goodrich* precludes contrary findings in this case, in particular that the competitive factors have not changed significantly "in the short time" since *B.F. Goodrich*, and that *stare decisis* mandates that the Commission reverse the decision of the ALJ. R.A.B. at 46, 1. I agree with the majority that "each case must be decided on its own facts," even where the same market is involved. Slip op. at 28. A contrary conclusion may mean that declining to find a violation when the market is in the 1000 range would preclude challenges to subsequent mergers in the same market as concentration progressively increased. An increase in the HHI from one merger to the next requires, at a minimum, a reassessment of the likelihood of anticompetitive effects given the higher concentration. Factors that may convince us that collusion is unlikely when there are 8 or 9 firms, may not convince us when there are 6 or 7 firms.

However, the differences in concentration between this case and *B.F. Goodrich* are slight; and some of the record is identical. Therefore, the Commission should be certain that the evidence in this case is sufficient and distinguishable to outweigh the evidence upon which it earlier relied in finding no violation in this market. I disagree with the majority that Complaint Counsel has met its burden in this regard.

In B.F. Goodrich, the Commission noted that "differences in product quality may make price differentials necessary to product a stable market equilibrium, and achieving a consensus on such differentials is likely to be difficult." *Id.* at 315 (footnote omitted). There are three categories of PVC resins: pipe, general purpose, and speciality. Within each category,<sup>9</sup> there are different grades of PVC, and within particular grades there are perceived differences in quality. *Id.* at 315-16. According to the record in B.F. Goodrich, 75% of PVC resin was commodity grades, while 25% was specialty grades. *Id.* at 316.

Not only does such relative product heterogeneity make reaching a collusive agreement more difficult, because multiple prices must be agreed to, it also makes policing compliance more difficult. Multiple prices facilitate cheating on a cartel agreement, because a producer can sell a higher priced grade of PVC, and invoice it at a lower grade, effectively cutting the price to the buyer by the difference in the prices of the grades.

In this case, the majority focuses on two indicia of product homogeneity: (1) customers' ability to substitute one producer's PVC for another's; and (2) producers' ability to obtain a "premium price" for product. Premium prices are defined as charging higher prices than other producers for the same type and grade of PVC. Slip op. at 34-36. The majority concludes that customers, in fact, do substitute between producers, and that it is not possible for a producer to obtain a premium price for his product. The majority concludes that PVC is homogeneous "within grade," slip op. at 34-36, 41, and that collusion would be facilitated. I do not agree.

The ability of producers to obtain premium prices would make it objectively difficult to reach a collusive price agreement. However, the absence of such premiums does not mandate a conclusion that it would be easy to arrive at collusive prices. There continue to be multiple prices for different types and grades of PVC resins -- not only the so-called commodity-type grades of PVC, pipe resin, general purpose resin (priced one cent higher than pipe grade), and film grade resin (priced an additional cent higher than general purpose), that the

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<sup>9</sup> The evidence is unclear as to whether there is more than one grade of pipe grade PVC. There are multiple grades within the other categories.

majority primarily focuses on, slip op. at 41-42, but also specialty grades of mass and suspension PVC homopolymer. The multiplicity of types and grades of PVC makes it more difficult to collude, even if each producer can produce each type and grade of PVC, and it also makes it easier to cheat on any collusive agreement, since producers can always disguise price discounts through deceptive billing.

*B. Production Cost Differences*

Differences in the costs of producing different types and grades of PVC are reflected in the price differentials between them. Some of the cost differences are due to the type of reactor used, large reactors having lower unit costs than small reactors. These cost differences for the various types and grades of PVC make achieving a price consensus more difficult.

The Commission in *B.F. Goodrich* determined that "PVC production costs differ significantly from one firm to another." 110 FTC at 321. Like the majority here, the Commission acknowledged that such costs were similar for producers using large reactors, which constituted two-thirds of installed capacity. *Id.* However, the Commission focused on the remaining small reactors that produce a variety of specialty resins, with resulting significant variations in production costs, and noted that "[m]ost firms operate several different sizes of reactor." *Id.* at 321 n.177. The Commission cited, for instance, evidence from the record showing that total plant operating costs varied among plants from 14 cents per pound to almost 22 cents per pound, because "different firms use reactors of different sizes to produce different PVC resins . . . accentuated by the fact that different PVC producers emphasize the production of different PVC grades". *Id.* at 322.<sup>10</sup> It also noted cost differences stemming from the less efficient nature of the small reactors, and the greater technical customer service required with respect to specialty resins. *Id.*

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<sup>10</sup> The majority points to evidence suggesting a smaller, but significant, difference in production costs between large and small reactors (*i.e.*, 14 to 22 percent of price). *See* slip op. at 7 n.19.

In this case, the majority acknowledges the substantial differences in costs of production, but concludes that the "difference in reactor size has led to two tiers of products, . . . rather than disparate costs among producers." Slip op. at 47. The majority concludes that the price differences are so great that PVC made in small reactors would not undercut price increases on PVC grades made in large reactors. *Id.*<sup>11</sup>

However, the majority's definition of the product market, in which I have concurred, does not divide the market into submarkets, and the opinion does not share the quite correct emphasis of the B.F. Goodrich opinion on the additional difficulties in colluding in the market defined by the majority. Moreover, the majority dismisses the ability of the small reactors to have an impact on the prices of PVC produced in large reactors, because small reactors are owned by the same manufacturers who produce PVC in large reactors. Such manufacturers, the argument goes, would have no incentive to undercut price agreements on PVC produced in large reactors. This approach does not take into sufficient account the question of whether companies, who own different proportions of small (high cost) and large (low cost) reactor capacity, would find it easy to reach a collusive agreement, and the fact that the variations undermine collusion. Such differences increase the number of variables that must be agreed upon, and are available as a source of cheating.

#### *C. Transportation Cost Differentials*

In finding that mass and suspension PVC is "relatively heterogeneous," the Commission in B.F. Goodrich also pointed to transportation cost differences. The Commission noted that, while several manufacturers operate plants in the Gulf Coast area, others are "in widely scattered locations." 110 FTC at 317. While acknowledging that mass and suspension PVC is "generally sold on a delivered price basis," the Commission concluded that it was not clear whether that price was uniform throughout the geographic market, and that any lack of uniformity would "complicate the task

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<sup>11</sup> Like the majority here, the Commission in B.F. Goodrich acknowledged the trend toward large reactors. 110 FTC at 321.

of developing a single consensus price, particularly given the fact that PVC plants are scattered all over the country." *Id.* at 317 n.152, 322.

The majority determines, based on the record in this case, that PVC is "sold on a uniform delivered price basis throughout the United States, usually with a two cent premium for customers west of the Rockies," slip op. at 43; that transportation differences are a small part of the selling price; that the locational differences are insignificant; and concludes that any such differences, to the extent that they exist, "are not sufficient to complicate collusion and thereby to decrease the likelihood of anticompetitive effects stemming from this acquisition." *Id.* at 43-45. I disagree.

Transportation costs can make it harder for producers in an industry to reach and police a collusive uniform delivered price agreement, whenever those costs are significant, and plants are widely spread geographically so that the cost of servicing a particular customer location will vary from producer to producer. Differences in transportation costs make it harder to reach a consensus on prices because plants that have relatively higher transportation costs will seek to have a higher collusive price than plants with lower transportation costs. Differences in transportation costs make it harder to police a collusive price agreement, because each plant will have an incentive to cheat on the agreement to obtain customers closest to its own location.

The majority acknowledges that shipment costs vary, depending on the location of the plant and the customer, but argues that transportation costs are relatively small and the effects are relatively insignificant. However, the evidence cited by the majority suggests to me, as similar evidence did to the B.F. Goodrich Commission, that such costs are significant, vary widely, and may have a significant impact on the ability to collude. Slip op. at 43-44 n.98 (transportation costs range from 2.7 percent to 12 percent). Transportation costs are a significant variable cost; participants in the market do indeed vary their transportation costs by choosing a particular plant location to serve a given customer, a custom that could facilitate cheating on a price agreement.

The majority denies that the plant locations are consequential in terms of defeating collusion. However, the plants discussed, *See* slip op. at 44-45, have not changed location since the Commission's

decision in B.F. Goodrich; they are the same plants with the same relative differences in transportation costs.<sup>12</sup> Similarly, the majority's argument that PVC transportation cost differences may be offset by VCM transportation cost differences was previously rejected by the Commission in Goodrich because "VCM may originate in a location different and distant from the destination of the PVC into which it is converted." 110 FTC 322 n.182. The record in this case, in my view, does not support changing the basic finding in B.F. Goodrich that transportation cost differences do make collusion more difficult.

*D. Demand Elasticity Differences*

The Commission concluded in B.F. Goodrich that the "likelihood of anticompetitive effects . . . increases as the price elasticity of demand for the product at issue declines." 110 FTC at 318 (footnote omitted). Firms find it easier to collude and the incentives to collude increase. *Id.* The opinion acknowledges that the price elasticity of demand for bulk and suspension PVC is relatively low, but notes that "an effort on the part of PVC producers to raise PVC prices to supracompetitive levels may be constrained to some degree by the higher price elasticity of demand for many PVC end use products, and made more difficult by variations in price elasticity from one PVC end product to another." *Id.* at 339 (footnote omitted). In other words, different types and grades of PVC face different elasticities of demand. *Id.* at 319. Because the makers of PVC produce different mixes and would face different losses of sales from a collusive price increase, reaching a collusive price increase would be more difficult.

The majority points to new evidence in the record, showing, in its view, that the elasticity of demand is lower than the Commission

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<sup>12</sup> The majority also suggests that large reactor plants tend to be located near one another, while small reactor plants are more geographically dispersed, but that the small reactor specialty homopolymer plants make products that do not directly compete with suspension PVC homopolymer made in large reactor plants. Slip op. at 44-45. As a result, it is effectively argued, only transportation differences between large reactor plants, which are primarily located on the Gulf Coast, are important. As in the discussion of production cost differences *supra*, I find this line of argument inconsistent with the definition of the market to include the production and sale of all mass and suspension PVC homopolymer.

believed in B.F. Goodrich. The opinion addresses pipe grade resins,<sup>13</sup> bottle applications, and calendaring applications.<sup>14</sup> Slip op. at 48-50. However, it does not discuss other types of resin, and does not address the issue raised by the Commission in B.F. Goodrich of whether the elasticity of demand for PVC sold for different uses is different, even if the elasticity is relatively low throughout the industry. This difference in elasticity is important to firms attempting to reach a collusive price agreement, because it means that the firms will have different incentives with respect to the proposed price increases. Those firms that produce and sell relatively more PVC for the end uses where the demand is relatively elastic will want a collusive price level that is lower than firms that produce and sell relatively more PVC for end uses where the demand is relatively inelastic. I do not believe the evidence in this record sufficient to overturn the Commission's conclusion in B.F. Goodrich that varying elasticities of demand contribute to undermining the ability to collude in this industry.

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<sup>13</sup> The majority notes that, over time, the price of pipe grade resins rose, and yet demand stayed strong or increased, and concludes that demand must be very inelastic. Slip op. at 48-49. I do not believe that such anecdotal evidence is sufficient to conclude that the demand for pipe grade resins is necessarily inelastic. As the price of pipe grade resins rose over time, other changing economic variables may have induced an increase in the demand for pipe grade resin. In assessing the elasticity of demand for the various types of PVC resins, it is unclear whether all other variables have been held constant in the anecdotal evidence.

<sup>14</sup> The majority notes that specialty PVC used for calendaring applications sells for more than general purpose PVC. The opinion concludes that "[t]he ability to obtain a price premium for PVC sold in the calendaring segment is consistent with the conclusion that the price elasticity of demand for PVC is low." Slip op. at 50. Since the cost of producing specialty PVC for calendaring is higher than the cost of producing general purpose PVC, it would be reasonable to expect the price of specialty PVC for calendaring to exceed the price of general purpose PVC. However, this does not address the elasticity of demand for either specialty PVC for calendaring or general purpose PVC. The elasticity of demand measures the change in quantity demanded in response to a change in the price. The higher price for specialty PVC for calendaring can be consistent with either an elastic or inelastic demand for specialty PVC for calendaring.

*E. Conclusion*

While, as the majority points out, the Commission in B.F. Goodrich also noted some elements of homogeneity in this market, the Commission's purpose was to suggest that certain aspects of heterogeneity, that would complicate the life of potential colluders, also exist. While each of these elements might not, in and of itself, defeat a collusion story, all of these factors must be viewed as a whole. Irrespective of evidence cited by the majority, I believe that sufficient doubt still exists about prospects for potential collusion due to a variety of factors, in light of the marginal structure of the post-merger market. Accordingly, with respect to the majority's finding of a violation in this market, and its ordered divestiture of the Pasadena, Texas plant, I dissent.

## FINAL ORDER

This matter having been heard on the appeal of the respondents from the initial decision and on briefs and oral argument in support of and in opposition to the appeal, for the reasons stated in the attached opinion, the Commission has determined to deny the appeal. Accordingly,

*It is ordered*, That the following order be and the same hereby is entered:

## I.

*It is ordered*, That the following definitions apply:

A. "*Occidental*" means Occidental Petroleum Corporation and Occidental Chemical Corporation, two corporations organized under the laws of California with their principal places of business in Los Angeles, California, and their directors, officers, agents and employees and their subsidiaries, divisions, affiliates, successors and assigns;

B. "*Tenneco*" means Tenneco, Inc., and Tenneco Polymers, Inc., two corporations organized under the laws of Delaware with their



principal places of business in Houston, Texas, and their directors, officers, agents and employees and their subsidiaries, divisions, affiliates, successors and assigns;

C. "*Acquired PVC assets*" means the suspension PVC homopolymer manufacturing facility located at Pasadena, Texas, the suspension PVC and dispersion PVC manufacturing facility located at Burlington, New Jersey, and all assets, titles, properties, interests, rights and privileges, tangible and intangible, related to the PVC business that were acquired by Occidental from Tenneco on or about April 30, 1986, together with all improvements thereto;

D. "*PVC*" means any vinyl chloride homopolymer with the repeating unit  $\text{CH}_2=\text{CHCl}$  and any copolymer of vinyl chloride with varying amounts of other chemicals, including vinyl acetate, ethylene, propylene, vinylidene chloride or acrylates;

E. "*Mass PVC*" means PVC produced from vinyl chloride by the mass (also referred to as "bulk") process;

F. "*Suspension PVC homopolymer*" means PVC homopolymer produced from vinyl chloride by the suspension process;

G. "*Suspension PVC copolymer*" means any copolymer of vinyl chloride and vinyl acetate produced by the suspension process and containing more than 50 percent by weight of vinyl chloride;

H. "*Dispersion PVC*" means PVC produced by the emulsion or dispersion process.

## II.

*It is ordered*, That within twelve (12) months from the date this order, becomes final, Occidental shall divest, absolutely and in good faith, at no minimum price, the acquired PVC assets. The purpose of the divestiture is to establish the acquired PVC assets, either singly or separately, as a viable competitor in PVC, by ensuring the continuation of the assets as ongoing, viable enterprises in the PVC industry, and to remedy the lessening of competition resulting from the acquisition of the acquired PVC assets by Occidental. The divestiture(s) shall be made only to an acquirer or acquirers and only in a manner that receives the prior approval of the Federal Trade Commission.

Pending divestiture, Occidental shall take all measures necessary to maintain the acquired PVC assets in their present condition and to prevent any deterioration, except for normal wear and tear, of any part of the acquired PVC assets, so as not to impair the present operating viability and market value of the acquired PVC assets.

### III.

*It is further ordered,* That at the time of the divestiture required by this order, Occidental shall provide to the acquirer or acquirers of the acquired PVC assets, on a nonexclusive basis, all PVC technology (including patent licenses and know-how) used by Occidental or developed by Occidental for use in connection with the acquired PVC assets; and

For a period of one (1) year following the divestiture required by this order, Occidental shall provide the acquirer or acquirers of the acquired PVC assets, if the acquirer(s) so requests, such additional know-how as may reasonably be required to enable the acquirer(s) to manufacture and sell PVC. Occidental shall charge the acquirer(s) no more than its own costs for providing such additional know-how.

### IV.

*It is further ordered,* That at the time of the divestiture required by this order, Occidental shall assign to the acquirer(s) of the acquired PVC assets all supply agreements for VCM and other feedstocks for the manufacture of PVC, all PVC sales, toll or exchange agreements, and all PVC customer records and files relating to PVC produced in (or supplied by Occidental at any time since May 1, 1986, from) the acquired PVC assets.

### V.

*It is further ordered,* That if Occidental has not divested the acquired PVC assets within the twelve-month period provided in paragraph II of this order, the Federal Trade Commission may appoint a trustee to effect the divestiture. The trustee shall be a person with experience and expertise in acquisitions and divestitures.

Neither the appointment of a trustee nor a Commission decision not to appoint a trustee under this paragraph V of the order shall preclude the Commission from seeking civil penalties and other relief available to it, including a court-appointed trustee, for any failure by Occidental to comply with this order.

Any trustee appointed by the Commission pursuant to this paragraph V shall have the following powers, authority, duties and responsibilities:

A. The trustee shall have the exclusive power and authority, subject to the prior approval of the Commission, to divest the acquired PVC assets. The trustee shall have twelve (12) months from the date of appointment to accomplish the divestiture. If, however, at the end of the twelve month period, the trustee has submitted a plan of divestiture or believes that divestiture can be accomplished within a reasonable time, the divestiture period may be extended by the Commission.

B. The trustee shall have full and complete access to the personnel, books, records and facilities of the acquired PVC assets, and Occidental shall develop such financial or other information relevant to the acquired PVC assets as the trustee may reasonably request. Occidental shall cooperate with the trustee and shall take no action to interfere with or impede the trustee's accomplishment of the divestiture. Any delays in divestiture caused by Occidental shall extend the time for divestiture under this paragraph V in an amount equal to the delay, as determined by the Commission.

C. The power and authority of the trustee to divest shall be at the most favorable price and terms available consistent with this order's absolute and unconditional obligation to divest at no minimum price and with the purposes of the divestiture, as stated in paragraph II of this order, subject to the prior approval of the Commission.

D. The trustee shall serve without bond or other security and at the cost and expense of Occidental on such reasonable and customary terms and conditions as the Commission may set. The trustee shall have authority to retain, at the cost and expense of Occidental, such consultants, attorneys, investment bankers, business brokers, accountants, appraisers and other representatives and assistants as are reasonably necessary to assist in the divestiture. The trustee shall

account for all monies derived from the divestiture and for all expenses incurred. After approval by the Commission of the account of the trustee, including fees for the trustee's services, all remaining monies shall be paid to Occidental, and the trustee's power shall be terminated. The trustee's compensation shall be based at least in significant part on a commission arrangement contingent on the trustee divesting the acquired PVC assets.

E. Occidental shall indemnify the trustee and hold the trustee harmless against any losses, claims, damages or liabilities arising in any manner out of or in connection with the trustee's duties under this order, unless the Commission determines that such losses, claims, damages or liabilities arose out of the misfeasance, gross negligence or the willful or wanton acts or bad faith of the trustee.

F. Promptly upon appointment of the trustee and subject to the approval of the Commission, Occidental shall, subject to the Federal Trade Commission's prior approval and consistent with the provisions of this order, transfer to the trustee all rights and powers necessary to permit the trustee to effect the divestiture required by this order.

G. If the trustee ceases to act or fails to act diligently, the Commission may appoint a substitute trustee.

H. The Commission may on its own initiative or at the request of the trustee issue such additional orders or directions as may be necessary or appropriate to accomplish the divestiture required by this order.

I. The trustee shall have no obligation or authority to operate or maintain the acquired PVC assets.

J. The trustee shall report in writing to Occidental and to the Commission every sixty (60) days concerning the trustee's efforts to accomplish divestiture.

## VI.

*It is further ordered,* That for a period of ten (10) years from the date this order becomes final, Occidental shall not directly or indirectly acquire -- other than the acquisition of manufactured product in the ordinary course of business -- all or any part of the stock or assets of, or any interest in, any producer of PVC located in

the United States without the prior approval of the Federal Trade Commission.

## VII.

*It is further ordered,* That Occidental shall, within sixty (60) days after the date this order becomes final and every sixty (60) days thereafter until it has fully complied with paragraph II of this order, submit in writing to the Commission a report setting forth in detail the manner and form in which it intends to comply, is complying or has complied with that paragraph. Such compliance reports shall include, among other things that may be required from time to time, a full description of all contacts and negotiations relating to the divestiture of the acquired PVC assets, including the name and address of all persons contacted, copies of all written communications to and from such persons and all internal memoranda, reports and recommendations concerning divestiture; and

Occidental shall submit such further written reports of its compliance as the staff of the Commission may from time to time request in writing.

## VIII.

*It is further ordered,* That Occidental, upon written request and on reasonable notice, for the purpose of securing compliance with this order, and subject to any legally recognized privilege, shall permit duly authorized representatives of the Commission:

A. Reasonable access during the office hours of Occidental, which may have counsel present, to inspect and copy books, ledgers, accounts, correspondence, memoranda, reports and other records and documents in the possession or control of Occidental that relate to any matter contained in this order; and

B. Subject to the reasonable convenience of Occidental, an opportunity to interview officers or employees of Occidental, who may have counsel present, regarding such matters.

## IX.

*It is further ordered,* That Occidental shall notify the Commission at least thirty (30) days prior to any proposed corporate change, such as dissolution, assignment or sale resulting in the emergence of a successor corporation, the creation or dissolution of subsidiaries or any other change in the corporation that may affect compliance with the obligations arising out of this order.

Commissioner Owen dissenting,<sup>1</sup> and Commissioner Starek and Commissioner Yao not participating.

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<sup>1</sup> Commissioner Owen concurs with the result reached in the Opinion of the Commission with respect to the markets for suspension PVC copolymer and dispersion PVC and with the relief ordered with respect to those two markets, including the divestiture of the Burlington, New Jersey plant.

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**Re: Petition of Brana Publishing, Inc. to Limit or Quash Civil Investigative Demand; Petition of Art Source International, Inc. to Limit or Quash Civil Investigative Demand; and Petition of Brana Enterprises, Inc. to Limit or Quash Civil Investigative Demand, File No. 872-3209.**

March 26, 1992

Dear Mr. Fox:

This is to advise you of the Federal Trade Commission's ruling on the Petitions to Limit or Quash the Civil Investigative Demands for Documentary Material (collectively "Petitions"), which you filed on behalf of your clients Art Source International, Inc. ("Art Source"), Brana Publishing, Inc. ("Brana Publishing"), and Brana Enterprises, Inc. ("Brana Enterprises") (collectively "Petitioners"), in the above-referenced matter. Because the petitions filed by Art Source, Brana Publishing, and Brana Enterprises raised the same issues, the Commission has responded with this single ruling covering all three petitions.<sup>1</sup>

The ruling set forth herein has been made by Commissioner Deborah Owen pursuant to authority delegated under Commission Rule of Practice 2.7(d)(4). Pursuant to Rule 2.7(f), within three days after service of this decision, Petitioners may file with the Secretary of the Commission a request for full Commission review. Whatever briefs or other material the Petitioners wish the Commission to consider in reviewing this decision must accompany any such request in order to be considered as timely filed. The timely filing of such a request shall not stay the return date in this ruling, unless the Commission otherwise specifies.

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<sup>1</sup> The oral presentation on the petitions filed by Brana Publishing and Art Source was held on February 25, 1992. At that time, counsel for Petitioners informed Commissioner Owen that he had also been retained to represent Brana Enterprises, which did not receive its C.I.D. until February 21, 1992. Counsel requested that the arguments he made at the oral presentation be treated as also made by Brana Enterprises. The arguments will be so treated.

Commissioner Owen has carefully reviewed the Petitions and accompanying exhibits. She has also considered the oral presentation on the Petitions conducted on February 25, 1992. The Petitions are denied in part, and granted in part, for the reasons stated below. Petitioners' obligations under the C.I.D.s are modified as set forth below.

### I. Background

On October 24, 1991, the Federal Trade Commission approved a Resolution Directing Use of Compulsory Process, authorizing the use of compulsory process in an investigation to determine:

whether unnamed persons, partnerships, or corporations, engaged in the sale, advertising, and marketing of fine art prints, may be engaged in unfair or deceptive acts or practices in or affecting commerce in violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. 45, as amended, including but not limited to, misrepresenting the origins, authorship, edition size, or value of fine art prints.

On January 28, as part of this investigation, civil investigative demands ("C.I.D.s") were issued to Art Source, Brana Enterprises, and Brana Publishing, firms engaged in the sale of fine art at charity and public auctions. The C.I.D.s were subsequently served on Petitioners.

Beginning on or about February 10, 1992, counsel for Petitioners and the staff of the Commission entered into negotiations concerning the C.I.D.s. Counsel for Petitioners expressed concerns over the scope, breadth, and alleged indefiniteness of the specifications in the C.I.D.s. He also expressed concerns over the protection of confidential business information contained in the documents. Counsel for Petitioners and the staff of the Commission were unable to resolve any of the issues that were raised. Counsel for Petitioners filed these Petitions.



## II. Specific Objections

- A. *Petitioners assert that the C.I.D.s seek information beyond the scope of the resolution authorizing compulsory process and as a result are unreasonable in terms of both relevance and burden.*

Petitioners note that the Federal Trade Commission is limited to seeking information reasonably relevant to the specific inquiry the Commission has authorized, "as set forth in the Commission's resolution." Pet. p. 5<sup>2</sup> (quoting *FTC v. Texaco, Inc.*, 555 F.2d 862, 874 (D.C. Cir. 1977)(en banc), *cert. denied*, 431 U.S. 974 (1977)). In this case, the Petitioners note that the Resolution limits the investigation to whether unnamed entities engaged in "the sale, advertising, and marketing of fine art prints" are in violation of Section 5 of the Federal Trade Commission Act. Resolution Directing Use of Compulsory Process (October 24, 1991)(emphasis added). However, the C.I.D.s seek the production of documents pertaining to the sale of artworks related to certain named artists, without regard to whether the artwork was a print. This, Petitioners assert, makes the C.I.D.s impermissible broad.

The Petitioners are incorrect in asserting that because the C.I.D.s seek information related to artworks other than fine art prints, they are impermissible broad. The starting point in analyzing the relevance of information called for by a specification to a Commission investigation is recognition that courts give "relevance" a broad interpretation in enforcing Commission compulsory process. As the United States District Court for the District of Columbia stated, "[b]ecause the need for investigating allegations of unlawful activity is a substantial one, the law requires that courts give agencies leeway when considering relevance objections." *Federal Trade Commission v. Invention Submission Corp.*, 1991-1 Trade Cas. (CCH) ¶ 69,338 (D.D.C. Feb. 14, 1991), *appeal pending* No. 91-5174 (D.C. Cir. argued March 9, 1992). More particularly, relevance is

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<sup>2</sup> References to the Petitions are cited as "Pet. p." with the appropriate page number. References to the transcript of the oral presentation on the Petitions, held on February 25, 1992, are cited as "Tr. p." with the appropriate page number.

measured against the agency's general purpose in gathering the investigative materials as described by the underlying resolution authorizing compulsory process. *Federal Trade Commission v. Texaco Inc.*, 555 F. 2d 862, 874 (D.C. Cir. 1977)(en banc), *cert. denied*, 431 U.S. 974 (1977). As the Commission staff pursue this investigation into possible unfair or deceptive acts in the sale, advertising, or marketing of fine art prints, it may be necessary for the staff to gather some incidental information on the sale, advertising or marketing of other types of art for purpose of comparison. Such information can be relevant to this investigation, although one would expect that the focus of the material requested would be on art prints.

The staff has determined that, at this time, it does not need comparative information concerning certain types of artworks not related to fine art prints. During the oral presentation on the Petition, staff indicated that they were willing to limit the C.I.D.s to documents that relate to prints, if agreement were reached on an appropriate definition of the term "prints." Tr. p. 13. At that time, counsel for Petitioners and counsel for the Commission seemed reasonably close to reaching agreement on the breadth of artworks to be covered by the C.I.D.s Tr. pp. 13-14. However, despite the urging of Commissioner Owen that both sides continue to negotiate, no agreement on this point has been reached. The Commission therefore feels compelled to define the artworks to be covered by the specifications of the C.I.D.s.

Definition 4 of the C.I.D.s shall be limited to artworks incorporating, in whole or in relevant part, the process of intaglio (e.g., etchings, engravings, dry points), aquatint, lithography, serigraphy, silkscreen, woodcut, poster printing, or photographic, photomechanical, or photochemical reproduction, or any combination of the above media, by, after, or attributed to one of the seven artists listed in the C.I.D.s, including any reproductions, facsimiles, or composites of images, by or purportedly by the above artists.

- B. *Petitioners assert that the scope of the documents sought by the C.I.D.s is too broad and burdensome, including the request for backup tapes or disks for computer systems.*

The Petitions assert that because each of the C.I.D.s "seeks virtually every document which in any way bears upon the acquisition, sale and offering for sale, of all artwork attributed to the relevant artists created or received by the Petitioner during a six year period," and because a response would require a review of "literally hundreds of files," each C.I.D. is overbroad and burdensome. In reviewing such claims of burden, it is instructive to restate the general rules that govern their consideration. First, "the burden of showing that an agency subpoena is unreasonable remains with the respondent." *FTC v. Rockefeller*, 591 F. 2d 182, 190 (2d Cir. 1979), quoting *SEC v. Brigadoon Scotch Distributing Co.*, 480 F. 2d 1047, 1056 (2d Cir. 1973), *cert. denied*, 415 U.S. 915 (1974); *accord FTC v. Texaco, Inc.*, 555 F. 2d. 862, 882 (D.C. Cir. 1977)(en banc). In *Brigadoon*, the Second Circuit added that "where, as here, the agency inquiry is authorized by law and the materials sought are relevant to the inquiry, that burden is not easily met." 480 F.2d at 1056.

Second, as the court stated in *Texaco*, "[w]e emphasize that the question is whether the demand is unduly burdensome or unreasonably broad." It added:

Some burden on subpoenaed parties is to be expected and is necessary in furtherance of the agency's legitimate inquiry and the public interest. . . . Thus, courts have refused to modify investigative subpoenas unless compliance threatens to unduly disrupt or seriously hinder normal operations of a business.

555 F.2d at 882 (emphasis in original)(footnotes omitted).

Finally, in order to attempt to meet the burden of showing unreasonableness, Petitioners must present something more than unsupported conclusions and unsupported claims of burden. In *Rockefeller*, for example, respondents prepared and submitted estimates of compliance costs. 591 F. 2d at 190. From this, it should be clear that a challenge to agency compulsory process based upon a claim of burden must be supported by some reasonable, substantial estimate of the cost of compliance and its relationship to the respondent's ongoing business operations. Unsubstantiated, conclusory claims will not meet the test -- they will not even come close. Federal Trade Commission Letter Ruling Re: Petition of Megatrend

Telecommunications, Inc. to Limit and/or Quash CID, File No. 902 3281 (June 24, 1991).

### 1. Time for Compliance

The Petitioners allege that the original deadline to comply with each C.I.D., each of which expired on February 19, 1992, was simply not enough time to physically review the "literally hundreds of files." Pet. pp. 3-4. Counsel for Petitioners requested a sixty-day extension. Tr. p. 7. In addition, counsel for Petitioners argues that the time period covered by each C.I.D., from January 1, 1986 to the present, is unduly burdensome. As an alternative, counsel for Petitioners suggests that Petitioners should initially be required to produce only documents relating to a two-year period, with documents from earlier time periods on to be produced if it is later determined that they are needed. Tr. pp. 6-7.

However, the Petitions lack the specific detail needed to support a finding of undue burden concerning the time period covered by the C.I.D.s. Counsel for the Commission states that the staff has reason to believe that the entire period from January 1, 1986 to the present will provide relevant information.<sup>3</sup> The Commission will not modify that period. Concerning the time period for compliance with the C.I.D.s, the Commission is persuaded that the original time period, approximately 20 days, was too short. Counsel for the Commission does not object to a short extension of time. The Commission will extend the date for compliance with the C.I.D.s to thirty days from the date of this letter.<sup>4</sup>

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<sup>3</sup> It would be inappropriate at this time for the Commission to reveal the basis on which the six-year time period was chosen.

<sup>4</sup> In addition to an extension of time, counsel for Petitioners asked that the Commission staff review the materials called for in the C.I.D.s in counsel's New York offices, rather than in the Petitioners' offices in California. Tr. pp. 8-9. The location of the document production is a matter best left to negotiation between the staff and counsel for the Petitioners, and the Commission will not order the staff to inspect and copy the documents in New York rather than in California.

## 2. Alleged Ambiguities

In the Petitions, Pet. p. 3, and the oral presentation, Tr. p. 9, counsel for Petitioners makes the allegation that terms used in the C.I.D.s were ambiguous, and thus make complete and accurate compliance with the C.I.D.s impossible. Petitioners allege that in this respect each C.I.D. violates Section 20(c)(3)(A) of the Federal Trade Commission Act. That Section provides that a C.I.D. for documentary material shall "describe each class of documentary material to be produced under the demand with such definiteness and certainty as to permit such material to be fairly identified. . . ." 15 U.S.C. 57b-1(c)(3)(A).

The only specific term that Petitioners identified as ambiguous was the term "cooperating entities" in Specification 3. The Commission staff offered a clarification of that term to counsel for Petitioners in their original conversation concerning the C.I.D.s. In the oral presentation, counsel for the Commission stated for the record that the Commission staff used that term to mean "organizations under whose auspices an auction is held or that benefit from an auction." Tr. pp. 13-14. The Commission adopts that definition.

The Petitioners did not identify any other terms that were allegedly ambiguous. Counsel for the Commission made clear his willingness to further clarify the term "cooperating entities," or other specifications unclear to Petitioners. The Commission does not see any need to define other terms in the C.I.D.s. The Commission determines that the C.I.D.s, as clarified by counsel for the Commission, meet the requirements of Section 20(c)(3)(A) of the Federal Trade Commission Act.

## 3. Computer Backup Tape or Disk(s)

A final point on burden raised by the Petitions is Specification 9 of each C.I.D., which requires Petitioners to produce "a copy of the most recent backup tape or disk(s) for Respondent's computer system." Petitioners point out that this specification has no direct tie whatsoever to the stated nature and scope of the investigation because the Commission staff is requesting the production of whatever happens to have been encoded on the most recent backup tape or

disk(s), whether or not it relates to the subject of the Commission's investigation. The Commission agrees that this specification is overly broad.

Definition 5 of each C.I.D. defines the term "documents" to include "computer data storage materials (including magnetic tapes or disks)." Therefore, each C.I.D. already calls for the production of specified relevant material on any computer backup tape not otherwise produced, which falls under Specifications 1 through 8 (as previously clarified by the staff and adopted herein), even if the documents are only available in the form of computer (machine) readable code on a magnetic tape, disk, or other computer storage device. In addition, Specification 9 calls for all information on the backup tape or disk that is not included in one of the other specifications. So long as the other information is relevant to the investigation, this request is permissible. However, Specification 9 does not include any limitations to restrict its scope to relevant information. Thus it does not meet the test set out in *Invention Submission* and *Texaco*. See *supra* pp. 2-3.

The Commission therefore modifies Specification 9, limiting it to all documents stored on the most recent backup tape or disk(s) that relate, reflect, or refer to the purchase of, sale of, or trade in, any relevant artwork included in Definition 4, the definition of relevant artwork, as that definition is modified above. For the purposes of this request, any data bases, data compilations, or spreadsheets included on the backup tape or disk(s) that contain any data entries that relate, reflect, or refer to the purchase of, sale of, or trade in such artworks, shall be considered a single document, and the entire data base or data compilation shall be produced. By this modification, the Commission does not intend to limit the obligations of Petitioners to search any backup tape or disk(s) for information relevant to Specifications 1 through 8. It may be noted that Direction 7 of the C.I.D. requires that documents responsive to more than one specification need not be submitted more than once. Therefore, to the extent documents contained on the most recent backup tape or disk(s) are produced in response to one of the previous specifications, they need not be produced again.

*C. Petitioners assert that they should be given additional confidentiality protection.*

Petitioners raise a number of concerns about the confidentiality of the information contained in their documents. First, in addition to the confidentiality protection provided by the Federal Trade Commission Act and Rules, Petitioners request that they be given 10 days advance notice before any of their confidential information is disclosed to other law enforcement agencies. Section 21(b)(6) of the Federal Trade Commission Act already sets forth the manner in which the Commission may disclose confidential information to other Federal law enforcement agencies and to State law enforcement agencies. 15 U.S.C. 57b-2(b)(6). This includes obtaining from the requesting State law enforcement agency a certification that such information will be maintained in confidence.

The Commission's procedure for disclosing information to other law enforcement agencies does not permit disclosing to the owner of such information the fact that such information has been disclosed to another law enforcement agency if the other agency requests that the owner not be notified. Moreover, even if the owner of such information is notified, the notification is to occur at the time the information is provided to the other law enforcement agency. See Commission Rules of Practice 4.11(c). Furthermore, granting the Petitioners' request for ten days advance notice could jeopardize other law enforcement agencies' confidential investigations, a task the Commission declines to take.

Second, the Petitioners express concern that their confidential information could be disclosed to competitors. It is unclear, from either the Petitions or the oral presentation, what relief the Petitioners are seeking here. The Commission Rules already provide protection regarding the disclosure of such information. Commission Rules of Practice 4.10 (c) provides that only the Commission may determine to make public nonpublic information, with certain exceptions not relevant here. Moreover, Commission Rules of Practice 4.10 (e), (f), and (g) explain in which situations the Commission may disclose confidential information, and in which situations the supplier of such confidential information is provided advance notice of the disclosure. Furthermore, Commission Rule 2.16 prescribes detailed custodial

requirements for material secured through compulsory process. The Petitions present no reason why the protection of these sections is not sufficient in the instant case. Therefore, the Commission declines to impose additional restrictions on the use of the Petitioners' confidential information.

Finally, the Petitioners express concern about the adverse impact caused by the Commission staff contacting their customers. Petitioners fear that if the Commission staff merely contacts one of Petitioners' customers, that will raise concerns in the mind of the client concerning the artwork that client purchased. Petitioners note that they have neither been charged with, nor convicted of, any crime. Tr. pp. 19-21. They wish to ameliorate the concerns of their clients and minimize any damage to their business from the investigation.

Petitioners suggest that the Commission staff be directed to begin any contact with one of Petitioners' clients with a statement that the Commission is conducting an "investigation of the art print industry, and [the staff] is seeking additional information relating to the industry. And that [the staff] understand[s] that [the customer] had some artwork that was purchased from a retailer and [the staff] want[s] to ask questions about it." Tr. p. 19. Petitioners seek to compel the Commission staff to give "adequate assurances" to such clients that the person from whom they bought artwork has not been the subject of an investigation, but in fact is cooperating with an investigation of the entire industry. Tr. p. 20. In sum, Petitioner requests that the Commission staff assure the Petitioners' clients that "the fact that [one of the Petitioners] has been asked for information should not be construed to mean that they are a target or that they did anything wrong, that is how the Commission conducts itself." Tr. p. 21.

The C.I.D.s in this case are intended to gather evidence to allow the Commission to determine whether certain parties have engaged in unfair acts or practices in the sale, advertising or marketing of fine art prints. The possible unfair acts or practices include misrepresenting the origins, authorship, edition size, or value of such prints. In previous investigations, the staff has developed evidence of the existence of large numbers of fraudulent art prints in the United States. It would be inappropriate for the Commission staff to reassure the clients of the Petitioners, or of any art dealer -- whether



or not that dealer is a target -- that there is nothing wrong with any particular artwork. Without examining the artwork, and perhaps without an expert opinion, the staff simply does not know if any particular artwork is genuine.

The Commission staff stated during the oral presentation that whenever such questions arise during interviews, the staff always states that there has been no finding of wrongdoing on the part of the company that they are investigating. The Commission assumes that to be staff's standard operating procedure. The Commission cannot go farther without unduly restricting the staff's investigation. The Commission will not consider doing so absent allegations of specific damage from the staff investigation, or allegations of staff misconduct. Even then, the legitimate interests of the Petitioners must be weighed against the Commission's obligations to conduct investigations. *See Invention Submission* at 65,353; Federal Trade Commission Letter Ruling Re: Petition of Invention Submission Corp. to Limit or Quash Civil Investigative Demands, File No. 882 3060, p. 15 (October 4, 1991). In this case, the Petitioners have not met the threshold burden of articulating specific allegations warranting Commission interference in the staff investigation. The Commission declines to restrict the staff's ability to contact clients of Petitioners.

### III. Conclusion

For the foregoing reasons, the Petitions to Limit or Quash the Civil Investigative Demands for Documentary Material filed by Brana Publishing, Inc., Brana Enterprises, Inc., and Art Source International, Inc. are denied in part and granted in part. Petitioners are directed to comply with the Civil Investigative Demands by close of business on the April 27, 1992.

Pursuant to Rule 2.7(f), within three days after service of this ruling, Petitioners may file with the Secretary of the Commission a request that the full Commission review the ruling. Commission Rule of Practice 4.4(b) provides that a document shall be deemed filed when it is received by the Office of the Secretary. *See* 16 CFR 4.4(b). The timely filing of such a request shall not stay the return date of this ruling, unless the Commission otherwise directs.

**Re: Hang-Ups Art Enterprises, Inc.'s Petition to Limit  
or Quash the Civil Investigative Demand, File No.  
872-3209.**

March 31, 1992

Dear Mr. Steiner:

This is to advise you of the Federal Trade Commission's ruling on the Petition to Limit or Quash the Civil Investigative Demand for Documentary Material ("Petition"), which you filed on behalf of your client Hang-Ups Art Enterprises, Inc. ("Hang-Ups" or "Petitioner"), in the above referenced matter.

The ruling set forth herein has been made by Commissioner Deborah Owen pursuant to authority delegated under Commission Rule of Practice 2.7(d)(4). Pursuant to Rule 2.7(f), within three days after service of this decision, Petitioner may file with the Secretary of the Commission a request for full Commission review. Whatever briefs or other material the Petitioner wishes the Commission to consider in reviewing this decision must accompany any such request in order to be considered as timely filed. The timely filing of such a request shall not stay the return date in this ruling, unless the Commission otherwise specifies.

Commissioner Owen has carefully reviewed the Petition and accompanying exhibits. She has also considered the oral presentation on the Petition conducted on February 25, 1992. The Petition is denied in part, and granted in part, for the reasons stated below. Petitioner's obligations under the C.I.D. are modified as set forth below.

### I. Background

On October 24, 1991, the Federal Trade Commission approved a Resolution Directing Use of Compulsory Process, authorizing the use of compulsory process in an investigation to determine:

whether unnamed persons, partnerships, or corporations, engaged in the sale, advertising, and marketing of fine art prints, may be engaged in unfair or deceptive acts or practices in or affecting commerce in violation of Section 5 of the Federal Trade

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Commission Act, 15 U.S.C. 45, as amended, including but not limited to, misrepresenting the origins, authorship, edition size, or value of fine art prints.

On January 28, 1992, as part of this investigation, a civil investigative demand was issued to Hang-Ups, a firm engaged in the sale of fine art at charity and public auctions. The C.I.D. was served on Petitioner on or about January 29, 1992. Pet. p. 2.<sup>1</sup> On February 4, 1992, Petitioner retained counsel to represent it in this matter. Pet. p. 23. The C.I.D. required Petitioner to make the specified documents available on February 19, 1992 by 5:00 p.m.

Beginning on February 5, 1992, counsel for Petitioner and the staff of the Commission entered into negotiations concerning the C.I.D. Counsel for Petitioner expressed concerns over the burden of the C.I.D., over what he considered a request to produce irrelevant information, and the possible damage to Petitioner's business if the Commission staff contacted Petitioner's clients. Counsel for Petitioner and the staff of the Commission were unable to resolve any of the issues that were raised. On February 18, 1992, counsel for Petitioner filed this Petition.

## II. Specific Objections

### *A. Petitioner asserts that the C.I.D. is vague and ambiguous and does not permit the responsive material to be fairly identified.*

Petitioner argues that the C.I.D. does not describe the documents requested with reasonable particularity. In particular, in the Petition, the Petitioner notes that the C.I.D. uses three terms, "cooperating entities," "respondent," and "transactions," that are so unclear, Petitioner asserts, that it cannot tell what is requested. Pet. p. 6. In addition, in the oral presentation, counsel for Petitioner noted additional terms that he alleged were ambiguous: "medium," Tr. p. 20, and "reproductions, facsimiles, and composites of images," Tr. p. 22.

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<sup>1</sup> References to the Petition are cited as "Pet. p." with the appropriate page number. References to the transcript of the oral presentation on the petition, held on February 25, 1992, are cited as "Tr. p." with the appropriate page number.

As a threshold matter, counsel for Petitioner failed to comply with Commission Rule of Practice Section 2.7(d)(2) with respect to these issues. Rule Section 2.7(d)(2) requires that "[e]ach petition [to limit or quash] shall be accompanied by a signed statement representing that counsel for the petitioner has conferred with counsel for the Commission in an effort in good faith to resolve by agreement the issues raised by the petition . . . ." In the instant case, counsel for Petitioner made an effort, in apparent good faith, to resolve some of the issues raised in the Petition, but by his own admission, counsel for Petitioner never raised these issues with counsel for the Commission. Tr. p. 19.

The purpose of Rule Section 2.7(d)(2) is to insure that counsel for Petitioner makes an effort to resolve with counsel for the Commission questions that invariably arise in discovery, without the intervention of the Commission itself. In this case, the questions that arose -- how to define the terms in the C.I.D. -- are the type of questions that the attorneys involved should be able to resolve. During the oral presentation, counsel for the Commission readily agreed to define and narrow the contested terms, suggesting that the attorneys might have solved these issues.

Despite the failure of counsel for Petitioner to raise these issues prior to filing the Petition, the Commission must insure that the C.I.D. complies with Section 20(c)(3) of the Federal Trade Commission Act. That Section provides that a C.I.D. for documentary material shall "describe each class of documentary material to be produced under the demand with such definiteness and certainty as to permit such material to be fairly identified . . . ." 15 U.S.C. 57b-1(c)(3).

While on its face the C.I.D. meets the requirements of Section 20(c)(3)(A), the Petition, and the oral presentation, raised some legitimate questions, particularly concerning "cooperating entity." However, during the oral presentation, Commission staff offered clarifications of some of these terms. The staff further indicated a willingness to clarify any other terms that were unclear to the Petitioner. In order to insure compliance with Section 20(c)(3)(A), as well as to facilitate the compliance of Hang-Ups, and the timely completion of this investigation, the Commission adopts and

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incorporates, in this opinion and in the definitions of the C.I.D., the following clarifications offered by Commission staff.

The Petition identified three terms which allegedly made the C.I.D. ambiguous: "cooperating entities," "respondent," and "transactions." With respect to "cooperating entities," the Commission staff clarified that term to mean the "civic organizations and other groups that have sponsored the auctions in question and any other beneficiaries of those auctions," in which Petitioner offered relevant artworks for sale. Tr. p.32.

With respect to the second term, "respondent," Definition 2 of the C.I.D. defines it to include "other entities under common ownership or control." Petitioner stated that it does not know what that means. At the oral presentation, the staff clarified the definition, limiting the definition of "respondent" to include only entities with "substantial common ownership or control." Tr. p. 33. Lest there be any confusion, the Commission hereby modifies the definition to include, within the term "respondent," any company with 10% common ownership -- that is where 10% of the ownership is held by individuals or entities that hold at least 10% of the ownership of Hang-Ups.<sup>2</sup>

With respect to the third term, "transactions," the C.I.D. in Specification 1 calls for the production of all documents "relating to Respondent's transactions concerning the relevant artworks . . . ." The Petitioner expressed concern that the term "transactions" might require production of documents related to lease arrangements, transactions with attorneys, and the like Pet. p. 6.

Petitioner's complaint is puzzling. If Petitioner has documents that relate to transactions "concerning the relevant artworks," Hang-Ups is instructed to produce them. To the extent that the specification would require the production of privileged material, the C.I.D. instructions contain procedures for handling such documents

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<sup>2</sup> Direction 2 of the C.I.D. requires Petitioner to provide all the documents in its possession, custody, or control, that fall within the specifications of the C.I.D. The C.I.D. does not require Petitioner to produce documents in the possession, custody or control of companies under common ownership and control with Hang-Ups, unless the documents are also in the possession, custody and control of Hang-Ups.

in a way that protects the privilege.<sup>3</sup> Petitioner's argument with respect to lease arrangements is a red herring -- it is difficult to envision a lease "concerning relevant artworks." Moreover, it is hard to envision how staff could draw the line here more narrowly, without exempting documents essential to the investigation.

In addition to the three terms identified in the Petition, at the oral presentation, counsel for Petitioner alleged that the additional terms, "artworks in any medium," "reproductions," "facsimiles," and "composites of images" are ambiguous. Tr. pp. 20-22. With respect to the definition of "artworks in any medium," it was unclear whether counsel for Petitioner was arguing that the term was ambiguous, or clear, but overbroad, because it called for production of documents related to artworks that were not prints. Tr. pp. 20-21. In either event, the staff agreed to narrow the definition of relevant artworks. Tr. pp. 31-32. Accordingly, the Commission limits the term relevant artworks to artworks incorporating, in whole or in relevant part, the process of intaglio (*e.g.*, etchings, engravings, dry points), aquatint, lithography, serigraphy, silkscreen, woodcut, poster printing, or photographic, photomechanical, or photochemical reproduction, or any combination of the above media, by, after, or attributed to one of the seven artists listed in the C.I.D.s, including any reproductions, facsimiles, or composites of images, by or purportedly by the above artists. This should both narrow the definition and clarify it for Petitioner.

With respect to the other three terms, to facilitate compliance with the C.I.D., the Commission hereby defines the terms "reproductions" and "facsimiles" to mean: (1) any copy of an artwork which is an exact copy in all respects; (2) any copy or reproduction of an artwork which cannot be distinguished without close examination from the original; or (3) any artwork bearing a stamped, printed, or other signature imitating that of the artist. "Reproductions" and "facsimiles" include posters. The Commission hereby defines "composites of images" to mean artworks that incorporate images from one or

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<sup>3</sup> It should be noted that no objection was raised with respect to those procedures for handling allegedly privileged materials.

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more works of an artist and combine them into a single image. The Commission defines "composites of images" to include "pastiche."<sup>4</sup>

It is expected that counsel for Petitioner and counsel for the Commission can resolve any other such questions without the intervention of the Commission.

*B. Petitioner asserts that the C.I.D. is overbroad, in terms of both its scope and breadth.*

Definition 4 of the C.I.D. states:

"Relevant artworks" means all artworks, in any medium, by, after, or attributed to the artists Marc Chagall, Salvador Dali, Joan Miro, Pablo Picasso, Alexander Calder, Victor Vasarely, and Philippe Noyer, including any reproductions, facsimiles, or composites of images by or purportedly by the above artists.

Petitioner argues that the staff, having defined what is relevant in the definitions of the C.I.D., cannot now require the production of information which is not relevant, *i.e.* does not relate to one of the seven named artists.<sup>5</sup> It must be first noted that Petitioner claims not that the staff have attempted to obtain irrelevant documents that do not contain information about one of the seven listed artists, but rather that the staff have attempted to obtain irrelevant information contained in documents that admittedly also contain relevant information.<sup>6</sup> The solution counsel for Petitioner proposes for documents "tainted with non-relevant material" is that the documents be withheld by Hang-Ups, or that the Petitioner be permitted to redact all non-relevant information from the documents that it produces to the Commission staff.

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<sup>4</sup> A pastiche is a "picture or other work of art that (often with fraudulent purpose) imitates the style of a particular artist by copying and recombining parts of his authentic works." *The Concise Oxford Dictionary of Art and Artists* 347 (1990).

<sup>5</sup> During the oral presentation, counsel for Petitioner may have also argued that the C.I.D. is overbroad because it called for information relating to all artworks, in any medium, by the named artists. Tr. p. 21. This objection is also dealt with above.

<sup>6</sup> A possible exception is Specification 8, which requests a backup tape or disk of Hang-Ups' computer system. Counsel for Petitioner may be arguing that this specification requests copies of irrelevant documents.

Petitioner's argument misses the point, both with respect to the utilization of redaction, and with respect to what information is relevant to the Commission's investigation. Redaction can be a useful way to segregate information into that which should be produced during discovery, and that which should be protected from disclosure during discovery. For example, parties might agree to redact information that is protected by a privilege against disclosure, or which is commercially sensitive and is unnecessary to the litigation. However, in this case, counsel for the Petitioner has made no claim of privilege. Counsel was unable to articulate any manner in which his client would be prejudiced if the Commission received documents complete with what Petition termed "irrelevant" information. Tr. p. 17. Thus, Petitioner should comply with the instructions in the C.I.D. to produce any document in its entirety, if it contains relevant information.

The starting point in analyzing the relevance of information called for by a specification in a Commission investigation is recognition that courts give "relevance" a broad interpretation in enforcing Commission compulsory process. As the United States District Court for the District of Columbia stated: "Because the need for investigating allegations of unlawful activity is a substantial one, the law requires that courts give agencies leeway when considering relevance objections." *Federal Trade Commission v. Invention Submission Corp.*, 1991-1 Trade Cas. (CCH) ¶ 69,338 (D.D.C. Feb. 14, 1991), *appeal pending* No. 91-5174 (D.C. Cir. argued March 9, 1992). More particularly, relevance is measured against the agency's general purpose in gathering the investigative materials as described by the underlying resolution authorizing compulsory process. *Federal Trade Commission v. Texaco Inc.*, 555 F. 2d 862, 874 (D.C. Cir. 1977)(en banc), *cert. denied*, 431 U.S. 974 (1977).

The scope of the investigation is defined by the resolution authorizing the use of compulsory process. That resolution was not limited to the seven artists listed in Definition 4 of the C.I.D. Those seven listed artists merely establish the artists whose works are the



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current focus of the investigation.<sup>7</sup> Information concerning the works of other artists may lead to the discovery of relevant evidence. Such information may allow comparisons between the transaction prices or methods of sale of artworks the staff believes are forged, and those the staff believe are genuine, which may help establish knowledge of the authenticity, or lack thereof, of the prints by the seven listed artists. In addition, such information may lead to the discovery of problems with the authenticity of additional prints. Finally, such information can provide a context to better understand the information that the documents contain regarding the seven listed artists. For these reasons, the Petitioner's argument that the C.I.D. is overbroad must be rejected as a basis to limit or quash the C.I.D.

In addition, the Petitioner has claimed that the time period covered by the C.I.D. is excessive. The C.I.D. covers a time period from 1986 through the present. Counsel for Petitioner suggested instead that Petitioner produce documents for the time period from January 1, 1989 to the present. Petitioner then suggested that older documents could be produced at a later date. Tr. pp. 11-12. Petitioner, however, offers only generalities about the burden of producing the additional documents.

The staff have indicated a sound basis for requesting documents going back to January 1, 1986.<sup>8</sup> There is thus no basis for limiting the staff to documents in the period suggested by Petitioner. The Commission staff and the Petitioner are free to work out any mutually agreeable schedule for the production of documents. If it is convenient for the Commission staff and the Petitioner to stage the production of documents by time period, that can be worked out between the staff and Petitioner. However, in this case, the Petitioner falls short of making the necessary showing for the Commission to order the Commission staff to limit production to the period suggested by Petitioner.

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<sup>7</sup> In this regard, the terminology "relevant artists" in Definition 4 may have been an unfortunate choice of words. Alternative language, such as a neutral term, "listed artists," or "Definition 4 artists," would have made it clear that neither the Commission, nor the staff, was limiting the investigation to information about the seven listed artists.

<sup>8</sup> It is unnecessary to repeat on the public record staff's basis for desiring documents as far back as 1986.

- C. *Petitioner asserts that compliance with the C.I.D. would be unduly burdensome, disrupt normal business operations, and damage Hang-Ups' reputation.*

Petitioner operates an art auction business. According to the Petition, Hang-Ups has twelve employees, ten of whom work in the warehouse and would have no familiarity with Hang-Ups' business records, or how those records are maintained. Allegedly, only two of the three principals of Hang-Ups, the vice-president and the secretary/treasurer, are capable of identifying documents responsive to the C.I.D. According to the Petition, both of these individuals are scheduled to travel extensively over the next few months to conduct auctions, and cannot remain in Hang-Ups' office to produce the requested documents without disrupting their auction schedule, foregoing substantial sales revenue, and disrupting customer relations. The Petition concludes that compliance with the C.I.D. is therefore unduly burdensome.

The Petition also alleges that the breadth of the C.I.D. requesting documents for the period from January 1, 1986 to the present, is unnecessary and unwarranted. The extended period for which Petitioner is required to produce documents allegedly exacerbates the disruption to Hang-Ups' business that complying with the C.I.D. purportedly will cause.

In reviewing such claims of burden, it is instructive to restate the general rules that govern their consideration. First, "the burden of showing that an agency subpoena is unreasonable remains with the respondent." *FTC v. Rockefeller*, 591 F. 2d 182, 190 (2d Cir. 1979), quoting *SEC v. Brigadoon Scotch Distributing Co.*, 480 F. 2d 1047, 1056 (2d Cir. 1973), *cert. denied*, 415 U.S. 915 (1974); *accord FTC v. Texaco, Inc.*, 555 F. 2d. 862, 882 (D.C. Cir. 1977)(en banc). In *Brigadoon*, the Second Circuit added that "where, as here, the agency inquiry is authorized by law and the materials sought are relevant to the inquiry, that burden is not easily met." 480 F. 2d at 1056.

Second, as the court stated in *Texaco*, "[w]e emphasize that the question is whether the demand is unduly burdensome or unreasonably broad." It added:

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Some burden on subpoenaed parties is to be expected and is necessary in furtherance of the agency's legitimate inquiry and the public interest. . . . Thus, courts have refused to modify investigative subpoenas unless compliance threatens to unduly disrupt or seriously hinder normal operations of a business.

555 F.2d at 882 (emphasis in original)(footnotes omitted).

Finally, in order to attempt to meet the burden of showing unreasonableness, respondents must present something more than conclusory and unsupported claims of burden. In *Rockefeller*, for example, respondents prepared and submitted estimates of compliance costs. 591 F. 2d at 190. From this, it should be clear that a challenge to agency compulsory process based upon a claim of burden must be supported by some reasonable, substantial estimate of the cost of compliance and its relationship to the respondent's ongoing business operations. Unsubstantiated, conclusory claims will not meet the test -- they will not even come close. Federal Trade Commission Letter Ruling Re: Petition of Megatrend Telecommunications, Inc. to Limit and/or Quash CID, File No. 902 3281 (June 24, 1991).

While Petitioner attempts to place a specific cost on complying with the C.I.D., it falls short of the required threshold showing to quash the C.I.D. on this basis. The Petition explains the potential cost to Hang-Ups if the vice-president and the secretary/treasurer are forced to cease holding art auctions while they search for documents. However, the Petition admits that Hang-Ups has a clerical employee and a third principal. Much of the documentary material called for in the C.I.D. should be easily identified. For instance, if a catalog lists a work by one of the artists listed in Definition 4, it should be produced; if a purchase order covers an artwork by one of the artists listed in Definition 4, it should be produced. This type of document production does not appear to require an intimate knowledge of the art in question. Hang-Ups does not explain why the existing clerical employee and other principal cannot be given instructions by the vice-president and the secretary/treasurer and do much of the work identifying documents called for by the C.I.D.

It should be noted that the Commission staff has not objected to Petitioner's request for additional time to respond to the C.I.D. In addition, the staff offered to limit the initial burden by allowing

Hang-Ups to produce documents relating to sales of relevant artworks to clients whose last names began with the letters R through Z. Staff offered to give Hang-Ups an indefinite extension on production of such documents for clients whose last names began with the letters A through Q. Letter from Monica Tait, Esq. to David Steiner, Esq. (February 13, 1992).<sup>9</sup>

Petitioner falls short of the showing of burden necessary to quash the C.I.D. However, the Commission is persuaded by Petitioner's argument that the original time period in which to comply with the C.I.D., approximately 20 days, was too short. The Commission will modify the C.I.D. and extend the date for compliance with the C.I.D.s to thirty days from the date of this letter.

*D. Petitioners assert that the disclosure of Hang-Ups' charity customers, as well as private purchasers, would destroy Hang-Ups' ability to do business with these customers in the future.*

The Petitioner identifies this as perhaps its most critical concern. Petitioner alleges that the mere contacting of potential auction sponsors by the Commission staff, and identification of Hang-Ups as the target of the investigation, will likely cause the contacted party to refrain from doing business with Hang-Ups in the future. Petitioner identifies two instances when adverse publicity allegedly severely impacted the ability of an art auction firm to obtain customers. Petitioner argues that it is unfair to damage its business before it is even accused of any wrongdoing. The relief that Petitioner seeks is not a ban on the staff contacting its customers; indeed, the Petitioner recognizes that some customers must be contacted. Rather, the

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<sup>9</sup> Staff reserved the right to request the production of such documents on thirty days notice, if the staff decided that they needed the additional documents.

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Petitioner seeks some limitation on the staff, to prevent the wholesale contacting of customers. Tr. p. 24.<sup>10</sup>

The Commission has faced this issue before. *See Invention Submission* at 65,353; Federal Trade Commission Letter Ruling Re: Petition of Invention Submission Corp. to Limit or Quash Civil Investigative Demands, File No. 882 3060 (October 4, 1991). In this case, the staff has disavowed any intention to contact all the customers, stating that they would contact only a small sampling of customers. In fact, the staff acknowledge that they only have the resources to contact a small sampling in any event. Tr. p. 37.

The staff previously offered to forego the immediate production of any documents relating to Petitioner's customers whose names began with the letters A through Q. Staff would only request those documents if, after examining the other documents produced by Hang-Ups, the staff determined the additional documents were necessary. Letter from Monica Tait, Esq. to David Steiner, Esq. (February 13, 1992). What the staff seeks is to retain the flexibility to determine for themselves, as the investigation progresses, how to construct a reasonable sample of clients. The Commission agrees that it is reasonable to allow the staff that flexibility. The Commission denies Hang-Ups' request to limit the C.I.D. in this way.

E. *Petitioner asserts that the request for Hang-Ups' backup tape or disks for their computer system is not warranted.*

Petitioner argues that 15 U.S.C. 44 is the statute controlling what constitutes documentary evidence that the Commission may seek in the C.I.D., and that the statute does not include computer tapes or disks. Therefore Petitioner argues that Specification 8 of the C.I.D.,

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<sup>10</sup> In the Petition at page 5, Petitioner also requested that the Commission staff be directed to tell those customers that it does contact, that there has been no specific accusation of wrongdoing made against Hang-Ups. In the oral presentation, Petitioner seems to have abandoned this request, stating that any such statement by staff would not affect the adverse impact on Hang-Ups' business. Tr. p. 13. Nevertheless, the Commission notes that Petitioner's concern is addressed by staff's policy to respond to the inquiries of interviewees that there has been no finding of wrongdoing on the part of the company about which they are asking questions.

which calls for the production of the most recent backup tape or disk for Hang-Ups' computer system, is inappropriate.

The statute under which the Commission issued the C.I.D. to Hang-Ups is Section 20 of the Federal Trade Commission Act, 15 U.S.C. 57b-1. Section 20(a)(5) defines "documentary material" to include "the original or any copy of any book, record, report, memorandum, paper, communication, tabulation, chart, or other document." (Emphasis supplied.) There is no requirement in the statute that a document created by a computer must have been printed on paper before the Commission can compel its production. Although Petitioner cites no authority for its position, it seeks to impose this requirement on the Commission. The statutory language covers documents of the types listed, without regard to whether they exist only in computer (machine) readable code or on a piece of paper.

Definition 5 of the C.I.D. defines the term "documents" to include material stored in computers, or in computer storage devices, including magnetic tapes or disks. Therefore, the Commission understands the C.I.D. to already call for the production of all documents which fall under Specifications 1 through 7, even if the documents are only available in the form of computer (machine) readable code on a magnetic tape, disk, or other computer storage device. Specification 8 calls, in addition, for all information on the backup tape or disk that is not called for by one of the other specifications. So long as the other information is relevant to the investigation, this request would be permissible.

However, the Commission staff is requesting the production of whatever happens to have been encoded on the most recent backup tape or disk(s), without regard to whether it is in any way relevant to this investigation. The Commission concludes that this is overly broad.

The Commission therefore modifies Specification 8, limiting it to all documents stored on the most recent backup tape or disk(s) that relate, reflect, or refer to the purchase of, sale of, or trade in any relevant artwork included in Definition 4, the definition of relevant artwork, as that definition is modified above. For the purposes of this request, any data bases, data compilations, or spreadsheets included on the backup tape or disk(s) that contain any data entries that relate,

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reflect, or refer to the purchase of, sale of, or trade in such artworks shall be considered a single document, and the entire data base or data compilation shall be produced. By this modification, the Commission does not intend to limit the obligations of Petitioner to search any backup tape or disk(s) for information relevant to Specifications 1 through 7. It may be noted that Direction 7 of the C.I.D. requires that documents responsive to more than one specification need not be submitted more than once. Therefore, to the extent documents contained on the most recent backup tape or disk(s) are produced in response to one of the previous specifications, they need not be produced again.

### III. Conclusion

For the foregoing reasons, the Petition to Limit or Quash the Civil Investigative Demand for Documentary Material filed by Hang-Ups Art Enterprises, Inc. is granted in part and denied in part. Petitioners are directed to comply with the Civil Investigative Demand by close of business on April 30, 1992.

Pursuant to Rule 2.7(f), within three days after service of this ruling, Petitioner may file with the Secretary of the Commission a request that the full Commission review the ruling. Commission Rule of Practice 4.4(b) provides that a document shall be deemed filed when it is received by the Office of the Secretary. *See* 16 CFR 4.4(b). The timely filing of such a request shall not stay the return date of this ruling, unless the Commission otherwise directs.

**Re: Petition of Japan Automobile Manufacturers  
Association, Inc. to Limit or Quash Subpoena  
Duces Tecum, File No. 901-0106.**

April 20, 1992

Dear Mr. Tanaka:

This is to advise you of the Federal Trade Commission's ruling on the Petition to Limit or Quash Subpoena Duces Tecum, which you filed on behalf of your client, the Japan Automobile Manufacturers Association, Inc. ("JAMA" or "Petitioner").

The ruling set forth herein has been made by Commissioner Deborah Owen pursuant to authority delegated under Commission Rule of Practice 2.7(d)(4). Pursuant to Rule 2.7(f), within three days after service of this decision, Petitioner may file with the Secretary of the Commission a request for full Commission review. Whatever briefs or other material the Petitioner wishes the Commission to consider in reviewing this decision must accompany any such request in order to be considered as timely filed. The timely filing of such a request shall not stay the return date set forth in this ruling, unless the Commission otherwise specifies.

The Petition is granted in part and denied in part for the reasons stated below.

**I. Background**

This subpoena arises in the context of the Commission's investigation of certain business practices of Japanese automobile manufacturers operating in the United States to determine whether they are or may be engaged in acts or practices in violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. 45, as amended. JAMA is a trade association whose membership includes thirteen Japanese automobile manufacturers. JAMA is based in Japan and has a United States office in Washington, D.C.

On June 5, 1990, the Commission approved a resolution authorizing the use of compulsory process in this investigation. On February 11, 1992, the Commission issued to JAMA the subpoena



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duces tecum at issue in this Petition. The subpoena contained nine specifications and set forth a March 3, 1992 return date.

Petitioner objected to producing certain documents under the subpoena. On several occasions, JAMA and the Commission's investigating staff discussed JAMA's concerns to limit or modify the subpoena. During the negotiations, staff extended the return date on the subpoena, pursuant to Commission Rule 2.7(c), until March 17, 1992. Staff denied JAMA's request to extend the deadline for filing a petition to quash or limit the subpoena, pursuant to Rule 2.7(d)(3). On March 2, 1992, JAMA filed the instant Petition.

JAMA advances several arguments in support of its Petition: (1) the subpoena is outside the scope of the Commission's authority; (2) the subpoena requires production of confidential documents, including responsive documents that are "politically sensitive;" (3) the subpoena seeks documents that are irrelevant to this investigation; (4) the subpoena is vague and indefinite; (5) the subpoena is unduly burdensome; and (6) JAMA is entitled to reimbursement of expenses incurred in complying with the subpoena. In connection with its burden argument, Petitioner also has requested a staggered production schedule to govern its compliance with the subpoena. Finally, Petitioner has requested that it be permitted to review any translations of foreign language documents obtained by the Commission or review the resume of any Commission-hired translator. JAMA has submitted a Memorandum of Law in Support of the Petition in which it elaborated upon the arguments raised in the Petition.

Commissioner Owen has carefully reviewed the Petition, accompanying exhibits, and supporting Memorandum. She has also considered the oral presentation on the Petition conducted on March 18, 1992. Petitioner's objections to the subpoena are discussed below.

## II. Petitioner's Objections

- A. *Petitioner alleges that the subpoena is outside the scope of the Commission's authority and that the subpoena was not issued for a lawful purpose.*

Petitioner contends that the subpoena "was issued for purposes other than the proper ones under the Commission's authority," and that "the way in which [the subpoena] is being enforced is not pursuant to a lawful purpose." JAMA Pet. at 2, Mem. at 11. In support of these allegations, Petitioner argues that the Commission's delay in issuing the subpoena, "more than twenty months" after the first round of subpoenas, somehow suggests that the Commission issued the subpoena for purposes that are not authorized by law. Petitioner further states that staff's refusal to make "any meaningful concessions" suggests that the Commission's action is not pursuant to a proper investigation, but "to show that the Commission's activities in this area are active, tough, and nonnegotiable. . . ." JAMA Pet. at 2.

This investigation and the attendant subpoena are plainly within the Commission's statutory authority. The FTC Act expressly provides that the Commission may "prosecute any inquiry necessary to its duties in any part of the United States" and has the power to "gather and compile information concerning, and to investigate from time to time the organization, business, conduct, practices, and management of any person, partnership, or corporation engaged in or whose business affects commerce, excepting banks, savings and loan institutions \* \* \* Federal credit unions \* \* \* and common carriers \* \* \*." 15 U.S.C. 43, 46(a). Sections 6 and 9 of the FTC Act, 15 U.S.C. 46, 49, enumerate the Commission's specific investigative powers, including its authority to issue various forms of compulsory process. In particular, Section 9 authorizes the Commission to "require by subpoena the attendance and testimony of witnesses and the production of all such documentary evidence relating to any matter under investigation." JAMA raises no contention that it is somehow exempt from investigation or beyond the Commission's subpoena power.

Petitioner's contention that the subpoena was issued for some improper purpose is both unsupported and untrue. The resolution authorizing the use of compulsory process in this matter clearly announces an investigation of certain business practices of Japanese automobile manufacturers operating in the United States (and of other unnamed parties) in order to determine whether any such person or persons may be engaged in, or may have engaged in, unfair methods

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of competition in violation of Section 5. Seeking relevant records from the trade association that represents these manufacturers is hardly an unusual or questionable action. The subpoena is designed to elicit information that pertains to the lawful purposes of this investigation as cited in the resolution and authorized by law. The fact that the subpoena was issued later, rather than earlier, in the course of a complex investigation is irrelevant.

Petitioner's related argument, that the staff's alleged unwillingness to negotiate somehow demonstrates an improper motive, is similarly without foundation. Petitioner's allegations as to the staff's unwillingness to negotiate the impact of the subpoena are belied by various modifications made by the staff during the course of its discussions with Petitioner's counsel and voluntarily proposed to the Commission at the hearing.<sup>1</sup> Hence, Petitioner's objection to the subpoena on grounds that it is outside the Commission's authority or was issued for an improper purpose is denied.

*B. Petitioner alleges that confidential and "politically sensitive" documents need not be produced.*

Petitioner argues that it should not be required to produce certain responsive documents that contain confidential information. *See* JAMA Mem. at 24-25 (stating that Specification 7 seeks confidential documents analyzing sales, marketing, pricing, promotion or production of automobiles). Petitioner also argues that it should be permitted to produce redacted versions of "politically sensitive" documents for fear that such documents would be turned over to persons other than Commission personnel, producing embarrassment. Hearing Tr. at 18-19. JAMA objects to the production of "politically sensitive" documents for two reasons. First, it states that Commission access to its sources of information without adequate safeguards would be detrimental to its business operations. Second, it maintains that producing such "sensitive" documents without redacting the identities and corporate affiliations of JAMA's sources of information may subject such individuals to potential retaliation.

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<sup>1</sup> *See, e.g.,* note 8, *infra* (discussing staff's suggested modifications).

Petitioner proposed to redact the identities of individuals and produce redacted copies to Commission staff. In addition, JAMA proposed to permit one Commission representative to review the original, unredacted documents in JAMA's offices.

### 1. Confidential information

The confidential nature of certain information does not place it beyond the reach of the Commission's compulsory processes. As the United States District Court for the District of Columbia has stated:

Congress, in authorizing the Commission's investigatory power, did not condition the right to subpoena information on the sensitivity of the information sought. So long as the subpoena meets the requirements of the FTC Act, is properly authorized, and within the bounds of relevance and reasonableness, the confidential information is properly requested and [the subpoena] must be complied with.

*FTC v. Invention Submission Corp.*, 1991-1 Trade Reg. Rep. (CCH) ¶ 69,338 at 65,353 (D.D.C. Feb. 14, 1991), *appeal pending*, No. 91-5174 (D.C. Cir. argued March 9, 1992) (footnote omitted).<sup>2</sup>

In addition, extensive statutory safeguards protect confidential information once supplied. Section 21 of the FTC Act mandates that information obtained by compulsory process during the course of a Commission investigation must be kept confidential.<sup>3</sup> 15 U.S.C.

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<sup>2</sup> There is abundant case law upholding the Commission's authority to obtain confidential documents. *See, e.g., FTC v. Gibson Products of San Antonio, Inc.*, 569 F.2d 900, 908 (5th Cir. 1979); *FTC v. Lonning*, 539 F.2d 202, 206, 209-210 (D.C. Cir. 1976); *FTC v. Tuttle*, 244 F.2d 605, 616 (2d Cir.), *cert. denied*, 354 U.S. 925 (1957); *TK-7 Corp. v. FTC*, 738 F. Supp. 446, 447 (W.D. Okla. 1990); *FTC v. Karr*, 1978-1 Trade Cas. (CCH) ¶ 61,932 (D.D.C. 1978).

<sup>3</sup> Prior to enactment of Section 21 of the FTC Act, the confidentiality of information obtained by compulsory process during the course of a Commission investigation (with the exception of trade secrets and customer identity, which were governed by Section 6(f) of the FTC Act) was governed by the terms of the Freedom of Information Act, 5 U.S.C. 552. The authority granted agencies under subsection (b) of that Act to withhold information is discretionary. The effect of Section 21(b) of the FTC Act was to replace discretion to withhold with a mandatory requirement to withhold.

Section 21 was enacted in 1980 as Section 14 of the Federal Trade Commission Improvements Act of 1980. Senator Wendell H. Ford, the Senate Manager of the legis-

57b-2(b); *See also* 15 U.S.C. 46(f); 16 CFR 4.10. Section 21(b)(6) sets forth the manner in which the Commission may disclose confidential information received pursuant to process to other federal law enforcement agencies and to state law enforcement agencies. 15 U.S.C. 57b-2(b)(6). In particular, the Commission must secure from the requesting law enforcement agency a certification that such information will be maintained in confidence. *Id.* In addition, Section 21(b)(3)(C) provides for the disclosure of documents or testimony obtained by the Commission's compulsory process to congressional committees or subcommittees upon request. In such instances, however, the Commission immediately must notify the owner or provider of the requested information about the congressional access request, if the requested information is designated as confidential by the owner or provider of the information.<sup>4</sup>

These statutory safeguards for confidential information, obtained by compulsory process during the course of a Commission investigation, were enacted, in part, to confirm and facilitate the Commission's ability to obtain confidential information in the course of its investigations and to safeguard that information once obtained.

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lation, provided some background leading to enactment of this provision, stating that:

the problem of obtaining information at the Commission does exist. Businesses frequently take the Federal Trade Commission to court to quash subpoenas, because of the fear that the FTC will release their confidential information to competitors. . . . The FTC Conference Report emphasizes that this provision was adopted due to the special circumstances surrounding the difficulty of receipt of information by the FTC.

126 Cong. Rec. 11914 (1980), reprinted in 7 Kintner, *The Legislative History of the Federal Antitrust Laws and Related Statutes*, 5911 (1983).

<sup>4</sup> During the hearing, Petitioner's counsel conceded that Congress has the authority to subpoena JAMA's documents on its own initiative, and that the Commission is not a necessary conduit for congressional access to such documents. Hearing Tr. at 33. Congress has inherent constitutional authority to investigate, and individual committees and subcommittees are delegated authority by the full House of Representatives and Senate to subpoena witnesses, testimony, and documents. *See McGrain v. Daugherty*, 273 U.S. 135, 174-75 (1927); *See also* Standing Rules of the Senate, 102nd Session, Rule 26(1) (Revised to March 18, 1992) [S. Doc. 102-17]; Rules of the House of Representatives, 102nd Congress, Rule XI, cl. 2(m)(1) (adopted Jan. 3, 1991) [H. Doc. 101-256].

The Commission finds that the subpoena issued to JAMA meets the test enunciated by the U.S. District Court in *Invention Submission*. Accordingly, Petitioner's objection to the production of confidential information is denied. Responsive confidential information is properly requested and must be produced.

## 2. "Politically sensitive" documents

Petitioner states that the primary basis for its objections to the subpoena is that it requires the production of "politically sensitive" documents. JAMA objects to the production of these documents because it believes such documents are "marginally responsive to the subpoena," and because of the "sensitive" nature of these documents. JAMA Mem. at 9. Petitioner has offered to redact the identities and corporate affiliations of individuals mentioned in these documents and to permit a single designated Commission staff representative to review the nonredacted original documents in JAMA's offices. However, Petitioner has failed to offer any legal precedent to support this proposal.

The Commission can compel the production of complete and unexpurgated responsive documents. See *FTC v. United States Borax & Chem. Co.*, 1978-1 Trade Reg. Rep. (CCH) ¶ 61,939 (D.D.C. Feb. 17, 1978); See also *SEC v. Vacuum Can Co.*, 157 F.2d 530, 531 (7th Cir. 1946); *In re Indusco, Inc.*, 15 F.R.D. 7, 10 (S.D.N.Y.1953). Requiring the production of complete, nonredacted documents facilitates the Commission's understanding of such documents. Relevant information often may be useful only if it is presented in the same context in which it was originally created. Further, to sustain the subpoena, a court need only find that the requested documents are relevant to a lawfully authorized inquiry. See *Indusco*, 15 F.R.D. at 10. Accordingly, the Commission has the authority to subpoena any of these "politically sensitive" documents that are relevant to the investigation, and as previously discussed, adequate procedures are provided to protect such information.

Staff recently made a proposal to Petitioner in an attempt to limit its obligations to produce "politically sensitive" documents that might not be relevant to this investigation. Petitioner agreed to staff's proposal that two staff attorneys be afforded an opportunity to

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examine these "politically sensitive" documents for relevancy in the offices of either Petitioner or its counsel. On April 10, 1992, two Commission staff members examined "politically sensitive" documents that were made available for their review in the offices of Petitioner's counsel. From that examination, the staff was able to determine that some "politically sensitive" documents are relevant and would further this investigation. Accordingly, Petitioner is hereby required to produce all relevant documents, regardless of their "political sensitivity."

*C. Petitioner asserts that some other specifications are also irrelevant.*

The courts give relevance a broad interpretation in enforcing Commission compulsory process. As the United States District Court for the District of Columbia recently stated:

Because the need for investigating allegations of unlawful activity is a substantial one, the law requires that courts give agencies leeway when considering relevance objections.

*FTC v. Invention Submission Corp.*, at 65, 351. More particularly, relevance is measured against the agency's general purpose in gathering investigative materials, as described by the underlying resolution authorizing compulsory process. *FTC v. Texaco Inc.*, 555 F.2d 862, 874 (D.C. Cir. 1977), *cert. denied*, 431 U.S. 974 (1977).

JAMA has raised five objections on relevance grounds. First, JAMA opposes specifications seeking information relating to the manufacture of automobiles, as opposed to automobile parts procurement. Second, it objects to the production of documents dating back to January 1, 1988. Third, JAMA challenges Specification 4, which seeks minutes and other documents that describe JAMA meetings. Fourth, it argues that Specification 6 requires the production of documents relating to competition among auto manufacturers in the United States, including documents discussing agreements, coordination efforts, meetings, communications or conversations among such manufacturers. Fifth, JAMA challenges Specification 9, which seeks documents relating to future

plans or efforts to substitute auto parts manufactured in the United States for other parts.

1. Documents relating to the manufacture of automobiles

In its papers, Petitioner challenges Specifications 1(e), 2, 3(c), 6(c) and 7, because they require production of information relating to the manufacture of automobiles. JAMA argues that this investigation focuses only on the procurement of parts by manufacturers manufacturing automobiles in the United States, and that documents pertaining to automobile manufacturing are therefore irrelevant.

During its oral presentation, Petitioner conceded that the Commission's resolution describes this investigation to include the restriction of competition in the United States auto parts industry or the automobile industry.<sup>5</sup> Given this admission, and the clear language of the resolution, its objection to production of plainly relevant information on automobile manufacturing is denied.

2. Documents dating back to January 1, 1988

In its papers, JAMA challenged the relevancy of 1988-89 documents, stating that such documents would be "stale and of historical value only." JAMA Mem. at 12. During its oral presentation, however, Petitioner conceded both the relevancy of 1988-89 documents that discussed auto parts procurement and that the Commission's resolution encompasses the possible restriction of competition in both the United States auto parts industry and the automobile industry. Hearing Tr. at 6-8. At the hearing, JAMA

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<sup>5</sup> At the hearing, Commissioner Owen asked whether it was Petitioner's position that the subpoena is not within the scope of the Commission's resolution authorizing compulsory process, or instead that the specifications are covered by the resolution but are not within the focus of the Commission's investigation. Petitioner's counsel responded that JAMA took the latter position. He further stated that the Commission clearly has the authority under the resolution to seek documents specified in the subpoena. Petitioner's counsel, however, suggested that both the title of this investigation -- "Foreign Auto Parts Investigation" -- and the congressional hearings that preceded it indicate that automobile parts procurement practices are the real focus. Hearing Tr. at 6-8.



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agreed to produce 1988-89 documents that discuss auto parts procurement, but continued its objection to production of 1988-89 documents that discuss automobile manufacturing. Petitioner did not pose a wholesale challenge to the relevancy of 1990-91 documents sought under the subpoena (although it has objected to production of certain documents on other grounds).

Administrative agencies vested with investigatory power have broad discretion to require the disclosure of information concerning matters within their jurisdiction. *Phillips Petroleum Co. v. Lujan*, 951 F.2d 257, 260 (10th Cir. 1991) (upholding agency's right to request and obtain documents more than six years old). Further, a district court must enforce an administrative subpoena unless the evidence sought is plainly incompetent or irrelevant to any legal purpose of the agency. *Id.*, citing *Endicott Johnson v. Perkins*, 317 U.S. 501, 509 (1943).

Petitioner's documents dating back to January 1988 are relevant to this investigation because Japanese-owned automobile and parts manufacturers have been operating in the United States since before 1988.<sup>6</sup> In addition, when Chairman Steiger testified on behalf of the Commission before the Committee on the Judiciary of the United States House of Representatives on May 3, 1990, she publicly announced this investigation. JAMA documents prepared in 1988-89 are therefore particularly important since documents created after this investigation became public may be colored by knowledge of its existence.

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<sup>6</sup> The four-year time period covered by the subpoena is not contemporaneous with the entire tenure of Japanese car manufacturing in the United States. Honda began manufacturing cars in the United States in 1982, Nissan in 1985, and Mazda in 1987. See United States Department of Commerce Study on Foreign Direct Investment in the United States, August 1991, at 19, 55. Japanese automobile parts companies began making substantial investments in parts manufacturing facilities in this country in the mid-1980s. See Department of Commerce Study on Japanese Direct Investment in United States Manufacturing, August 1991, at 19. JAMA began conducting its business in Washington, D.C. in mid-1976 and notes in its Petition and supporting papers that it has played an important role in encouraging Japanese-owned automobile and parts manufacturers to open facilities in this country since 1980. See JAMA Certificate and Application for Certificate of Authority, filed with District of Columbia Department of Consumer & Regulatory Affairs, Business Regulation Administration, Corporations Division (Jan. 23, 1992), at 3.

Counsel for Petitioner admitted during its oral presentation that 1988-89 documents could contain information about a violation of Section 5 during that time period.<sup>7</sup> Such documents are clearly relevant, given the activities of Japanese-owned automobile and parts manufacturers in this country during that period. For the foregoing reasons, Petitioner's objection to producing 1988-89 documents discussing automobile manufacturing is denied.

### 3. Documents pertaining to all JAMA meetings

Petitioner objected to Specification 4 on relevancy grounds. That Specification seeks documents pertaining to all JAMA meetings. Subsequent to the filing of JAMA's Petition and pursuant to Rule 2.7(c), staff modified Specification 4 and limited its scope to the following documents:

All minutes and other documents recording or describing meetings of JAMA and any JAMA chapter, subdivision, office and affiliate that relate to the manufacturing of automobiles in the United States or the procurement of parts by manufacturers manufacturing automobiles in the United States.

*See* Letter from Michael D. McNeely to H. William Tanaka (March 9, 1992) (emphasis added). The Commission now must determine whether the documents sought under this Specification are relevant and whether the modification imposes any undue burden on Petitioner.

As noted earlier, Petitioner has conceded that the Commission's resolution authorizing the use of compulsory process in this investigation encompasses both the automotive industry and the auto

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<sup>7</sup> COMMISSIONER OWEN: Well, now, is it your position that the documents pertaining to this 1988 to 1990 period would not be probative of any wrongdoing that may have taken place during that period?

MR. TANAKA: Well, if it is first of all still information which may be of some historical value.

COMMISSIONER OWEN: Well, it might be historical value about a violation of Section 5, might it not?

MR. TANAKA: Conceivably, yes.

COMMISSIONER OWEN: Hypothetically speaking.

Hearing Transcript at 20.

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parts industry. We find that, as modified by the staff, Specification 4 lies within the bounds of relevance, and this further limitation imposes no undue burden on Petitioner. We therefore adopt staff's modification to this Specification as set forth in staff's March 9, 1992 letter to Petitioner's counsel.

#### 4. Specification 6

JAMA objected to Specification 6 on grounds that it requires production of documents relating to virtually every aspect of its activities, irrespective of their relevance to this investigation. JAMA Mem. at 24. This specification seeks documents relating to competition among automobile manufacturers in the United States, including documents discussing agreements, coordination efforts, meetings, communications, or conversations among such manufacturers.

Petitioner fails to offer, and we cannot determine, any basis for finding such documents to be outside the scope of this investigation. As noted earlier, courts give relevance a broad interpretation in enforcing the Commission's compulsory process. This investigation is to determine, *inter alia*, whether certain persons or entities are restricting competition in the United States auto parts or automotive industry. The Commission's process resolution enumerates certain anticompetitive practices that may have been the means used in restricting competition. These practices include equity exchanges, interlocking directorates, intra-group financial commitments, joint research and development efforts, membership in exclusive management councils or clubs with certain auto parts manufacturers, and predatory or discriminatory pricing or refusals to deal with certain groups or suppliers. We are persuaded that documents that discuss competition among auto manufacturers that manufacture in the United States would likely bear upon whether certain persons or entities have engaged in any of the foregoing anticompetitive practices. Likewise, documents that discuss or relate to agreements, meetings, communications or conversations between or among manufacturers, concerning the manufacture, sale, or distribution of automobiles or parts procurement, would likely bear upon whether

Petitioner or its members have engaged in these practices in restraint of trade.

We find that documents described in Specification 6 are properly within the scope of this investigation and are relevant to whether manufacturers may be restricting competition involving either the auto parts or the automotive industry. Accordingly, Petitioner's objection to Specification 6 on relevancy grounds is denied.

#### 5. Documents that discuss future plans or efforts

Petitioner objects to Specification 9, which seeks documents relating to present or future plans or efforts to substitute auto parts manufactured in the United States for other parts. JAMA contends that future plans or efforts are irrelevant to the conduct at issue, which is alleged to have occurred between 1988 and the present. JAMA Mem. at 24.

We find that documents relating to future plans or efforts are relevant to the Commission's investigation. Future business plans of Petitioner and its members may bear upon how they conduct themselves now. Such documents also could assist in interpreting other documents that describe current or recent business practices. In addition, such documents are likely to shed light on past parts procurement practices. Accordingly, Petitioner's objection to the production of documents relating to future plans or efforts to substitute auto parts manufactured in the United States for others is denied.

#### D. *Petitioner alleges that the subpoena is vague and indefinite.*

Petitioner argues that the subpoena fails to describe material sought with sufficient particularity or definiteness. However, although JAMA asserts that certain definitions and specifications within the subpoena are vague and indefinite, it fails to identify them. We are given no specific language from the subpoena that is purportedly ambiguous or unclear, and Petitioner must provide more than rhetorical flourishes in order to prevail. Accordingly, Petitioner's conclusory and unsupported objection on grounds of vagueness or indefiniteness is denied.

E. *Petitioner argues that the subpoena is unduly burdensome.*

Petitioner objects to the subpoena on burdensomeness grounds for several reasons, each of which is discussed separately in the following sections. Before turning to the merits of Petitioner's arguments, it is instructive to restate the general rules that govern claims of burden.

Our analysis is guided by several standards. First, "the burden of showing that an agency subpoena is unreasonable remains with the respondent." *FTC v. Rockefeller*, 591 F.2d 182, 190 (2d Cir. 1979), quoting *SEC v. Brigadoon Scotch Distributing Co.*, 480 F.2d 1047, 1056 (2d Cir. 1973), *cert. denied*, 415 U.S. 915 (1974); accord *FTC v. Texaco, Inc.*, 555 F.2d at 882. In *Brigadoon*, the Second Circuit added that "where, as here, the agency inquiry is authorized by law and the materials sought are relevant to the inquiry, that burden is not easily met." 480 F.2d at 1056.

Second, as the court stated in *Texaco*, "[w]e emphasize that the question is whether the demand is unduly burdensome or unreasonably broad." It added:

Some burden on subpoenaed parties is to be expected and is necessary in furtherance of the agency's legitimate inquiry and the public interest. . . . Thus, courts have refused to modify investigative subpoenas unless compliance threatens to unduly disrupt or seriously hinder normal operations of a business.

555 F.2d at 882 (emphasis in original) (footnotes omitted).

Finally, in order to meet the burden of showing unreasonableness, respondents must present something more than conclusory and unsupported claims of burden. In *Rockefeller*, for example, respondents prepared and submitted estimates of compliance costs. 591 F.2d at 190. From this, it should be clear that a challenge to agency compulsory process based upon a claim of burdensomeness must be supported by some reasonable, substantiated estimate of the cost of compliance and its relationship to the respondent's ongoing business operations. Unsubstantiated, conclusory claims will not meet the test -- they will not even come close. This requirement is consistent with the Commission's previous rulings on petitions to limit or quash subpoenas or civil investigative demands. See generally Commission

ruling on Petition of Brana Publishing, Inc. to Limit or Quash CID, letter to Lawrence I. Fox, Esquire (March 26, 1992), File No. 872-3209; Commission ruling on Petition of Winnebago Industries, Inc. to Quash or Limit CIDs, letter to Christopher Smith, Esquire (July 26, 1991), File No. 902-3240; Commission ruling on Petition of Megatrend Telecommunications, Inc. to Limit and/or Quash CID, letter to Daniel Shepro, Esquire (June 24, 1991), File No. 902-3281.

1. Effect on normal business operations

Petitioner asserts that compliance with this "unduly burdensome and unreasonably broad" subpoena threatens to unduly disrupt or seriously hinder its normal operations. JAMA Mem. at 19-20. In its oral presentation, Petitioner stated that it suffers from personnel changes every several years, and as a result, its files have not been kept in a systematized fashion that would facilitate the search for responsive documents. However, although JAMA stated in its papers that it has only four employees in its Washington, D.C. office, it emphasized in its oral presentation that manpower would not be a problem because any number of paralegals from its law firm could be enlisted to conduct the document search. JAMA indicated that approximately ninety boxes of documents are responsive to the subpoena. Hearing Tr. at 26.

Petitioner's unsupported assertions are insufficient to warrant a limitation on production of lawfully demanded documents on burdensomeness grounds. In the absence of any specificity in this regard, and given the lack of manpower constraints, Petitioner has not demonstrated that production of the relevant information could amount to the type of burden that would "unduly disrupt or seriously hinder normal operations of a business," as the standard was described in *Texaco*, 555 F.2d at 882. Moreover, Petitioner has failed to offer evidence to substantiate its claim that its normal business operations would be unduly disrupted or seriously hindered. Accordingly, its objection on such grounds is denied.

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## 2. Time for compliance

The reasonableness of the return date is measured under the general rules for evaluating burdensomeness described above. Petitioner offers some substantive information on which to determine the reasonableness of the time allowed for response to the subpoena. Although JAMA did not specifically object to the time for compliance in its Petition, the supporting memorandum states, *inter alia*:

A return date of March 3, 1992 is patently unreasonable. Considering the extremely broad scope of the Commission's subpoena, requiring JAMA to respond in less than three weeks is clearly unreasonable. The subpoena seeks virtually every document in JAMA's custody or control. Thousands of documents, many in Japanese, will have to be reviewed. Thus, it is not physically possible for JAMA to comply by the return date.

\* \* \*

After JAMA counsel explained the unduly burdensome nature of compliance with the subpoena in such a short period of time, Commission staff extended the deadline for compliance with the subpoena until March 17 and denied the scope and other issues raised by JAMA counsel. Under the circumstances, an extension of time until only March 17 is not meaningful.

JAMA Mem. at 14.

Petitioner also has noted that Instruction 5 imposes an additional burden on it in meeting the Commission deadline because some of its documents are in Japanese. JAMA states that an attorney and an interpreter must review each Japanese document to identify privileged material. JAMA agrees to produce all responsive Japanese documents without translation, but with all privileged material redacted. JAMA Mem. at 16.

The Commission is persuaded that the original time period, approximately 21 days, was too short, given the exceptional circumstances of this case, including the nature of Petitioner's business, the nature of the document request, and the hurdles presented in identifying privileged communications among JAMA's foreign language documents. The Commission will extend the date for compliance with the subpoena to May 20, 1992.

### 3. Schedule of privileged documents

Petitioner objects to Instruction 5 of the subpoena, which requires it to state, in writing, individually for each document withheld under a claim of privilege:

its type, title, subject matter, and date; the names, addresses, positions, and organizations of each author and recipient; and the specific grounds for claiming that the document is privileged as well as facts sufficient to support such a claim.

JAMA asserts that this requirement imposes an unreasonable and unfair burden, "tantamount to an arbitrary and unlawful denial of a reasonable opportunity to assert the privilege." JAMA Mem. at 15.

Providing the information required under Instruction 5 is a predicate to asserting a claim of privilege here. Commission Rule 2.8A requires any person withholding material responsive to an investigational subpoena, if so directed in the subpoena, to submit the information called for in Instruction 5. Federal courts impose similar requirements for litigants withholding documents based on a claim of privilege. *See, e.g., Peat, Marwick, Mitchell & Co. v. West*, 748 F.2d 540 (10th Cir. 1984), *cert. dismissed*, 469 U.S. 1199 (1985); *Eureka Financial Corp. v. Hartford Accident and Indemnity Co.*, 19 Fed. R. Serv. 3d 1448 (E.D. Cal. March 27, 1991). The court in *Eureka Financial* explained that:

[t]he purpose of the specific objection requirement is to provide the party seeking discovery with a basis for determining what documents the party asserting the privilege has withheld. Otherwise, how could this opposing party ever know whether the documents withheld under a blanket privilege objection were withheld correctly, incorrectly, or maliciously? [The objecting party] would have the court believe that an opposing party must simply trust the good faith and diligence of the party asserting the privilege.

19 Fed. R. Serv. 3d at 1454.

For the foregoing reasons, and in light of the additional time for compliance granted to Petitioner, *supra*, Petitioner's objection on grounds that Instruction 5 imposes undue burden is denied.



#### 4. Documents available from public sources

Petitioner argued both in its papers and in its oral presentation that a significant quantity of its responsive documents is publicly available (*e.g.*, newspaper and magazine articles, proposed legislation, books, etc.). According to Petitioner, an estimated thirty to forty percent of the roughly ninety boxes of responsive documents encompass publicly available documents. When the Commission issued the subpoena now in dispute, it was unaware that JAMA's files contained such a large proportion of publicly available documents. In an effort to limit any unnecessary burden that might have been imposed on JAMA as a result of the subpoena, staff has excluded certain categories of publicly available documents from the scope of production. We emphasize that the foregoing exclusions of certain publicly available documents from the scope of production have no effect upon any such documents that contain handwritten notations, including interlineations or marginalia. Responsive documents containing any handwritten notations or other alterations must be produced. Petitioner has agreed to these exclusions from production.<sup>8</sup> We find that such exclusions of various categories of publicly

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<sup>8</sup> While negotiating this agreement, Petitioner furnished staff with a list of publicly available print materials that it wished to exclude from the scope of this production. Staff reviewed the list and eliminated those publicly available sources of general circulation to which it has access and reduced the scope of publicly available sources within the scope of the subpoena.

Staff further limited the scope of production by agreeing that Petitioner is not required to produce the following categories of publicly available documents contained in Petitioner's files: (1) congressional correspondence with federal and state agencies; (2) drafts of federal or state legislation; (3) announcements of federal or state legislation; (4) federal or state regulations on automobile emissions or fuel economy; (5) text of congressional hearings; (6) text of press conferences held by U.S. Representatives or Senators; (7) statements made on the floor of the Senate or House of Representatives; (8) reference materials prepared by Senators, Representatives or their staffs; (9) news releases issued by federal agencies; (10) books; (11) studies and legal briefs prepared by federal and state agencies relating to automobile emissions; and (12) annual and quarterly reports of General Motors, Ford or Chrysler.

Following the hearing, staff further sought to minimize Petitioner's compliance burden and extended an offer that JAMA need not produce documents that relate solely to trade balances between the United States and Japan. Petitioner agreed that such documents would be excluded from production.

available documents sufficiently limit the scope of production of publicly available documents. Petitioner is required to produce all responsive documents contained in its files that are available from public sources and not otherwise expressly excluded from production pursuant to its agreement with staff.

5. Documents previously produced to staff  
by JAMA or other sources

Petitioner, citing undue burden, makes two arguments that the subpoena is duplicative. First, it contends that the subpoena requires production of documents that JAMA has already provided to staff voluntarily. Second, Petitioner claims the subpoena is duplicative because it seeks documents already obtained by staff from other sources during this investigation.

No list of the documents JAMA previously submitted to staff was ever created. Such documents have since been integrated with other materials obtained throughout this investigation. In an effort to identify documents previously submitted, staff has reviewed correspondence from Petitioner's counsel that accompanied two voluntary submissions of documents in April and June, 1990. Based on this correspondence, staff reviewed its files and identified approximately twenty-eight documents previously submitted by JAMA. Staff has agreed that Petitioner need not provide these documents again. To the extent that staff identifies additional documents previously submitted by JAMA prior to the final return date set forth below, Petitioner is not required to resubmit such documents.

To the extent that Petitioner can identify documents that staff has previously obtained from other sources during this investigation, such documents must be submitted, unless staff may choose not to require their production. We must allow staff some discretion in this regard, since confidentiality restrictions may prevent staff from acknowledging its previous access to such documents and their source. Furthermore, certain documents, although already given to staff by other sources, must be produced because their existence in JAMA's files may be of independent significance.

F. *Petitioner requests reimbursement for compliance costs.*

Petitioner seeks reimbursement for all "search, retrieval, compilation, and duplication costs incurred in complying with the subpoena." JAMA Mem. at 26.

Pursuant to the subpoena duces tecum, Petitioner must relinquish its responsive documents to the Commission. Section 9 of the FTC Act sets forth the Commission's authority to require by subpoena the production of documentary evidence relating to any matter under investigation. It has been the Commission's practice to accept from a subpoena addressee either original documents or photocopies thereof.

Recipients of subpoenas are expected to bear the cost of compliance, which is considered to be part of the public duty of providing evidence. *See SEC v. OKC Corp.*, 474 F. Supp. 1031, 1037-37 (N.D. Tex. 1979). The Commission has stated, "[a] subpoenaed party is expected to absorb the reasonable expenses of compliance as a cost of doing business, but reimbursement by the proponent of the subpoena is appropriate for costs shown by the subpoenaed party to be unreasonable." *In re ITT Corp.*, 97 FTC 202, 203 (1981). In an interlocutory order in the ITT matter, the Commission ruled that, to determine whether the costs of compliance are "reasonable," the ALJ should "compare the costs of compliance in relation to the size and resources of the subpoenaed party." *Id.*, citing *SEC v. OKC Corp.* Other courts have denied requests for reimbursement because imposing reproduction costs on the Commission would derogate its power to issue administrative subpoenas. *FTC v. Texaco*, 555 F.2d at 883; *See also EEOC v. Maryland Cup Corp.*, 785 F.2d 471, 477 (4th Cir.), *cert. denied*, 419 U.S. 815 (1986).

The Commission finds that no reimbursement for either search or copying costs is warranted in this case. The Commission's Operating Manual states that no reimbursement will be provided for search costs incurred by a subpoena addressee. Furthermore, no reimbursement will be provided for copying costs except in exceptional circumstances. *See* FTC Operating Manual Chapter 3.3.6.5. Petitioner has failed to raise any facts or arguments to suggest that there are exceptional circumstances that would require such

reimbursement for copying. Petitioner has cited no other authority that would require reimbursement for search costs or copying costs on these facts. Moreover, Petitioner's burden has been reduced to some extent by the limitations on the subpoena as outlined herein. For the foregoing reasons, Petitioner's request for reimbursement for search and copying costs is denied.<sup>9</sup>

*G. Petitioner requests a staggered production schedule.*

Petitioner has proposed a staggered production, whereby the initial stage of production would be restricted to production of "a small random sampling of documents." JAMA Mem. at 25. We find this unacceptable because it would permit production of a few documents selected at Petitioner's discretion. Furthermore, it is unnecessary in light of staff's modifications and the Commission's extension of time for compliance.

*H. Petitioner requests that it be permitted to review either the Commission translations of Japanese documents or the resume of any Commission-hired translator.*

Petitioner has stated that it is prepared to produce all Japanese language documents, without translation, but that any privileged excerpts would be redacted. JAMA Mem. at 16. The subpoena, by its terms, does not require Petitioner to obtain translations for its foreign language documents. Petitioner has expressed concern that Japanese language documents are particularly susceptible to mistranslation, and as an additional safeguard, Petitioner requests that it be permitted to review the Commission-translated documents for accuracy. Hearing Tr. at 21-22. Petitioner also has proposed that it be permitted to supply the Commission with a list of prospective

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<sup>9</sup> Subsequent to its Petition, JAMA has stated that it will make all responsive documents available for staff's inspection and copying subject to the disposition of its Petition. See Letter from H. William Tanaka to Michael D. McNeely (March 20, 1992). We note that Commission staff has offered, but is not required, to allow Petitioner to make responsive documents available for duplication by staff.

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translators or to review the resume of any Commission-hired translator. *See* JAMA Mem. at 16-17; *See also* Rule 2.7(d)(2) Statement at 3, accompanying JAMA Petition.

Nothing precludes Petitioner from submitting a list of translators it would recommend; however, neither the Commission nor its staff would be obligated to retain any of the "JAMA-approved" translators. Moreover, nothing precludes Petitioner from obtaining for the Commission its own translations of any documents that it believes are susceptible to mistranslation. Petitioner offers no legal authority or Commission precedent to support its proposals that it be permitted to review either the translated documents or the resume of any Commission-hired translator. We find that such outside involvement in a Commission investigation would be inappropriate and hereby deny Petitioner's proposals. This ruling in no way forecloses any subsequent opportunity Petitioner might have to raise any objections relating to any alleged mistranslation of its documents.

### III. Conclusion

For the foregoing reasons, the Petition to Limit or Quash Subpoena Duces Tecum filed by Japan Automobile Manufacturers Association, Inc. is denied in part and granted in part. Pursuant to Rule 2.7(e), JAMA is directed to comply with the subpoena issued to it by 5:00 p.m. on May 20, 1992.

Pursuant to Rule 2.7(f), within three days after service of this ruling, Petitioner may file with the Secretary of the Commission a request that the full Commission review the ruling. Commission Rule of Practice 4.4(b) provides that a document shall be deemed filed when it is received by the Office of the Secretary. *See* 16 CFR 4.4(b). The timely filing of such a request shall not stay the return date of this ruling, unless the Commission otherwise directs.

**Re: Hang-Ups Art Enterprises, Inc.'s Petition to Limit  
or Quash the Civil Investigative Demand, File No.  
872-3209.**

April 29, 1992

Dear Mr. Steiner:

The Commission has considered (a) the Petition to Limit or Quash the Civil Investigative Demand that you filed on behalf of Hang-Ups Art Enterprises, Inc. ("Petition"), including the affidavits of Max Klein and David Paul Steiner that were filed with it; (b) the March 31, 1992 letter ruling granting in part, and denying in part, the petition; (c) the transcript of the oral presentation on the petition, held February 25, 1992; (d) your request for Commission review filed April 6, 1992; and (e) the Civil Investigative Demand at issue.

The Commission has determined that your request for full Commission review does not raise any new issues regarding the Petition, and that the Petition was properly denied in part and granted in part for the reasons stated in the March 31, 1992 ruling.

The Commission also denies your request for a stay of the April 30 return date for the documents. Accordingly, the full Commission concurs with and hereby adopts the March 31, 1992 letter ruling in this matter. Hang-Ups Art Enterprises, Inc. is directed to comply with the Civil Investigative Demand by April 30, 1992.

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**Re:   Petition of Center Art Galleries-Hawaii, Inc. to Limit  
      or Quash the Civil Investigative Demand, File No.  
      872-3209.**

June 22, 1992

Dear Mr. Bain:

This is to advise you of the Federal Trade Commission's ruling on the Petition to Limit or Quash the Civil Investigative Demand for Documentary Material ("Petition"), which you filed on behalf of your client Center Art Galleries-Hawaii, Inc. ("Center Art" or "Petitioner"), in the above-referenced matter.

The ruling set forth herein has been made by Commissioner Deborah Owen pursuant to authority delegated under Commission Rule of Practice 2.7(d)(4). Pursuant to Rule 2.7(f), within three days after service of this decision, Petitioner may file with the Secretary of the Commission a request for full Commission review. Whatever briefs or other material the Petitioner wishes the Commission to consider in reviewing this decision must accompany any such request in order to be considered as timely filed. The timely filing of such a request shall not stay the return date in this ruling, unless the Commission otherwise specifies.

Commissioner Owen has carefully reviewed the Petition and accompanying exhibits. She has also considered the oral presentation on the Petition conducted on April 8, 1992. The Petition is denied in part, and granted in part, for the reasons stated below. Petitioner's obligations under the Civil Investigative Demand ("CID") are modified as set forth below.

### I. Background

On October 24, 1991, the Federal Trade Commission approved a Resolution Directing Use of Compulsory Process, authorizing the use of compulsory process in an investigation to determine:

whether unnamed persons, partnerships, or corporations, engaged in the sale, advertising, and marketing of fine art prints, may be engaged in unfair or deceptive

acts or practices in or affecting commerce in violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. 45, as amended, including but not limited to, misrepresenting the origins, authorship, edition size, or value of fine art prints.

On January 28, 1992, as part of this investigation, a CID was issued to Center Art, a firm engaged in the sale of fine art at charity and public auctions. On March 3, 1992, Center Art was served a copy of the CID by the United States Marshal's service. By letter dated March 9, 1992, the Bureau of Consumer Protection staff extended Center Art's time to produce documents and file a motion to quash. Pet. p. 2.<sup>1</sup>

Counsel for Petitioner and the staff of the Commission entered into negotiations concerning the CID. Initially, counsel for Petitioner and the staff were unable to resolve the issues raised by Petitioner. On March 30, 1992, counsel for Petitioner filed this Petition. Counsel for Petitioner and the staff of the Commission continued negotiations up to and during the eve of the oral presentation on April 8, 1992. Counsel for Petitioner and the staff were able to resolve many of the issues that were raised.<sup>2</sup> However, several issues remained.

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<sup>1</sup> References to the Petition are cited as "Pet. p." with the appropriate page number. References to the transcript of the oral presentation on the Petition, held on April 8, 1992, are cited as "Tr. p." with the appropriate page number.

<sup>2</sup> Counsel for Petitioner and the Commission staff resolved a number of objections to the definitions in the CID, by referring to the Letter Ruling on the Petition of Brana Publishing, Inc. to Limit or Quash Civil Investigative Demand; Petition of Art Source International, Inc. to Limit or Quash Civil Investigative Demand; and Petition of Brana Enterprises Inc. to Limit or Quash Civil Investigative Demand, File No. 872-3209, issued March 26, 1992 ("Brana Letter Ruling"). Counsel for Petitioner agreed to accept (1) the definition of "artwork," Tr. p. 5; (2) the definition of "cooperating entities," Tr. p. 22; and the limitation on the breadth of the requirement to produce back up computer tapes, Tr. p. 5-6, contained in the Brana Letter Ruling. The Commission adopts the same rulings on these three issues in this Petition as contained in the Brana Letter Ruling.

Counsel for Petitioner withdrew the objection to the use of the term sales scripts, Tr. p. 23.



## II. Specific Objections

*A. Petitioner asserts that the scope of the documents sought by the CID is unduly broad and burdensome.*

Petitioner first asserts that the structure of the CID, given the manner in which Center Art maintains its files, would require the review of virtually all documents maintained by Center Art. In addition, Petitioner originally asserted that the specifications are insufficiently detailed to permit Petitioner to identify the specific documents required under the CID. The issue of the definiteness of the specifications was resolved by agreement between the staff and counsel for Petitioner.

The agreement on the meaning of terms did not fully dispose of the issue of burden. However, counsel for Petitioner offered to provide a subset of the requested documents on a staggered basis to reduce the burden on Petitioner, while, Petitioner asserted, providing Commission staff with the information they required. Counsel for Petitioner's offer addresses both this burden objection, and the reasonableness of the time period of the CID, and will be discussed immediately below.

*B. Petitioner asserts that the CID does not prescribe a return date which will provide a reasonable period of time to assemble the documents.*

Petitioner asserts that because of the volume of documents in the possession of Petitioner, the time period specified in the CID is unreasonably short. Unlike most other petitions to quash subpoenas and CIDs that have come before the Commission, in this case, Petitioner has at least attempted to catalogue the type and volume of documents allegedly in its possession. Petitioner estimates that it possesses over 6,500,000 documents that would have to be reviewed to identify the documents requested by the CID. Pet. pp. 8-10. Furthermore, while the CID requires the production of documents that contain information on artworks by certain artists, Petitioner's documents contain information by artwork title, without identifying the artist in the document. Tr. p. 28. According to Petitioner, this

requires that someone knowledgeable about the artworks and artists review the documents. Center Art argues that it has only one employee and a part-time helper qualified to undertake that search. Tr. p. 28.

In addition, Center Art has a group of documents that, the United States District Court for the District of Hawaii has ruled, were illegally seized in 1987 by law enforcement officers, acting under the leadership of postal inspectors from the United States Postal Service, during an unrelated investigation of Center Art. *In re Motion for Return of Property Pursuant to Rule 41, Federal Rules of Criminal Procedure*, 681 F.Supp. 677 (D.Haw.1988), *aff'd*, *Center Art Galleries-Hawaii, Inc. v. United States*, 875 F.2d 747 (9th Cir. 1989) (hereinafter "Motion for Return"). These documents were returned to Center Art pursuant to the Court's order. However, according to Petitioner, the documents were returned without apparent organization, and were never re-integrated into Center Art's filing system, Tr. p. 10; moreover, according to Petitioner, the boxes are stored in what may be described as a "makeshift" manner. Tr. p. 14. In addition to arguing that these documents should not be produced during the pendency of litigation between Center Art and the postal authorities, discussed below, Petitioner alleges that the condition of these documents is such as to require an enormous amount of time to produce pursuant to the CID.

Leaving aside the documents that were seized by the postal authorities, Petitioner has proposed staggered production of some of the documents requested by the CID. First, Petitioner offers to produce certain files within two weeks of an agreement with the staff. These documents include: (1) documents denoted as artists files; (2) employee tax forms to the extent necessary to identify employees;<sup>3</sup> and (3) receiving logs post-dating the document seizure in 1987. Tr. p. 46-7.<sup>4</sup> With respect to other documents that are maintained in the general chronological files of the company, the Petitioner has offered

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<sup>3</sup> Petitioner agreed to annotate the forms to the extent of their ability with the positions held by the employees. Tr. p. 7.

<sup>4</sup> The Commission understands that the Petitioner has already produced at least some of the documents that were offered within the two-week period.

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to produce documents from its files for two-month periods of each year covered by the CID beginning with the last half of 1987. Tr. p. 12. Petitioner has offered to produce those documents within 60 days. Tr. p. 9.

The Commission staff agree to accept the Petitioner's proposal if they have a right to require the production of additional documents responsive to the CID from the files of Center Art, at a later date, upon sixty days notice to the Petitioner. The Commission agrees with the Petitioner and the staff on the proposed staggered production schedule for documents created after the postal authority seizure and modifies the CID accordingly.

To the extent that they have not already been produced, Petitioner shall produce within two weeks of the date of this letter (1) artists files, (2) employee tax forms sufficient to identify employees annotated to the extent possible with the employee's position, and (3) receiving logs post-dating the document seizure in 1987. Within sixty days of the date of this letter, the Petitioner shall produce all other documents responsive to the CIDs for two months of each year since and including 1987; however, the months of 1987 shall be after the document search. This schedule amounts to twelve months worth of documents chosen from the period 1987 to the present. The staff and Petitioner have already agreed upon November and December of 1987 and January and February of subsequent years.

Petitioner shall be obligated to produce additional documents from its general chronological files if, after receiving the first round of documents, Commission staff request additional production. Petitioner shall be given 60 days notice before it is required to produce additional documents, and is obligated to produce such additional documents as the staff request on the same staggered production schedule, producing documents for any twelve months that post-date the 1987 document seizure, chosen by the staff, every 60 days. The Commission understands that this schedule resolves the objections to the CID by Center Art, except for the documents seized in the earlier postal investigation.

- C. *Petitioner asserts that certain documents that were illegally seized by postal authorities should not be produced pending resolution of the appeal of the litigation between postal authorities and Petitioner.*

On April 15, 1987, postal inspectors led a team of thirty law enforcement officers in a search of six separate Center Art locations. During the search, virtually all of the business records of Center Art were seized. As already noted, the United States District Court for the District of Hawaii found the search warrants overbroad and ordered all of the documents, except those relating to prints attributed to Salvador Dali, suppressed. Motion for Return, at 688. In a subsequent ruling, the United States Court of Appeals for the Ninth Circuit upheld the District Court suppression order. 875 F.2d 747.

The 1987 search of Center Art was part of an investigation that led to subsequent convictions that are now on appeal to the Ninth Circuit.<sup>5</sup> Because of the ongoing appeal, Petitioner argues that the CID should be quashed to the extent it calls for documents that were seized and subsequently ordered returned to Center Art (hereinafter "suppressed documents"). Because the illegal seizure covered virtually all of the business records of Center Art, Petitioner argues that it should produce no documents that pre-date the seizure.

Petitioner does not contend that because the documents were illegally seized, the Commission can never obtain the documents in a civil investigation. Tr. p. 21. Rather Petitioner argues that because of the possibility that the suppressed documents, or information contained in the documents, may reach the postal authorities or government prosecutors prior to a Ninth Circuit decision on the pending appeal, Petitioner should not have to produce such documents until after that decision. Tr. pp. 18-19, 21-22.

In addition, Petitioner alleges that the condition of the documents precludes any complete or systematic search of the files that were seized and later returned. Tr. p. 22. Pursuant to the court ruling that the documents were illegally seized, the documents were returned to

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<sup>5</sup> *United States v. Wiseman, Center Art Galleries-Hawaii, Inc., and Mett*, Nos. 90-10612, 90-10616, and 90-10617 (9th Cir.). The Commission understands that the appeal briefs have been filed, and oral argument is scheduled for July 20, 1992.

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Center Art. However, the documents were never re-integrated into Center Art's filing system. According to Petitioner, the documents are simply kept in boxes. Tr. p. 28. Additional documents from Center Art have been added to the boxes, and Petitioner now estimates there are 6.5 million documents in the boxes.<sup>6</sup> Pet. p. 10. Counsel for Petitioner sampled a few boxes and found that the information on the labels on the boxes may or may not reflect the contents of the box. Tr. p. 10.

Addressing the issue of the burden first, the staff have offered a procedure for the staff to examine a sample of the documents. As an alternative to producing all documents from 1986 and 1987 that are called for in the CID, the staff suggested a two-part procedure, in which Center Art would first produce a list of the information on the labels on the boxes in storage, recognizing that the labels may or may not be accurate. In the second part of the procedure, the staff propose to identify twenty to thirty boxes, and that the production from 1986 and early 1987 be limited to whatever relevant documents from those years are found in the chosen boxes.

At the oral presentation on the Petition, counsel for Petitioner estimated that it would take 15 to 20 days to simply inventory the labels on the boxes, and an additional 60 days to actually produce the documents from the boxes chosen by the staff, beyond the time required to produce the documents from the post-seizure period, 1987 to the present. Counsel for Petitioner made it clear that he was not agreeing to such a schedule because Petitioner still sought a ruling on quashing the CID with respect to the illegally seized documents. However, in the event of an adverse ruling on that issue, such a schedule would not impose an undue burden on Center Art. Tr. p. 35.

The Commission denies Petitioner's request to quash the CID with respect to the suppressed documents. Several considerations justify this ruling. First, Petitioner has not shown that those documents bear on any issue in the pending criminal appeal. Second, Petitioner has shown no conceivable mechanism by which those

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<sup>6</sup> Petitioner claims to have 315 boxes. Tr. p. 10. Experience with the production of large volumes of documents suggests that Petitioner's estimate probably errs on the high side. However, Petitioner's representations are sufficient to convince the Commission that Petitioner possesses a large number of documents.

documents could somehow be used in a criminal case in which the trial is already over; in which, therefore, the record was closed long ago; and in which the appeal will be argued in only a few weeks. Third, any request for access by federal law enforcement authorities would have to be considered and ruled on by the Commission's General Counsel, under a grant of authority that establishes strict guidelines for release of agency records to coordinating agencies. *See* 15 U.S.C. 46(f), 57b-2(b)(6); 16 CFR 4.11(c). Petitioner establishes no basis for assuming that the General Counsel or the Commission's staff would participate, either intentionally or inadvertently, in any improper release of information. Neither does Petitioner establish any basis for the implicit assumption that government prosecutors or other federal law enforcement officials would improperly or illegally seek access to FTC records in knowing or negligent violation of an applicable federal court order, assuming that such an order existed. Absent such a showing, no limitation of the CID, nor any additional restriction on the staff's use of the information, is appropriate.

Based on the information presented, the Commission modifies the CID with respect to the suppressed documents in the following manner. Within 70 days from the date of this letter,<sup>7</sup> the Petitioner shall produce to the Commission staff a list of the boxes of documents held in storage, including in the list, whatever descriptive information is on the outside of the boxes. The staff shall then identify to Center Art no more than 30 of the boxes, and within 60 days of the date staff informs Center Art of their selection, Center Art shall produce all documents contained in those boxes that are responsive to the CID.

Petitioner shall be obligated to produce additional documents from these storage boxes if, after receiving the first round of documents, Commission staff request additional production. Petitioner shall be given 60 days notice before it is required to produce additional documents and is obligated to produce such additional documents as the staff request on the same staggered

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<sup>7</sup> This date is 10 days after the date for production of the documents from the general chronological files discussed in Part II above.

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production schedule, producing documents from up to thirty boxes, chosen by the staff, every 60 days.

#### IV. Conclusion

For the foregoing reasons, the Petition to Limit or Quash the Civil Investigative Demand for Documentary Material filed by Center Art Galleries-Hawaii, Inc. is granted in part and denied in part. Petitioner is directed to comply with the Civil Investigative Demand according to the staggered schedule set forth above.

Pursuant to Rule 2.7(f), within three days after service of this ruling, Petitioner may file with the Secretary of the Commission a request that the full Commission review the ruling. Commission Rule of Practice 4.4(b) provides that a document shall be deemed filed when it is received by the Office of the Secretary. *See* 16 CFR 4.4(b). The timely filing of such a request shall not stay the return date of this ruling, unless the Commission otherwise directs.

**Re: Request of Center Art Galleries-Hawaii, Inc. for  
Review of Ruling by Full Commission on the Petition  
to Limit and/or Quash CID, File No. 872-3209.**

July 30, 1992

Dear Mr. Bain:

The Commission has considered: (a) the Petition on behalf of Center Art Galleries-Hawaii, Inc. ("Petitioner" or "Center Art") to Limit and/or Quash Civil Investigative Demand; (b) the transcript of the hearing thereon; (c) the CID specifications at issue; (d) the June 22, 1992 letter ruling by Commissioner Owen granting in part, and denying in part, the Petition; and (e) your request for full Commission review of that ruling, including the documentary attachments ("Request for Commission Review").

In requesting full Commission review, Center Art focuses its appeal on the ruling that Petitioner must produce some of the documents that were ruled to have been illegally seized during a criminal investigation of Center Art. Request for Commission Review at 4.<sup>1</sup> In its Request, for the first time, Center Art specifically asks the Commission to delay any production requirement with respect to the suppressed documents pending the outcome of a possible retrial that might result from the pending appeal of its criminal conviction.<sup>2</sup> Presenting new material in its Request for Commission Review, Center Art further argues that certain alleged past misconduct by federal criminal investigators or prosecutors demonstrates that suppressed documents, once in the Commission's possession, will be obtained unlawfully by such prosecutors, even in violation of a court order. The Commission denies Petitioner's Request to delay production and, in all other respects, adopts Commissioner Owen's letter ruling.

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<sup>1</sup> See *In re Motion for Return of Property Pursuant to Rule 41, Federal Rules of Criminal Procedure*, 681 F. Supp. 677 (D. Haw. 1988), *aff'd*, *Center Art Galleries-Hawaii, Inc. v. United States*, 875 F.2d 747 (9th Cir. 1989) [hereinafter "*In re Motion for Return of Property*"].

<sup>2</sup> *United States v. Wiseman, Center Art Galleries-Hawaii, and Mett*, Nos. 90-10612, 90-10616, and 90-10617 (9th Cir.).



The Commission finds that these arguments do not differ substantively from Petitioner's previous argument that the seized documents should not be produced pending resolution of the criminal appeal. As stated in the letter ruling on Center Art's Petition, requests for access by federal law enforcement authorities must be considered and ruled upon by the Commission's General Counsel, and in certain instances, the Commission, under a grant of authority that establishes strict guidelines for release of agency records to coordinating agencies.<sup>3</sup> The Commission finds that the appropriate remedy for any improper conduct by government prosecutors hypothesized by Petitioner is not to impede the Commission's independent investigation of Petitioner; but rather for Petitioner to apply to the court with jurisdiction over the criminal case for appropriate relief and, thereafter, to seek sanctions for any violation of that court's order that might have occurred. Accordingly, the Commission denies Petitioner's request to delay production.

In all other respects, the Commission has determined that the Request for Commission Review raises no new issues.<sup>4</sup> The Commission therefore concurs with, and hereby adopts, that ruling.

Under Rule 2.7(f), the timely filing of a request for full Commission review shall not stay the return date specified in the ruling, unless otherwise specified by the Commission. The Commission notes that Petitioner may implicitly seek a stay of the dates for compliance with the CID specified in the ruling.<sup>5</sup> The Commission denies that request. The return dates remain as specified in Commissioner Owen's letter ruling.

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<sup>3</sup> See 15 U.S.C. 46(f), 57b-2(b)(6); 16 CFR 4.11(c).

<sup>4</sup> Center Art further contends that the letter ruling "is based upon incorrect facts," referring to the statement that the district court "ordered all of the documents, except those relating to prints attributed to Salvador Dali, suppressed." Request for Commission Review at 6. Center Art correctly notes that the district court ordered all seized evidence returned, except the Dali prints and other works of arts. *In re Motion for Return of Property*, 681 F. Supp. 617, 687-88. We find that this incidental misstatement of fact concerning the district court's ruling has no bearing on the ultimate conclusions stated in the letter ruling.

<sup>5</sup> See Request for Commission Review at 6, 12 (requesting that the CID "be held in abeyance pending outcome of [Center Art's] criminal appeal").