

IN THE MATTER OF

E. I. DUPONT DE NEMOURS & COMPANY

FINAL ORDER, OPINION, ETC., IN REGARD TO ALLEGED
VIOLATION OF SEC. 5 OF THE FEDERAL TRADE COMMISSION ACT*Docket 9108. Complaint, April 5, 1978—Order, Oct. 20, 1980*

This order sustains the initial decision of the administrative law judge and dismisses the complaint issued April 5, 1978 charging a Wilmington, Del. chemical manufacturer with attempting to monopolize the domestic titanium dioxide market. The Commission holds that since the conduct of the company was "consistent with its own technological capacity and market opportunities," it was "reasonable" and not a violation of law.

Appearances

For the Commission: *James C. Egan, Jr.* and *Robert W. Doyle, Jr.*

For the respondent: *William E. Kirk, Jr.* and *Howard J. Rudge*,
Wilmington, Del. and *Daniel M. Gribbon*, *Covington & Burling*,¹
Washington, D.C.

COMPLAINT

The Federal Trade Commission, having reason to believe that E. I. DuPont de Nemours & Company has violated and is now violating Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. 45, and that a proceeding by it in respect thereof is in the public interest, hereby issues its complaint, charging as follows:

E. I. DUPONT DE NEMOURS & COMPANY

1. Respondent E.I. DuPont de Nemours & Company (hereinafter "DuPont") is a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its principal offices and place of business located at 1007 Market St., Wilmington, Delaware.

2. DuPont is engaged principally in manufacturing and selling diversified lines of chemical products and other products related thereto. In 1976, the company's sales were in excess of \$8.3 billion, its net income was in excess of \$459 million, its assets at year end were valued in excess of \$7 billion, and it ranked 16th on the Fortune 500 list.

¹ Mark I. Levy, Esq., was on the briefs for respondent. He is now Assistant to the Solicitor General, Office of the Solicitor General of the United States, Department of Justice, Washington, D. C. 20530.

3. DuPont is the dominant domestic producer of titanium dioxide pigments (hereinafter "TiO₂"), presently accounting for more than 40% of domestic annual production. In 1976, TiO₂ produced by the company in the United States was valued in excess of \$265 million, yielding the company pre-tax earnings of approximately \$40 million. [2]

4. At all times relevant hereto, DuPont sold and shipped its products throughout the United States, and engaged in or affected commerce within the meaning of Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. 44.

TRADE AND COMMERCE

5. For purposes of this complaint, the relevant market is the production of TiO₂ in the United States.

6. TiO₂ produced in the United States in 1976 was valued in excess of \$600 million.

7. The relevant market is highly concentrated, with the top four firms accounting for more than 80% of production.

8. Barriers to entry into the relevant market are high.

9. Except to the extent that competition has been hindered, frustrated, lessened, or eliminated by the acts and practices alleged in this complaint, DuPont is in substantial competition with other firms in the relevant market.

ACTS AND PRACTICES

10. Since as early as 1972, DuPont has engaged and is now engaging in unfair methods of competition and unfair acts and practices in or affecting commerce by using its dominant position, size and economic power in an attempt to monopolize the relevant market alleged herein. Said unfair methods of competition and unfair acts and practices by DuPont have included, but have not been limited to, the following:

a. adoption and implementation of a plan to expand the company's domestic TiO₂ production capacity by an amount sufficient to enable the company to capture substantially all growth in domestic demand for TiO₂ through at least the 1980's; and

b. adoption and implementation of a pricing policy designed to frustrate the growth of smaller domestic TiO₂ producers and to forestall entry by foreign producers. [3]

EFFECTS AND VIOLATION

11. The aforesaid acts and practices have had and do have, among other things, the tendency and capacity to restrain, lessen, or eliminate competition or to create a monopoly in the relevant market alleged herein, and thus are to the prejudice and injury of the public and constitute unfair methods of competition and unfair acts and practices in or affecting commerce in violation of Section 5 of the Federal Trade Commission Act, as amended.

INITIAL DECISION BY MILES J. BROWN, ADMINISTRATIVE LAW
JUDGE

AUGUST 31, 1979

INTRODUCTION

The Federal Trade Commission issued its complaint in this matter on April 5, 1978 (mailed April 10, 1978), charging respondent, E. I. DuPont de Nemours & Company ("DuPont") with unfair methods of competition and unfair acts and practices in or affecting commerce in violation of Section 5 of the Federal Trade Commission Act, as amended (15 U.S.C. 45).

More particularly, the Commission charged that DuPont had, since as early as 1972, engaged in certain practices in an [2]attempt to monopolize the production of titanium dioxide pigments ("TiO₂") in the United States. The Commission alleged that the practices challenged included, but were not limited to, the following:

- a. adoption and implementation of a plan to expand the company's domestic TiO₂ production capacity by an amount sufficient to enable the company to capture substantially all growth in domestic demand for TiO₂ through at least the 1980's; and
- b. adoption and implementation of a pricing policy designed to frustrate the growth of smaller domestic TiO₂ producers and to forestall entry by foreign producers.

The complaint alleged that DuPont's practices had the tendency and capacity to restrain, lessen or eliminate competition or to create a monopoly in the relevant TiO₂ market and were to the prejudice and injury of the public and constituted unfair methods of competition in violation of Section 5 (see Complaint).

In the notice of contemplated relief that accompanied the complaint, the Commission suggested, among other things, (1) the divestiture of DuPont's De Lisle, Mississippi, TiO₂ production facility

as a viable, independent entity; (2) divestiture of either DuPont's New Johnsonville, Tennessee, TiO_2 facility or of DuPont's Edge Moor, Delaware, TiO_2 facility as a viable, independent entity; and (3) royalty-free licensing of all "technology and know-how" used by DuPont in connection with the production of TiO_2 (Complaint p. 5).

In its answer, DuPont asserted that the complaint failed to set forth a violation of Section 5 of the Federal Trade Commission Act or any other provision of law. As to the challenged practices spelled out in the complaint, DuPont asserted that it has lawfully expanded its capacity to produce TiO_2 in anticipation of increased demand and has at all times lawfully priced its products. Among its specific defenses, DuPont contended that the Commission lacks statutory authority to order the relief set forth in the notice of contemplated relief and that any sanction, such as divestiture or royalty-free licensing, would infringe upon DuPont's right to due process of law as guaranteed by the Fifth Amendment to the Constitution of the United States (see Answer).

Thereafter complaint counsel engaged in intensive discovery of DuPont, DuPont's TiO_2 competitors and certain TiO_2 users. The return on complaint counsel's discovery of nonparties was made available to DuPont. Confidential information was subject to strict protective orders limiting access thereto to DuPont's independent "outside" counsel. During this same period, DuPont engaged in discovery directed to the Commission and, later to its TiO_2 competitors. Following the exchange of trial briefs, witness and exhibit lists, adjudicative hearings [3]commenced on December 20, 1978, at which time complaint counsel presented the bulk of their documentary exhibits. DuPont's requests for *in camera* treatment for certain exhibits were granted (see tr 5-20).²

On January 8, 1979, a hearing was held on the question of the confidential status of certain production statistics of nonparty competitors which were the basis for complaint counsel's statistical charts, the final forms of which are in the record as CXs 220-227.³ Although NL Industries ("NL"), formerly National Lead Co., Gulf and Western ("G&W") and American Cyanamid ("Cyanamid") registered strong objections to certain procedures employed by the administrative law judge resulting in the publication of the preliminary drafts of the charts themselves, the problems relating to the

² All *in camera* treatment for DuPont's confidential documents was granted with the understanding that *in camera* status would expire on the date of the initial decision. On August 10, 1979, the administrative law judge issued an order extending *in camera* treatment for these documents until issuance of the final order by the Commission or unless otherwise ordered by the Commission.

³ DuPont and complaint counsel stipulated that the charts would be considered accurate for purposes of this proceeding only, thus settling all controversies as to whether different methods of calculating values were used by the various reporting sources and all other questions regarding compilation of industry data (CXs 228A-E; 229).

underlying documents were resolved by deleting certain sensitive information not necessary to the adjudication of any of the issues in this matter.

Complaint counsel presented one witness, Dr. William G. Shepherd, Professor of Economics, University of Michigan. His direct testimony was reduced to writing in advance of hearings (CX 218). The cross examination, redirect examination and recross examination of Dr. Shepherd consumed three hearing days (tr 129-582).

On February 12, 1979, complaint counsel's "charts" (CX 220-227) were received into evidence, whereupon complaint counsel rested their case-in-chief (tr 596).⁴ DuPont immediately began its answering case and in six days of hearings introduced the testimony of four top DuPont officials⁵ and the testimony of Elaine Donald, Manager of Marketing Analysis in the Chemical, Dye and Pigment Department (tr 955-1007; 1172-1192).

On February 26, 1979, DuPont presented the direct [4]testimony of Dr. Morris Albert Adelman, Professor of Economics, Massachusetts Institute of Technology (tr 1530-1617). The cross examination, redirect examination and recross examination of Dr. Adelman was heard on March 1, 1979, after which DuPont offered several documentary exhibits into evidence and rested its answering case (tr 1628-1782). On March 16, 1979, the fourteenth and last day of hearings, complaint counsel offered their case in rebuttal, consisting solely of documentary exhibits (tr 1792-1851). DuPont's surrebuttal consisted of two documents that were received into the record by order dated March 26, 1979.

On April 16, 1979, after having been advised that the Official Reporter had delivered the record to the Office of the Secretary, the administrative law judge closed the record for further receipt of evidence, and set a schedule for the filing of proposed findings and briefs. The parties filed their proposed findings on May 16, 1979, and their answering briefs on June 5, 1979. On July 9, 1979, the Commission granted the administrative law judge's request for an extension of time until August 24, 1979, in which to file the initial decision, and on August 21, 1979, further extended this time until August 31, 1979.

Any motions appearing on the record not heretofore specifically ruled upon either directly or by the necessary effect on the

⁴ Respondent's motion to dismiss at the close of the case-in-chief was denied (tr 584-5; 596).

⁵ Crawford H. Greenewalt, past President and past Chairman of Board of Directors (tr 597-658); Irving S. Shapiro, current Chairman of the Board of Directors and Chairman of the Executive Committee (tr 659-868); James H. Baird, General Manager of the Chemicals, Dyes and Pigments Department (created January 1978) and past Assistant General Manager of the Pigments Department (tr 869-954, 1013-1171; 1198-1227); and Harold B. Clark, Manager, Research and Development for White Pigments and Mineral Products (tr 1229-1518).

conclusions in this initial decision are hereby denied. The proposed findings and conclusions submitted by counsel supporting the complaint ("CSCPF") and counsel for DuPont ("RespPF")⁶ have been given careful consideration and to the extent not adopted by this decision, in the form proposed or in substance, are rejected as not supported by the evidence, as argumentative, or as immaterial.

PRELIMINARY STATEMENT

The record in this case consists primarily of documents created in the normal course of DuPont's TiO_2 business. These documents include requests for appropriations for plant construction or expansion, annual reports of the Pigment Department to the Executive Committee, and Pigments Department "Task Force" analyses of the TiO_2 industry and DuPont's TiO_2 business. The record also includes the testimony of some of DuPont's top officials entrusted with making or recommending decisions relating to the TiO_2 business. DuPont's answer to complaint counsel's request for admissions (CX 3) contains many of the evidentiary facts of this case. [5]

There is little dispute as to the actual events that took place during the critical period from 1971 to 1978. The parties are, however, in total disagreement as to the meaning, weight, and importance that are to be accorded certain documents and statements contained therein.⁷ Although a long, and perhaps too detailed, recitation of the facts annotated to the record is included in this initial decision, it is appropriate, I think, at the outset, to summarize the findings and the factual issues raised by the parties.

Summary of the Findings

TiO_2 is a white chemical pigment employed in the manufacture of other products to make them whiter or opaque and it is used primarily by the manufacturers of paints, paper, synthetic fibers, plastics, ink and synthetic rubber.

There are two basic processes used in the manufacture of TiO_2 . The "sulfate" process which uses a sulfuric acid reaction on a relatively low grade feedstock (ilmenite ore or titanium slag) and a "chloride" process which uses a chlorine reaction upon either a high grade titanium ore feedstock (rutile ore or synthetic rutile) or on

⁶ Other abbreviations used in this initial decision are: CX—Commission's Exhibit; RX—DuPont's exhibit; RespBr—Brief in Support of Proposed Findings of Facts and Conclusions for DuPont; CSCReply—complaint counsel's reply to DuPont's proposed findings; RespReply—Reply Brief of DuPont; and tr—transcript of testimony.

⁷ Many of these "events" were intracorporate communications, pertinent portions of which have been set forth verbatim in the "Findings as to the Facts" section which begins at page 8, *infra*.

lower grades of feedstock (primarily ilmenite ore). Only DuPont used the chloride process with lower grade feedstocks.

The so-called sulfate process was developed first. Because it is a "batch" process, as contrasted with the "continuous flow" operation of the chloride process, the sulfate process is not as conducive to scale economies. Following World War II, DuPont, already operating several sulfate TiO_2 plants, decided to try to develop a commercially feasible ilmenite chloride process using the relatively abundant low grade ilmenite ore. By 1953 DuPont had built a fully operational production unit at its Edge Moor, Delaware, facility. By 1958 it had built another plant at New Johnsonville, Tennessee, utilizing its "ilmenite chloride technology." During this period, other TiO_2 manufacturers built sulfate process plants.

In the late 1950's abundant rutile ore deposits were discovered. From 1960 until 1970 all TiO_2 plants constructed (including DuPont's Antioch, California, plant) were designed to use this high grade rutile ore in a rutile chloride process. Until the late 1960's, the overall costs of production were substantially identical in the various processes and except for short periods of time, the TiO_2 market was stable and enjoyed a steady growth. DuPont did enjoy some economies of scale at its large New Johnsonville facility and to a lesser degree at its, by then enlarged, Edge Moor chloride plant. Although only DuPont had the technological "know-how" for a commercially [6]feasible chloride process on the lower grade ilmenite ore feedstock, the relative costs of rutile feedstock and ilmenite were such that none of the manufacturing processes enjoyed a significant cost advantage.

The cost of rutile ore increased dramatically in the late 1960's and early 1970's. At about the same time, environmental regulations required the TiO_2 manufacturers using the sulphate process to embark on costly pollution abatement programs. As a result, DuPont's ilmenite chloride process for TiO_2 placed it at a substantial cost advantage when compared with its competitors bound by either the sulphate process or the high quality rutile feedstock chloride process.

In 1972, DuPont decided to capitalize on this cost advantage by engaging in a growth strategy. It continued the policy of refusing to license its ilmenite chloride technology, accelerated and increased the expansion of its Edge Moor and New Johnsonville plants and initiated plans to construct a large new plant using the advanced chloride technology. DuPont anticipated being able to supply the market place with all of the additional needs for TiO_2 (resulting from growth in market demand of TiO_2 or through withdrawal of its

competitors from TiO_2 production) through the 1980's. The company estimated that it would obtain about 65% of the TiO_2 market by 1985. In 1975, a time of recession, DuPont reviewed its 1972 strategy and decided to continue with its program of "aggressive expansion," including the construction of a new plant at De Lisle, Mississippi.

From 1972 to 1976, DuPont's share of the domestic TiO_2 market rose from approximately 30% to approximately 41% and by 1977 it had achieved a 42% share of that market. However, due to the slowdown in the economy, the total consumption of TiO_2 in 1977 was not significantly different than it was in 1972.⁸ Although the demand for TiO_2 has not increased as expected through 1978, DuPont still forecasts that it will obtain about a 55% share of the market by 1985 and admits that its 1972 growth strategy is still in effect.

Since 1970, no competitor has embarked on a program of expansion and since 1974 DuPont has impeded certain price rise attempts by its competitors.

Complaint counsel's theory of the case is that, in 1972, when DuPont was placed at a substantial cost advantage over its TiO_2 manufacturing competitors through the "fortuitous" increase in the price of rutile ore and the increase in the cost of waste disposal from the sulfate process of manufacturing TiO_2 , it devised an "aggressive growth strategy" by which it [7]planned to capture substantially all of the growth in the TiO_2 market until the mid-1980's. Complaint counsel contend that in implementing this growth strategy, DuPont embarked on an unwarranted capacity expansion program combined with a strategic pricing program whereby it would price high enough to finance its expansion but yet not high enough to warrant competitors to expand.

According to complaint counsel, DuPont's growth strategy unreasonably prevented its competitors from expanding and thus prevented them from building large TiO_2 plants with which to learn the low grade ore ilmenite technology or to take advantage of economies of scale. Complaint counsel assert that by such practices and by the refusal to license its low grade ore ilmenite technology to NL or any other domestic manufacturer, DuPont has unreasonably protected its cost advantage from competitive erosion and, accordingly, it is in a position to gain a monopolistic share of the TiO_2 market in the future.

Complaint counsel admit that each facet of DuPont's strategy is not objectionable taken by itself. Their theory of violation of Section

⁸ Several TiO_2 competitors closed their rutile chloride process plants in the early 1970's, and NL closed its St. Louis sulfate plant in 1978 because of environmental difficulties. Kerr-McGee built a large beneficiation plant to produce synthetic rutile but recently discontinued production due to inefficiencies in the operation.

5 of the Federal Trade Commission Act is the exclusionary effect of DuPont's aggressive growth strategy taken as a whole, and the anticompetitive effects that may result therefrom (see CSCPF pp. 2-3, 85-86, 123-25; CSCReply pp. 5-6).

DuPont admits that its long term strategy was to take advantage of the unique opportunity it had through its cost superiority over its competitors to capture substantially all of the growth in the TiO_2 market until the mid-1980's (RespReply 1, 7). However, it denies that its cost advantage was entirely "fortuitous," but instead was the outcome of its business decision to innovate the low grade ore technology many years before (RespBr pp. 5-6; RespReply A8-9). It denies that its expansion of capacity of existing plants or the building of the De Lisle plant was anything more than preparing to satisfy the increase in demand expected in the TiO_2 market (RespPF # 59; RespReply A21-A23). It also denies that it engaged in any pricing practice that could be considered to be unlawful, and asserts that it did not adopt or implement the strategic pricing asserted by complaint counsel (RespPF #145; RespReply A16-A19).

DuPont claims that there was nothing to prevent its competitors, who are large corporations experienced in the rutile chloride process for manufacturing TiO_2 , from perfecting their own low grade ore technology or building large scale manufacturing plants, if they chose to engage in those areas of investment (see RespPF ##252-273; RespReply A25-A28). DuPont states that it was under no obligation to license its low grade ore technology to NL or any other competitor (RespPF #108; RespReply A24-25). Finally, DuPont points out that the record shows that it has not achieved the increase in market share anticipated in its growth strategy, and that in the competitive atmosphere that presently exists in the TiO_2 [8]market, it is in no position to acquire a monopoly in that market (RespPF ## 209-248; RespReply 8, A6-A7, A33-A36).

DuPont claims that complaint counsel have placed unwarranted emphasis on certain statements contained in "task force" related documents that actually reflected "think tank" or "brainstorming" type exercises, and which, according to DuPont officials, were not relied upon by management in making its business decisions and were not the basis for such decisions (see RespPF ## 180-186; RespReply A18-19). DuPont points to the testimony of its officials to support its view that such decisions did not involve strategic pricing or other exclusionary tactics (RespReply A19).

Having reviewed the entire record in this proceeding, and having considered the demeanor of the witnesses together with the pleadings, the proposed findings, conclusions and briefs submitted by

complaint counsel and counsel for DuPont, I make the following findings of fact based on the record considered as a whole:

FINDINGS OF FACT

1. DuPont is a Delaware corporation with its principal place of business located at 1007 Market St., Wilmington, Delaware. At all times relevant hereto, DuPont sold and shipped its products throughout the United States and engaged in or affected commerce within the meaning of Section 4 of the Federal Trade Commission Act, as amended (see Complaint and Answer ¶¶ 1, 4).

2. DuPont is engaged in the manufacture and sale of a diversified line of chemical and related products which may be generally classified as follows: agricultural chemicals; industrial chemicals; explosives; finishes and coated fabrics; textile fibers; pharmaceuticals; photographic products; synthetic rubber products; polymer intermediates; plastics, resins, coatings and films; and pigments and dyes (see CX 65J, K). DuPont sells primarily to other manufacturers, with a relatively small portion of its products reaching the consumers in the form produced by it (CXs 4-8, 9Z17-18, 65J, K).

3. Until January 1, 1978, DuPont's TiO_2 business was part of the Pigments Department, which on that date was merged with the Dyes and Chemical Division to form the Chemicals, Dyes and Pigments Department (see CX 9Z16; tr 869 (Baird)).

4. The relevant product market for purposes of this case is [9] TiO_2 pigments (" TiO_2 ") (CSCPF #5; RespPF #209).⁹

5. The United States as a whole is the relevant geographic market for purposes of this case (CSCPF #5; RespPF #209).

6. In 1976, DuPont had total sales in excess of \$8.3 billion, assets in excess of \$7 billion and net income in excess of \$459 million. In 1976, DuPont's production of TiO_2 was valued at approximately \$265 million, and sales of such products yielded the company pretax earnings of approximately \$40 million (Complaint and Answer ¶¶ 2, 3; CX 8). In 1976, the value of DuPont's total domestic shipment of TiO_2 was \$257 million (CX 222).

7. In 1976, DuPont had five manufacturing competitors in the domestic TiO_2 market, all of which manufactured a diversified line of products (see CXs 220-227; RX 46, 47, 49, 50, 86). They were G&W, Cyanamid, Kerr-McGee, NL and SCM.

8. TiO_2 is a white pigment used to whiten, brighten and opacify

⁹ The parties have agreed that market shares for purposes of this case are to be calculated from domestic shipments of TiO_2 (CX 223; see tr 1118-19).

paints, plastics, paper, inks, synthetic fibers and rubber compounds (CX 3 ## 1, 2, 4; CXs 9H; 75B; 120Q; 140B).¹⁰ Due to its unparalleled quality as a white pigment, TiO_2 has no commercially satisfactory substitute over a wide range of prices, and no significant future substitutes providing comparable "value-in-use" are foreseen (CX 3 ## 61-63; CX 9H).

9. There are three titaniferous feedstocks used in the manufacture of TiO_2 : (1) titaniferous mineral concentrates—ilmenite, rutile and leucoxene—each of which is derived from a naturally occurring ore of the same name; (2) titanium slag, which is produced by smelting ilmenite concentrate; and (3) beneficiated titaniferous concentrates, commonly referred to as "synthetic rutile" or "beneficiated ilmenite", which are ilmenite concentrates processed and upgraded to be roughly equivalent to rutile concentrates (CX 3 ##29, 30; CX 191A; tr 614 (Greenewalt)).

10. Titanium ores are always found associated with iron with the ratio of iron to titanium dioxide being highest in rock type ores and lowest in rutile ore (tr 614-15 (Greenewalt)). The various titaniferous feedstocks differ in titanium dioxide content, a factor that affects the suitability of the feedstock [10] for a particular process, as well as the amount of waste product produced. The titaniferous feedstocks used in the manufacture of TiO_2 have the following titanium dioxide content: ilmenite concentrate—30% to 80%; titanium slag—70% to 85%; leucoxene—less than 90%; synthetic rutile—90%—95%; and rutile concentrate—90% to 99% (CX 3 ## 31-34; CX 131C).

11. The domestic TiO_2 producers using natural rutile ore currently rely almost entirely on foreign sources, with the only known large deposits of economically extractable rutile ore being located in eastern Australia (CX 3 #45; tr 643 (Greenewalt); see CX 266Z4). The more abundant ilmenite ore is mined in Florida, New Jersey and New York as well as in western Australia (CX 266Z2, Z4). Substantial quantities of titanium slag are imported from Canada (CX 266Z4).

12. For purposes of this case there are *three*¹¹ commercial processes used to produce TiO_2 : (1) the sulfate process; (2) a high-grade feedstock chloride process which may be called a "rutile chloride process"; and (3) a low grade feedstock chloride process,

¹⁰ TiO_2 exists in two different crystal structures, rutile (in no way related to "rutile" ore) and anatase. Anatase TiO_2 is used primarily in the paper industry. Because rutile TiO_2 requires an additional step in the sulfate process, anatase TiO_2 is somewhat cheaper than rutile TiO_2 . DuPont is the only manufacturer able to produce anatase TiO_2 by the chloride process (CX 3, ## 50, 56-59; CXs 17D, H; tr 892-93 (Baird)).

¹¹ From a technical or scientific view there are only *two* processes, the sulfate process and the chloride process. The chloride process, in turn, has two categories relating to the feedstocks used. DuPont's ilmenite or advanced chloride process is not separable so much because of the basic chemistry involved, but because of the advanced technology necessary to create a feasible commercial manufacturing operation using that process.

used only by DuPont, which may be called the "ilmenite chloride process" or the "advanced chloride process" (CX 3 ## 14, 39, 40). In the sulfate process, by which TiO_2 is produced by the digestion of titaniferous feedstocks with sulfuric acid, only ilmenite and titanium slag can be used. In the chloride processes, titanium bearing ores are reacted with chlorine in the presence of carbon to yield titanium tetrachloride which in turn, when combined with oxygen, forms titanium dioxide (CX3 ## 12, 13; CXs 9H, 14Z29-Z31, 58H, 61A; 266M). The rutile chloride process requires the use of rutile or synthetic rutile. The ilmenite (or advanced) chloride process uses feedstocks consisting of a mixture of ilmenite, leucoxene and rutile ranging from 60% to 70% natural titanium dioxide content (CX 3 ## 14, 39, 40; CXs 14, 58E, 72A, 117 *in camera*).

13. The first domestic plant for manufacturing TiO_2 was built by National Lead Co. at Sayreville, New Jersey. It began operations in 1918. This was a sulfate process plant. National Lead built a second sulfate process plant in 1923, at St. Louis, Missouri (see CX 3 #144).

DuPont entered the TiO_2 business in 1931 when it acquired the Commercial Pigment Company which operated a sulfate process TiO_2 plant in Baltimore, Maryland. In 1935, DuPont built a sulfate process TiO_2 plant at Edge Moor, Delaware (CX 3 ## 91, 92, 95; CXs 15A, 241A *in camera*).

Virginia Chemical Company, which by 1947 had become a [11] subsidiary of Cyanamid, began producing TiO_2 by the sulfate process in 1937 at a plant at Piney River, Virginia (CX 3 ## 152, 153).¹²

Glidden Paint Company (eventually acquired by SCM in 1967) started a sulfate process TiO_2 plant at Baltimore, Maryland, in 1956 (see CX 266Z9; CX 3 #167).

In 1948, DuPont completed construction of a chloride process plant at its Edge Moor facility. By 1952 this plant was successfully producing TiO_2 using a low grade ore feedstock (see Finding 16, *infra*).

In 1955, Cyanamid began producing TiO_2 at Savannah, Georgia, using the sulfate process (CX 266Z7).

New Jersey Zinc Company began producing TiO_2 by the sulfate process at Gloucester, New Jersey, in 1956. It became a subsidiary of G&W in 1966 (CX 3 ## 161-162).

In 1958, DuPont started up a new ilmenite chloride process plant at New Johnsonville, Tennessee.

14. In the late 1950's or early 1960's large quantities of rutile ore were discovered in Eastern Australia. All new TiO_2 production

¹² See CX 266Z7-Z10 for a list of TiO_2 producing companies, their plant locations, the process and raw materials used, and an estimated name plate capacity history with planned expansions.

plants constructed after that discovery were designed to use a rutile chloride process (see CX 16A). In 1964, DuPont opened a plant using a rutile chloride process at Antioch, California (CX 266Z7).

In 1964 Cabot Corporation opened a rutile chloride process TiO_2 plant in Astabula, Ohio. In 1965 American Potash Chemical Corporation (subsequently acquired by Kerr-McGee) opened a rutile chloride plant at Hamilton, Mississippi (CX 3 #159; CX 266Z7). In 1966, Cyanamid opened a rutile chloride process TiO_2 plant at Savannah, Georgia and NL opened a rutile chloride process plant at Sayreville, New Jersey. In 1968, SCM opened a rutile chloride process plant at Baltimore, Maryland, and PPG (Pittsburg Plate Glass) opened a rutile chloride process plant at Natrium, West Virginia (CX 3 ## 155-171).

In 1970, Sherwin Williams opened a rutile chloride process plant in Astabula, Ohio. This plant was built for Sherwin Williams by DuPont (see CX 33C). SCM purchased this plant in 1974, with the approval of DuPont.

15. Some of the considerations that led DuPont to undertake development of a chloride process were the desire to achieve greater ore flexibility and to reduce waste disposal problems. The sulfate process can use only those ores that react with [12]sulfuric acid. At that time, there were abundant titanium ores unsuitable for use in the sulfate process. In addition, DuPont wished to use the lower grade ilmenite because it had a readily available supply, originally from India, and later from Florida (CX 16I, J; tr 1417-19 (Clark)).

In the sulfate process approximately three and one-half tons of waste are produced for every ton of TiO_2 . It is difficult to dispose of this waste, a solution of iron sulfate and sulfuric acid.

In contrast, the rutile chloride process yields only one-half ton of waste per ton of TiO_2 . In addition, the principal chloride process waste comes out as dry anhydrous ferric chloride which is easier to dispose of than the acidic waste from the sulfate process. The low grade ilmenite chloride process yields more waste per ton of TiO_2 produced than the rutile chloride process (tr 1071-72 (Baird)).

16. The development of DuPont's ilmenite chloride process, including its progression from laboratory to production plant, proved to be a very difficult technical feat. Although DuPont had demonstrated the practicality of operating small chloride process experimental units, this small scale production experience could not be extrapolated to larger commercial production units. Instead, it was necessary to discard or radically modify many of the small scale

techniques and devise new ones applicable at large scale (CX 241D, *in camera*).¹³ Increases in the size of equipment and the scale of the operation materially changed the operating characteristics (*ibid*).

The original 12,000 ton per year TiO_2 chloride plant at Edge Moor was completed and ready for initial operating trials in the Spring of 1948. It was not until 1951 that the problems with the chloride process were overcome. By 1952 DuPont had a commercially viable chloride TiO_2 production process using low grade ilmenite feedstocks (CX 241E, *in camera*; tr 618, 637, 650 (Greenewalt)). In 1956, the chloride process facility at Edge Moor was expanded with a second chloride unit (RX 3Z1-Z2) and by 1965 the capacity of that chloride facility was 45,000 tons per year. In 1958-59 DuPont built a new chloride facility at New Johnsonville, Tennessee (RX 3Z1-Z2). This new facility was at large scale to take advantage of scale economies and in 1959 DuPont produced 45,000 tons of TiO_2 there (CX 241N, *in camera*; RX 3Z1). Significantly, although it only took six months to move the New Johnsonville plant from initial trials to a viable production facility, it was not until 1963 that the New [13]Johnsonville plant was operating at maximum efficiency (see CX 212J). New Johnsonville's production capacity was expanded to 70,000 tons per year by 1963, to 100,000 tons per year by 1964, and to 120,000 tons per year by 1968. DuPont enjoyed substantial scale economies at the New Johnsonville plant by 1970 (CX 3 ## 20, 21; RX 3Z1).

17. Subsequent to the development of DuPont's ilmenite chloride process, large deposits of rutile ore became available (tr 642-43 (Greenewalt); tr 1420-21 (Clark)). This readily available source of high grade ore encouraged TiO_2 producers, including DuPont (Antioch, California), to build rutile chloride plants during the 1960's (see *Finding 14, supra*). A high grade rutile process plant was considered to yield at that time a better return on investment than a comparable low grade ilmenite process plant, considering the relative cost of the raw materials (rutile and ilmenite), the cost of chlorine, the cost of disposing of waste materials, and the lower cost of the initial investment for a high grade ore plant (tr 1071-72 (Baird); tr 1473-74 (Clark); RX 20E; CX 16A, C).¹⁴

18. DuPont's New Johnsonville ilmenite chloride process plant produced a higher quality pigment than the sulfate plants. On the

¹³ Exhibit CX 241, *in camera*, spells out the development of the chloride process and details many of the technical difficulties encountered. For example, one difficult problem encountered was the development of materials that would hold up in the extremely corrosive environment of chlorine gas at very high temperatures. Mr. Greenewalt summarized the development of the low grade TiO_2 technology (tr 608-26).

¹⁴ The ilmenite chloride process consumes more chlorine per ton of TiO_2 produced and turns out more waste, than the high grade rutile chloride process.

basis of its experience at New Johnsonville, DuPont's officials made the following assessment in May of 1972 (CX 26B):

. . . The success of the Johnsonville process resulted in a rapid increase in share of market as the quality and adequate supply of the improved pigment became the standard of comparison in the industry . . .

19. The 1960's had been a stable and relatively profitable period for TiO_2 producers, although imports caused problems at times (CX 250B; tr 670-71 (Shapiro)). In the 1950's and 1960's the selling price of TiO_2 had remained essentially unchanged. As imports and domestic capacity increased in the 1960's, price cutting became prevalent. And by the end of 1969 the economy began to enter a recession (CX 250B; tr 671, 677 (Shapiro); tr 872-73 (Baird); tr 1232-33 (Clark)).

DuPont's profitability in TiO_2 was extremely attractive in the 1960's. Between 1965 and 1970, the net rate of return (after taxes) was between 10.3 and 15.5%, averaging 12.5%, and was probably greater in the first part of the 1960's (CXs 115G; 26B; tr 671 (Shapiro)).

20. By 1970, there were nine producers of TiO_2 in the United States. As reported on CX 221 (Appendix A), the total ("name plate") capacity for 1970 was as follows (thousands of tons): [14]

	Capacity	%
NL	268	32
DuPont	252	30
Cyanamid	90	10.7
SCM	78	9.3
G&W	43)	8.3 ¹⁵
Cabot	27)	
Kerr-McGee	37	4.4
Sherwin Williams	27	3.2
PPG	18	2.1

As reported on CX 224 and CX 225 (Appendix D and E) the domestic production of TiO_2 by the sulfate and chloride processes was as follows in 1970 (thousands of tons):

¹⁵ G&W and Cabot's capacities have been counted together on CX 221.

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	Sulfate	Chloride
NL	192.9	28.8
DuPont	42.8	161.0 ¹⁶
Cyanamid	47.4	6.4
SCM	48.4	.7
G&W	33.0	-
Kerr-McGee	-	33.4
Sherwin Williams	-	18.4
Cabot	-	21.4
PPG	-	10.3

21. Shortly after 1970, an unexpected shortage of rutile ore developed and the price of rutile ore increased dramatically (RX 20; tr 1421 (Clark)). In early 1972, with the cost of high grade rutile feed stocks at all time levels, some competitive TiO_2 producers curtailed their operations. PPG abandoned its rutile chloride process plant at Natrium, West Virginia, and NL shut down its rutile chloride process unit at Sayreville, New Jersey. In 1972, G&W leased Cabot's rutile chloride process plant located at Astabula, Ohio, with an option to buy, which it exercised in 1975 (CX 3 #166). In 1974, SCM purchased the Sherwin Williams rutile chloride process plant at Astabula, Ohio (CX 3 #142).

22. In early 1970, following enactment of environmental legislation, sulfate producers, reputed to be worst of the chemical industry polluters, were forced to incur substantial pollution related capital investment costs, greatly raising the costs of these plants (CXs 27, 34H).

23. By early 1972, the increase in the price of rutile ore vis-a-vis ilmenite ore and the increased costs for pollution abatement for the sulfate process producers vis-a-vis the chloride process producers, placed DuPont at a significant cost advantage over all of its competitors, an advantage that was [15]further magnified by economies of scale enjoyed by DuPont's New Johnsonville and Edge Moor ilmenite chloride process plants. In addition, because of the shut down of some rutile chloride process plants and reduced imports, a severe shortage of TiO_2 was experienced in the domestic TiO_2 market (CX 3 ## 172-178).

24. In February 1972, DuPont announced plans to complete the conversion of Edge Moor to an all ilmenite chloride facility, thus

¹⁶ DuPont's production of TiO_2 uses the ilmenite chloride process except for 27,000 tons produced at its Antioch, California, plant, which uses a rutile chloride process (see CX 26627-28).

eliminating the last of its sulfate process production (see CX 17B-F). Replacement of its sulfate facility was made feasible through the development of techniques to produce an anatase-type TiO_2 by the chloride process (see CXs 17, 21).¹⁷ It also planned the expansion of the New Johnsonville plant. The capacity available from existing plants after expansion was expected to be sufficient to supply demand to 1979-1981, before additional manufacturing facilities would be needed (CX 21K). DuPont also planned to close its Antioch, California, rutile chloride plant as soon as practicable, thus eliminating any dependence on rutile ore (Ibid.).

25. In 1971, the Pigments Department had created a TiO_2 "Task Force" and "Core Group". The Core Group consisted of the heads of the divisions in the Pigments Department who were responsible for the various aspects of the TiO_2 business. The Task Force was made up of a number of individuals in the Pigments Department at the level below the division heads. The Task Force also created certain sub-groups called "Task Groups" to study various issues. The Task Force reported to the Core Group, which in turn reported to the Pigments Department through Mr. Baird, the Assistant General Manager. In 1972, the Task Force engaged in a broad evaluation of DuPont's TiO_2 business and made recommendations for a long-range strategy, the final details of which were reported to the Executive Committee in May, 1972 (tr 871-75 (Baird); 1231-32 (Clark); see CX 73A).

26. In a document dated May 25, 1972 ("1972 White Paper") A. H. Geil, Vice-president & General Manager, Pigment Department, reported to the Executive Committee on "Opportunities in the TiO_2 Business." The 1972 White Paper, in pertinent part reads (CX 26, 27):

... A number of significant developments have occurred which make it desirable at this time to reassess the outlook for this business and to request your Committee's concurrence with the broad outlines of a program designed to take advantage of significantly enlarged opportunities [CX 26A].

* * * * *

... The price competition of the 1965 to 1971 [16] period narrowed profit margins all producers in the industry, and brought home as never before the realities of business. The most significant of these include:

At substantial scale, the chloride process requires lower capital investment than sulfate process.

Disposal of wastes from the chloride process can be accomplished at a lower economic penalty than is the case with the sulfate process.

¹⁷ Anatase TiO_2 is used by paper manufacturers, and constitutes approximately 20% of DuPont's shipments of TiO_2 (see CX 68J).

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With the exception of DuPont, all other producers by the chloride process require the use of either rutile ore or a beneficiated product having a low iron content. The worldwide shortage of rutile has resulted in an increase in price from \$A65 in 1965 to \$A110 in 1972 [CX 26B].

With completion of the conversion of the Edge Moor sulfate unit to a chloride process operation, DuPont will be entirely committed to chloride process operations at large scale. DuPont's unique ability to operate the chloride process with relatively low cost ilmenite ore provides a favorable operating cost capability. Technology for complete recycle of process wastes with an acceptable economic penalty is progressing. *This combination of factors puts DuPont in a unique position to increase its share of market by a substantial amount.*

Competitive developments during the past six months provide support for this contention. PPG Industries recently announced the abandonment of its chloride process plant because of unfavorable prospective economics. This move coincided with the failure of the Sherbro project in Sierra Leone which was designed to provide the rutile feed for this unit. NL Industries has announced abandonment of its chloride process unit as a result of unfavorable economics. This producer has also terminated its production of an extended titanium pigment under conditions which have alienated some of the customers formerly purchasing that product. Concurrent with these events has been the effect of the government's monetary actions on importation of titanium dioxide. The import surcharge and, subsequently, the devaluation of the dollar have made imported [17]products less competitive in this market.

Assessment of the status of competitive producers leads to the conclusion that sulfate process operators, with the exception of NL Industries, will be unable to cope with waste disposal problems and will shut down eventually. Chloride process producers probably will continue operations, but it is difficult to see how they can cope with waste disposal and generate sufficient funds for major expansion. [CX 26C].

The combination of these factors has narrowed the margin between total production capacity in this country and the level of consumer demand. Pigments Department has been oversold since early in the year, and information from the trade indicates that American Cyanamid and other producers in varying degree are in this position.

For the short term, Pigments Department is taking steps to increase production capacity as expeditiously as possible. The plant shutdown of the Antioch unit has been averted. The expansion at Johnsonville is being expedited in order to achieve partial expansion at the earliest date. Modest capacity increases at Edge Moor are being undertaken. In view of the prospects, however, these are stop-gap measures.

Continued growth of the TiO_2 market is forecast. While the rate of population increase has declined, TiO_2 has demonstrated a consistent increase in per capita consumption. In terms of total impact, TiO_2 can be described as a "standard of living" product. Its per capita consumption has paralleled the per capita consumption of electrical energy, for instance. Technologically, the only threats to TiO_2 as the major product of commerce are silicon carbide and "void hiding" products. It is concluded that silicon carbide would be too expensive to compete. Void hiding can be achieved by entraining tiny air bubbles and TiO_2 particles for certain emulsion paint and paper applications. Realistic potential for these products is included in sales projections. Expected that the domestic industry requirements will grow at a rate of about 10% per year for the balance of this decade. In terms of industry tonnage, this means requirements will be between 1,000M¹⁸ and 1,100M tons in 1980, as compared to

¹⁸ 100,000,000 Tons ("M")

713M tons in 1971. The [18]increase is equivalent to about four fully [CX 26D] developed Johnsonville-type process lines. Even if growth should fall short of these expectations, any reasonable projection will require major expansion in the industry. *It is believed that Pigments Department has the technology, the operating and construction capability, the cash generation capacity, and the waste disposal expertise to capture the major portion of this market growth. If this be true, there is the potential to increase market share from the current level of 31-32% to 56% by 1980, and with the trends persisting to approach 65% by 1985.*

A program designed to seize this opportunity would have specific implications, all of which would have to be resolved quantitatively at as early a stage as possible.

Adoption of a pricing policy which would provide adequate profit and cash generation for expansion.

Decision on configuration of production facilities. It seems obvious that within this time period a fully developed third site would be necessary.

A substantial increase in our commitments for titanium mineral. There appear to be adequate possibilities for large-scale ilmenite supply.

Final decision between waste disposal alternatives including beneficiation of ore, electrolysis or ferric chloride oxidation.

A program to acquire and train about 200 exempt salary personnel by 1977 [CX 26E].

* * * * *

In summary, Pigments Department finds itself in a unique situation. In technology, it is in a position of undisputed leadership not only in this country but in the world. Although the ability to use low grade ores in the chloride process has been known since 1950, no other producer has been able to achieve this capability. Most producers have directed their technical programs toward developing a beneficiated ilmenite which, at best, would show economics similar to rutile. In scale, [19]Pigments Department is the only producer with large units which permit holding unit capital investment at low levels. We are not aware of any other producer with waste disposal technology which can be accomplished without severe economic penalty. These same considerations apply to operations in foreign markets and separate studies to define the Department's participation in these markets are underway.

It is recommended that agreement in principle be granted to the Department to proceed with full development of this program. It is anticipated that substantial additional information will be provided in the Annual Report to be submitted in November 1972. In [CX 26F] succession, appropriation requests requesting authorization of the expenditures necessary to provide the required facilities will provide your Committee with the detailed considerations necessary for your evaluation of each step prior to the authorization of the capital funds required [CX 26G emphasis added].

27. In an "Advice of Action" addressed to Mr. Geil and dated May 31, 1972, the Secretary of the Executive Committee advised [CX 27A]:

Referring to your report dated May 25, 1972, on above subject [Opportunities in the TiO₂ Business]:

After discussion with you, J. H. Baird, Assistant General Manager, C. I. Smith, Jr., Director, R. A. Hageman, Manager, Plants Technical, Production Division, J. E.

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Kramer, Director, Sales Division, Pigments Department, R. E. Manning, General Counsel, C. E. Welch, Assistant General Counsel, R. J. Reichert, Manager, Environmental Control, Government Affairs and Tax Division, Legal Department, and E. F. Ruppe, Director of Environmental Affairs, it was moved and unanimously carried that the Executive Committee agrees in principle with the program presented in the above-mentioned report, and grants authority to Pigments Department to proceed with full development of this program.

28. On June 20, 1972, J. E. Kramer, Director, Sales Division, Pigments Department, forwarded to J. H. Baird, Assistant General Manager, a recommendation by H. C. Ballard that DuPont not increase its TiO_2 pigment prices. Kerr-McGee had announced a 2¢ per pound price increase on rutile TiO_2 , effective July 1, [20]1972. In addition to the reasons stated by Ballard,¹⁹ Kramer stated (CX 28A):

... A price increase would markedly improve our competitors' economics and permit them to expand production facilities and increase share of market.

Attached to the Kramer memorandum was an in-depth analysis of competitive earnings at certain price levels including the current prices at 1¢ and 2¢ price increases (CX 28E). DuPont did not increase its prices and Kerr-McGee reduced its increase to 1¢, thus creating a "two tiered" pricing situation (see CX 70C).

29. On July 12, 1972, the Executive Committee approved the Pigment Department's Authorization request for the expansion of the New Johnsonville plant from 141M to 196M tons per year (CX 29). The Pigments Department reported that this appropriation was for the accelerated expansion program for New Johnsonville spelled out in the 1972 White Paper, i.e., CX 26 (CX 29D, E).

30. In the Pigment Department's Annual Report for 1972 (November), it reported to the Executive Committee that other producers appeared to be unable to expand due to problems associated with small-scale chloride plants needing high grade titanium mineral, waste disposal and lacking advantage of scale and sulfate plants requiring extra processing steps to meet chloride quality and uncertainties with respect to disposal of a large volume of pollutants produced by the sulfate process (CX 34, G, H). The report reiterated the 1972 White Paper objective, including the "adoption of a pricing policy providing adequate profit and cash generation for expansion" (CX 34 I).

¹⁹ The reasons given by Ballard were that most of the large customers were "price protected" through the end of 1972 and that any price increase would affect the small customer. Moreover, this price raise, following a substantial price increase in late 1971, could be in conflict with the Economic Stabilization Act of 1970 and might be considered "gouging" by the trade. Another reason was that Kerr-McGee and G&W were selling TiO_2 pigments at prices lower than DuPont's list price. Ballard stated: "Maintenance of present prices would appear, for the near future at least, to permit a respectable return on investment and adequate generation of cash for expansion" (CX 28C, D).

31. In November 1972, the Pigments Department advised the Executive Committee in connection with a study of foreign TiO_2 opportunities that, although it had received a large number of inquiries with respect to the purchase of manufacturing rights to DuPont's unique technology and proprietary expertise, with the exception of the construction of the high grade rutile chloride plant for Sherwin Williams, it had confined itself to DuPont's domestic expansion, conversion of a Mexican sulfate plant to the chloride process and construction of a plant in Argentina (CX 33C). [21]

32. In connection with an ongoing study of the feasibility of DuPont's entering the TiO_2 pigments market in Europe, A. H. Geil, in a discussion with the Executive Committee on July 18, 1973 (CX 38), indicated that the reasons supporting construction of 110M and 220M tons per year production lines at Brunswick, Georgia²⁰ to start up in 1977 and 1979, respectively (CX 38 L, W), and a 110M ton per year plant in Europe were (1) DuPont's advantage of technology and scale and ability to assume leadership in innovation, quality, service, and price and (2) the developing shortage of TiO_2 pigment. As to the latter reason, it was observed: "If we don't step into the breach and build capacity, one or more of our competitors will" (CX 38C). This document contains a summary of domestic TiO_2 competitors and DuPont's perception of their expansion plans (CX 38F).

33. On November 7, 1973, DuPont announced by corporate news release through its Public Affairs Department that it planned to build a TiO_2 pigments plant at De Lisle, Mississippi, to start operation by 1977. The press release stated that the De Lisle plant would be built with expansion in mind (CX 159 H, I). In this respect the statement reads:

As the plant expanded additional employment opportunities would be created and ultimately it might employ between 1,000 and 1,200 persons. Expansion would depend upon continued growth of the markets for titanium dioxide . . . [CX 159 I].²¹

34. In its 1973 Annual Report to the Executive Committee, the Pigments Department reported that plans were "well under way" to exploit the Department's strengths in the chloride process in both the domestic and European markets" (CX 40C):

. . . The Department continues to capitalize on its position as the lowest cost producer by expanding capacity at the New Johnsonville, Tennessee, and Edge Moor, Delaware plants. Programs are being developed for the start-up of large, new plants in the United States (1977) and Europe (1978).

²⁰ Although the site of "Plant X", mentioned in the 1972 White Paper, was first chosen as Brunswick, Georgia, local environmental considerations required the shift of locale to De Lisle, Mississippi (See tr 1035-36 (Baird)).

²¹ The last sentence of the statement reads: "The plant at Wilmington [Edge Moor] . . . currently is converted to the chloride method in a major expansion."

35. On December 6, 1973, the Pigments Department presented its appropriation request (Part 3) for funds to complete the expansion of the New Johnsonville plant to 228M tons per year. In this request, it reported that the shutdown of the PPG chloride plant and NL's shutdown of its rutile chloride process plant and part of its St. Louis sulfate process plant plus the [22]curtailment of foreign imports had removed approximately 150M tons of finished TiO_2 from the domestic market and had created a severe industry-wide shortage. Due to favorable economics resulting from these circumstances, DuPont changed its plan to close down its higher cost operation at Antioch. The appropriation request was approved by the Executive Committee on December 12, 1974 (CX 41A).

36. In February 1974, DuPont turned down a request by NL for a license for its ilmenite chloride technology (CX 3 ## 136, 137; CXs 44C, D; 46A, D).

37. On March 27, 1974, the Executive Committee approved the Pigment Department's appropriation (Part 3) request for funds with which to complete the conversion and expansion of the Edge Moor plant to 167M tons per year capacity (CX 49). In its request, the Pigment Department stated (CX 49 G):

The market for titanium pigments has been continuously growing while industry capacity has been relatively stagnant, forcing allocation during the past two years. This coupled with rising raw material, labor and pollution abatement costs for the industry has accelerated selling prices beyond that forecast in the Part 2 [appropriation request]. Now that the Phase IV price controls have been modified on titanium pigments an additional increase of at least 3.5¢ per pound is expected almost immediately and thereafter an increase of about 1.75¢ per year. For comparison, the unit sales price expected in the third year of this project is \$36.77 per cwt. versus \$6.43 used in the Part 2 calculation (1Q-1974 rate is about \$28/cwt.). Because of the department's advantages over competition—market knowledge, advantages of scale, advanced chloride technology, ability to use lower cost ilmenite ore and development of practical waste disposal schemes—the selling price increases will more than offset anticipated higher costs. As a result, DuPont's titanium dioxide profit margin will soon rise to or exceed historical levels and the return for this project increases accordingly.

8. On July 10, 1974, the Executive Committee approved the Pigment Department's first appropriation request (Part 1) for \$8 million for "partial design, preparation of a current appraisal available for full funds authorization and cancellation charges on short-term delivery equipment" at the proposed De Lisle plant (CX 49). In its appropriation request, the Pigment Department reported the expansion projects at the three operational TiO_2 plants—Edge Moor (30M annual tons) Edge Moor 1 (167M annual tons) and Johnsonville (252M annual tons)—and added "when these

expansions are complete in 1977, capacities at these sites will be at their desired practical limits" (CX [23]54C). The request goes on to reiterate:

The market for titanium pigments has been continually growing while industry capacity has been relatively stagnant, forcing allocation during the past two years. The opportunity now exists for DuPont with its marketing knowledge and technology to launch a major expansion program. This will require development of a new plant site. [CX 54C]

39. On July 16, 1974, DuPont issued a press release on the De Lisle project. This press release stated that this plant, scheduled to begin operations in 1977, was planned with further expansion in mind. The press release also reviewed the expansion under way at Edge Moor and New Johnsonville (CX 159 F, G).

40. In early 1975, DuPont's competitors announced a 5¢ price increase. DuPont did not raise its prices and its competitors' price increases were rescinded (see CX 201A).

41. In 1975, due to the precipitous downturn in business in late 1974 (See CX 71F), the Pigments Department Task Force undertook a reexamination of the TiO_2 growth strategy outlined in the 1972 White Paper (CX 73A). K. H. Quisel and R. L. Heffelfinger stated that the current (1975) strategy was, among other things, fast growth from 1976 to 1980 and to obtain a 52-55% share of the domestic TiO_2 pigment market. It was thought that "as long as DuPont is aggressive, only U. S. expansion will be Kerr-McGee's 50M tons per year plant." This was attributed to "high waste disposal costs, low cash for some, and inability to build large plants." As to price, it was thought that a 3¢ per pound per year increase would yield the necessary return for De Lisle and also give competition generally adequate return to stay in business (CX 76A, B).²²

42. On July 15, 1975, DuPont announced a 3.5% price increase on its TiO_2 pigments, which was immediately followed by its competitors, effective in early August (CXs 78; see CX 161C, CX [24]201; RX 2).

43. In the summer of 1975, Pigment Department's task force engaged in an in-depth analysis of the TiO_2 business, the evolution of DuPont's market strategies and detailed projections on various alternative business plans (See CX 85A, B, 91, 92). The completion of

²² In summarizing the major "changing points" in TiO_2 strategy it was observed (CX 76D):

Price

In 1972, strategy appears to have been to maintain prices at a point to provide cash for DuPont expansion, but limit competition's ability to expand.

Price forecasts have gradually increased as magnitude of new JV, EM, and De Lisle investments became apparent.

Current pricing forecast should keep competition in business without enough cash to expand.

this study was accelerated when the Executive Committee called for a reappraisal of certain investment projects including the De Lisle project.²³

44. On October 10, 1975, the Pigment Department made a presentation to the Executive Committee to justify continuation and completion of the De Lisle project (CX 116). The presentation compared four alternatives: (1) the proposed De Lisle program ("De Lisle"); (2) an alternative program that would provide the maximum reasonable time deferral of the proposed De Lisle program and its potential consequences ("Delay"); (3) an alternative program, if any, that would be accomplished at less cost, and the consequences thereof, ("Maintain Share"); and (4) the consequences of essentially abandoning all expansion programs ("No Expansion").

In connection with the De Lisle proposal, the Pigment Department, after reporting on DuPont's unique cost advantages over its competitors²⁴ stated (CX 116 G, H, I, J):

* * * * *

The second half of the reason for this TiO₂ program concerns TIMING.

In 1971 and 1972, DuPont launched a program to aggressively gain a commanding position in the market place. This program has been going according to plan. On this *FIFTH CHART* are listed reasons why now, as a result of that plan, is a unique point in time for our TiO₂ business.²⁵ [25]

We are the lowest cost producer in the world. A major part of this is based on low-grade ore and on scale of operation. We estimate that in ten years competitors will have solved these problems, particularly if they are encouraged to expand.

We have publicized through the various press releases and speeches of Company officials that we plan to expand. This has made us into the most-favored supplier in the eyes of customers who depended upon us in the last shortage and are planning on our covering them in the next shortage. If we drop out of this leadership position by cancelling De Lisle we foresee we will lose some of our position as most-favored supplier.

Because the big accounts must depend upon us as their major supplier, they also depend upon us to develop products which meet their needs. The way this has been carried out is that each new grade is generally developed with one or more big accounts. This cuts the lag time on grade introduction to almost zero. If we lose our credibility with these accounts [CX 116 H] by cancelling De Lisle, we will lose at least a part of this special product development relationship.

One of our major strengths lies in the ability to operate large-scale plants. This

²³ Due to a general business slowdown following the oil embargo, and a tight cash flow position, DuPont found it necessary to curtail certain investment projects. On October 10, 1975, it heard approximately 10 reports relating to projects which had theretofore been deemed to be neither expendable nor nonexpendable (Category 3). In effect, the Pigment Department's De Lisle project was competing with other projects for the limited investment funds available (tr 711-717 (Shapiro); RX 16).

²⁴ "The most significant points are chloride is cheaper than sulfate; large chloride plants are cheaper than small; and DuPont has at least a 5¢ (and frequently much larger) advantage over its competitors" (CX 116 G).

²⁵ "TiO₂ strategy; Unique Point in Time; Lowest Cost Producer; Customers Expect Expansion; Product Development Enhanced by Leadership; Market Will Support a Big Plant Now But Not Later; New Site Has Value; Market Share Has Value" (CX 116 U).

gives us significant cost advantages. This advantage, however, incurs large capital outlays when a major expansion is undertaken. This means the plant must be operating at a high rate within 3-4 years to be economically viable.

TiO₂ sales quantities have long followed GNP and Pigments and the Economist's office feel this relationship will continue during the period for which we are strategizing. Over this time, we expect TiO₂ use in the U.S. to grow at better than 5% (while the recovery is returning us to the long-term trend line), but then drop to about 2.7% in the 1980's. This means that in the immediate future we can fill a De Lisle in a little over three years; whereas by the end of this period, filling such a large plant will take about five years.

A new site has value to Pigments. Pigments now has a very large portion of its production for the paint [CX 116I] industry concentrated at Johnsonville. De Lisle would help minimize for our customers the risk of any kind of disturbance that was local in nature. Delays at De Lisle continuously increase our vulnerability to [26] opposition in obtaining permits. If we delay by about three years from our original 1975 funding, we will have lost our current political support and, with it, our ability to keep permits active.

Market share has value to us. In capitalizing on our strengths, we will increase our share. [CX 116 J]

With respect to the "Delay" alternative, Pigments reported that "a one-year additional delay in funding to 1977 represents the maximum time delay," the principal disadvantage being lost sales and earnings (CX 116 J).

With respect to the "Maintain Share" alternative, the Pigments Department outlined its considerations to alter some plans for completing Edge Moor to keep DuPont's grade structure in balance with the market and a "reamout" at Johnsonville, increasing capacity to 252M tons per year. (For an explanation of the term "reamout" see tr 1084 (Baird)). It concluded (CX 116M):

In the market place, as soon as it would become clear that DuPont had abandoned De Lisle, we would expect to see an additional price increase of about \$2/cwt above our preferred case ["De Lisle"]. In addition, we would expect Kerr-McGee to build the plant they announced at Mobile but haven't started. We would also expect several others to expand. This might well be American Cyanamid and Glidden who have both told customers they would like to expand but haven't moved yet, apparently because of the pricing situation. When these expansions start up about 1980, we would expect a temporary oversupply which would cause some erosion of prices, so that by about 1982 we would expect to see the price drop about \$2/cwt below the base case price structure.

Finally, with respect to the "No Expansion" alternative, the Pigment Department stated (CX 116N):

Abandoning the TiO₂ expansion program would mean simply maintaining the three existing plants. During our strategy re-analysis, we did not give this case the finely structured study that we gave the other cases. For purposes of this presentation we've assumed that our plants would fill rapidly and stay full. We've also assumed

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pricing equal to the previous alternative. In fact, this is probably overly optimistic because badly-timed expansions would probably periodically cause erosion of prices.

The Pigment Department summed up its presentation as follows (CX 116“O”): [27]

In summary, TiO_2 offers DuPont a low risk, high return business opportunity . . . [i]t is noteworthy that Reports on Accomplishment for TiO_2 projects over the last ten years have averaged 112% of forecast.

45. In its Annual Report to the Executive Committee dated December 1, 1975, the Pigments Department stated in pertinent part, with respect to its TiO_2 business (CX 120 Q):

Business Description

. . . In spite of shortages in 1973-1974, only DuPont and Kerr-McGee have indicated plans for major expansions. DuPont's business is strongly focused on domestic markets where it is the undisputed leader because of superior manufacturing technology; lowest costs; good protection in titanium ore, a major raw material; experience and resources to respond rapidly to market opportunities; and a 41% market share.

Business Objective and Financial Goals (1975-1980)

The business objective is to complete implementation of the growth program outlined to the Executive Committee in the Department's report of May 25, 1972. This is, in essence, to exploit a unique opportunity to capture most of the domestic industry growth into the early eighties, thus increasing market share above 52% and operative earnings to about \$200MM per year.

General Business Strategy

The strategic plan to implement the growth program capitalizes on the internal strengths and competitive factors which have yielded DuPont a position of leadership. Key elements are:

Start-up new facilities at De Lisle, Mississippi, in 1978. This expansion, as the recently completed ones at Johnsonville and Edge Moor, exploits the ability to operate large scale plants utilizing low grade, lower cost titanium ore.

Continuation of process innovation and improvement programs to maintain position as lowest cost producer. This work will affect both the product line and the development of new, more unique products. For example, the De Lisle design incorporates new lower cost (both manufacturing and investment) finishing technology. [28]

pricing policy to bring operative margins to 25-35%. Prices are forecast to increase about 6% annually; assessments of competitor's costs indicate this is consistent with price increases they will require to recover increasing costs of ore and waste disposal. continued focus on domestic opportunities . . . In addition there are world wide opportunities to license DuPont's chloride technology, capitalizing on it while it is still valuable to generate additional cash flow.

46. In early 1976, after NL and Cyanamid announced a 4¢ per pound price rise on rutile grades, of TiO_2 and a 3¢ per pound increase anatase, DuPont announced a 3¢ price rise on all products and all

competitors adjusted their prices to match DuPont's (CXs 200A, 201A). R. J. Fahl, stated in a memorandum to J. E. Kramer proposing the 3¢ increase, that this increase "would not shrink the market significantly and would permit our projected market growth and penetration to continue" (CX 200A).

47. On June 16, 1976, the Executive Committee approved the Pigments Department's appropriation request (Part 3) for funds to return the De Lisle project schedule to a first quarter, 1979, turnover, for visible site preparation, and an expansion of the proposed plant from 130M to 150M tons per year (CX 133). Based upon an analysis of competitive capabilities to expand versus DuPont, Pigments Department reported (CX 133M):

Analysis of cost and investment data indicates that most competitors are operating at a disadvantage versus DuPont and that a major expansion by them would be financially marginal, particularly if DuPont proceeds with De Lisle. The one possible exception is Kerr-McGee which now has an estimated 6% of the industry capacity. Earlier they announced a 50M tons-per-year pigment expansion and a 100M tons-per-year beneficiated ore facility to be located near Mobile, Alabama. Construction has started on the beneficiation plant, but the pigments expansion was postponed indefinitely in October 1975. *It is expected that their expansion plans will be determined largely by the rate of recovery of the TiO₂-consuming industries and by their estimate of additional market share available which could be influenced by DuPont's announced plans and visible actions at De Lisle.* We believe it unlikely they will have additional capacity before 1980. In our industry capacity forecasts, we have assumed they will have a 50M tons per year plant operating in 1981 [Emphasis supplied]. [29]

As to selling price trends, the Pigments Department stated (CX 133M, N):

Industry selling prices were increased by 3.5¢ per pound (9%) in August 1975, even though the industry was operating at only 70% of capacity, and again by 3¢ per pound (7%) in March 1976. These increases were above those forecast in the Part 2 [appropriation request]. In our discussions with customers, we have been candid relating the need to increase prices to maintain our expansion activities and their acceptance of the recent price increases is indicative of their understanding of the impact of increased costs.

Prices are forecast to increase 5-7% annually from current levels through the early 1980's. Several elements are at work to sustain these rates of increases. We estimate the inflation in the general economy [CX 133M] coupled with more stringent pollution control requirements will force competitive costs up about 8% per year over the next several years. The old sulfate plants cannot be expected to achieve productivity increases to offset these increased costs. Selling prices for project return purposes are considered to be conservative estimates because they do not allow for full recapture of estimated competitive cost increases of the sulfate producers by as much as two cents per pound. *The high investment cost required to provide additional capacity should prevent overcapacity developing to depress prices* [Emphasis supplied].

48. On June 21, 1976, DuPont issued a press release on the

authorization of the \$20 million additional for the 150M ton per year TiO_2 plant it expected to begin building at De Lisle in 1977, and have operating by 1979. Although pointing out that the 1979 start-up was two years behind the original schedule, the press release reported that DuPont had said in early 1975 "it would pace construction to the recovery in the economy following the downturn which began in the fourth quarter of 1974" (CX 159 B).

49. On November 10, 1976, the Executive Committee approved the Pigments Department's appropriation request (Part 4) for funds to complete the expansion of Edge Moor including the installation of Simultaneous Drying and Grinding equipment (CX 198 B-E, I).

50. On March 23, 1977, the Executive Committee approved (CX 158A, 198A) the Pigments Department's appropriation request (Part 4) for full funding of the De Lisle project. Concerning competitors' capabilities to expand versus DuPont, the Pigments Department reported (CX 158N, O): [30]

Kerr-McGee remains the only competitor to announce a major expansion to start up before 1981. They planned to build a 50M tons per year TiO_2 plant at Mobile, Alabama with a 100M tons per year ore [CX 158N *in camera*] beneficiation plant at the same site. The beneficiated ore was to supply both their new plant and the existing Hamilton, Mississippi plant. Their ore beneficiation plant started up last year, and is expected to be at normal operating rates by this spring. *Our competitive cost-analysis program shows it would be financially more profitable for them to sell the beneficiated ore than to build a plant to convert it to TiO_2 pigment.* We believe the earliest they could start up a chloride line would be 1980 and have included this in our capacity forecasts.

NL Industries has announced plans to start up a chloride plant in the early 1980s, after the technology has been developed in Germany. If this plant is built, we believe it will replace their Sayreville, New Jersey sulfate plant, which was the highest cost domestic line, and was shut down from February 1976 to February 1977 because of a bitter strike. Their permit to barge acidic waste to the ocean expires in 1981.

The five domestic sulfate plants (which provided over 60% of 1976 competitive capacity) dispose of their acidic waste as follows:

<i>Plant</i>	<i>Disposal Method</i>
NL-St. Louis	River discharge
NL-Sayreville	Ocean dumping
American Cyanamid-Savannah	Neutralization-gypsum manufacture
SCM-Baltimore	Neutralization-river discharge
Gulf & Western-Gloucester	River discharge

No environmentally sound, economical way to handle these wastes has been developed. As pollution regulations become more strict, these plants will face rapidly increasing costs. The NL St. Louis plant was sued by the federal government in January because it did not build a treatment plant for its acidic discharges, as required by the current EPA permit. The suit seeks daily fines of \$10,000 until the treatment plant is operating and more than \$400,000 for past pollution. We believe

sulfate plant shutdowns are more likely than any [31]additional expansions [Emphasis supplied].²⁶

51. On April 4, 1977, DuPont announced the authorization of more than \$110 million in additional funds to continue construction of the De Lisle plant. DuPont stated that the plant was expected to be operational in 1979 (CX 159A).

52. In May 1977, SCM and NL announced 5¢ per pound price increases on TiO₂ pigments. Shortly thereafter DuPont raised its prices 2¢ per pound and its competitors' rescinded their 5¢ price increases and matched DuPont's new price (see CX 161-166F).

In a memorandum to A. H. Geil and J. H. Baird dated May 6, 1977, J. E. Kramer stated that the rationale for a 2¢/lb. increase vis-a-vis 5¢/lb. was as follows (CX 163A):

Unit cost of manufacture have and are projected to increase only 2.2¢/lb between 3/76 and 3/78 while selling price will have increased 5¢/lb.

Worldwide imbalance of supply and demand estimated to be + 350,000T. High prices would invite off shore producers to have larger U.S. market share.

Reverse downward trend of market share; we do not need De Lisle if we can not capture market growth.

Deterrent for further reduction of TiO₂ in end use products.

Smaller price increases more palatable to our customers and can be more readily passed on to customer [Emphasis supplied].

53. In its 1977 Annual Report to the Executive Committee, dated December 5, 1977, the Pigments Department reported the following pertinent information relating to its TiO₂ pigment business (CX 196F, G, H, W):

* * * * *

[32] *The domestic titanium dioxide pigment (TiO₂) business has been experiencing increasing problems of oversupply and price-discounting.* The principal contributor is the continuing sluggish recovery of the European and third-world economies. This is encouraging a number of foreign producers to export to the United States at below market prices and in volumes estimated to be 62% ahead of last year. *Softening domestic demand is aggravating the situation.*

In spite of these problems, the TiO₂ business is expected to achieve record sales volumes and pretax earnings in 1977. *Based on government data and reports from customers, it appears several of the larger domestic producers have been more adversely affected by the imports with sales significantly below 1973 levels. Our cost estimates indicate they may be operating at break-even or worse.*

The situation has caused the forecast achievement of prices and volumes presented in the De Lisle project to be one year behind schedule. A price increase of two cents to 48.5 cents per pound for bagged rutile pigment announced around mid-year will not

²⁶ In analyzing the possible sales forecasts, the Pigments Department states: "Shutdown of a single domestic manufacturing unit, or the failure of Kerr-McGee to follow through on its announced expansion plans, would increase DuPont's sales comparable to the increased demand [as forecast in the most optimistic economic conditions] (CX 158R).

Initial Decision

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become fully effective until the end of the year. Prices in Europe are equally sluggish running five to eight cents less than U.S. prices. [CX 196F *in camera*]

* * * * *

DuPont remains the only TiO₂ producer pursuing an active expansion program. Trade comments would indicate several domestic competitors may be having profitability and environmental compliance problems which could lead to capacity reductions.

* * * * *

The current sluggishness of the TiO₂ business should not delay the De Lisle construction activities. A delay would have minimal effect on cash flow as \$140MM (of \$182MM authorized) has been expended or committed. Even under the pessimistic assumption that sales volume and prices slide two years versus project projections, the TiO₂ business would still break even in 1979 (the start-up year) [CX 196G].

* * * * *

A better choice is continuation of construction in the most economical way (e.g. no overtime or additional hiring to make up [33]construction delays), leaving the option of temporary mothballing at time of completion. This approach could delay start-up now scheduled for the first quarter of 1979, by at least one to two quarters. Further study by Engineering will provide more definitive schedule information by mid-December. This construction route offers the advantage of having the plant available to meet a sudden surge of demand brought about by a turn around in the world economic situation or by removal of TiO₂ capacity from the market due to competitive environmental or profitability pressures. [CX 196H]

* * * * *

The business objective is to complete implementation of the growth strategy and program outlined to the Executive Committee in the Department's report of May 25, 1972. This is, in essence, to capitalize on a unique opportunity to capture most of the domestic growth into the early eighties, thus increasing market share above 51% and operative earnings to almost \$150MM per year by 1982 [CX 196W; Emphasis supplied].

54. The cost advantage that DuPont has over its competitors has several parts. DuPont is the only TiO₂ manufacturer that has built and operates large scale, low grade ore, ilmenite chloride process plants (see CX 40F-G). This gives DuPont the advantage of sale economies as well as an advantage in lower plant investment costs (see CX 3 ## 20, 21; CX 61). In addition, ilmenite ore is much less expensive than the rutile ore or beneficiated ilmenite (synthetic rutile) used by its competitors who operate rutile chloride process plants. The waste disposal costs of a chloride process plant are lower than the waste disposal costs of sulfate plants (CXs 40G, H; 51). The high grade ore chloride plants have some cost advantages over the low grade ore chloride plants in that they use less chlorine gas per ton of TiO₂ produced and create less waste per ton of TiO₂ produced (see tr 1341-44 (Clark)).

In order for competitors to eliminate or reduce substantially DuPont's cost advantage in the manufacture of TiO_2 , they would have to develop a low grade ore technology and build large scale chloride process plants (tr 1390-91 (Clark); CXs 23, 116H). The record shows that development of this advanced technology at large scale entails a substantial learning time (tr 1386-87 (Clark)). DuPont estimates that it would take from 5 to 10 years for a competitor to come close to DuPont's cost of production (CX 116H; see 1387-89, 1434-35 (Clark)).

The general nature of DuPont's cost advantage (including the estimated costs for De Lisle) is demonstrated graphically in [34]a chart that appeared in the Pigments Department's Part 3 appropriation request for funding of the De Lisle project (CX 133L) (Appendix F).²⁷

DuPont's cost advantage became pronounced in the early 1970's and increased until at least 1972 as the price of rutile ore increased dramatically due to a shortage in that raw material. In addition, beginning in the early 1970's, sulfate manufacturers have faced very high costs of waste disposal. NL completely closed down its sulfate plant in St. Louis because of its inability to meet the environmental requirements as to the disposal of its waste.

The record shows that DuPont's cost advantage has decreased recently primarily due to an increase in the price of chlorine, a high energy product (CX 76D). However, DuPont has predicted that its cost advantage will exist for the foreseeable future (CX 209K-Z, *in camera*).

55. In the 1972 White Paper, DuPont adopted a "pricing policy" which would provide adequate profit and cash generation for expansion (CX 26E). From May 1972 to June 1978 there were 12 announcements of TiO_2 list price increases, and DuPont either led or met fully the announcements by competitors on eight of those occasions (CXs 3 ##194-235, CX 166).

In June 1972, shortly after DuPont began its growth "strategy," Kerr-McGee announced a 2¢/lb. price increase on rutile TiO_2 . SCM and NL then announced a 1¢/lb. list price increase. DuPont and G&W did not raise their prices and Kerr-McGee lowered its price increase to 1¢/lb. This resulted in an unusual two tiered pricing structure in the TiO_2 industry which apparently lasted until 1974 when "price controls" were removed (see CXs 28A, C; tr 886-890 (Baird)).

²⁷ Similar charts appear in other DuPont documents, the first one appearing in CX 38T, in connection with a TiO_2 strategy presentation by the Pigments Department to the Executive Committee on July 18, 1973 (See also CX115F, 116T, 158N *in camera*). The record shows that at all times relevant to the issues in this case, DuPont has analysed its competitors' cost in detail (See CXs 23, 63; portions *in camera*; 64 portions *in camera*; 68L, "0"; 81 *in camera*; 82 *in camera*; 83 *in camera*; 98C *in camera*; 133M; 158N *in camera*; 196).

Many reasons were given for not raising DuPont's prices at that time. Although TiO_2 was in short supply, several TiO_2 producers and foreign importers were selling below DuPont's list price. Concern was registered about a price rise encouraging an increase in imports. In addition, many of DuPont's large customers had been "price protected," that is, guaranteed a certain price, until the end of 1972. There had been a substantial price increase at the end of 1971, and a [35]further increase, which would affect only smaller customers, could be considered "gouging" and might affect DuPont's "image as a preferred supplier." (CX 28B-D).²⁸

In early 1974, upon the removal of "price controls," there were a series of four price increases which resulted in a total increase in the list price for rutile TiO_2 of approximately 12¢/lb. to a 40¢ level (CX 3 ## 196-99; tr 891-93 (Baird)). At one point during this period, DuPont was unsuccessful in its attempt to raise the price of its anatase TiO_2 by 5¢/lb., and it reduced this to 3¢/lb. to match competitors' lesser price increase (CX 3 ## 199-200; tr 892-93, 1208-09 (Baird)).

In January 1975, DuPont declined to follow several of its competitors' announced price increases of 5¢/lb. on rutile and anatase and the competitors' price increases were cancelled (CX 3 ## 201-04, 206-09; tr 894-96, (Baird)). Baird testified that by this time the effect of the mid-70's recession was being felt and that sales of TiO_2 had dropped substantially and that there was discounting from list prices by competitors (see RX 2C; tr 894-96 (Baird)).

However, in August 1975, DuPont led a 3.5¢/lb. increase in list prices, an increase that was followed by its competitors (CX 3 ## 210, 215; CXs 69, 78). The Pigments Department reported in pertinent part (RX 2C):

A 3-½¢/lb. increase is expected to restore earnings to a satisfactory level for the balance of 1975 and through the first half of 1976 in the absence of any unforecasted energy cost increase. Major customers have been advised informally that an 8-10% increase would be necessary soon, and appear willing to accept this level. Such an increase is in keeping with projected prices in the 1974 Annual Report and Supplement, and Project [36]2613, and is believed to be the best compromise level for restoring earnings without shrinking the market (customers will probably not undertake gross reformulation to use less TiO_2 if the increase is held below 10%). We believe all domestic competitors will rapidly follow this increase, as three of the six

²⁸ J. E. Kramer, in recommending that DuPont not increase its list price at that time, stated (CX 28A):

A price increase would markedly improve our competitors' economics and permit them to expand production facilities and increase share of market. . . . In support of this we have heard two comments from our customers:

PPG—Walter Ethier, Director of Purchases, PPG, stated that D. Benoit, Kerr-McGee District Manager, told him on 6/16/72 that Kerr-McGee had to raise prices 2¢ per pound in order to justify expansion plans. SCM—R. Lozon, Director of Purchases for the Glidden Durkee Division, told me that the TiO_2 industry should expand production capabilities. However, SCM could never justify expansion facilities at current prices.

attempted to initiate comparable increases in January 1975. Because demand at that time was so weak, we elected not to increase at that time.

During 1975, members of the TiO_2 task force, evaluating the growth strategy initiated in 1972, stated that:

In 1972, strategy *appears to have been* to maintain prices at a point to provide cash for DuPont expansion, but limit competitors' ability to expand. Price forecasts have gradually increased as magnitude of new JV, EM, and De Lisle investments became apparent. Current pricing forecast should keep competition in business without enough cash to expand [CX 76D, Emphasis added].²⁹

In assessing DuPont's current strategy the task force stated: "Increase 3¢/lb./yr. to 1980 will yield necessary return for De Lisle based on current cost projections. Also give competition generally adequate return to stay in business" (CX 76B).³⁰ DuPont's officials testified that strategic pricing "was never used in our pricing" (tr 1248 (Clark); see also 889-90 (Baird)). [37]

In early 1976, NL announced an increase of 4¢/lb. on rutile TiO_2 and 3¢/lb. on anatase (see CX 129B). When DuPont raised its price only 3¢/lb. on both grades, NL lowered its price increase to 3¢/lb. on rutile. In his proposal for the 3¢/lb. increase by DuPont, R. J. Fahl stated his reasons (CX 129A):

This will represent an 10.8% increase (annualized) since August, 1975.

This places us one year ahead of the schedule reported in the Annual Report and De Lisle project submissions and provides operative earnings \$14MM above forecast for calendar 1976 (\$20MM annualized).

A 4¢ increase on rutile grades would penalize 84% of our current customers at the expense of the 16% who can utilize anatase. . . .

A 3¢ increase will minimize inroads by foreign competition. . . .

A 3¢ increase would be a clear demonstration of responsible pricing practices, and in line with projections on which customers have based their pricing policies. It would not shrink the market significantly, and would permit our projected market growth and penetration to continue.

A 3¢ increase will prevent further widening of the rutile/anatase differential. . . .

In May 1977, SCM and NL announced a list price increase of 5¢/lb. on anatase and rutile (CX 3 ## 226-29; CX 162A). DuPont declined to

²⁹ As a preface to their History of Reported TiO_2 Business Strategy, K. H. Quisel and R. L. Heffelfinger stated: "The key elements of the strategy have not been totally documented" (CX 76A).

³⁰ The task force directed the compilation of pricing forecasts that would show the following (CX 85B; CX 101A):

- Determine price which will trigger competitive expansions.
- Determine price where foreign competitive products will enter.
- Determine price where non TiO_2 products will substitute.
- Determine reaction of competitors to our strategy.
- Price that will cause any one to fold.

The Competition Situation Task Force filed a detailed report (CXs 100-05, 108).

match this 5¢ increase and instead announced a list price increase of 2¢/lb. Competitor's price increases were then rolled back to DuPont's level. J. E. Kramer's rationale for the 2¢/lb. increase instead of the 5¢/lb. increase was as follows (CX 162A):

The market is still not firm as there are many deals in all the industries we serve either by discounting price 3 to 4¢/pound, sale of "substandard" material at distressed price, or the use of extended terms. Through the first quarter, we sold 18% of our product at reduced prices as a result of meeting competitive action.

A worldwide supply and demand imbalance of $\pm$ 300,000 tons exists. Imports of titanium dioxide have increased during 1977 and substantially higher prices would invite offshore producers to have a larger U.S. market share.

A deterrent for customers to formulate their products to lower TiO₂ levels, and an incentive [38] for restoration toward historical levels. This is highly important to us, as our growth depends on an expanding market.

Smaller price increases are more palatable to our customers as they can pass the increases along easier.

Reverse downward trend of market share; we do not need De Lisle if we can not capture the market growth. When we aggressively priced from 1972 through 1975, we substantially gained market share even during the 1975 recession. From March, 1976 on we have not been aggressive in the market place from a pricing standpoint and as result, our market share eroded 2.5%.

Two cents per pound increase, effective June 1, 1977, and in place 100% by 11/1/77 is expected to yield additional earnings of \$4.5MM during 1977.

Current average selling price is 44.9¢/pound and this increase should put us ahead of the price forecasted in both the Annual Report and Project 2613-14 (De Lisle) of 45.4¢/pound [emphasis supplied].

On January 23, 1978, R. J. Fahl recommended that DuPont roll back the 2¢ price increase of June, 1977. He stated (RX 7A):

The announced June, 1977 titanium dioxide price increase is not holding. I propose that we promptly announce that pre-June prices are in effect through the first quarter, and try to initiate an increase in the second quarter if conditions appear more favorable.

Thirty-eight percent of "TiPure" sales were at the current list price in December, but of this 38%, over 8% was as R-O (slip) codes or RPS with performance guarantees. In effect, 30% is conventional grades at current list, and the number of pricing actions we are asked to meet indicates this could drop below 25% by February.

Accordingly, it appears that DuPont's announced list prices during 1972 through 1977 were in the range where they generated enough cash flow to justify DuPont's expansion, and were too low to permit competitive expansion, although high enough to keep competitors in the TiO₂ business. It also appears that these prices were not artificially or unilaterally established by DuPont, but were controlled by the economic [39] conditions in the TiO₂ market (see CX 47C). These conditions were affected by "price controls", cost of inflation (especially energy costs), the severe recession of 1974-1975,

substantial excess supply of TiO_2 , imports, and a reluctance of TiO_2 users to return to normal levels of use after a period where "reformulation" was prevalent (tr 1241-43, 1320 (Clark)).³¹

56. Immediately before DuPont adopted the growth strategy whereby it intended to capture the major portion of the expected growth in the domestic TiO_2 market, its total plant capacity was approximately 270,000 tons per year. The Antioch plant had a capacity of 28,000 tons per year; Edge Moor (sulphate) had a capacity of 55,000 tons per year; Edge Moor (chloride) had a capacity of 46,000 tons per year, and New Johnsonville had a capacity of 141,000 tons per year (see CX 15A-B). Its expansion plans for those plants were to replace the Edge Moor sulfate plant with a chloride plant of the same size (55,000 tons per year), to expand the New Johnsonville capacity to 196,000 tons per year, and to close the Antioch rutile ore plant (CX 15B, 21E, "O"). This would have resulted in a net gain in capacity of 27,000 tons per year by 1974. DuPont estimated that from this expanded capacity (approximately 400,000 tons per year) it would be able to supply demand for its TiO_2 until 1979-1981 before additional manufacturing facilities would be needed (CX 21K).

By May 1972, NL Industries had shut down its chloride plant at Sayreville, New Jersey, and PPG had abandoned its chloride plant in West Virginia. In addition, NL terminated its production of an extended TiO_2 pigment and the United States had imposed a 7.5% *ad valorem* duty on imported TiO_2 (see CX 21 H, I, 26C). This resulted in a shortage of TiO_2 in the domestic market.

In the 1972 White Paper, DuPont estimated that the projected growth in industry tonnage between 1972 and 1980 would be about 330,000 tons per year which was the equivalent (in 1972) to about three fully developed New Johnsonville-type process lines (CX 34H, I). After adoption of the program set forth in the 1972 White Paper, DuPont cancelled its plans to close down the Antioch plant and initiated plans to expand the New Johnsonville plant to 228,000 tons per year (CX 29D, K), to increase the capacity of the new chloride line at Edge Moor to 110,000 tons per year (CX 32D) and began plans to build two [40]production lines of 110,000 tons per year and 220,000 tons per year at plant site "X" (which eventually became the De

³¹ Complaint counsel have proposed findings to the effect that DuPont in 1972 adopted, and have since engaged in, "a pricing policy which would provide adequate profit and cash generation for expansion but limit competitors' ability to expand," citing the 1972 White Paper (CX 26E), Kramer's recommendation on the June 1972 Kerr-McGee price increase (CX 28A), the Task Force's evaluation of the 1972 growth strategy (CX 76D), numerous Task Force documents disseminated throughout the company (CXs 113P, 114P), and similar Task Force statements in 1976 and 1977 (CXs 137C, 145D, 178) (See CXCPF 241-51). They also request a finding that DuPont implemented this strategic pricing policy when price roll backs were forced on competitors during 1975, 1976 and 1977 (See CSCPF 261). The record does not support such findings.

Lisle project) for an eventual capacity of approximately 750,000 tons per year by 1980.³²

In November 1973, before the appropriation of any funds for the construction of De Lisle, DuPont announced its plans to build that TiO₂ plant (CX 159H, I). In May of 1974, Kerr-McGee announced its plan to build a 50,000 ton per year TiO₂ plant and a 100,000 ton per year beneficiation facility at Mobile, Alabama (CX 131I, K). In July of 1974, DuPont appropriated \$8 million (of an estimated total of \$165 million) to start the De Lisle project. At that time the Antioch plant had been expanded to a capacity of 30,000 tons per year and Edge Moor and New Johnsonville were being expanded to total site capacities of 167,000 tons per year and 252,000 tons per year respectively, those capacities being at the desirable practical limits (CX 54C). DuPont announced its plan to construct the De Lisle facility and the Edge Moor and Johnsonville expansions on July 16, 1974 (CX 159F, G).

Although Kerr-McGee built and started up its 100,000 ton per year beneficiation plant, it closed it in 1978. It has not yet started construction of the 50,000 ton per year TiO₂ plant at Mobile and DuPont no longer expects that it will go through with that construction in the near future. NL has announced that it will construct a 100,000 ton per year chloride plant, although construction of that plant has not begun.

Thus, except for DuPont, no TiO₂ producer has started construction of a new TiO₂ plant in the United States since 1970, and DuPont anticipates no such expansion in the foreseeable future.

An overall view of the growth of industry capacity and industry sales (including DuPont's forecasts to 1982) is demonstrated graphically in a chart that appeared in Exhibit CX 133I (Appendix G).

Although industry sales have not increased as expected since the 1974-1975 recession, some industry capacity was lost when NL closed its St. Louis sulfate plant in 1978 because of difficulties with pollution problems. NL has imported TiO₂ pigments to replace the supply lost by the shut down of the St. Louis plant. Other imports have remained at about 4% of domestic shipments (CX 223). Although total industry sales are [41]still at the 1972-1973 levels, DuPont's share of the domestic TiO₂ market increased from 30% in 1970 to approximately 41% in 1977.³³

³² A comparison of DuPont's market share projections in February 1972 and July 1972 is graphically demonstrated on Appendix H (CX 21-0; 29N; CSCP p. 41).

³³ Complaint counsel have proposed a finding to the effect that DuPont's expansion of its TiO₂ capacity was not justified by market place conditions and that such over expansion was undertaken as part of a strategy to prevent TiO₂ competitors from expanding their capacity. They also propose a finding to the effect that the DuPont press releases announcing the De Lisle project were exaggerated and were designed to affect competitors' decisions as to whether to expand their facilities. On this record, DuPont's proposed expansion was reasonably responsive to the

(Continued)

57. Before 1972, DuPont had received a large number of inquiries regarding the purchase of rights to DuPont's chloride technology, including requests from Cyanamid, Cabot, and Glidden (CXs 3, #127; 33C; 250C). All of these requests were turned down, except that DuPont constructed a rutile ore plant similar to its Antioch plant for Sherwin Williams (CXs 33C, 250D; tr 1386 (Clark)).

After 1972, DuPont has continued to receive inquiries on the licensing of its chloride process TiO_2 technology and has turned down such requests (CX 3, ## 132, 133). In 1974, DuPont turned down a request by NL for a license for its ilmenite chloride technology (CX 3, ## 136, 137, CX 45, CX 46D). This was not the first time that such a request from NL was denied (CX 3, # 138).

In connection with the NL request in early 1974, H.B. Clark, Manager of DuPont's TiO_2 Research & Development Department, recommended (CX 44C, D):

National Lead has said they will buy the Sherwin Williams plant providing we will sell them the technology to use ilmenite in that plant. We should very clearly say no to this request. National Lead has the marketing base which could allow them with ilmenite chloride technology to deny us the sales that we require to make our new investments profitable.

* * * * *

It seems clear, however, that we should not wish to transfer our ilmenite technology to any major competitor (and very probably not even to Sherwin-Williams) since low cost ore and scale are the only two advantages we now enjoy and both of these are temporal. It would appear to me that the maximum gain from these two advantages will come from increasing our market share rather than collecting royalty payments or license fees from disseminating this information broadly. [42]

DuPont has considered license requests from foreign countries including Japan, Brazil, U.S.S.R. and the Peoples Republic of China, but has never completed any such negotiations (CXs 132C, 140D, 157, 180E, 188B; see CX 60).

Royalties for such licenses, especially domestic licensing of the lower cost ilmenite process, would have yielded substantial fees, a fact that has been considered by DuPont officials (see CXs 120Q, 157A-B).

DISCUSSION

Section 5 of the Federal Trade Commission Act empowers the

expected growth in demand for TiO_2 . The record also shows that DuPont's announcements were necessary to inform the De Lisle, Mississippi, community, as to DuPont's plans as well as notify customers who were having difficulty obtaining TiO_2 in 1974, that DuPont intended to be a major supplier in the future (see CX 62F; 105A).

Federal Trade Commission to prohibit certain "unfair methods of competition" and certain "unfair or deceptive acts or practices."³⁴ Section 5 was intended to be a broad and flexible statute under which the Commission could designate as "unfair methods of competition" conduct that, although not previously deemed violative of statutes governing trade practices, had the anticompetitive effects that such legislation was designed to prevent. See H.R. Rep. No. 1142, 63d Cong., 2d Sess. 18-19 (1914). It is well settled that Section 5 covers conduct that either violates the prohibitions of the Clayton Act and the Sherman Act or conduct that could lead to unreasonable restraints on competition if not prohibited. See *Federal Trade Commission v. Brown Shoe*, 384 U.S. 316, 321 (1966); *Federal Trade Commission v. Cement Institute*, 333 U.S. 683 (1948).

An illegal attempt to monopolize constituting a violation of Section 2 of the Sherman Act involves a "specific intent" to control prices or destroy competition in a relevant market, predatory or anticompetitive conduct directed to accomplish those ends, and a dangerous probability of success. *Purex Corp. v. Procter & Gamble Co.*, 596 F.2d 881, 890 (9th Cir. 1979). *Janich Bros., Inc. v. American Distilling Co.*, 570 F.2d 848, 853 (9th Cir. 1977); *Golden Grain Macaroni Co.*, 78 FTC 63, 164 (1971), *enforced in part*, 472 F.2d 882 (9th Cir. 1972), *cert. denied*, 412 U.S. 918 (1973). It is generally accepted that monopoly power exists when an industry member has the power to raise prices or exclude competition when it so desires, and that such monopoly power is unlawful if it is willfully maintained or acquired as distinguished from arising from growth or [43]development as a consequence of a superior product, business acumen or historical accident. *Purex Corp. v. Procter & Gamble Co.*, 890 *supra*; *Golden Grain Macaroni Co.*, *supra*, 78 FTC at 157.

Complaint counsel contend that DuPont had (and continues to have) the intent to prevent competition, to control prices and to gain a dominant share of the TiO₂ market. In this respect, complaint counsel allege that DuPont has engaged in certain strategic business conduct designed to perpetuate a so-called "investment asymmetry" between DuPont and its TiO₂ competitors, namely, the existence of business conditions under which competitors would not choose to construct large scale TiO₂ production facilities (CSCPF pp. 2-3, 96-98, 113-17, 123-25; see CX 218 pp. 43-44 (Shepherd); see also tr 1548-19 (Adelman)).

³⁴ "Sec. 5(a)(1). Unfair methods of competition in or affecting commerce, and unfair or deceptive acts or practices in or affecting commerce, are hereby declared unlawful.

"(2). The Commission is hereby empowered and directed to prevent persons, partnerships, or corporations, . . . from using unfair methods of competition in or affecting commerce and unfair or deceptive acts or practices in or affecting commerce."

Complaint counsel assert that as part of its strategy DuPont priced its TiO_2 products low enough to discourage competitors' expansion, yet high enough to fund DuPont's own expansion, engaged in premature expansion of its own TiO_2 facilities and capacity, made exaggerated announcements relating to its expansion plans, and refused to license its TiO_2 technology to its competitors. They contend that this exclusionary scheme was anticompetitive (CSCPF pp. 96-98, 120, 122, 124), and that through such strategy DuPont has insulated its substantial cost advantage from erosion over time. Complaint counsel contend that without large scale construction no competitor would be in a position to substantially reduce or eliminate DuPont's cost advantage through the necessary "learning by doing," inherent in the development of an ilmenite technology, or by scale economies, available from large chloride process plants. Complaint counsel contend that the intended effect of DuPont's strategy was to limit the funds available for competitive expansion, decrease the return that competitors could expect from expansion and increase the risks of such expansion (CSCPF pp. 2-3, 80, 86, 96-98). Complaint counsel conclude that if the results of this challenged course of conduct are not reversed DuPont will eventually obtain the power to raise prices or prevent competition at will (see CSCPF pp. 98-104, 113-17, 126-30).

Characterizing DuPont's challenged course of conduct as an "exclusionary growth strategy," complaint counsel take the position that such conduct violates Section 5 of the Federal Trade Commission Act because it constitutes an illegal attempt to monopolize the TiO_2 market violative of the Sherman Act, threatens an incipient violation of the Sherman Act, violates the spirit of the Act, and violates public policy insofar as it causes undue harm to competition, competitors or consumers (see CSCPF pp. 109-10, 123-25).

DuPont argues that there is nothing anticompetitive about an industry member attempting to gain market share and that such an "attempt" is the very substance of effective competition. It also contends that not one element of its challenged conduct [44] ("growth strategy") is unlawful: that it did nothing illegal in obtaining its cost advantage over its competitors (see RespReply A7-A9); that its plant expansion and new construction were reasonable and necessary responses to anticipated increase in market demand for TiO_2 (see RespReply 6-7, A19-A24); and that it was under neither a legal nor a moral obligation to give its competitors (particularly NL) its ilmenite technology through licensing (see RespReply A24-A25). DuPont contends that its competitors had and continue to have the means and technical ability by which to develop their own ilmenite

technology or other low grade ore technology and their competitors' choice not to undertake the required investment in the past or present should not be held against DuPont (RespReply A25-A28).

DuPont claims that complaint counsel have made unwarranted assumptions about its growth strategy by attributing to DuPont's management certain policies that appeared in certain planning or analysis documents. For example, DuPont claims that it never engaged in the strategic pricing alleged by complaint counsel, that it did not forecast higher prices for TiO_2 , should its growth plans prove successful (tr 1288-92, 1304, 1375-79, 1451-56, 1497-99 (Clark)) and that it never considered itself to have or to be able to obtain through its growth plans a monopoly share of the TiO_2 market (tr 1327-30, 1321-25, 1339-40 (Clark)). DuPont also claims that it never made announcements about its expansion plans that were not accurate and for a legitimate reason.

Although the record does not support complaint counsel's overall view of DuPont's growth strategy, it does support their view of the exclusionary effect of DuPont's expansion program on competitor's expansion, and the probability that DuPont will obtain substantial market (monopoly) power (see CSCPF pp. 104-09, 123-25; CX 218 pp. 7-9 (Shepherd)). There is no doubt that the Federal Trade Commission Act was designed to prevent unfair trade practices that have the tendency or capacity to create a monopoly or lessen competition. But in any proceeding brought under the Federal Trade Commission Act, the Commission, before it may issue orders deemed remedial or preventative, must find that a respondent's conduct constitutes an *unfair* method of competition or an *unfair* or *deceptive* act or practice.

No matter how DuPont's officials may have analyzed their future business opportunities that arose upon the advent of DuPont's substantial cost advantage in the early 1970's, and no matter how they have appraised the nature or effect of their growth strategy, I can find no *conduct* that can be considered "unfair" within the meaning of the Federal Trade Commission Act. Even complaint counsel do not assert that any individual action taken by DuPont, whether in acquiring its cost advantage, in its TiO_2 pricing, in its expansion of capacity or in its choice not to license its TiO_2 ilmenite technology was illegal or even unreasonable. Complaint counsel challenge the exclusionary *effect* of all of these actions taken together, along with their claim that DuPont *intended* such an exclusionary effect (see also CX 218 p. 27 (Shepherd)). [45]

In my opinion, the ultimate question in this matter is whether DuPont had *alternatives* to its aggressive growth strategy that it was

required to take, in lieu of the actions it did take, in order not to run afoul of the antitrust laws.

Dr. Shepherd testified that "DuPont should have done whatever it wanted to do, subject to the proviso that it not choose a strategy whose effect was to transform the TiO_2 industry into a virtual monopoly" (CX 218 pp. 65-66). In this respect Dr. Shepherd noted that DuPont had made analyses of various directions it could have taken (ibid). His testimony on the various elements of the strategy indicates that in his opinion DuPont should not have priced as low as it did or should not have embarked on such a large expansion program (especially the construction of the De Lisle facility). He was of the opinion that one alternative DuPont had was to license its ilmenite technology to its competitors (including NL) at some point in time after 1972.³⁵

I am not convinced that DuPont was required to take actions different than those it did take. DuPont's cost advantage was the result of business foresight, intelligent planning, dedicated technological application to a most difficult production problem, the taking of economic risk, and its competitors' choice during the 1960's to build production facilities designed to use high-grade rutile ore. The development of the shortage of rutile ore and the advent of high costs of pollution abatement for TiO_2 producers were not accidental. Although DuPont's gain was not unexpected, the magnitude and the timing of this new cost advantage was unexpected. But this cost advantage was not "fortuitous" in the sense that it was either accidental or unearned.

I do not believe that DuPont was required to price its TiO_2 products high enough to insure its less efficient competitors sufficient revenue to finance expansion. The resulting higher cost of TiO_2 to user-customers (and ultimately to the consumer) and the resulting exorbitant profits to DuPont would be more antisocial in the long run than the natural exclusionary effect of the so-called "investment asymmetry" that developed in the TiO_2 industry before 1972. As detailed above (Finding 55), I do not believe that DuPont's [46]actual pricing in the period from May 1972 to 1978 could have been much different than it actually was, given price controls, the mid-70's recession and the slow recovery of the TiO_2 industry during 1976 and 1977 (see tr 1602-03 (Adelman)). In those situations where DuPont

³⁵ Dr. Shepherd testified (CX 218 pp. 66-67):

I would like especially to consider another alternative that DuPont could have adopted—that of licensing its technology. DuPont had many opportunities to license its chloride technology. A policy which permitted licensing would have lowered production costs throughout the industry, while letting DuPont harvest extra profits in line with the cost savings made possible by its chloride technology. With licensing, the cost-saving benefits of DuPont's technology would not have been limited to its own production. . . .

failed to match its competitors' price raises, the market conditions did not justify such price increases. During the period 1975 to 1977 there was an over supply of TiO_2 , producers were operating at approximately 70% of capacity, and there were substantial TiO_2 sales at prices discounted from list. If DuPont had raised its TiO_2 list prices substantially, and then sold at those prices, it would have placed itself at a competitive disadvantage and would have been considered a "price gouger" by customers.

The lowest cost producer's choice to expand capacity in a situation of short supply, is a sound business judgment that is economically justified. In 1973, when there was a severe shortage of TiO_2 , DuPont was entirely justified in planning to build a new plant. The record shows that a plant the size of De Lisle was necessary to take advantage of scale economies. The record also shows that DuPont thought the future of the sulfate process plants was in doubt (tr 1443, 1510-11 (Clark)). Any theory that higher cost producers must be protected against the effects of expansion by their lower cost competitor is not sound economic theory. And certainly the construction of a plant at less than scale is not socially desirable. In the circumstances, the De Lisle expansion was a reasonable business choice in 1972, and was still a reasonable choice in 1975. DuPont's announcements of its plans for De Lisle were for legitimate reasons and were not necessarily for the purpose of restraining competitive expansion.

DuPont was not required to license its ilmenite technology to its competitors (or potential entrants, if any). The choice to look to long run profitability instead of immediate revenue from royalties is not unfair. There is no showing on this record that competitors could not develop that technology, if they had chosen to take that course of action. The fact that these competitors found themselves five to ten years behind DuPont in 1972 did not obligate DuPont to give up its technological advantage.

The final question is whether DuPont's course of conduct, neither unreasonable nor unfair, becomes unfair because DuPont, in forecasting the effects of its actions, i.e., limited or no competitive expansion and its own increase in market share, knew or should have known that it would acquire substantial market power. With knowledge that the success of its growth program depended on either minimal or no expansion by its competitors, DuPont nevertheless put a growth strategy into operation in 1972 and has continued that growth strategy to date. DuPont was aware that TiO_2 prices were low enough to discourage competitive expansion and acknowledged that increase in market share was important to its profitability. As the

dominant TiO_2 producer in the 1980's, DuPont predicted that it would be in a position to increase the profitability of that portion of its business in the foreseeable future. [47]

In other words, the question is whether DuPont was prohibited from engaging in any conduct, the *effect* of which might be to transform the TiO_2 industry into a virtual monopoly (see CX 218, p. 65 (Shepherd)). I do not think that business awareness of the nature of and the probable results of otherwise completely legitimate business conduct changes that conduct into an illegal anticompetitive practice or supplies an illegal intent to lessen competition or create a monopoly. I have found no prior "attempt to monopolize" case in the courts or before the Commission and not one has been cited by complaint counsel, that transforms lawful conduct into unlawful conduct without the presence of some overt or anticompetitive act considered unreasonable in the regular conduct of a competitive business.

I am not persuaded on the record considered as a whole that DuPont created, or unfairly maintained, the "investment asymmetry" which has existed in the TiO_2 industry since 1970 and which now is an effective barrier to the competitive expansion required by DuPont's competitors to place them in a position to challenge DuPont's impending dominance in the TiO_2 industry. Regardless of its market share, DuPont, in 1972, acquired the means to develop market power when it obtained a substantial cost advantage over its competitors. In my opinion whether DuPont adopted a less aggressive growth strategy program that complaint counsel and Dr. Shepherd appear to think it should have engaged in or the aggressive growth strategy challenged in this case, the so-called "investment asymmetry" would have nevertheless prevailed and the future prospects for effective competition would be just as tenuous as they appear today.³⁶ [48]

Section 5 of the Federal Trade Commission Act can be invoked to

³⁶ Dr. Shepherd was of the opinion that DuPont's behavior was that of a dominant firm and that its share of 40% of the TiO_2 market (where its nearest competitor's share was only 16%) indicates it already has substantial degree of monopoly power (see CX 218 pp. 7, 9). I do not agree that DuPont already has monopolized the TiO_2 market within the meaning of Section 2 of the Sherman Act. The record shows that DuPont does not have control over TiO_2 prices. It does not have the power to establish prices without regard to its competitors' pricing. However, when the De Lisle facility is in full production and the demand for TiO_2 increases as DuPont expects it will, a different case may appear. In this respect, Dr. Shepherd testified (CX 218 p. 8):

... DuPont's market share seems to be likely to grow further, rather than suffer erosion. The record suggests that the sulfate TiO_2 plants now operating in the U. S. have a limited future. Meanwhile, DuPont has over 66 percent of all chloride-process TiO_2 production in the U. S. market, and this share will rise in the next year or two as the De Lisle plant opens. That plant, with up to 16 percent of U.S. TiO_2 capacity, will raise DuPont's total market share to at least 55 percent, and approximately 75 percent of the chloride-process TiO_2 production. Other producers have no major expansion under way, nor any present access to comparable chloride technology. Their sulfate-process plants are at an increasing cost disadvantage.

effect structural changes in an industry only where it is clearly demonstrated that the competitive disequilibrium is the result of some conduct that could be designated as "unfair". If the challenged conduct is not unreasonable and not the cause of the trend toward monopoly power, no violation of Section 5 exists, merely because the effects upon competition may be undesirable from an economic point of view.

CONCLUSION

I conclude that DuPont did not engage in the "strategy" attributed to it in the complaint and by complaint counsel in their proposed findings in that DuPont did not *engage* in "strategic pricing," but rather established its TiO₂ prices relative to market forces over which it had no control.

I also conclude that DuPont's conduct of its business, insofar as it is challenged in this proceeding, was neither unreasonable nor unfair and that its conduct did not constitute an illegal attempt to monopolize the domestic TiO₂ market in violation of Section 2 of the Sherman Act and did not constitute unfair methods of competition or unfair and deceptive acts or practices in violation of Section 5 of the Federal Trade Commission Act, as amended.

ORDER

It is ordered, That the complaint in Docket 9108, E.I. DuPont de Nemours & Company, is dismissed. [49]

Attachments:

- Appendix A: CX 221 A,B - Total Domestic TiO₂ capacity 1970-1971
- Appendix B: CX 222 - Total Domestic Shipment of TiO₂, Excluding Exports
- Appendix C: CX 223 A,B - Total Domestic Shipment of TiO₂, Including Imports, Excluding Exports 1970-1977
- Appendix D: CX 224 - Total Domestic TiO₂ Production Via the Sulfate Process/1970-1977
- Appendix E: CX 225 - Total Domestic TiO₂ Production Via the Chloride Process 1970-1977
- Appendix F: CX 133L - Mill Costs of TiO₂ producers at Capacity
- Appendix G: CX 133I - Industry Sales and Capacity.
- Appendix H: CXCPF p. 41- Comparison of DuPont Market Share Projections February/July 1972 [A-50]

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CHART 2: Total Domestic TiO₂ Pigments Capacity 1970-1977 (in 'tons). (Source: Chemical Economics Handbook, Stanford Research Institute, June 1978) 1/

	TOTAL EXISTING TiO ₂ PIGMENTS CAPACITY 1970-1977 (in 'tons)											
	1970		1971		1972		1973		1974		1975	
	Total	Share	Total	Share	Total	Share	Total	Share	Total	Share	Total	Share
DUPONT 2/	252,000	30.0%	271,000	31.0%	327,000	37.5%	368,000	39.7%	313,000	35.2%	368,000	38.9%
MC Industries 3/	288,000	32.0%	268,000	31.9%	232,000	26.6%	221,000	23.9%	232,000	26.1%	232,000	24.4%
American Cyanamid	90,000	10.7%	82,000	9.8%	92,000	10.6%	112,000	12.1%	112,000	12.6%	112,000	11.8%
SCM 4/	78,000	9.3%	78,000	9.3%	78,000	9.0%	78,000	8.4%	82,000	9.2%	112,000	11.8%
Gulf 5/	70,000	8.3%	70,000	8.3%	70,000	8.0%	70,000	7.6%	71,000	8.2%	73,000	7.7%
Kerr-McGee	37,000	4.4%	39,000	4.6%	45,000	5.2%	50,000	5.4%	50,000	5.6%	50,000	5.3%
Shawin-Williams 4/	27,000	3.2%	27,000	3.2%	27,000	3.1%	27,000	2.9%	27,000	3.0%	-	-
PPG 5/	18,000	2.1%	-	-	-	-	-	-	-	-	-	-
TOTALS	840,000	100%	841,000	100%	871,000	100%	926,000	100%	889,000	100%	947,000	100%
											977,000	100%
												925,000

1/ Because the capacity figures are year-end rather than an international average for the year, the calculated operating rate is not precise and is sometimes understated. It has generally been accepted that the effective operating capacity of most plants, taking into account normal downtime, is about 90% of nameplate. This table lists an estimated annual nameplate capacity history for the years 1970 through 1977. (See 788.5002 B.)

2/ 55,000 tons of sulfate pigments capacity located at Edge Moor, Indiana closed in 1974 and replaced by 55,000 tons of chloride pigments capacity located at Edge Moor. This chloride conversion is recorded in capacity figure of 1975.

3/ NI shut down its St. Louis, Missouri 100,000 TTY sulfate plant in late 1977 or early 1978 for environmental reasons.

4/ CX 100B; CX 1010C; Chemical Economics Handbook, February 1975, p. 577.4232 P-Q. Shawin-Williams' 27,000 TTY TiO₂ pigments plant located in Ashland, Ohio is allocated to Shawin-Williams' capacity for 1974 even though the plant was acquired by SCM on October 12, 1974.

5/ Answer to Specification 2 of August 20, 1975 sulfate plant design team.

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CHART 3: TOTAL DOMESTIC SHIPMENTS OF TIO₂ PIGMENTS BY U.S. PRODUCERS (EXCLUDING EXPORTS)

1970 - 1977

(Million Dollars and Nearest One Percent)

	1970	1971	1972	1973	1974	1975	1976	1977
Du Pont	96 30%	94 30%	109 30%	141 33%	195 38%	190 41%	257 41%	290 42%
NL	107 33%	98 32%	101 28%	112 26%	103 20%	90 20%	108 17%	115 17%
American Cyanamid	23 7%	29 9%	42 12%	43 10%	53 10%	48 10%	68 11%	74 11%
SCH	26 8%	26 8%	29 8%	36 8%	44 9%	50 11%	74 12%	80 12%
Gulf + Western	13 4%	11 3%	30 8%	35 8%	44 9%	32 7%	44 7%	54 8%
Kerr-McGee	15 5%	12 4%	22 6%	25 6%	29 6%	33 7%	42 7%	41 6%
Sherwin-Williams	8 2%	12 4%	14 4%	17 4%	18 4%			
Cabot	12 4%	10 3%						
PPG	4 1%	4 1%						
Subtotal	304 94%	297 95%	347 94%	408 95%	485 95%	443 96%	592 95%	653 95%
Other Imports	21 6%	15 5%	22 6%	20 5%	28 5%	19 4%	29 5%	39 5%
TOTAL	325	312	369	428	513	462	621	692

(SHIPMENTS RETURNED TO NEAREST 1000, HAZARD SHIPMENT RETURNED TO NEAREST MILITARY NUMBER)

✓	CI 130, 1300, 1301, 1327, 849, 1270, 1501, 1805, CI 1500, Letter dated 12/4/78 to Mr. William J. Murphy, Attorney, Bureau of Competition, from CI 904, 904A, 904B, 904C, 904D, 904E, 904F, 904G, 904H, 904I, 904J, 904K, 904L, 904M, 904N, 904O, 904P, 904Q, 904R, 904S, 904T, 904U, 904V, 904W, 904X, 904Y, 904Z, 904AA, 904AB, 904AC, 904AD, 904AE, 904AF, 904AG, 904AH, 904AI, 904AJ, 904AK, 904AL, 904AM, 904AN, 904AO, 904AP, 904AQ, 904AR, 904AS, 904AT, 904AU, 904AV, 904AW, 904AX, 904AY, 904AZ, 904BA, 904BB, 904BC, 904BD, 904BE, 904BF, 904BG, 904BH, 904BI, 904BJ, 904BK, 904BL, 904BM, 904BN, 904BO, 904BP, 904BQ, 904BR, 904BS, 904BT, 904BU, 904BV, 904BW, 904BX, 904BY, 904BZ, 904CA, 904CB, 904CC, 904CD, 904CE, 904CF, 904CG, 904CH, 904CI, 904CJ, 904CK, 904CL, 904CM, 904CN, 904CO, 904CP, 904CQ, 904CR, 904CS, 904CT, 904CU, 904CV, 904CW, 904CX, 904CY, 904CZ, 904DA, 904DB, 904DC, 904DD, 904DE, 904DF, 904DG, 904DH, 904DI, 904DJ, 904DK, 904DL, 904DM, 904DN, 904DO, 904DP, 904DQ, 904DR, 904DS, 904DT, 904DU, 904DV, 904DW, 904DX, 904DY, 904DZ, 904EA, 904EB, 904EC, 904ED, 904EE, 904EF, 904EG, 904EH, 904EI, 904EJ, 904EK, 904EL, 904EM, 904EN, 904EO, 904EP, 904EQ, 904ER, 904ES, 904ET, 904EU, 904EV, 904EW, 904EX, 904EY, 904EZ, 904FA, 904FB, 904FC, 904FD, 904FE, 904FF, 904FG, 904FH, 904FI, 904FJ, 904FK, 904FL, 904FM, 904FN, 904FO, 904FP, 904FQ, 904FR, 904FS, 904FT, 904FU, 904FV, 904FW, 904FX, 904FY, 904FZ, 904GA, 904GB, 904GC, 904GD, 904GE, 904GF, 904GG, 904GH, 904GI, 904GJ, 904GK, 904GL, 904GM, 904GN, 904GO, 904GP, 904GQ, 904GR, 904GS, 904GT, 904GU, 904GV, 904GW, 904GX, 904GY, 904GZ, 904HA, 904HB, 904HC, 904HD, 904HE, 904HF, 904HG, 904HH, 904HI, 904HJ, 904HK, 904HL, 904HM, 904HN, 904HO, 904HP, 904HQ, 904HR, 904HS, 904HT, 904HU, 904HV, 904HW, 904HX, 904HY, 904HZ, 904IA, 904IB, 904IC, 904ID, 904IE, 904IF, 904IG, 904IH, 904II, 904IJ, 904IK, 904IL, 904IM, 904IN, 904IO, 904IP, 904IQ, 904IR, 904IS, 904IT, 904IU, 904IV, 904IW, 904IX, 904IY, 904IZ, 904JA, 904JB, 904JC, 904JD, 904JE, 904JF, 904JG, 904JH, 904JI, 904JJ, 904JK, 904JL, 904JM, 904JN, 904JO, 904JP, 904JQ, 904JR, 904JS, 904JT, 904JU, 904JV, 904JW, 904JX, 904JY, 904JZ, 904KA, 904KB, 904KC, 904KD, 904KE, 904KF, 904KG, 904KH, 904KI, 904KJ, 904KK, 904KL, 904KM, 904KN, 904KO, 904KP, 904KQ, 904KR, 904KS, 904KT, 904KU, 904KV, 904KW, 904KX, 904KY, 904KZ, 904LA, 904LB, 904LC, 904LD, 904LE, 904LF, 904LG, 904LH, 904LI, 904LJ, 904LK, 904LL, 904LM, 904LN, 904LO, 904LP, 904LQ, 904LR, 904LS, 904LT, 904LU, 904LV, 904LW, 904LX, 904LY, 904LZ, 904MA, 904MB, 904MC, 904MD, 904ME, 904MF, 904MG, 904MH, 904MI, 904MJ, 904MK, 904ML, 904MM, 904MN, 904MO, 904MP, 904MQ, 904MR, 904MS, 904MT, 904MU, 904MV, 904MW, 904MX, 904MY, 904MZ, 904NA, 904NB, 904NC, 904ND, 904NE, 904NF, 904NG, 904NH, 904NI, 904NJ, 904NK, 904NL, 904NM, 904NN, 904NO, 904NP, 904NQ, 904NR, 904NS, 904NT, 904NU, 904NV, 904NW, 904NX, 904NY, 904NZ, 904OA, 904OB, 904OC, 904OD, 904OE, 904OF, 904OG, 904OH, 904OI, 904OJ, 904OK, 904OL, 904OM, 904ON, 904OO, 904OP, 904OQ, 904OR, 904OS, 904OT, 904OU, 904OV, 904OW, 904OX, 904OY, 904OZ, 904PA, 904PB, 904PC, 904PD, 904PE, 904PF, 904PG, 904PH, 904PI, 904PJ, 904PK, 904PL, 904PM, 904PN, 904PO, 904PP, 904PQ, 904PR, 904PS, 904PT, 904PU, 904PV, 904PW, 904PX, 904PY, 904PZ, 904QA, 904QB, 904QC, 904QD, 904QE, 904QF, 904QG, 904QH, 904QI, 904QJ, 904QK, 904QL, 904QM, 904QN, 904QO, 904QP, 904QQ, 904QR, 904QS, 904QT, 904QU, 904QV, 904QW, 904QX, 904QY, 904QZ, 904RA, 904RB, 904RC, 904RD, 904RE, 904RF, 904RG, 904RH, 904RI, 904RJ, 904RK, 904RL, 904RM, 904RN, 904RO, 904RP, 904RQ, 904RR, 904RS, 904RT, 904RU, 904RV, 904RW, 904RX, 904RY, 904RZ, 904SA, 904SB, 904SC, 904SD, 904SE, 904SF, 904SG, 904SH, 904SI, 904SJ, 904SK, 904SL, 904SM, 904SN, 904SO, 904SP, 904SQ, 904SR, 904SS, 904ST, 904SU, 904SV, 904SW, 904SX, 904SY, 904SZ, 904TA, 904TB, 904TC, 904TD, 904TE, 904TF, 904TG, 904TH, 904TI, 904TJ, 904TK, 904TL, 904TM, 904TN, 904TO, 904TP, 904TQ, 904TR, 904TS, 904TT, 904TU, 904TV, 904TW, 904TX, 904TY, 904TZ, 904UA, 904UB, 904UC, 904UD, 904UE, 904UF, 904UG, 904UH, 904UI, 904UJ, 904UK, 904UL, 904UM, 904UN, 904UO, 904UP, 904UQ, 904UR, 904US, 904UT, 904UU, 904UV, 904UW, 904UX, 904UY, 904UZ, 904VA, 904VB, 904VC, 904VD, 904VE, 904VF, 904VG, 904VH, 904VI, 904VJ, 904VK, 904VL, 904VM, 904VN, 904VO, 904VP, 904VQ, 904VR, 904VS, 904VT, 904VU, 904VV, 904VW, 904VX, 904VY, 904VZ, 904WA, 904WB, 904WC, 904WD, 904WE, 904WF, 904WG, 904WH, 904WI, 904WJ, 904WK, 904WL, 904WM, 904WN, 904WO, 904WP, 904WQ, 904WR, 904WS, 904WT, 904WU, 904WV, 904WW, 904WX, 904WY, 904WZ, 904XA, 904XB, 904XC, 904XD, 904XE, 904XF, 904XG, 904XH, 904XI, 904XJ, 904XK, 904XL, 904XM, 904XN, 904XO, 904XP, 904XQ, 904XR, 904XS, 904XT, 904XU, 904XV, 904XW, 904XX, 904XY, 904XZ, 904YA
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Initial Decision

96 F.T.C.

QWC-5: Total aromatic TIO, Physicals production Via The Sulfate Process 1970-1977 (In Tons).

TOTAL AROMATIC TIO, PHYSICALS PRODUCTION VIA THE SULFATE PROCESS
1970-1977 (In Tons)

	1970		1971		1972		1973		1974		1975		1976		1977	
	Tons	Share	Tons	Share	Tons	Share	Tons	Share	Tons	Share	Tons	Share	Tons	Share	Tons	Share
Alpert 1/	42,800	11.7%	41,700	12.0%	53,700	15.1%	53,200	13.9%	45,100	12.7%	-	-	-	-	-	-
NL Industries 2/	192,888	51.0%	183,807	53.1%	162,702	45.7%	184,299	48.0%	166,257	47.0%	135,283	58.0%	98,366	45.1%	73,485	36.6%
American Cyanamid 3/	47,349	13.0%	48,348	13.9%	53,561	15.1%	51,657	13.5%	50,480	14.3%	31,172	13.4%	44,772	20.5%	43,190	21.5%
SOM 4/	48,370	13.3%	44,771	13.0%	45,613	12.8%	50,961	13.3%	48,814	13.8%	38,182	16.4%	40,148	18.4%	47,324	23.6%
Gulf 6/	33,067	9.1%	27,395	8.0%	40,499	11.4%	43,492	11.3%	43,020	12.2%	28,626	12.3%	34,993	16.0%	36,830	18.1%
Western 5/	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kerr-McGee	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shawin-Williams	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	364,474	100%	346,021	100%	356,075	100%	383,609	100%	353,671	100%	233,263	100%	218,279	100%	200,829	100%

- 1/ CX 192A.
- 2/ CX 901A; 902A; 903A; 904A; 905A; 906A; 907A; 908A; 909A; 910A; 911A; 912A; 913A; 914A; 915A; 916A; 917A; 918A; 919A; 920A; 921A; 922A; 923A; 924A; 925A; 926A; 927A; 928A; 929A; 930A; 931A; 932A; 933A; 934A; 935A; 936A; 937A; 938A; 939A; 940A; 941A; 942A; 943A; 944A; 945A; 946A; 947A; 948A; 949A; 950A; 951A; 952A; 953A; 954A; 955A; 956A; 957A; 958A; 959A; 960A; 961A; 962A; 963A; 964A; 965A; 966A; 967A; 968A; 969A; 970A; 971A; 972A; 973A; 974A; 975A; 976A; 977A; 978A; 979A; 980A; 981A; 982A; 983A; 984A; 985A; 986A; 987A; 988A; 989A; 990A; 991A; 992A; 993A; 994A; 995A; 996A; 997A; 998A; 999A; 1000A; 1001A; 1002A; 1003A; 1004A; 1005A; 1006A; 1007A; 1008A; 1009A; 1010A; 1011A; 1012A; 1013A; 1014A; 1015A; 1016A; 1017A; 1018A; 1019A; 1020A; 1021A; 1022A; 1023A; 1024A; 1025A; 1026A; 1027A; 1028A; 1029A; 1030A; 1031A; 1032A; 1033A; 1034A; 1035A; 1036A; 1037A; 1038A; 1039A; 1040A; 1041A; 1042A; 1043A; 1044A; 1045A; 1046A; 1047A; 1048A; 1049A; 1050A; 1051A; 1052A; 1053A; 1054A; 1055A; 1056A; 1057A; 1058A; 1059A; 1060A; 1061A; 1062A; 1063A; 1064A; 1065A; 1066A; 1067A; 1068A; 1069A; 1070A; 1071A; 1072A; 1073A; 1074A; 1075A; 1076A; 1077A; 1078A; 1079A; 1080A; 1081A; 1082A; 1083A; 1084A; 1085A; 1086A; 1087A; 1088A; 1089A; 1090A; 1091A; 1092A; 1093A; 1094A; 1095A; 1096A; 1097A; 1098A; 1099A; 1100A; 1101A; 1102A; 1103A; 1104A; 1105A; 1106A; 1107A; 1108A; 1109A; 1110A; 1111A; 1112A; 1113A; 1114A; 1115A; 1116A; 1117A; 1118A; 1119A; 1120A; 1121A; 1122A; 1123A; 1124A; 1125A; 1126A; 1127A; 1128A; 1129A; 1130A; 1131A; 1132A; 1133A; 1134A; 1135A; 1136A; 1137A; 1138A; 1139A; 1140A; 1141A; 1142A; 1143A; 1144A; 1145A; 1146A; 1147A; 1148A; 1149A; 1150A; 1151A; 1152A; 1153A; 1154A; 1155A; 1156A; 1157A; 1158A; 1159A; 1160A; 1161A; 1162A; 1163A; 1164A; 1165A; 1166A; 1167A; 1168A; 1169A; 1170A; 1171A; 1172A; 1173A; 1174A; 1175A; 1176A; 1177A; 1178A; 1179A; 1180A; 1181A; 1182A; 1183A; 1184A; 1185A; 1186A; 1187A; 1188A; 1189A; 1190A; 1191A; 1192A; 1193A; 1194A; 1195A; 1196A; 1197A; 1198A; 1199A; 1200A; 1201A; 1202A; 1203A; 1204A; 1205A; 1206A; 1207A; 1208A; 1209A; 1210A; 1211A; 1212A; 1213A; 1214A; 1215A; 1216A; 1217A; 1218A; 1219A; 1220A; 1221A; 1222A; 1223A; 1224A; 1225A; 1226A; 1227A; 1228A; 1229A; 1230A; 1231A; 1232A; 1233A; 1234A; 1235A; 1236A; 1237A; 1238A; 1239A; 1240A; 1241A; 1242A; 1243A; 1244A; 1245A; 1246A; 1247A; 1248A; 1249A; 1250A; 1251A; 1252A; 1253A; 1254A; 1255A; 1256A; 1257A; 1258A; 1259A; 1260A; 1261A; 1262A; 1263A; 1264A; 1265A; 1266A; 1267A; 1268A; 1269A; 1270A; 1271A; 1272A; 1273A; 1274A; 1275A; 1276A; 1277A; 1278A; 1279A; 1280A; 1281A; 1282A; 1283A; 1284A; 1285A; 1286A; 1287A; 1288A; 1289A; 1290A; 1291A; 1292A; 1293A; 1294A; 1295A; 1296A; 1297A; 1298A; 1299A; 1300A; 1301A; 1302A; 1303A; 1304A; 1305A; 1306A; 1307A; 1308A; 1309A; 1310A; 1311A; 1312A; 1313A; 1314A; 1315A; 1316A; 1317A; 1318A; 1319A; 1320A; 1321A; 1322A; 1323A; 1324A; 1325A; 1326A; 1327A; 1328A; 1329A; 1330A; 1331A; 1332A; 1333A; 1334A; 1335A; 1336A; 1337A; 1338A; 1339A; 1340A; 1341A; 1342A; 1343A; 1344A; 1345A; 1346A; 1347A; 1348A; 1349A; 1350A; 1351A; 1352A; 1353A; 1354A; 1355A; 1356A; 1357A; 1358A; 1359A; 1360A; 1361A; 1362A; 1363A; 1364A; 1365A; 1366A; 1367A; 1368A; 1369A; 1370A; 1371A; 1372A; 1373A; 1374A; 1375A; 1376A; 1377A; 1378A; 1379A; 1380A; 1381A; 1382A; 1383A; 1384A; 1385A; 1386A; 1387A; 1388A; 1389A; 1390A; 1391A; 1392A; 1393A; 1394A; 1395A; 1396A; 1397A; 1398A; 1399A; 1400A; 1401A; 1402A; 1403A; 1404A; 1405A; 1406A; 1407A; 1408A; 1409A; 1410A; 1411A; 1412A; 1413A; 1414A; 1415A; 1416A; 1417A; 1418A; 1419A; 1420A; 1421A; 1422A; 1423A; 1424A; 1425A; 1426A; 1427A; 1428A; 1429A; 1430A; 1431A; 1432A; 1433A; 1434A; 1435A; 1436A; 1437A; 1438A; 1439A; 1440A; 1441A; 1442A; 1443A; 1444A; 1445A; 1446A; 1447A; 1448A; 1449A; 1450A; 1451A; 1452A; 1453A; 1454A; 1455A; 1456A; 1457A; 1458A; 1459A; 1460A; 1461A; 1462A; 1463A; 1464A; 1465A; 1466A; 1467A; 1468A; 1469A; 1470A; 1471A; 1472A; 1473A; 1474A; 1475A; 1476A; 1477A; 1478A; 1479A; 1480A; 1481A; 1482A; 1483A; 1484A; 1485A; 1486A; 1487A; 1488A; 1489A; 1490A; 1491A; 1492A; 1493A; 1494A; 1495A; 1

Initial Decision

TABLE 1: Total Chloride Production Tons, Registered Via The Chloride Plant, 1970-1977 (in Tons)

TOTAL CHLORIDE PRODUCTION TONS, REGISTERED VIA THE CHLORIDE PLANT, 1970-1977 (in Tons)

	1970		1971		1972		1973		1974		1975		1976		1977	
	Total	Share	Total	Share	Total	Share	Total	Share	Total	Share	Total	Share	Total	Share	Total	Share
DuPont 1/	161,000	57.4%	170,100	51.0%	200,900	56.4%	217,500	60.4%	272,400	63.1%	239,900	64.2%	310,100	64.5%	313,300	66.3%
NE Initiatives 2/	28,835	10.3%	20,805	6.5%	-	-	-	-	-	-	-	-	-	-	-	-
American Cyanamid 3/	6,407	2.3%	22,961	7.5%	31,215	9.5%	31,634	9.0%	34,719	8.0%	28,710	7.7%	37,764	7.9%	31,271	6.4%
SCM 4/	701	0.2%	12,784	4.0%	17,884	5.1%	21,113	5.4%	23,889	5.5%	40,346	10.4%	56,757	11.4%	60,455	12.4%
Gulf & Western 5/	-	-	-	-	25,492	7.3%	28,789	7.3%	28,082	6.5%	14,491	3.9%	23,870	5.0%	25,888	5.3%
Kerr-McGraw 6/	33,472	12.0%	36,106	11.2%	41,952	12.1%	46,405	11.4%	49,120	11.1%	50,000	13.4%	52,034	10.4%	46,745	9.4%
Seaboard Williams 7/	16,407	6.6%	26,363	8.2%	26,398	7.6%	28,134	7.1%	24,773	5.7%	-	-	-	-	-	-
Chubb 8/	21,416	7.6%	22,973	7.2%	-	-	-	-	-	-	-	-	-	-	-	-
PGC 9/	10,366	3.7%	8,048	2.5%	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	280,604	100%	321,140	100%	347,841	100%	393,225	100%	432,004	100%	372,447	100%	480,505	100%	487,659	100%

1/ CHLORIDE.

2/ NE Initiatives 081037 and 081061 (original owner's name submitted in response to June 11, 1978 subpoena duPont duPont). NE closed its chloride plant in 1977.

3/ CHLORIDE.

4/ CHLORIDE.

5/ CHLORIDE.

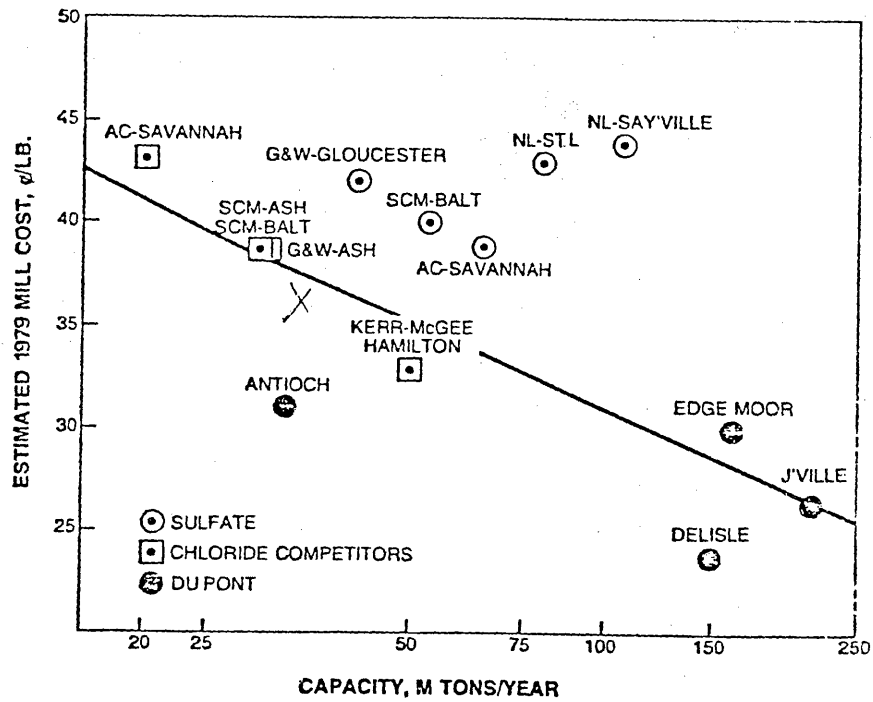
6/ CHLORIDE.

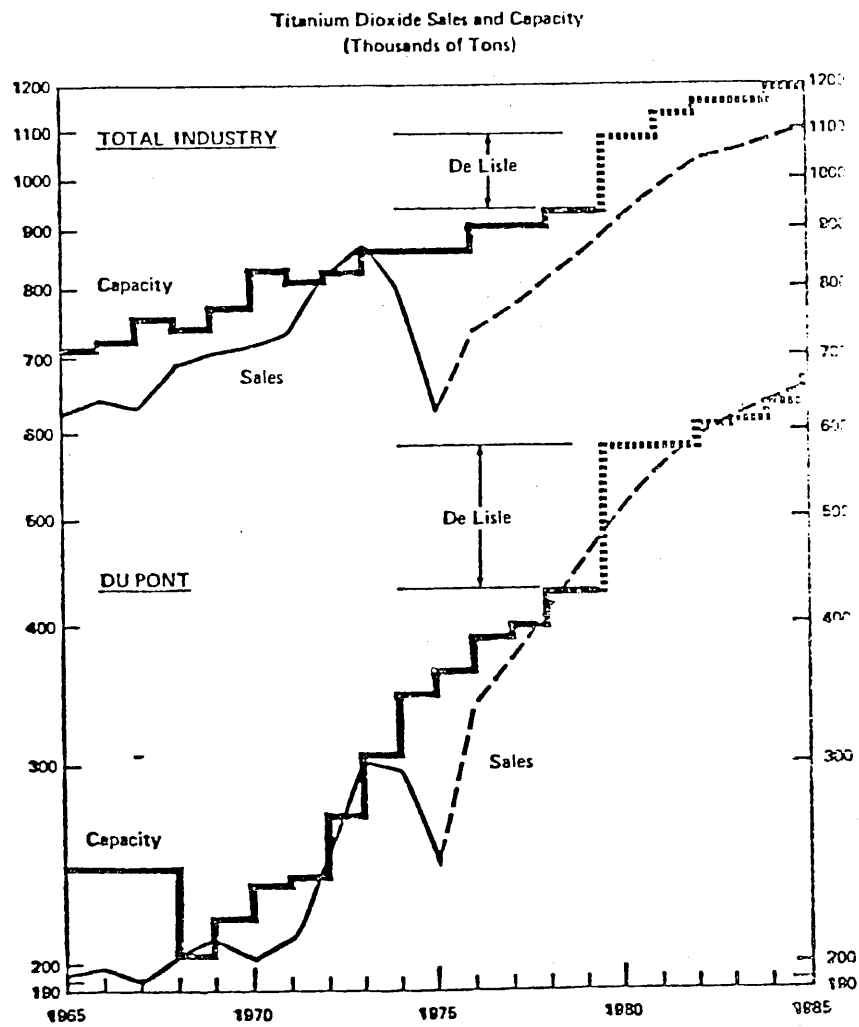
7/ CHLORIDE.

8/ CHLORIDE.

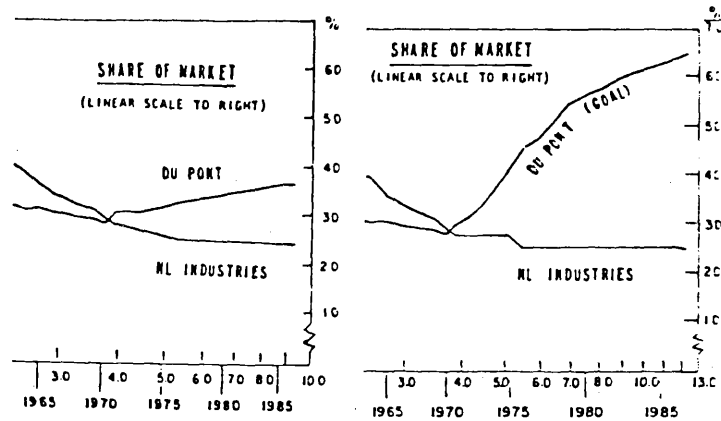
9/ CHLORIDE.

These documents contain chloride production data for Gulf & Western's chloride plant located at
 1/ CHLORIDE, 081037 and 081061 (original owner's name submitted in response to June 11, 1978 subpoena duPont duPont). NE closed its chloride plant in 1977.
 2/ CHLORIDE, 081037 and 081061 (original owner's name submitted in response to June 11, 1978 subpoena duPont duPont). NE closed its chloride plant in 1977.
 3/ CHLORIDE, 081037 and 081061 (original owner's name submitted in response to June 11, 1978 subpoena duPont duPont). NE closed its chloride plant in 1977.
 4/ CHLORIDE, 081037 and 081061 (original owner's name submitted in response to June 11, 1978 subpoena duPont duPont). NE closed its chloride plant in 1977.
 5/ CHLORIDE, 081037 and 081061 (original owner's name submitted in response to June 11, 1978 subpoena duPont duPont). NE closed its chloride plant in 1977.
 6/ CHLORIDE, 081037 and 081061 (original owner's name submitted in response to June 11, 1978 subpoena duPont duPont). NE closed its chloride plant in 1977.
 7/ CHLORIDE, 081037 and 081061 (original owner's name submitted in response to June 11, 1978 subpoena duPont duPont). NE closed its chloride plant in 1977.
 8/ CHLORIDE, 081037 and 081061 (original owner's name submitted in response to June 11, 1978 subpoena duPont duPont). NE closed its chloride plant in 1977.
 9/ CHLORIDE, 081037 and 081061 (original owner's name submitted in response to June 11, 1978 subpoena duPont duPont). NE closed its chloride plant in 1977.

FIGURE 2: MILL COSTS OF
TITANIUM DIOXIDE PRODUCERS



Comparison of DuPont Market Share
Projections: February/July 1972.



source: CX 21 O

source: CX 29 N

BEFORE "GROWTH STRATEGY"
February 10, 1972

AFTER "GROWTH STRATEGY"
July 6, 1972

OPINION OF THE COMMISSION

By CLANTON, *Commissioner*:*Introduction*

In challenging the legality of an expansion strategy adopted and carried out by respondent, E.I. DuPont de Nemours & Company ("DuPont"), in its titanium pigments business, this case addresses issues that are fundamental to antitrust policy. The complaint, issued April 5, 1978, charges DuPont in a two-part count with unfair methods of competition and unfair acts and practices by using its dominant position in an attempt to monopolize the production of titanium dioxide pigments ("TiO₂") in the United States, in violation of Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. 45. Administrative Law Judge Miles J. Brown (ALJ) dismissed the complaint and complaint counsel appeal.

The many events that compose the expansion strategy at issue span the years 1971 to 1978. As might be expected, these events are highly relevant to the issue of liability and, for that reason, must be set out in some detail, especially in view of the allegation that the expansion plan is unreasonable, and therefore unlawful, only [2]if assessed in its entirety. The actual occurrence of much of this conduct is largely uncontroverted, but the parties vigorously contest the legal consequences of these events.¹ (ID 5)

Respondent and the Market

DuPont is a Delaware corporation with its principal place of business at 1007 Market St., Wilmington, Delaware. In 1976, DuPont had sales exceeding \$8.3 billion, assets exceeding \$7 billion and net income exceeding \$459 million. It is engaged in the manufacture and sale of diverse chemical and related products, among them pigments and dyes including titanium dioxide pigment. During the period in question, DuPont's TiO₂ production was the responsibility of its

¹ The following abbreviations will be used in this opinion.

ID	-	Initial Decision page number
IDF	-	Initial Decision Finding number
Tr.	-	Transcript page number
CX	-	Complaint Counsel's exhibit number
RX	-	Respondent's exhibit number
CAB	-	Complaint Counsel's appeal brief
RAB	-	Respondent's answering brief
CRB	-	Complaint Counsel's reply brief
Tr.OA	-	Transcript of Oral Argument page number

Pigments Department, and in 1976, DuPont's total domestic shipments of TiO_2 amounted to \$257 million. (IDF 1-3, 6)

There is no dispute about the product and geographic markets at issue in this case. As there are no practical substitutes for the product, TiO_2 constitutes a distinct product market. The United States as a whole is the relevant geographic market for purposes of this case. (IDF 5)

TiO_2 is a white chemical pigment used in the manufacture of such products as paint and paper to make them whiter or opaque. In manufacturing TiO_2 , there are two basic processes: the "sulfate" process and the "chloride" process. Essentially, the sulfate process involves the reaction of sulfuric acid with relatively low-grade feedstock (ilmenite ore or titanium slag), while the chloride processes entail the reaction of chlorine either with a high-grade titanium ore (rutile ore or synthetic rutile) or with lower grades of feedstock (principally ilmenite ore). During the relevant time frame, only DuPont used the latter chloride process. (ID 5) [3]

A brief background on these two processes is helpful. The sulfate process was the first developed and used by all producers, including DuPont. It is a "batch" process, not affording the economies of large scale inherent in the "continuous flow" operation of the chloride processes. In the post-World War II period, DuPont developed chloride technology and began applying it to the relatively abundant low-grade ilmenite ore for commercial purposes. By 1952 DuPont's first ilmenite chloride facility was fully operational at Edge Moor, Delaware, where it also had a sulfate facility. In 1958, DuPont opened a second ilmenite chloride TiO_2 plant at New Johnsonville, Tennessee. While DuPont was building chloride process TiO_2 plants in the 1950's, other producers continued to build only sulfate plants. (ID 5)

In the late 1950's, abundant rutile ore deposits were discovered, and from 1960 to 1970, all TiO_2 plants constructed, including DuPont's Antioch, California, plant, were designed to use rutile ore in a chloride process. Until the late 1960's, the overall costs of production of TiO_2 were essentially equal among the various combinations of processes and ores. Although DuPont alone possessed the technology (principally know-how) to make the chloride process commercially viable using ilmenite ore, the relative costs of rutile and ilmenite were such that no production process conferred a significant cost advantage. (ID 5-6) So long as rutile ore was plentiful, a high-grade rutile chloride plant yielded a better return on investment than a comparable low-grade ilmenite process plant, due to the relative costs of ores, chlorine, waste disposal and initial

investments (which were lower for the high-grade ore plant). (IDF 17)

DuPont's development of the ilmenite chloride process through the transition from the laboratory stage to commercial production unquestionably proved to be a difficult and notable technological achievement. Although DuPont developed this process in small operating units, the small-scale production technology could not be readily transferred to larger-scale commercial production. Thus, new techniques had to be devised to adapt the chloride process to increasing scales of operation. (IDF 16)

Around 1970, a world-wide shortage of rutile sent its price soaring. Also at about that time, federal environmental regulations imposed costly pollution abatement requirements upon sulfate TiO_2 producers, threatening to close down some of the sulfate capacity. As a result, DuPont's ilmenite chloride process left it holding a substantial cost advantage (unit cost of about 16¢/lb) over its competitors (about 21¢/lb). (ID 6, CX 28E) [4]

It was DuPont's decision in 1972 to exploit this advantage and to increase its market share that gave rise to the complaint in this case. From 1972 to 1977, DuPont expanded its capacity and increased its market share from approximately 30% to 42%, and it presently forecasts that it will achieve a 55% share by 1985. Since 1970, no TiO_2 competitor has added new production capacity. (ID 6)

The Allegations

The complaint charges DuPont with an attempt to monopolize the TiO_2 market by the adoption and implementation of a strategy or plan to expand its domestic TiO_2 production capacity to capture substantially all of the growth in domestic demand for TiO_2 through the mid-1980's. Crucial to the plan was DuPont's undisputed cost advantage over its rivals in production of TiO_2 , which stemmed both from economies of scale and from DuPont's unique technological ability to use lower-grade (and lower cost) ilmenite ore. In this respect, complaint counsel contend that DuPont's cost advantage was "fortuitous," conferred upon it accidentally by the increases in the price of rutile and the costs of waste disposal in the sulfate process.

As alleged, DuPont's growth strategy consists of three interrelated elements: a) expansion of capacity by construction of a large-scale plant; b) exploitation of its cost advantage by pricing its products high enough to finance its own expanded capacity, yet low enough to discourage rivals from expanding; and c) refusal to license its cost-

saving ilmenite chloride technology with which rivals could learn to take advantage of the economies of scale inherent in the low-grade ore technology. In addition, the allegedly strategic behavior of DuPont consisted of premature expansion of its TiO_2 capacity and exaggerated announcements of its expansion intentions, all for the primary purpose of preempting competitors' expansion plans.

Complaint counsel contend that this conduct amounted to exclusionary and anticompetitive behavior insulating DuPont's cost advantage from competitive erosion since the ilmenite chloride technology actually changes as the scale of operation increases and, without large-scale operations, no competitor will be able to reduce or eliminate DuPont's cost advantage through "learning-by-doing" ilmenite chloride technology. The inevitable result of this strategy, according to complaint counsel, will be to give DuPont the power to raise prices at will, restrict output and prevent competition. (ID 43) Indeed, complaint counsel argue that DuPont's expansion plan "made no sense unless it results in a monopoly." Tr. OA 17. [5]

DuPont admits that it sought to capitalize on its cost advantage in order to capture or serve the major portion of the growth in demand for TiO_2 well into the 1980's. (RAB 12) Even so, it denies that the cost advantage was "fortuitous," claiming instead that it was due to its costly innovations in low-grade ilmenite chloride technology in earlier years. It further denies that its capacity expansion had any purpose other than to satisfy the expected increase in demand for TiO_2 . DuPont also denies that it engaged in an unlawful strategic pricing strategy, contending that its pricing during the period was attributable to market forces beyond its control. (RAB 27) Indeed, DuPont asserts that complaint counsel failed to prove that its prices were not profit-maximizing under the prevailing economic conditions. *Id.*

Furthermore, DuPont claims that it was under no duty to license its ilmenite chloride technology to any competitor, and contends that its competitors, all large corporations engaged in TiO_2 manufacture, are not prevented from developing their own low-grade ore technology or constructing large scale plants if they choose to make such investments. (RAB 28) Finally, DuPont points to its failure to achieve the anticipated growth in its market share and denies that it could attain monopoly power in the TiO_2 market. (RAB 43 *et seq.*)

We proceed now to a fuller exposition of the events giving rise to this case.

The Strategy

Prior to its switch to a more aggressive growth strategy, DuPont had some limited TiO_2 expansion plans underway. Specifically, respondent sought to expand its sales from 218 thousand tons per year ("MT") in 1971 to 301 MT in 1976, including an increase in the chloride capacity at New Johnsonville from 141 MT to 196 MT, which would make it the world's largest TiO_2 plant.² At that time, DuPont's pricing policy was to maintain prices, except to cover inflation, until 1986 in conjunction with its conversions and expansions. (CX 22A) Its share of the TiO_2 market stood at 30%. (CX 21) [6]

In early 1972, however, DuPont noted that significant changes had occurred or were occurring in the TiO_2 market, including the fact that National Lead ("NL") and PPG were shutting down rutile chloride plants due to price erosion during the recession, that NL had ceased making "extended pigment," thus taking even more product off the market, and that the industry had little reserve capacity, although demand was recovering from the recession. (CX 21) Later that year, DuPont became further aware of its advantageous position when its Development Department formed a Task Force to improve the performance of the Pigments Department. The Task Force focused on the coming decline of sulfate capacity, DuPont's expanded scale and its 5¢/pound cost advantage over its competitors, the rutile supply problems of competitors, the waste disposal differences between sulfate and chloride, and the fact that competitors could technically convert to ilmenite but that at their scales of production it was too expensive and risky to do so.³ (CX 23) The Task Force reported those developments to the Executive Committee and predicted that DuPont could capture all of the anticipated increase in demand (from 713 MT in 1971 to 1000-1100 MT in 1980) and attain a market share of 56% by 1980 and perhaps 65% by 1985.

In light of these apparent long-run opportunities, DuPont decided in 1972 to launch the more aggressive expansion strategy. It attributes its decision specifically to a) recovery of the economy from the recession, b) a surcharge on imports, c) the impending and actual

² As background, it should be noted that in 1971 DuPont had both sulfate and chloride process plants. But because of the increasing costs of the sulfate process, in 1971 the Pigments Department recommended exclusive reliance on the chloride process and conversion of sulfate capacity at Edge Moor to ilmenite chloride production. (CX 15)

³ DuPont believed that the basic ilmenite chloride patent technology had been disclosed in scientific literature, but its competitors continued to use the rutile chloride process. In DuPont's view, they were reluctant to shift to ilmenite technology because they shied away from ilmenite waste disposal problems and they lacked sufficiently large-scale plants to justify the expense of conversion. (CX 16A-F)

decrease in sulfate and rutile chloride capacity throughout the industry and d) DuPont's cost advantage in using ilmenite together with the scale economies achieved through expansions at Edge Moor and New Johnsonville. (RAB 11) Complaint counsel contend that no exogenous market change led to the reassessment, but that DuPont simply sought to prevent competitive expansion and attain monopoly power. Although the documentary record reveals little about the reasons leading DuPont to rethink its strategy, complaint counsel are correct in asserting that the principal market changes justifying the growth strategy mostly occurred prior to DuPont's adoption of its earlier, more moderate expansion program. [7]

The initial terms of the new expansion plan called for upgraded capacities of 167 MT for Edge Moor (from 110) and 228 for New Johnsonville (instead of 196), and for a third ilmenite chloride plant at "Site X," originally envisioned as two lines commencing at staggered times, with a capacity range between 110 and 380 MT. (CX 26F, H, CX 38L, CX 50B, H)

While such capacities were large for the industry, from the outset, DuPont's expansion plans appeared to involve plants of optimally efficient scale. DuPont's estimate of the increase in demand between 1972 and 1980 was 330 MT, which DuPont characterized as equivalent to "three fully developed JV-type [New Johnsonville] lines" (110 MT each). (CX 34I, CX 26D-E) Later planning documents retained 110 MT as a benchmark capacity in the proposal for a 110 MT line by 1980 at Site X and an "innovative" second line of 220 MT there in the indefinite future. (CX 38L) Throughout the planning period 1972-73, DuPont's technological applications improved and the plan was revised to expand New Johnsonville to 252 MT (two lines). With the increase in the optimal scale of the JV-type line to 126 MT, the planned capacity of the future single line at Site X increased to 130 MT.⁴ (CX 26H, CX 54A) There is no evidence that DuPont planned to build excess capacity or that its plans to fulfill the foreseen demand with new and expanded plants were inconsistent with scale economies.

As mentioned above, the Task Force expected the remainder of the industry to suffer a net loss of capacity. DuPont's estimate of its competitors' 1972 capacity was 480-505 MT, which included 160 MT of sulfate capacity that was expected to be shut down due to environmental difficulties. (CX 26M) DuPont anticipated a limited expansion of competitors' chloride capacity before 1980, which would replace some of the lost sulfate production. Specifically, DuPont

⁴ The capacities of 167 for EM and 252 for JV were the "desired practical limits" of those plants; expansions to those limits were actually begun in May 1974. (CX 54C)

expected Kerr-McGee to gain a net increase of 50 MT (chloride), while expansion by others was less certain.⁵ In no event was competitive chloride expansion expected to exceed 110 MT by 1980, compared to the projected loss of 160 MT of sulfate capacity. The 1972 appropriation request for the expansion of New Johnsonville noted that PPG and NL were abandoning chloride plants due to unfavorable economics, that Cabot had transferred its chloride plant to Gulf & Western, that remaining industry capacity was oversold and that industry expansion was necessary to meet forecast demand. (CX 29H-I) [8]

Complaint counsel accuse DuPont of perpetuating these discouraging conditions for competitors by pricing in a manner that made it unattractive for other firms to invest in new capacity. While pricing to generate funds for expansion was an integral part of the 1972 strategy, discouragement of competitive expansion did not appear as an express element of the strategy until 1975, at least in presentations to the Executive Committee.⁶ As for DuPont's individual pricing decisions throughout the period 1972-1977, there is some additional evidence to suggest that those decisions took account of the effect upon competitive expansion. At the same time, the record indicates that respondent's pricing strategy underwent periodic adjustment due to variations in market forces, including cost inflation and amended demand forecasts.

Complaint counsel cite several events that allegedly reveal DuPont's pricing policy to prevent competitors from earning sufficient funds to expand. In one such instance, Kerr-McGee increased its TiO_2 price by 3¢ in June 1972, an action that DuPont personnel understood to be related to the desire of certain competitors to expand. Complaint counsel contend that it was DuPont's unilateral refusal to follow the price increase, not market forces, that prevented the price hike. However, DuPont proved unable to prevent an increase—because of a lack of excess capacity, DuPont could not force a roll-back of prices to its level, and two-tier pricing resulted. (RAB 25) Although the documents show that the expansion-inducing effects of the increase played a role, other market-related reasons influencing DuPont's decision were that: a) DuPont's larger customers had price protection (a firm price) until the end of the year, b) there was uncertainty about federal price controls, c) an increase would stimulate imports, d) an increase during a shortage looked

⁵ Expansions of 25 MT by American Cyanamid and 35 MT by SCM were assigned low (10%) probabilities, (CX 213B) and apparently expansions by other firms were even less likely.

⁶ Express elements of the 1972 strategy were to a) price to generate funds for expansion, b) decide the configuration of production facilities (a third site was needed), c) increase the mineral supply and d) decide on a waste disposal method. (CX 27F)

like gouging, and e) DuPont's price was already higher than some competitors'. (CX 28)

Subsequently, DuPont increased its prices on four separate occasions in 1974. (CX 3, #196-200) The record fails to show whether DuPont led all of these increases, although in its brief respondent states that it led the last one, which had to be partially rescinded. (RAB 27) In January 1975, after these four increases, DuPont, citing market softness, again refused to support a competitor's 5¢ increase, and all competitors rolled back their prices. (CX 3, #201-09) However, six months later, DuPont led another, lesser price increase of 3.5¢, which competitors followed. (CX 3, #210-14) This time DuPont thought the increase was a compromise [9]level for restoring earnings in the face of rapidly rising costs without shrinking demand. (RX 2B) Due to excess capacity and discounting, this latter increase was only partially successful. Nevertheless, complaint counsel cite this sequence of events as evidence of DuPont's power to control prices and its policy of restricting competitors' revenues.

Two other pricing patterns were discussed. In both 1976 and 1977, competitors led increases but, when DuPont raised its prices by a lesser amount, the competitors rescinded to the smaller increase. In 1976, DuPont cited the effects of the price hike on its customers and on imports, while in 1977 DuPont believed that the smaller increase would help it keep its market share, would minimize substitution of "extenders" for TiO_2 , would be more palatable to customers, and would approximate recent cost increases. (CX 161)

While an interest in discouraging expansions by competitors could be inferred from the totality of the pricing policies and conduct, substantial alternative reasons attributable to external market forces were also evident, and neither of the explanations is necessarily inconsistent with what occurred in each instance. In reviewing the strategy, the 1975 Task Force inferred that, from the outset, the pricing policy had the dual purpose of providing cash for expansion and limiting competitors' ability to expand. On the other hand, as we discuss further below, it appears that independent market factors may have led DuPont and competitors to price at levels below the expansion-inducing (or limit) price that would have prevailed under more favorable market conditions.

Complaint counsel also contend that DuPont strategically announced its intentions to build new capacity and actually began such expansions prematurely, for the primary purpose of preempting and discouraging competitors' expansion opportunities. (CAB 15) For example, in July 1974, an appropriation request was made for the "partial design, a construction cost estimate, and cancellation

charges on long-term delivery equipment" for a 130 MT chloride plant at De Lisle, Mississippi. (CX 3, #114) DuPont also described this action as a decision "to authorize funds for a preliminary engineering study into a third TiO₂ chloride" plant. (CX 3, #126) By comparison, the press release of July 16 declared that DuPont planned to construct a plant on a site then under option and that it had authorized expenditure of \$8 million for a "detailed design and order of long delivery equipment." (CX 159F) Complaint counsel argue that DuPont's announcement of this appropriation, among others, was both premature and exaggerated. The ALJ found that such announcements were necessary to inform customers and the De Lisle community of DuPont's plans. (ID 41) While a "detailed design" suggests more of a commitment than a "preliminary engineering study," this disparity in the announced scope of DuPont's intentions does not seem sufficient to mislead [10]sophisticated corporate managers, especially since the amount of expenditure was disclosed. In addition, DuPont's customers were anxious to know whether DuPont would supply their anticipated increased needs. Furthermore, DuPont had encountered environmental resistance in its first choice of sites, and because of the time required to license such a facility, it was reasonable to give early notice to the community, to licensing authorities and to customers. For these reasons, it appears that the scope and timing of DuPont's announcements of its intentions regarding De Lisle were related to legitimate business considerations.

Complaint counsel also allege that DuPont's decision on the timing of De Lisle's start-up amounted to another of the strategic decisions aimed at preventing competitive expansion, and that DuPont eventually decided to bring De Lisle on-stream "early." (CAB 37) Yet complaint counsel acknowledge that an accelerated start-up would not result in oversupply. *Id.* From the outset, the start-up of De Lisle was planned to coincide with the increase in demand that the economic recovery of the late 70's was expected to bring. The Pigments Department emphasized the advantages of proper timing in urging the Executive Committee not to delay the start-up:

Although this action (reaming out existing facilities and delaying the start-up until 1981) reduces cash needs during 1975-1978, it has serious long run implications. . . . At a later date, it would be impossible to regain this momentum because the lack of major activity by DuPont in the interim would prompt competition to implement their own expansion plans. Therefore, sell-out of a De Lisle-type plant would require about ten years rather than the desired 3-4 years. . . . [since] DuPont would be facing the prospect of competing on a "me-too" basis. (CX 71F)

This document and other Task Force memoranda indicate that the

decisions regarding the commencement of production at De Lisle were consistent with both a desire to respond to market opportunities and a desire to expand before competitors expanded.

We also note that there are no allegations that the size of the De Lisle proposal was excessive or inconsistent with optimal scale economies. When the De Lisle plans were first assembled, the equipment specifications from New Johnsonville were used, yielding a projected capacity of 130 MT. By 1975, DuPont had recalculated the capacities of the equipment for use at De Lisle, taking improvements into account, and up-graded the projected efficient capacity to 150 MT. (CX 113J) The plans for a second line at De Lisle were later postponed indefinitely. [11]

In 1975, a general economic recession led the DuPont Executive Committee to reevaluate about ten capital projects, and a slump in TiO_2 sales in particular led it to review the De Lisle construction plans. The Pigments Department found its De Lisle project competing for funds with several other corporate projects. To make its case for the De Lisle project, the Task Force devised two alternative ten-year TiO_2 business strategies—one an aggressive “growth” plan calling for completion of De Lisle and aiming toward 60% of the market, the other a “maintain” strategy aimed at a 43% share with no new plant until 1985. (CX 91) To convince the Executive Committee not to abandon or delay De Lisle, the Task Force focused on the long-run profitability of the TiO_2 business with the added capacity and a larger market share. Much attention in the parties’ briefs is devoted to the extent to which the Executive Committee was exposed to and adopted the plans and recommendations of the reconstituted TiO_2 Task Force.

In attempting to estimate the effect of TiO_2 prices on DuPont’s ability to sell out De Lisle within three or four years of the plant’s opening, the Task Force performed the following calculations: price that would trigger competitive expansion, price that would trigger imports, price at which TiO_2 substitutes occur, price that will sink any firm. (CX 85B) The express pricing goal under the “growth” strategy was to price as high as possible to generate expansion funds without a major competitive expansion or foreign entry. Under the “maintain” strategy, the pricing policy would be “to balance profit with limited competitive expansion and foreign entry.”⁷ (CX 113P)

⁷ The return on investment in TiO_2 was significantly higher for DuPont than for its competitors. DuPont documents describe the TiO_2 business as a profitable one for itself but a marginal one for competitors. (CX 182E) While DuPont’s operative return on investment was 29% in 1972, its estimates of competitors’ returns were as follows: Kerr-McGee and American Cyanamid, 8%; SCM and Cabot, 3%; NL Industries, 12%. (CX 26M) The projected return on the De Lisle project was also higher than that for DuPont’s overall TiO_2 operations. The projected net return on the De Lisle project by the third year of operation (1981) was 17% while the projected net return on DuPont’s entire TiO_2 business for the third year was 15%. (CX 133N)

The documents indicate the Task Force's belief that if De Lisle were delayed one year, competitive expansion was unlikely (CX 101), but that if De Lisle were abandoned, Kerr-McGee, SCM and American Cyanamid might expand. (CX 108) However, in its presentation to the Executive Committee, the Task Force predicted that any delay of De Lisle would stimulate others to expand. In turn, it was argued, such expansion would preclude DuPont from attaining full capacity within the four-year period thought necessary to make De Lisle economically viable. (CX 116I)

The Task Force also prepared several comparative long-range projections of the price and profit expectations under the two proposed strategies, projections that are referred to in the briefs as the "welfare analysis." These projections showed that, while TiO_2 prices would be lower in 1980 under the growth plan than under the "maintain" strategy, after 1984 the prices, and thus the [12]total profitability out to 1992, would be higher under the expansion plan. The welfare analysis itself contains no explanation of the different price assumptions used, but other documents referred generally to the value of a larger market share. (CX 116J)

Complaint counsel argue that the welfare analysis shows that DuPont knew that it would recoup any sacrifice of short-run profit by higher long-run prices which, they contend, would result from DuPont's higher market share and future monopoly power over price. Complaint counsel also contend that, because the Executive Committee chose to build De Lisle despite the fact that the third-year rate of return was lower than that in the "maintain" strategy projection, the upper management of DuPont must have looked beyond its normal three-year investment evaluation period and intended a predatory, short-term sacrifice of profits. By complaint counsel's calculations, DuPont will reap \$387 million more between 1975 and 1992 under the growth strategy than it would under the "maintain" plan.

DuPont responds that the two tables of projected market variables called the "welfare analysis" do not mean what complaint counsel claim they do. According to the testimony of Mr. Clark, the Pigments Department's manager for research and development, the planning period for the De Lisle project ran only to 1985. The projected price in that year would be higher for the "growth" strategy than for the "maintain" strategy, in the judgment of the Task Force, because of the following scenario: If De Lisle were delayed, prices would first rise, reflecting a shortage. However, competitors would eventually bring on new capacity in an uncoordinated manner, resulting in overcapacity. Prices would then fall or at least stabilize despite

rising costs for a period of years. By 1985, the overcapacity would cause prices to drop 2¢/pound below the projected level under the growth strategy, due to excess capacity. Mr. Clark's testimony is that the projection of prices beyond 1985 was a purely mechanical application of factors to produce DuPont's uniform investment evaluation benchmark, the investor's method rate of return, for the full period of depreciation (13 years). (Tr. 1286-91, 1455-59) Mr. Clark explained that while the 2¢ differential in 1985 resulted from Task Force judgment about the scenario, the computer simply escalated the numbers out to 1992 in the same relationship as they stood in 1985. Mr. Clark also vigorously denied that anticipation of larger market share played any role in the projections. (Tr. 1299, 1323, 1385, 1468)

From the documentary evidence, it seems reasonable to infer that the Task Force projections were used in the presentation to the Executive Committee and that the Committee was aware of the conceptual, if not the actual, projected price differential between the two strategies, despite testimony that the differential was not a factor in the De Lisle decision.^{*} While the 1992 projections do not appear to [13] reveal any specific assessment of the factors that would affect prices beyond 1985, the projections nevertheless indicate that DuPont would gain some pricing advantage if it built De Lisle and thereby prevented a period of overcapacity. But, weighed in its context, the "welfare analysis" reveals little about the extent to which DuPont would exercise its market power.

In addition to the projected price differential, several other factors were discussed by the Task Force in preparation for the presentation to the Executive Committee. One topic presented to the Committee was the retention of DuPont's TiO₂ customer base, while a topic apparently dropped from the written presentation was the preemptive impact upon competitors of DuPont's announcements of its expansion plans.

As for customer relations, DuPont believed that

[a] portion of our market share growth over the past years stems from bringing on additional capacity at times when it was needed. Another portion resulted from the expectation on the part of customers that we would continue to expand to meet their growth needs. (CX 118A)

By 1975, De Lisle had already been announced and customer expectations established. Having created such expectations, DuPont

^{*} Mr. Shapiro, DuPont's chairman, testified that while the short-run profitability of reaming out and expanding New Johnsonville exceeded the short-run profitability of building De Lisle, output from New Johnsonville would be inadequate to meet demand and DuPont would have to build another plant anyway, so it was more efficient and economical to proceed with De Lisle. (Tr. 799)

believed it had much to lose from reversing itself on De Lisle, especially its credibility as a supplier. To delay construction of De Lisle would be seen by customers as unwillingness to meet their future needs. To cancel would be worse, in the view of the Task Force, since competitors had been discouraged from expansion because of DuPont's "announced and well-publicized intentions." (CX 118A) DuPont would gain "an image of having forestalled competitive expansions on a false premise," and would thereafter be the least favored supplier. *Id.*

Such Task Force speculation about the preemptive nature of the announcements about De Lisle, as contrasted with the expansion itself, did not go beyond the Pigments Department. While the Task Force observed, in the draft of its presentation, that its well-publicized expansion plans had made competitors hesitant to expand, (CX 113F) there was nothing explicit about preemption of competitive expansions in the written discussion before the Executive Committee. (CX 116H) Nevertheless, it is reasonable to infer from the overall presentation that the Executive Committee clearly understood the full effects of such a large expansion. The Committee was told that the pricing structure had reportedly kept competitors from expanding; and it was also made aware of DuPont's scale advantages, customer expectations, the pricing structure, the political and environmental value of a new chloride production site and the differential in projected prices between the alternative strategies. After the presentation, the Executive Committee decided to continue [14]as planned with construction of the 150 MT De Lisle plant, to commence operation in 1979.⁹

This decision was believed to have

signalled DuPont's intention to compete strongly for the increased needs of domestic industry into the early eighties. Customers, concerned about future shortages, and most competitors, aware of the many problems they face, appear to have accepted this. (CX 140H, CX 120U)

Even so, throughout the rest of the period, the Task Force remained concerned that, due to unanticipated slumps in demand, the strategy, which it continued to follow, would not yield sufficient revenues for De Lisle. In fact, however, between 1972 and 1977, DuPont's profit objectives were almost met, by its own account, by keeping its prices high, causing the Task Force to recommend a

⁹ In examining the role of the Task Force, we have reviewed respondent's arguments that it should not be held accountable for the brainstorming of lower-level management. It is clear, however, that the Task Force constituted much more than a "think tank" operation. It was specifically set up to develop a long-range plan for the Pigments Department and its basic recommendations were consistently followed by the Executive Committee. Moreover, the Task Force's periodic reassessment of the 1972 strategy, and its revisions, leave little doubt as to senior management's endorsement of the basic elements of the growth strategy. (CX 178, 180, 182).

program of lower prices to encourage consumption of TiO_2 . (CX 182F)

As originally conceived, the growth strategy did not call for DuPont to take market share or existing sales away from competitors; rather, the plan was to capture the forecast growth in demand. As it turned out, over the course of the strategy, DuPont did take some market share from its competitors. Despite DuPont's early forecasts and expectations, between 1972 and 1977 there was no net increase in total demand for TiO_2 and competitors' sulfate plants did not close. While it fell well short of its earlier market share goals, DuPont nevertheless increased its sales over the period by 80 MT, at the expense of competitors.

By late 1977, no competitive expansion was foreseen. The final injection of funds for the start-up of De Lisle was being fine-tuned to coincide with the anticipated economic recovery at which the output was aimed. (CX 196H, CX 159B) [15]

Summary of Facts

We have here a remarkably clear blueprint of DuPont's plan to capture all or most of the increased demand for TiO_2 after 1972. Although DuPont has fallen somewhat short of its 1972 market share goals—51.8% planned vs. 43% actual for 1978—it nevertheless has continued to follow the early strategy. The principal setbacks resulted from a slowdown in demand growth and the continued operation of sulfate plants that DuPont thought would be closed due to pollution problems. These circumstances also forced DuPont to cancel (or at least indefinitely postpone) a second line at De Lisle. As to much of the evidence there is little dispute about the precise events that occurred or the sequence of these events. Where the parties diverge sharply is over the inferences to be drawn from DuPont's conduct and, more specifically, over the justifications offered in defense of the expansion and pricing decisions.

As for the expansion program, the record is quite clear that DuPont's plans left little room for competitors, with the possible exception of Kerr-McGee, to expand by 1980. At the same time, it is also clear that DuPont did not seek to drive competitors out of the market, although the effect of capturing all growth would inevitably be to reduce the market share of other competitors and, arguably, the value of that share. There is no evidence to indicate that DuPont's 1972 estimate of 1980 demand was unreasonable or exaggerated; indeed, a TiO_2 shortage existed in 1972 and the economic downturn of the mid-70's had not yet materialized. Had

DuPont expanded only its existing facilities to their "desired practical limits" (Edge Moor from 55 to 167, New Johnsonville from 141 to 252, and Antioch from 28 to 50), its addition of capacity would have fallen short of the projected 1980 increase in demand by about the amount of the projected capacity of De Lisle's first production line.¹⁰

Complaint counsel do not contend that DuPont overbuilt its capacity relative to anticipated demand; rather they argue that respondent met its growth objectives only by preempting competitive expansion through strategic announcement and start-up of the De Lisle plant as well as pricing to deter competitive growth. As examples of strategic timing, complaint counsel cite DuPont's 1974 announcement of its plan to build De Lisle, which occurred before funds were actually appropriated, and the 1975 recommendation to the Executive Committee urging that start-up of De Lisle not be delayed for two years (despite a market slump) because of competitive ramifications. [16]

On the other hand, as the law judge noted and complaint counsel recognize, there were legitimate business reasons for DuPont to provide as much notice as possible of its expansion plans. (ID 21, 41, CAB 36) DuPont had encountered strong environmentally related resistance in its attempts to locate what eventually became the De Lisle plant, and, in fact, the firm abandoned its first choice of sites in Georgia. Thus, early notice and clearance of a site was logical, and the period required for licensing such a facility appeared substantial. In addition, as the record indicates, there were customer-related reasons for providing adequate advance notice about capacity expansion and for not abandoning publicly announced expansion plans. In short, although DuPont systematically took account of the impact of its decisions on competitors, we cannot find that respondent timed the announcement and start-up of its De Lisle plant in a way that was unrelated to market growth, lead time and other legitimate business considerations.

It should also be emphasized that the significant scale economies achieved by DuPont in its ilmenite chloride process made it feasible for respondent to try and capture growth left unmet after expansion of its existing plants through construction of a large, efficient-size plant. Other than Kerr-McGee, with its contemplated 50 MT addition, DuPont appeared to be the firm most interested and capable of significant expansion before 1980. As market conditions

¹⁰ That takes into account the 1972 projection that there would be a net loss of roughly 60 MT due to shutdown of sulfate plants. Because those shutdowns never occurred and demand growth slowed, the De Lisle plant was brought on stream later than originally anticipated.

changed throughout the period, DuPont revised both the size of the De Lisle plant and its start-up date to take account of the adjusted estimates of demand. While DuPont's original plans for its new plant site included a second line of 220 MT capacity, and while the press release announcing the first appropriation for De Lisle stated that the single-line plant was planned with expansion in mind, the second line at De Lisle was never formally announced to the industry and, indeed, quickly disappeared from the TiO_2 strategy.

As De Lisle neared completion, and after \$142 million had been spent on the project, DuPont considered whether to delay or to accelerate its start-up. The final infusion of capital was to be timed so that completion coincided with the anticipated resurgence of demand. The costs already sunk as well as customer expectations were legitimate business reasons for DuPont to proceed with completion as urged by the Pigments Department in late 1977, even if it meant that the plant might lie dormant for a year.

On the pricing side, two interrelated issues are involved: DuPont's influence over price and the rationale for both the firm's individual pricing decisions and its overall pricing strategy. Central to complaint counsel's case is the allegation that DuPont deliberately sought to deter competitive expansion, and simultaneously effect its own expansion plans, by using its cost advantage to price at a level that would make it unattractive for competitors to enlarge their capacity. [17] In support of their position, complaint counsel rely on Task Force statements as well as four instances where DuPont forced a rollback in competitors' price hikes by refusing to go along. Respondent obviously disputes these contentions, claiming that independent market forces influenced its specific pricing decisions and that the Executive Committee did not adopt the Task Force pricing recommendations.

The evidence of DuPont's cost advantage and its pricing behavior clearly indicates that it exercised some degree of price leadership in the industry. For example, internal company documents reveal DuPont's own belief in 1975 that if price increases were to occur it would have to lead the way. (CX 99A) Moreover, DuPont's ability to force a rollback of price hikes in early 1975, to initiate successfully a lesser price increase several months later, and to force further rollbacks in 1976 and 1977, points strongly to the conclusion that respondent had a measure of power over price.

It is true, of course, as respondent contends, that other factors influenced industry pricing between 1972 and 1978, factors which suggest that DuPont did not have unfettered control over prices. Because of a shortage, DuPont was unable to roll back prices in 1972,

thereby creating a two-tiered pricing structure. DuPont's actions in forcing price rollbacks in later years can be explained, as respondent contends, by independent market forces such as excess capacity, customer reaction and the threat of imports. Customers, for example, could reduce their consumption of TiO_2 to some extent through the use of extenders. And, as long as excess capacity existed, competitors had an incentive to increase sales by discounting in order to reduce fixed costs. By DuPont's own account, it gained market share early in the slump through aggressive pricing but suffered a slippage later when prices were kept too high. (CX 182C) Thus, there were some constraints on DuPont's pricing decisions, but that does not detract from the fact that respondent enjoyed significantly greater freedom than its rivals to influence industry pricing.

As for the Task Force recommendations concerning deterrent or limit pricing, it is hard to reach any conclusion other than that such an objective was part and parcel of the overall growth strategy. To be sure, the 1972 plan presented to the Executive Committee did not expressly refer to a limit pricing policy. Nevertheless, that objective was viewed by the Task Force in 1975 as an element of the plan and later Task Force reports reiterated this feature. (CX 91H, 76D) Had the Executive Committee rejected such an approach, it seems highly unlikely that it would have surfaced in later reports. But, having found that such a pricing strategy existed, it is quite another thing to ascertain how it affected specific pricing decisions. In fact, in light of the other market factors affecting DuPont's specific pricing decisions, it is impossible to discern from the record the degree to which DuPont looked to competitors' expansion plans in making those decisions. There is no evidence, however, that DuPont priced below its costs and complaint counsel do not attempt to make such a showing. [18]

In view of the pricing evidence, it is quite probable that complaint counsel's and respondent's seemingly contradictory positions are, in fact, not inconsistent. As noted earlier, DuPont had performed several calculations of pricing parameters, including the limit price above which competitors could be expected to bring in new capacity. But, because general economic forces kept demand below anticipated levels and put downward pressure on TiO_2 prices during the period in question, DuPont and its competitors may well have been pricing in an area below the limit price, i.e., the price that, in the growing market of 1972, would suffice to deter competitive expansion. In such a situation, DuPont apparently would be less concerned about the critical expansion-inducing price and more concerned with short-

term market share gain or loss, especially as it affected the efficient utilization of existing capacity. This is not to suggest, of course, that DuPont's pricing responses in 1975-77 had no impact on competitors' expansion plans. To the extent rivals were denied price hikes by DuPont, their profits undoubtedly suffered, thereby making it even less likely that new expansion would be contemplated. What the evidence does suggest, however, is that the pricing decisions of DuPont during this period may well have reflected short-term market conditions more than long-term strategic considerations.¹¹ Nevertheless, while DuPont did not have absolute control over price and was constrained by market forces beyond its control, there is persuasive evidence that it was able to exert its influence over the prices of competitors and that it sought to do so for the dual purpose of generating sufficient funds for its own expansion and depriving competitors of sufficient funds to expand. This pricing behavior is analyzed below in light of current standards of predation and exclusionary conduct.

Finally, as with the expansion-detering price issue, respondent also attempts to insulate its Executive Committee from association with the long-run welfare considerations developed by the Task Force in 1975 for the purpose of comparing the "growth" and "maintain" strategies. While the Executive Committee did not set prices, it was certainly aware of the basis for the Pigments Department pricing decisions. It also seems clear from the presentations to the Executive Committee that it knew that under the prevailing price structure competitors had not come forward with expansions. Finally, in connection with its decision in 1975 [19]not to delay De Lisle, the record demonstrates that the Committee received information showing a price differential between the two alternative strategies (CX 116M), and it was aware that the long-run superior profitability of the De Lisle alternative became apparent only after the third year of projection. However, it appears that the projected superiority of the De Lisle alternative was based, to a considerable degree, on the higher sales volume and the avoidance of excess industry capacity associated with that alternative. The presentation to the Executive Committee did indicate that a higher market share had "value," but that term had several meanings (Tr. 1455, 1468), and it is not clear what DuPont personnel concluded about such

¹¹ In addition, because of DuPont's cost advantage, it is quite logical to assume that the cost pressures inducing respondent's competitors to raise prices did not affect DuPont as severely. In the oligopolistic TiO₂ market, DuPont's competitors might have hoped and expected that other firms would go along with price hikes, even in the face of slumping demand, and such action might appear rational. But, in view of DuPont's lower costs, its refusal to go along with the price increases seems consistent with explanations that are not based solely on deterrence considerations.

value. From the welfare analysis we can tell that if De Lisle were delayed, uncoordinated competitive expansions might drive the price of TiO_2 down for a period of time, perhaps at some temporary social cost because of inefficient capacity utilization, whereas if De Lisle were built DuPont would probably enjoy an even greater degree of price leadership. But the predictions of the Task Force do not reveal the extent to which DuPont would attempt to exercise its market power in the future.

In sum, the facts show rather unequivocally that DuPont, with a 30% market share in 1972 and a substantial cost advantage over its rivals, sought to exploit this opportunity by embarking on a long-term expansion project to capture the demand growth anticipated over the following decade. In pursuing this objective, DuPont foresaw that this plan would significantly enhance its market share, possibly giving the firm a 65% share by 1985. In addition, DuPont took into account the impact of its actions on expansion by competitors, with particular emphasis on the effects of its pricing decisions and the competitive consequences of delaying De Lisle when the market turned downward in the mid-1970s. At the same time, DuPont's pricing and construction decisions were also influenced by intervening market factors. Lastly, DuPont refused to license its technology, preferring instead to reap the rewards of its low cost technology by direct application rather than by sharing it with competitors.

Whether this conduct violates the antitrust laws is the critical issue to which we turn next. [20]

Legal Discussion

Complaint counsel argue that DuPont's output expansion, its timing of that expansion, its pricing policies and its refusal to license technology were carried out with the objective of attaining a monopoly share of the TiO_2 market, and that the plan, if not already successful, is close to the mark. In urging a finding of liability, complaint counsel rely principally on traditional attempted monopoly analysis, and they contend that DuPont's conduct was unreasonably exclusionary, using a rule-of-reason approach.

It is alleged that this expansion program is unlawful only if taken in its entirety. Complaint counsel admit that no one element of the aforementioned conduct in DuPont's strategy is sufficiently unreasonable to be unlawful if taken independently. Rather, their theory is that the elements combine to create an unreasonably exclusionary

effect, thereby constituting an attempt to monopolize and an unfair method of competition under Section 5 of the FTC Act.¹² Complaint counsel stress that DuPont's expansion plan "made no sense unless it results in a monopoly" (Tr. OA 17), and that its conduct foregoes short-run profits and is profit-maximizing in the long run "only if competition is stifled and monopoly can be achieved." (CRB 36) (emphasis in original)

This case raises fundamental questions about the extent to which dominant firms may aggressively pursue competitive opportunities, especially where they enjoy some form of cost or technological advantage over their rivals. More specifically, the crucial issue facing us is not whether such firms may legitimately compete or capitalize on their advantages, but whether those opportunities are exploited in an unreasonable fashion. In other words, how much latitude should be afforded a major, well-established firm when it seizes a competitive edge and attempts to enhance significantly its market position? In the context of this case the question is not so much whether DuPont had the right to expand but whether it did so by measures that went beyond what were justified by its cost advantage.

a) *Section 2 Standards*

We begin our discussion by focusing on Section 2 of the Sherman Act, 15 U.S.C. 2, which makes it unlawful for any person to monopolize, or attempt to monopolize, any part of [21]the trade or commerce among the several states.¹³ Section 5 of the Federal Trade Commission Act empowers the Federal Trade Commission to prohibit certain unfair methods of competition, and that section has been construed to cover conduct that violates either the prohibitions of the Clayton Act and the Sherman Act or conduct that could lead to unreasonable restraints on competition if not prohibited. *FTC v. Brown Shoe*, 384 U.S. 316, 321 (1966); *FTC v. Cement Institute*, 333 U.S. 683 (1948).

The classic definition of the offense of attempt to monopolize is set forth in *Swift & Co. v. United States*, 196 U.S. 375, 396 (1905):

Where acts are not sufficient in themselves to produce a result which the law seeks to prevent—for instance, the monopoly—but require further acts in addition to the mere

¹² Complaint counsel also contend that Section 5 can reach practices not covered by Section 2 of the Sherman Act. (CAB 41-42) However, the case was tried principally under a Section 2 theory and we shall approach the issues from that perspective.

¹³ There is no dispute as to the relevant product or geographic markets in this case. (IDF 5) The parties are also in agreement that product market shares for purposes of this case are to be determined by domestic shipments of TiO₂. (ID 9)

forces of nature to bring that result to pass, an intent to bring it to pass is necessary in order to produce a dangerous probability that it will happen.

As the Supreme Court later indicated, an attempt requires more than intent to do acts that tend toward monopoly; the intent spoken of in *Swift* is a specific intent to destroy competition or achieve monopoly. *Times-Picayune Publishing Co. v. United States*, 345 U.S. 594, 626 (1953); see also L. Sullivan, Handbook of the Law of Antitrust 135 (1977).¹⁴ [22]

As further refined by the courts, the attempt offense includes three principal elements: (1) specific intent to control prices or destroy competition, (2) exclusionary or anticompetitive conduct, and (3) a dangerous probability of success. *E.g., California Computer Products, Inc. v. IBM Corp.*, 613 F.2d 727, 736 (9th Cir. 1979); *Pacific Engineering & Production Co. of Nev. v. Kerr-McGee Corp.*, 551 F.2d 790, 791 (10th Cir. 1977); *Central S. & L. Ass'n of Chariton, Iowa v. Federal Home Loan Bank Board*, 422 F.2d 504, 508 (8th Cir. 1970); *Merit Motors, Inc. v. Chrysler Corp.*, 417 F.Supp. 263, 269-270 (D.D.C. 1976), *aff'd.*, 569 F.2d 666 (D.C. Cir. 1977). These criteria, however, are not mutually exclusive but rather are interrelated to the extent that evidence of conduct may shed light on intent and the probability of success; conversely, evidence of a respondent's purpose may reveal the extent to which there are legitimate business justifications underpinning the respondent's conduct. See *Janich Bros., Inc. v. America Distilling Co.*, 570 F.2d 848, 853 (9th Cir. 1978), *cert. denied* 439 U.S. 829 (1978); *Transamerica Computer Co., Inc. v. IBM Corp.*, 481 F.Supp. 965, 989 (N.D. Cal. 1979).

With respect to the "dangerous probability" issue, there is conflict in the law as to what degree of market power, or proximity to monopoly status, need be shown before a finding of liability can be made. Compare *Greyhound Computer Corp., Inc. v. IBM Corp.*, 559 F.2d 488, 496, 504 (9th Cir. 1977),¹⁵ and *Kearney & Trecker Corp. v. Giddings & Lewis, Inc.*, 452 F.2d 579, 598 (7th Cir. 1971), *cert. denied* 405 U.S. 1066 (1972), with *United States v. Empire Gas Co.*, 537 F.2d 296, 305 (8th Cir. 1976), *cert. denied* 429 U.S. 1122 [23] (1977).¹⁶ Suffice

¹⁴ Complaint counsel do not allege that DuPont's conduct is designed to destroy its rivals; rather, they urge that destruction of rivals is unnecessary to the success of predatory strategy. Complaint Counsel Appeal Brief, 50, when merely preventing rivals from competing in the short run enables a predator to attain long-run monopoly power. See O. Williamson, Williamson on Predatory Pricing II, 88 Yale L. J. 1183, 1185 (1979). We agree with this position as a general proposition. As the Court observed in *United States v. Griffith, et al.*, 334 U.S. 100, 107 (1948), "[t]he antitrust laws are as much violated by the prevention of competition as by its destruction."

¹⁵ In fact, the Ninth Circuit has essentially dispensed with the dangerous probability requirement as an independent element of the attempt offense, saying instead that the probability of success is important only as evidence of specific intent. That appears, however, to be a minority view among the circuits, and for purposes of our discussion we assume that some showing of a dangerous probability of success is required.

¹⁶ The recent report of the National Commission for the Review of Antitrust Laws and Procedures expresses concern about construing the "dangerous probability" standard too stringently, so that liability attaches only if the

(Continued)

it to say, the evidence here of DuPont's leading position in 1972, its substantial cost advantage, its price leadership, and the existence of substantial scale economies indicates that respondent was on the verge of achieving monopoly power and that even the more stringent "dangerous probability" test appears to have been met. That is also the view of the ALJ. (ID 44)

We turn next to the issue of "specific intent," an elusive aspect of the attempt offense. In this connection, it seems important to bear in mind what the attempt doctrine does not proscribe. As Areeda & Turner put it:

"specific intent" clearly cannot include . . . the mere intention to prevail over one's rivals. To declare that intention unlawful would defeat the antitrust goal of encouraging competition on the merits, which is heavily motivated by such an intent. P. Areeda & D. Turner, *Antitrust Law* ¶822a at 314 (1977) (footnote omitted)

Similarly, Professor Cooper observes that:

Plainly, then, the "specific intent" required in attempt cases is not simply a subjective intent to prevail in the market. Instead, it is the intent to indulge in means that are in some sense untoward. Cooper, *Attempts and [24] Monopolization: A Mildly Expansionary Answer to the Prophylactic Riddle of Section Two*, 72 Mich. L. Rev. 373, 395 (1974) (footnote omitted)¹⁷

We highlight the intent issue because complaint counsel in their appeal and reply briefs make much of the documentary evidence concerning DuPont's 1972 goal of capturing a 56% market share by 1980 (and possibly 65% by 1985) and other statements indicating DuPont's awareness of the potential effects on competitors of its expansion plan. (CAB 44-45; CRB 22) It is argued that these documents demonstrate a "specific intent" to exclude competition and gain a monopoly. In fact, complaint counsel contend that this evidence of intent (together with a dangerous probability of success) is sufficient to establish liability even without looking to conduct.

respondent or defendant has a near-monopoly share of the market. Instead, the Commission, citing the *Kearney* decision, urged a balancing approach that gives less weight to market power considerations where the challenged conduct is clearly anticompetitive. National Commission for the Review of Antitrust Laws and Procedures, *Report to the President and the Attorney General* 145-49 (January 22, 1979). We share some of these concerns and note that if market share is the governing factor, DuPont had only about a 30% market share in 1972 when it embarked on its expansion program. Yet, the evidence clearly reveals DuPont's capability and desire to increase its market share to levels that, at least, approach monopoly proportions. While we ultimately cannot find DuPont's conduct to be unreasonable, our disposition of this matter should not depend upon a showing that DuPont's market position exceeded some magic market power (as measured by market share) criterion.

¹⁷ Even Professor Sullivan, who rejects an overly restrictive interpretation of Section 2, has this to say about specific intent:

It also seems clear that an intent to monopolize could not be inferred merely from conduct consistent with efficient competitive responses, such as merely expanding to meet new opportunities. Even though such conduct would, on the most sweeping view of the law, suffice for the offense of monopolization if monopoly power were in fact achieved, such conduct does not warrant an inference of specific intent to monopolize. L. Sullivan, *Handbook of the Law of Antitrust*, 136 (1977) (hereinafter cited as Sullivan).

But intent is a barren issue without consideration of the means contemplated for acquiring monopoly power. It is simply unrealistic to divorce conduct from intent. Even the broad language of *Alcoa*,¹⁸ which complaint counsel quote (CAB 43), focuses primarily on Alcoa's conduct and its effect on competition. And, of course, that was a monopolization case, which involves the less demanding general intent test.

As a general matter, it seems unwise to find that a firm has the requisite specific intent for anticipating the exclusionary consequences of successful competitive behavior which leads, or may lead, to a monopoly, so long as that behavior is reasonable. To suggest otherwise would be to proscribe all acts in which firms [25]conjure up some thoughts of achieving monopoly irrespective of the actual character of the means employed to gain that end. Perhaps the relationship between intent and conduct is best characterized by the court in *Transamerica*:

More than an intent to win every sale, even if that would result in the demise of a competitor, is required before it can be concluded a defendant has the type of exclusionary intent condemned by the antitrust law. Intent and conduct are closely related; and there must be some element of unfairness in the conduct before an anticompetitive intent can be found, as distinguished from the benign intent to beat the opposition. (citations omitted) 481 F.Supp.at 1010.

There is no doubt that intent can shed light on questionable conduct and the justifications for the conduct.¹⁹ But the crucial issue is whether DuPont's conduct represents legitimate competitive behavior or an unreasonable effort to propel the firm into a dominant position in the TiO₂ market. That is the issue to which we address the bulk of our discussion.

We come now to the critical element of an attempt to monopolize for purposes of this case: the reasonableness of DuPont's conduct in formulating and executing its expansion strategy. Few antitrust issues of late have sparked more interest and debate than has the subject of predation and strategic deterrent behavior. At stake is the extent to which dominant firms should be permitted to compete aggressively, and the standards by which conduct should be deemed predatory (and therefore unreasonable). These issues [26]have

¹⁸ *United States v. Aluminum Company of America*, 148 F.2d 416 (2d Cir. 1945).

¹⁹ As Judge Friendly observed in *Buffalo Courier-Express, Inc., v. Buffalo Evening News, Inc.*, 601 F.2d 48, 54 (2d Cir. 1979), in discussing the relationship between intent and conduct:

The intent alone is not sufficient, although, of course, it may give color to the acts. Similarly, acts alone are insufficient, although they may evidence intent.

received extensive discussion in recent court decisions and economic literature,²⁰ and complaint counsel's case draws heavily from this debate.

Central to complaint counsel's definition of predation is the notion that a firm in trying to discipline or destroy competition will sacrifice short-term gain for long-term competitive advantage. Professor Sullivan provides a good summary of this point in the following excerpt from his treatise:

the predator seeks *not to win the field by greater efficiency*, better service, or lower prices reflective of cost savings or modest profits. The predatory firm tries to inhibit others in ways *independent of the predator's own ability to perform effectively* in the market. Its price reduction or predatory expenditure is calculated to impose losses on other firms, not to garner gains for itself; indeed, the predation is likely to involve present losses to the predator, or at all events to foreclose profits which could currently be earned, detriments which are accepted by the predator as the cost of freeing itself for the future from the competition it now faces. Sullivan at 111. (footnotes omitted) (emphasis added) [27]

This description seems sound, but the short-term/long-term dichotomy can only be carried so far, for otherwise, any action by a monopolist to compete by ways that are not profit-maximizing in the short-run would be suspect.²¹

It is within this context that we review the relevant judicial precedent and economic literature. Although no case has dealt directly with the unique combination of activities present here, several decisions have touched on various aspects of the conduct engaged in by DuPont. These involve cases of alleged monopolization as well as attempted monopolization. It is, of course, axiomatic that the duty imposed on a monopolist may not be incumbent on a lesser firm, even a substantial industry leader. Nevertheless, a review of the principles governing conduct by monopolists is desirable for two reasons. First, the standards for judging attempts to monopolize are derived in part from the standards applicable to the completed offense. Second, the courts have historically been suspicious of excessive market power in the hands of private firms and have interpreted the offense of monopolization to include conduct by

²⁰ Areeda & Turner, Predatory Pricing And Related Practices Under Section 2 of the Sherman Act, 88 Harv. L. Rev. 697 (1975); Scherer, Predatory Pricing and the Sherman Act: A Comment, 89 Harv. L. Rev. 868 (1976); Areeda & Turner, Scherer on Predatory Pricing: A Reply, 89 Harv. L. Rev. 891 (1976); Scherer, Some Last Words On Predatory Pricing, 89 Harv. L. Rev. 901 (1976); Williamson, Predatory Pricing: A Strategic And Welfare Analysis, 87 Yale L. J. 284 (1977); Spence, Entry, Capacity, Investment and Oligopolistic Pricing, 8 Bell J. of Econ. 534 (1977); Williamson, Williamson On Predatory Pricing II, 88 Yale L. J. 1183 (1979); Schmalensee, On the Use of Economic Models In Antitrust: The *RealLemon* Case, 127 Pa. L. Rev. 994 (1979); Baumol, Quasi-Permanence of Price Reductions: A Policy for Prevention of Predatory Pricing, 89 Yale L. J. 1 (1979); Joskow & Klevorick, A Framework for Analyzing Predatory Pricing Policy, 89 Yale L. J. 213 (1979).

²¹ Sullivan, in distinguishing between legitimate and unlawful behavior, further suggests that predatory conduct is likely to seem "odd," "jarring" or "unnatural." "It will not strike the informed observer as normal business conduct, as honestly industrial." Sullivan at 111-12.

companies whose market shares fall far short of 100 percent control. As such, the range of permissible behavior for monopolists and non-monopolists cannot always be sharply differentiated, especially at the margin. In view of these factors and DuPont's close proximity to monopoly status, an examination of some of the relevant monopoly decisions seems particularly pertinent.

It should be noted at the outset that we are not dealing here with conduct that amounts to an unlawful restraint under Section 1 and, as such, an attempt to monopolize under Section 2. *See United States v. Columbia Steel Co.*, 334 U.S. 495, 525 (1948); *United States v. Griffith*, 334 U.S. 100, 106 (1948); *United States v. United Shoe Machinery Corp.*, 110 F.Supp. 295, 342 (D. Mass. 1953). Rather, we are concerned with single-firm conduct, the lawfulness of which is more ambiguous and depends on a variety of factors including the market position of the respondent, the structure of the industry, the nature of the conduct (and alternatives to such conduct), and the effect of the conduct on competition. Thus, we agree with complaint counsel that it is appropriate to employ a rule of reason-type approach for judging the lawfulness of DuPont's behavior. [28]

Such an approach is reflected even in the far-reaching, landmark decision in *United States v. Aluminum Company of America*, 148 F.2d 416 (2d Cir. 1945) ("*Alcoa*"), the progenitor of the cases on exclusionary expansion, as well as complaint counsel's theory here. In that case *Alcoa*, with its 90 percent market share, confronted rivals with repeated increases in capacity in anticipation of demand, thereby excluding competitors from profitable opportunities to grow. In condemning this action and finding that *Alcoa* was not the "passive beneficiary of a monopoly," Judge Hand nonetheless concluded that not all monopolies were proscribed by Section 2. In addition to natural monopolies and those created by "force of accident," he cited the situation where "[a] single producer may be the survivor out of a group of active competitors merely by virtue of his superior skill, foresight and industry." *Id.* at 430. Thus, Judge Hand felt that some evaluation of the justifications for the monopolist's behavior and the resulting market structure was called for although, as applied to *Alcoa*, he believed that its capacity expansions were not "inevitable" and that they did not reflect the action of firms "who do not seek, but cannot avoid, the control of a market." *Id.* at 431.

In *United Shoe Machinery*, Judge Wyzanski pointed out that Section 2 clearly covered common law restraints of trade and clearly did not cover market control captured solely through superior skill and intelligence. As to the intermediate case, he observed that

legislative history was silent as to the legal consequences of monopolies which reflect neither of the above causes but stem rather from "some practice which without being predatory, abusive, or coercive was in economic effect exclusionary." 110 F.Supp.at 341.

Relying heavily on the legal tests set forth in *Alcoa* and *Griffith*, Judge Wyzanski found that United Shoe's practices were exclusionary and not economically inevitable. In so doing he elaborated on the exception to liability for monopolization formulated by Judge Hand:

the defendant may escape statutory liability if it bears the burden of proving that it owes its monopoly solely to superior skill, superior products, natural advantages, (including accessibility to raw materials or markets), economic or technological efficiency, (including scientific research), low margins of profit maintained permanently and without discrimination, or licenses conferred by, and used within, the limits of law, (including patents on one's own inventions, or franchises granted directly to the enterprise by a public authority). *Id.* at 342.

[29]Applying this to United Shoe's leasing practices, Judge Wyzanski determined that:

they are not practices which can be properly described as the inevitable consequences of ability, natural forces, or law. They represent something more than the use of accessible resources, the process of invention and innovation, and the employment of those techniques of employment, financing, production, and distribution, which a competitive society must foster. *They are contracts, arrangements, and policies which, instead of encouraging competition based on pure merit, further the dominance of a particular firm. In this sense, they are unnatural barriers; they unnecessarily exclude actual and potential competition; they restrict a free market.* *Id.* at 344-45. (emphasis added)

Turning briefly to *Griffith*, there is language in that case that could be construed to proscribe virtually any monopoly, however acquired or maintained.²² Yet, the Court went on to emphasize that it is the "exercise" or "use" of monopoly power to foreclose competition or in a competitive advantage that is unlawful, thereby suggesting that for a violation to exist there must be something more than the exercise of inherent competitive advantages, such as technological advantages. The facts of that case required little analysis of competitive trade-offs as the practices at issue there—concerted efforts by film exhibitors to utilize monopoly power in some markets to gain exclusive distribution rights in other markets—revealed significant competitive harm with little or no offsetting justification.

²²As put by the Court, "monopoly power, whether lawfully or unlawfully acquired, may itself constitute an offense under Section 2 even though it remains unexercised. For Section 2 of the Act is aimed, not at the acquisition or retention of effective market control. See *United States v. Aluminum Co. of America*, 148 F.2d 416, 428, 429." *United States v. Griffith*, 334 U.S. 100, 107 (1948) (footnote omitted). In *Alcoa*, it is not clear whether the Court was endorsing Judge Hand's test or embracing a somewhat different formulation.

tions. Indeed, the Court called these practices a "misuse of monopoly power" and found violations of both Sections 1 and 2 of the Sherman Act. 334 U.S. at 108.

Finally, in the most recent Supreme Court monopoly decision, *United States v. Grinnell*, 384 U.S. 563 (1966), the Court restated the test for monopolization as one which, in part, proscribes the "willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident." *Id.* at 570-71. However, [30] as in *Griffith*, the Court was not called upon to draw any subtle distinctions between permissible and impermissible monopoly conduct, since the tactics employed there to attain market control, primarily a series of acquisitions, constituted a rather clear case of unjustified behavior, which might have given rise to a separate violation under Section 7 of the Clayton Act.

Thus, these decisions reflect at least a general judicial willingness to weigh the relative competitive virtues and evils of dominant firm behavior even in the monopoly context. With the exception of *Alcoa*, however, the facts of the other cases and the broad principles set forth therein provide only the most general sort of guidance in analyzing the lawfulness of DuPont's activities. As noted above, *Grinnell* and *Griffith* involved factual situations where there was little doubt about the anticompetitive nature of the challenged behavior. *United Shoe* raised more difficult issues, but as the court noted there, the leasing system in question, while not an unusual marketing tool, heightened entry barriers substantially and introduced no significant competitive efficiencies or other benefits.

As for *Alcoa*, it superficially at least provides a much closer analogy to the facts of this case. But there are differences, not the least of which is the fact that *Alcoa* was a monopolist that had maintained its hold over the market through repeated additions to capacity over a long period of time.²³ Moreover, the circumstances and justifications surrounding those increases in output are not detailed. In light of more recent precedents and literature on exclusionary conduct, discussed below, *Alcoa* leaves unanswered a number of important questions that are especially relevant in the context of the attempt case now before us.²⁴

For example, *Alcoa* reveals nothing about the scale economies

²³ Areeda & Turner in their treatise suggest that a better rationale for the holding in *Alcoa* would have been to construe Section 2 to outlaw persistent monopolies, subject to certain efficiency defenses such as economies of scale or superior skill. P. Areeda & D. Turner, *Antitrust Law* at ¶623b. Whether Section 2 of the Sherman Act or Section 5 of the FTC Act reach that far is an issue we need not decide here.

²⁴ For a general critique of the *Alcoa* decision, see P. Areeda & D. Turner, *Antitrust Law* at ¶608; Sullivan at 95-97.

inherent in Alcoa's expansions, nor does the decision specifically address whether Alcoa's additional output conformed to demand [31] estimates or resulted in excess capacity. Furthermore, while the court condemned Alcoa's repeated additions to capacity as preemptive and preservative of monopoly, it gave unclear signals about other aggressive conduct engaged in by the firm, some of which it found to be reasonable and justified by legitimate business reasons.²⁵ Whatever may have been the proper result under the facts in *Alcoa*, we believe these issues need to be explored in greater depth in the context of an attempt to monopolize, such as we have here.

The attempt cases encompass a wide variety of challenged conduct and the courts have employed various approaches in assessing the reasonableness of defendants' actions. See generally Hawk, *Attempts to Monopolize—Specific Intent as Antitrust's Ghost in the Machine*, 58 Cornell L. Rev. 1121 (1973). For example, where the conduct at issue reveals a clear purpose to destroy competition, with no countervailing business justifications, the Supreme Court has had little difficulty in declaring such behavior predatory. Thus, in *Lorain Journal Co. v. United States*, 342 U.S. 143, 153 (1951), the sole newspaper in the market incurred liability for attempting to monopolize by its refusal to accept advertising orders from merchants who patronized a competing radio station. By contrast, in *Times-Picayune Publishing Co. v. United States*, 345 U.S. 594, 627 (1953), the Court found no attempt to monopolize in conduct that was "predominantly motivated by legitimate business aims." The defendant, a newspaper publisher with a monopoly morning paper and an evening paper facing competition, adopted a unit pricing plan requiring advertisers to purchase advertising in both its papers, a practice which allegedly foreclosed the competing [32]evening paper from a share of the advertising market. While resting its decision on the absence of specific intent, the Court appeared to draw upon its earlier Section 1 analysis of the advertising plan in finding a proper business purpose. Under that analysis, the Court found the plan reasonable, noting that many other publishers had adopted similar

²⁵ It is instructive to note that the Government sought to show that many of Alcoa's transactions, "neutral on their face, were not in fact necessary to the development of Alcoa's business, and had no motive except to exclude others and perpetuate its hold upon the ingot market." Specifically, the Government attempted to prove that Alcoa bought up bauxite deposits and water-power sites "not for the purpose of securing an adequate future supply, but only in order to seize upon any available supply and so assure its monopoly." The court viewed the charge as depending entirely upon Alcoa's intent, "for if the purchases provided for the future needs of the business, or for what Alcoa honestly believed were its future needs, they were innocent." 148 F.2d at 432-33. The district court believed the lengthy testimony of Alcoa officials that Alcoa had not purchased the bauxite and water-power sites in order to exclude others, and the reviewing court upheld that belief, even though Alcoa "did buy a number of such sites which it did not fully use." *Id.* at 434. This determination reflects the tension that exists in distinguishing exclusionary behavior from conduct that is undertaken for legitimate, non-predatory business purposes but which may have incidental exclusionary effects.

plans and that unit rates substantially reduced overhead costs. *Id.* at 633. On balance, however, the decision provides only limited guidance as to the role and weight to be accorded conduct evidence in evaluating intent, especially where the conduct falls short of a Section 1 violation.

In a case involving allegations of preemptive expansion, *American Football League v. National Football League*, 323 F.2d 124 (4th Cir. 1963), the court determined that the NFL's plans to offer franchises in two new cities in 1960, the same year that the AFL started up, did not constitute an attempt to monopolize. Focusing heavily on the issue of intent, the court found that the NFL had independent business reasons for expanding and had planned to do so even prior to the formation of the AFL. The two-city expansion, according to the court, was simply the implementation of those earlier plans and the NFL would have been "greatly embarrassed" if it had not followed through. *Id.* at 132.

A different result, however, was reached in *Philadelphia World Hockey Club v. Philadelphia Hockey Club*, 351 F.Supp. 462 (E.D. Pa. 1972), a monopolization case, in which the National Hockey League's expansion efforts were cited as evidence of a wrongful intent to monopolize the market for major league professional hockey players. While relying on *Alcoa*, the court nevertheless recognized that the creation of the WHL and the NHL's expansion drive were "both responses to an increased market for those entering as well as those already in the field." *Id.* at 512. In finding liability the court indicated that it did not rely solely on expansion but took account of other conduct, such as the reserve clause, and statements by the NHL President expressing a clear determination to preserve the NHL as the exclusive major professional hockey league in the United States and Canada. *Id.* at 512-13. Thus, in view of this analysis, it is not entirely clear what the court would have done had it been faced with the kind of growth plan encountered here: expansion that is consistent with demand projections and can be accomplished only through large, efficient-scale operations which have the inevitable tendency of restricting competitors' efforts to expand at scale.²⁶ [33]

In *Bergjans Farms Dairy Co. v. Sanitary Milk Producers*, 241 F.Supp. 476 (E.D. Mo. 1965), *aff'd* 368 F.2d 679 (8th Cir. 1966), the court

²⁶ In addition to *Alcoa* and *Philadelphia Hockey Club*, complaint counsel also cite *Schine Chain Theatres, Inc. v. United States*, 334 U.S. 110, 119 (1948), as supporting generally their position. But in *Schine*, the Supreme Court affirmed findings that *Schine* threatened to open new theatres in towns where competitors refused to sell out where new entry was planned. It appears that the essence of the activity under scrutiny there—disciplining rivals rather than responding to long-run market opportunities—is substantially different in nature from the conduct issue here.

found an attempt to monopolize from an overall course of conduct that included expansion by acquisition coupled with other restrictive conduct. There, a dairy cooperative that produced 55-60 percent of the raw milk in a market sought to increase the percentage of its milk purchased as higher-priced "Class I" milk by processors and concurrently to exclude other producers from such sales. To accomplish its goal, the cooperative employed price cuts, false pricing announcements, secret discounts, acquisition of a processor and predatory price cuts on processed milk. As an integrated firm, it forced other processors to buy Class I milk from its members, employing such tactics as below-cost sales, price discrimination and subsidization, and price-fixing with retail stores. It is not clear, however, how much weight the court gave to each of the practices, and the conduct, including the nature of the expansion, differs considerably from the behavior of DuPont.

By contrast, internal expansion, without more did not constitute an attempt to monopolize in *Hiland Dairy, Inc. v. Kroger Co.*, 402 F.2d 968 (8th Cir. 1968), *cert. denied*, 395 U.S. 961 (1969). In that case, the plaintiff sought to enjoin Kroger from building a dairy processing plant with the capacity to supply more than 20 percent of total demand, claiming that building the plant constituted an attempt to monopolize and that the expansion would give Kroger power to impose unreasonable restraints on competition. No conduct involving unreasonable restraints was at issue, nor was Kroger a dominant firm in the market. The court distinguished *Alcoa*, citing the "unique" factors present in that case—a 90 percent market share and repeated increase in demand—and concluded that the mere act of building a plant is not by itself unfair or predatory.

In two other recent attempt cases, the practices accompanying internal expansions were not deemed to be sufficiently unreasonable to make out violations of Section 2. In one, the conduct involved unfair claims to advertisers and a promotional giveaway which apparently incurred no losses. *Buffalo Courier Express, Inc. v. Buffalo Evening News, Inc.*, 601 F.2d 48 (2d Cir. 1979). And, in another, low pricing to increase demand did not render illegal a firm's doubling of its capacity, since the new capacity was installed in anticipation of its future need and was not to be carried at a loss. *Structure Probe, Inc. v. Franklin Institute*, 450 F. Supp. 1272, 1288 (D. Pa. 1978), *aff'd mem.* 595 F.2d 1214 (3d Cir. 1979). [34]

These cases, like the monopolization cases discussed above, unfortunately are of limited usefulness to the task here. They provide no clear explication of the factors to be considered in assessing the reasonableness of conduct by firms with market power approaching

monopoly proportions. For the most part, the courts have couched their decisions in terms of such general considerations as the defendants' conformity with prevailing business norms or the existence of independent economic justifications to support the challenged conduct. Insofar as the expansion cases are concerned, about the most that can be said is that the courts appear to be cautious about condemning expansion by non-monopolists, especially where the expansion is not accompanied by other conduct that is anticompetitive.

In addition to these cases, however, several decisions of late, cited by respondent, address the reasonableness of dominant firm behavior in greater depth. Although these decisions do not involve the kind of output expansion activity present here, they do shed further light on the conduct standards applicable to both monopolization and attempted monopolization cases.

Of particular interest is a series of cases involving the marketing practices of IBM. *California Computer Products v. IBM Corp.* ("Cal Comp"), 613 F.2d 727 (9th Cir. 1979); *Greyhound Computer Corp. v. IBM Corp.*, 559 F.2d 488 (9th Cir. 1977); *ILC Peripherals v. IBM Corp.* ("Memorex"), 555 F.2d 1379 (9th Cir. 1977); *Telex Corp. v. IBM Corp.*, 510 F.2d 894 (10th Cir. 1975); *Transamerica Computer Co. v. IBM Corp.*, 481 F. Supp. 965 (N.D. Cal. 1979). Among the various charges of exclusionary conduct were allegations that IBM lowered prices to drive competitors from the market and preserve its market share, altered its leasing policies in order to frustrate and exclude competitors, and implemented superfluous design changes in equipment to forestall competition.

In finding IBM's actions to be reasonable, the court in *Cal Comp* concluded that IBM's dominant position in computers resulted initially from technological superiority, and that the firm was entitled to maintain that position through "shrewdness in profitable price competition," which the court characterized as business acumen. 613 F.2d at 742. In addition to finding IBM's price reductions "highly profitable,"²⁷ the court also found the design changes [35] to be cost-saving technical improvements which justified lower prices. According to the court, IBM, even as a monopolist, had the right to redesign products to reduce cost or improve performance, and the firm was under no obligation to predisclose its new technology to competitors. *Id.* at 744.

Addressing somewhat different leasing and pricing policies in

²⁷ While adhering to the Areeda-Turner marginal cost rule as the basic test for predatory pricing, the court nevertheless indicated that under the right circumstances limit pricing might be proscribed, and that pricing above marginal or average variable costs might be condemned when viewed in light of other aspects of the monopolist's conduct. 613 F.2d at 743.

Greyhound, the Ninth Circuit upheld IBM's fixed term leasing plan as a reasonable response to competition, but reversed a directed verdict for the firm on the pricing issues, saying that the evidence showed IBM's actions to be *prima facie* anticompetitive without legitimate business purpose. 559 F.2d at 505. In reaching this result the court started with the premise that IBM, as a monopolist, "would be precluded from employing otherwise lawful practices that unnecessarily excluded competition from the [market]." *Id.* at 498. Applying this standard, the court determined that changes in the technological discount offered by IBM would not be economically justified except as a means of inhibiting leasing company competitors. Similarly, the court found that IBM's action in boosting maintenance rates on its new generation of equipment, despite lower maintenance costs, was not competitively justified and had the primary effect of restricting competitors' access to such equipment by stretching out the period required to recoup investment.

In *Telex*, IBM's redesigned peripheral equipment and accompanying price reductions were judged by a two-fold test: (1) whether the acts were business practices typical of those used in a competitive market, and (2) whether the conduct involved the use of monopoly power. 510 F.2d at 925-26. In finding IBM's conduct to be reasonable, ordinary business behavior, the court felt that a firm such as IBM should be given sufficient latitude to respond to erosion of its lawfully acquired market share. As the court observed:

It would seem that technical attainments were not intended to be inhibited or penalized by a construction of Section 2 of the Sherman Act to prohibit the adoption of legal and ordinary marketing methods already used by others in the market, or to prohibit price changes which are within the "reasonable" range, up or down. *Id.* at 927.

Two additional district court opinions involving IBM are worth noting. These cases also deal with conduct that is similar or identical to the practices at issue in the aforementioned cases, and both decisions devote considerable discussion to the question of predatory pricing standards. In *Memorex*, the court concluded that a two-part test should be applied to allegations of exclusionary pricing. If entry barriers are low, the Areeda-Turner marginal or average variable cost standard should hold. If entry barriers are high, the proper measure would be to determine whether prices are below short-run profit maximizing levels—in other words, the inquiry would focus on whether the defendant is sacrificing current [36]profits to gain even higher profits in the future.²⁸ In addition, the court felt that pricing

²⁸ In arriving at this position, the court relied on two Ninth Circuit appellate cases involving allegations of attempted monopolization and a Fifth Circuit case dealing with price discrimination under the Robinson-Patman

to meet competition was permissible without regard to costs, thus allowing the dominant firm to match any competitive price offerings irrespective of the entry hurdles facing the would-be challenger. According to the court, IBM's pricing met these tests. 458 F. Supp. at 433.

As for the non-pricing conduct, the *Memorex* court found that IBM's new product offerings were significant innovations and that its product announcements were not false or misleading.

In *Transamerica*, after an exhaustive review of the precedents, the court determined that an average cost pricing test was the most defensible from an economic and public policy perspective.²⁹ As for design changes, the court looked to see if the changes were "unreasonably restrictive of competition," taking into account the effects on competitors and consumers, technological advantages and intent. 481 F. Supp. at 1003. In finding IBM's conduct generally reasonable, the court had this to say about the general standard for judging the behavior of a monopolist:

Where a monopolist chooses an alternative that does not unreasonably restrict competition, the law is not offended. It is the choice of an unreasonable alternative, not the failure to choose the least restrictive alternative, that leads to liability. *Id.* at 1022. [37]

One further case deserves consideration. *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.2d 263 (2nd Cir. 1979), *cert. denied*, 100 S. Ct. 1061 (1980). Briefly, the *Berkey* court found no attempt to monopolize in Kodak's introduction of the "110" camera and no general duty of a monopolist to predisclose its innovations to competitors. Reminiscent of the charges of exaggerated and premature expansion announcements by DuPont were Berkey's allegations that Kodak made false and exaggerated claims about its new film for the 110 camera: the court disagreed, finding the film to be a superior product for which there was a market.

In reaching its decision, the court emphasized that, in the context of a monopolization case, a violation can be found only by showing the use of monopoly power. According to the court,

a use of monopoly power is an action that a firm would have found substantially less effective, or even counterproductive, if it lacked market control. *Id.* at 291.

²⁹ *Act. ILC Peripherals v. IBM Corp.*, 458 F. Supp. at 431-32, citing *Janich Bros., Inc. v. American Distilling Co.*, 570 F.2d 848, 857 (9th Cir. 1977); *Hanson v. Shell Oil Co.*, 541 F.2d 1352, 1358-59 (9th Cir. 1976), *cert. denied*, 429 U.S. 1074 (1977); and *International Air Industries, Inc. v. American Excelsior Co.*, 517 F.2d 714, 723-24 (5th Cir. 1975). These decisions, while largely endorsing the Areeda-Turner test, nonetheless suggest that pricing above average variable or total costs might be deemed to be predatory in situations where new entry is difficult.

³⁰ In attempt cases, however, the court, citing *Janich* and *Hanson*, n. 28 *supra*, noted that an average variable cost test might be appropriate where independent evidence of specific intent or dangerous probability is lacking. 481 F. Supp. at 989.

While reaffirming the well-established principle that actions proper for a non-monopolist may be improper if engaged in by a monopolist, the court went on to note that:

if an action that gains a firm a competitive advantage is effective because of the company's efficiency, prestige, and innovativeness, and not because of its control over the market, the action is not a use of power. *Id.* at 291 n. 50.³⁰ [38]

These decisions reflect some of the most extensive efforts by the courts in recent years to devise tests for determining whether conduct by monopolists or near-monopolists is unreasonably exclusionary or constitutes legitimate competitive behavior. In so doing, the courts have fashioned a variety of criteria such as a) whether the behavior amounted to ordinary marketing practices, b) whether it was profitable or economically rational, c) whether it resulted in improved product performance or d) whether it would have been effective for a firm without market power. In addition, several of the decisions emphasize that the lawfulness of the practices depends on the market setting (*e.g.*, nature of entry barriers) and the anticompetitive potential of the challenged practices. In particular, the decisions in such cases as *Greyhound* and *Transamerica* suggest the importance of weighing the efficiencies and competitive virtues of the practices under scrutiny against their exclusionary characteristics and effects.

There is little doubt that many of these considerations can be of great help in judging the lawfulness of single-firm conduct. Actions that promote innovation or improve efficiency, for instance, should generally be encouraged, not inhibited. But we believe it would be unwise policy, especially in the face of actual or threatened monopoly, to focus solely on the benefit side of the equation while ignoring the adverse effects of dominant firm behavior. For example, a firm's conduct might consist largely of ordinary business practices, yet be highly exclusionary because of the industry structure and the firm's market power. So too, the actions of the would-be monopolist may enhance efficiency or product performance, albeit marginally, although the overall competitive effect is decidedly negative. In a similar vein, there are shortcomings in a test which relies exclusively on determining whether the conduct would have been rational for a smaller firm. On the one hand, it might be logical and necessary for a new or recent entrant to engage in below cost pricing as a

³⁰ As examples of actions that may be permissible for firms with market power, the *Berkey* court had this to say:

a firm that has lawfully acquired a monopoly position is not barred from taking advantage of scale economies by constructing, for example, a large and efficient factory. These benefits are a consequence of size and not an exercise of power over the market. Nevertheless, many anticompetitive actions are possible or effective only if taken by a firm that dominates its smaller rivals. (citations omitted) *Id.* at 274-75.

means of achieving market penetration. On the other hand, size and efficiency may coalesce so that it is difficult, if not impossible, to ascertain precisely whether an effective marketing tactic owes its success to greater efficiency or the naked exercise of market power. Moreover, behavior that is rational for a firm with little or no market power may nevertheless produce substantial and unnecessary anticompetitive effects when wielded by a firm with considerable market clout.

In the present case, DuPont's conduct appears to be justified by respondent's cost superiority over its rivals, demand forecasts and scale economies. There is no evidence that DuPont's pricing or capacity strategies were unprofitable (regardless of the cost test employed) and, as discussed later, the plant announcements do not appear to be misleading. Yet, that is not the end of our inquiry. As we have suggested, the proper test for measuring the reasonableness of DuPont's conduct takes account of overall competitive effects—pro and con—within the relevant market setting. To further explore the factors that should guide our analysis, we turn to the new literature on predatory business strategies. [39]

b) *Economic Literature*

Complaint counsel draw on recent economic literature in urging that DuPont's conduct should be condemned under a rule-of-reason approach to predation. In the process, they reject the so-called *per se* marginal cost pricing tests of Areeda and Turner and even the special *per se* rules advanced by Professor Williamson. Instead, complaint counsel support the approach suggested by Professor Scherer of looking at all relevant market factors affecting long-run welfare in determining whether dominant firm conduct is unreasonable.

Much of the current economic debate stems from the aforementioned effort by Professors Areeda and Turner to develop a set of objective, efficiency-based predatory pricing rules which will serve to deter the most likely abuses of market power and which courts can workably apply. Areeda & Turner, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 Harv. L. Rev. 697 (1975). Under their proposal, only pricing below marginal or average variable costs would be deemed predatory, except where marginal costs exceed average costs; in the latter case, pricing above average costs would be legal.³¹ The principal criticisms of this approach, in

³¹ A significant feature of the Areeda-Turner test is the assumption that predation is most likely to occur in situations where the monopolist has excess capacity, i.e., where marginal cost is less than average cost. It should also be noted that these commentators would establish no rule governing possible predatory investment in new

(Continued)

the view of a number of commentators, see n. 20 *supra*, are (1) that it focuses only on eliminating equally efficient firms and ignores the social loss from elimination of less efficient firms on the ground that any other standard would chill desirable pricing behavior by firms with substantial market shares; and (2) that it fails to take account of market-place dynamics, especially the ability of dominant firms to prevent even equally efficient firms from entering the market on a viable scale. Although each of these commentators offers a somewhat different solution to the problem, they share the common objective of developing legal criteria that will adequately address the long-run welfare effects of conduct by firms having substantial market power.

Professors Scherer and Williamson, in particular, are both concerned with output decisions by dominant firms which, though not necessarily violating the Areeda-Turner cost-based rules, nevertheless serve to deter effective new entry or expansion by existing firms. Scherer, for example, criticizes Areeda and Turner for overstating the significance of predation in situations where a dominant firm maintains excess capacity and for understating [40] the entry-detering effects of output expansions beyond optimal levels, in the range where price falls below marginal cost yet exceeds average cost. Scherer, *Predatory Pricing and the Sherman Act: A Comment*, 89 Harv. L. Rev. 869 (1976). Scherer's concern is that output and pricing in this range might be used to deter new entry by equally efficient firms when minimum efficient scale is large because residual demand cannot accommodate the additional output required for viable entry. For such a strategy to be effective, of course, the prospective entrant must perceive that the dominant firm is unlikely to make room by reducing its output. Even though actual entry by the new firm would drive prices below the Areeda-Turner levels if the monopolist refused to back off, Scherer believes that the entrant might be unwilling to take the risk that enforcement of the antitrust laws would provide it adequate protection. Scherer at 872.³²

The scenario sketched by Scherer bears a superficial resemblance to the DuPont situation, inasmuch as it is alleged that DuPont's pricing and growth strategy purposefully served to deter existing firms from developing low-cost ilmenite technology by precluding

capacity, since they believe that monopolists are unlikely to build costly excess capacity simply to deter new entry and that it would be too difficult to determine whether the excess capacity was attributable to strategic reasons or innocent factors, such as unanticipated changes in demand. Areeda & Turner, *Predatory Pricing And Related Practices Under Section 2 of the Sherman Act*, 88 Harv. L. Rev. 697, 719 (1975).

³² In their reply to Professor Scherer, Professors Areeda and Turner express a willingness to modify their standard slightly so that predation could be established if the dominant firm's prices fell substantially below marginal cost, though still above average cost. Areeda & Turner, *Scherer on Predatory Pricing: A Reply*, 89 Harv. L. Rev. 868, 894 (1976).

them from learning to operate at large, efficient scale. On closer examination, however, the similarity evaporates. Scherer's model assumes that the dominant firm's output is expanded into the range where its average costs are rising and its prices are below marginal cost. But such conduct is not evident here. DuPont does not appear to be operating, or planning to operate, on the upward segment of its average cost curve, either by building a less-than-efficient size plant or by otherwise expanding output beyond optimum levels. Thus, we are unable to find in this part of Scherer's analysis any cause to deem DuPont's expansion and pricing strategy unreasonable.

Of perhaps greater relevance is Scherer's further recommendation that cost-based tests be replaced by a rule-of-reason analysis for gauging the long-run welfare effects of dominant firm behavior. Under such an approach, Scherer suggests that there may be cases where pricing above marginal cost levels should be deemed predatory because of ensuing long-run welfare losses. Of great significance to us, though, is that even here Scherer recognizes the welfare benefits of expansion consistent with optimal scale economies, a situation characteristic of DuPont's expansion program. To Scherer, the proper way to analyze non-traditional forms of dominant firm predation, such as preemptive output expansion, is by an assessment of such variables as

the relative cost positions of the monopolist and fringe firms, the scale of entry required [41] to secure minimum costs, whether fringe firms are driven out entirely or merely suppressed, whether the monopolist expands its output to replace the output of excluded rivals or restricts supply again when the rivals withdraw, and whether any long-run compensatory expansion by the monopolist entails investment in scale economy-embodied new plant. Scherer, at 890.

Since DuPont, the low-cost producer, is not seeking to displace existing output,³³ or to increase output temporarily to head off competitive expansion, it seems difficult to condemn its expansion efforts, which are directed at capturing future growth in demand. Of course, it can be argued that other TiO_2 producers would eventually achieve cost parity with DuPont (estimated ten years) if they were encouraged to expand to large scale operations. But it seems anomalous to preclude DuPont from competing for this increased demand on grounds that it could do so most efficiently only at a level

³³ DuPont's plan, if successful, will, of course, reduce the market share of rivals over time, but that is still considerably different from a program designed simply to substitute DuPont's output for that of its competitors. It should also be repeated that DuPont's increase in market share since 1972 has come largely at the expense of competitors, including imports, due to two factors—increased capacity provided by expansion of DuPont's existing facilities and a leveling off of demand after 1972. These market share inroads, of course, are attributable to unexpected changes in market conditions.

of capacity and output that inevitably tends to exclude other competitors.

Professor Williamson also emphasizes the strategic aspects of predatory pricing, but he focuses on a somewhat different problem. Williamson, *Predatory Pricing: A Strategic and Welfare Analysis*, 87 Yale L. J. 284 (1977). Specifically, Williamson assumes that dominant firms will respond to cost-based predatory pricing rules, such as the Areeda-Turner test, by deliberately choosing a pre-entry plant scale that enables them to meet new entry by expanding output to levels that remain profitable for them but not for their putative rivals. In short, by building in excess capacity, the established firm can turn back new entry without violating the applicable cost-based pricing standard. Under this scenario, potential entrants are presumed to have access to the same cost-saving technology as the dominant firm, although cost parity may be achieved only with operational experience.

The cornerstone of Williamson's solution to this problem is his output restraint rule, which precludes dominant firms (60% market share) from disproportionately expanding output (above their historical shares of demand) in response to new entry. [42] Such a rule, presumably, would force large firms anticipating entry to set their pre-entry output at higher levels, thereby leading to a more efficient utilization of resources.³⁴

On its face, the kind of preemptive expansion addressed by Williamson differs from the DuPont facts. Williamson's concern seems to be with short-term strategic responses by dominant firms that are designed primarily to discipline the behavior of rivals rather than to take advantage of efficiencies in serving long-term demand growth. By contrast, in this matter, we cannot find that DuPont's plan was designed simply or even primarily for the purpose of blocking expansion moves of competitors (although that certainly may have been an effect). Moreover, with respect to Williamson's additional rule for pricing by established firms, which is keyed to full cost recovery, it appears evident that DuPont's pricing also met this standard, there being no suggestion by complaint counsel that DuPont's prices either in the short run or the long run failed to cover costs plus a reasonable return on investment.

Complaint counsel also refer us to an article by Professor Spence for the proposition that investment in new capacity may be a more

³⁴ This approach has been criticized by Professor Schmalensee for being difficult to apply and for not adequately addressing all forms of predation. Schmalensee generally prefers the Scherer approach, although he suggests that an average cost test may be a more workable standard for judicial application in predatory pricing cases. Schmalensee, *On the Use of Economic Models in Antitrust: The ReaLemon Case*, 127 Pa. L. Rev. 994, 1029 (1979).

effective entry-deterring device than price cutting. Spence, *Entry Capacity, Investment and Oligopolistic Pricing*, 8 *Bell J. of Econ.* 534 (1977). Spence contends that capacity expansion may be used strategically to deter entry, but his concern is with practices quite different from those in the present case.

The principle of this [Spence] model is quite simple. It is that existing firms choose capacity in a strategic way designed to discourage entry. *This strategic purpose is realized by holding excess capacity in the preentry period.* This excess capacity permits existing firms to expand output and reduce price when entry is threatened, thereby reducing the prospective profits of the new entrant who operates on the residual demand curve to zero. (emphasis added). *Id.* at 534-35. [43]

While Spence's model really addresses excess capacity carried by an entire industry, rather than a single firm, we recognize its potential applicability to single-firm behavior; even so, we distinguish the conduct of DuPont. It cannot be said that DuPont built excess capacity to hold in reserve as a means of disciplining existing rivals or deterring new entry. DuPont's original plan conformed to demand estimates, and there is no persuasive evidence that DuPont unreasonably refused to delay or cancel De Lisle in the face of declining demand simply as a way to keep competitors in check. Also, the fact that there is capability for a second new line at De Lisle does not lead us to conclude that DuPont artificially or unreasonably attempted to head off competitive expansion in the context of the Spence model.

In a more recent article, Professors Joskow and Klevorick pull together some of the theories and concepts previously discussed and advance a two-tiered approach to dealing with predatory pricing. Joskow & Klevorick, *A Framework for Analyzing Predatory Pricing Policy*, 89 *Yale L. J.* 213 (1979). They propose that structural conditions determine whether the market is conducive to predation; if it is, a set of behavioral rules would be applied to gauge the legality of the dominant firm's pricing practices. Under their approach, monopoly pricing that fails to cover average total costs would be presumed to be predatory, except in limited circumstances, for example, where excess capacity is attributable to a declining industry.³⁵

As for pricing above average costs, Joskow and Klevorick believe that in certain circumstances temporary price cuts by dominant firms to levels above average cost may also be predatory. They propose the following rule:

A price decrease to a point above average total cost would be presumed to be legal

³⁵ Professor Posner also advocates an average cost test as the proper basis for assessing the legality of monopoly pricing. R. Posner, *Antitrust Law: An Economic Perspective* 184-96 (1976).

unless the price cuts were reversed either fully or to a significant extent within a reasonable period of time—for example, two years. *Id.* at 255.

Under this rule, any reversal in price would have to be justified by changes in demand or costs, and the predatory pricing would have to “run its course” before relief would be available.³⁶ [44]

Comparing DuPont’s strategy with the Joskow & Klevorick approach reveals some obvious distinctions. For one thing, it is not clear whether DuPont, in 1972 or even today, enjoys the kind of entrenched monopoly power that Joskow & Klevorick view as a critical prerequisite to the application of their behavioral standards, although there is evidence that DuPont has some degree of market power. More importantly, as noted elsewhere, there is no allegation of below-cost pricing here, whether the standard is average variable or average total costs. To be sure, these authors offer a separate non-cost standard that looks to temporary price deviations and the circumstances surrounding those deviations, but implicit in their model is a concern for short-run responses to competitive inroads that are divorced from such market factors as new growth opportunities or superior technology.³⁷ When coupled with the demand projections and cost advantages extant here, the DuPont strategy reveals long-term considerations that are of a character considerably different from the short-run price cutting addressed by Joskow & Klevorick.

To summarize, the focus of much of the literature centers on strategic responses to new entry, or, as characterized by Williamson, responses “of a gaming variety—now it’s there, now it isn’t, depending on whether an entrant has appeared or perished. . . .” Williamson, 87 Yale L. J. at 339. Such behavior hardly typifies DuPont’s expansion plan, which contemplated a permanent increase in plant capacity and output. Even as to respondent’s pricing objectives—generating funds for its own expansion while [45]discouraging similar efforts by competitors—those objectives were

³⁶ Another commentator, Professor Baumol, advocates a predatory pricing rule that precludes monopolists from rescinding price cuts made in response to the threat of entry for a reasonable period of time. Baumol, n. 20 *supra*.

³⁷ While the authors downplay the significance of evidence concerning subjective intent, they believe it may be of some value where the evidence clearly indicates (1) that the monopolist plans to increase prices after driving competition from the market, and (2) the price cuts are being used “to increase artificially the difficulty of entering the market.” What they mean by this is evidence of long-range plans by a monopolist to preserve its market power through erection of entry barriers or outright elimination of competing firms. In this connection, the authors observe that allegations of predatory pricing are often accompanied by charges that firms have engaged in other anti-price forms of predation, such as “targeted” advertising expenditures, “false” product announcements and product “manipulations.” Joskow & Klevorick, A Framework For Analyzing Predatory Pricing Policy, 89 Yale L. J. 213, 259, n. 92 (1979). But they acknowledge that the issues may not be resolved easily because of the difficulty of distinguishing artificial exclusionary behavior from legitimate responses to competition. Similar issues are involved here inasmuch as DuPont is charged with having developed a predatory scheme that involves interrelated pricing, expansion and announcement practices.

consistent with DuPont's cost advantage and undertaken in conjunction with the firm's long-term growth in response to demand projections; they were not undertaken simply as a device to retard entry without regard to independent market forces.

To be sure, the recent literature does not fully address all forms of exclusionary conduct, especially where the actions are of a longer-term nature. To the extent that it does we can find no persuasive basis for declaring DuPont's behavior unlawful. The conduct at issue here, for example, does not appear to be the kind of artificial, entry-barrier raising behavior cited by Professors Joskow & Klevorick. See n. 37 *supra*. DuPont's actions may make future competitive expansion more difficult, but that effect is not the product of artificially induced conduct that is unrelated to market conditions, cost differences or scale economies.

Thus, although the literature to date on the subject of predation is not exhaustive, nor has it produced a consensus among the commentators, it does provide a valuable framework for looking at the merits of this case. As such, we find no compelling basis in the various analyses for judging DuPont's behavior to be unreasonable.

c) Conclusions

Having reviewed the legal precedents and economic literature on the subject of predation, we believe that the conduct under question should be assessed generally in light of the respondent's market power, the nature of its conduct and prevailing market conditions. As the firm's market power approaches monopoly proportions, the standard for measuring the legality of the firm's behavior would more closely approximate the standard applicable to monopolists.

We recognize, of course, the importance of providing as much guidance to business as possible, so that desirable competitive behavior is not chilled, even by a firm with considerable market power. Nevertheless, some uncertainty in dealing with dynamic market factors is probably unavoidable. No one simple test seems adequate. We suspect, however, that in many instances the challenged conduct can be fairly categorized as clearly legitimate competitive behavior, on the one hand, or as behavior which clearly has little or no redeeming justification, on the other hand. For the gray areas in between, we believe there is no substitute for a careful, considered look at the overall competitive effects of the practices [46] under scrutiny.³⁸ In the absence of a stronger consensus among the

³⁸ At a more specific level, some of the factors that appear especially pertinent to a proper rule-of-reason type analysis include: (1) the extent to which the conduct enhances efficiency or innovation, including profitability considerations; (2) the extent to which the conduct is a reaction to competitive behavior, demand shifts, new

(Continued)

courts and commentators as to the lawful parameters of monopoly or dominant firm behavior, we believe that a balancing approach, which takes due account of rational, efficiency related conduct, is best suited to the task at hand.³⁹

Recalling Judge Wyzanski's comments in *United Shoe Machinery*, he observed that the practices at issue there involved

contracts, arrangements, and policies which instead of encouraging competition based on pure merit, further the dominance of a particular firm. In this sense, they are *unnatural* barriers; they *unnecessarily* exclude actual and potential competition; they restrict a free market. 110 F. Supp. at 344-45 (emphasis added). [47]

This characterization, though addressing monopoly behavior, effectively summarizes the kind of approach that remains relevant today for dealing with market power-related conduct. Similar considerations are reflected in the decisions in *Greyhound*, 559 F.2d at 498 (whether practices "unnecessarily excluded competition") and *Transamerica*, 481 F. Supp. at 1022 (conduct proscribed which "unreasonably restrict[s] competition").

In applying these principles to the facts of this case, it is useful to restate complaint counsel's fundamental objection to DuPont's growth plan. In essence, complaint counsel contend that it was logical for DuPont to do what it did only if monopoly power could be attained in the future. It is argued that DuPont's construction/pricing/non-licensing policy involved a current foregoing of available profits, that DuPont recognized that it could recoup those profits down the road through high volume and higher prices, and that DuPont's policy only made sense if those excess profits would become available at a later date.

Put differently, DuPont presumably would not have tried to capture all future demand growth, and thereby risked the costs of operating a plant the size of DeLisle at less than capacity, unless it was reasonably assured that other competitors could not expand. DuPont obtained this assurance, it is claimed, not through normal market forces, but rather through its own efforts, as evidenced by the combination of expansion, announcement, pricing and licensing

technology or other market conditions; (3) the permanence or reversibility of the challenged actions; (4) the alternatives available to the firm; and (5) the effect of the conduct on entry barriers and rival firm behavior. As we have noted, however, resort to such benchmarks as whether the practices constituted "ordinary" or "typical" business behavior may be of some value, but they can hardly be expected to serve as reliable indicators of competitive effects, especially where market power is substantial and entry barriers high. Even behavior that improves efficiency or technology may still be unreasonable, since the benefits may be only incidental in relation to the adverse effects (e.g., improvements instituted merely as a temporary measure for the purpose of driving competitors out of the market). As we have seen, increases in output, a normal and usually legitimate form of competitive behavior, may be used primarily as an exclusionary tactic.

³⁹ Professor Cooper also provides some helpful considerations for determining the reasonableness of behavior in attempt cases, Cooper, *Attempts and Monopolization: A Mildly Expansionary Answer to the Prophylactic Riddle of Section Two*, 72 Mich. L. Rev. 373, 449 (1974).

policies. As further proof of the overall strategy, complaint counsel cite to DuPont's pricing forecasts, which it is argued clearly reveal respondent's plan to sacrifice short-term profits for long-term monopoly gains.

We simply cannot accept this analysis. The rationality of DuPont's program hardly seems dependent on its ability to extract monopoly profits in the future. DuPont had a highly efficient process, indeed the most efficient in the industry, and it anticipated expanding market demand. To serve that demand, DuPont enlarged its existing facilities to optimal levels and built a new plant of efficient scale (but not above efficient levels and no larger than necessary to satisfy predicted demand) to serve the market it expected would develop. Given respondent's level of efficiency, expansion of the magnitude undertaken would make sense, regardless of whether the firm would eventually be able to raise prices above competitive levels. Moreover, DuPont's pricing policies were entirely consistent with its cost advantage and apparently (for there is no suggestion that it engaged in predatory pricing) were profitable, even during the '70s when respondent was arguably foregoing additional profits. [48]

Even if DuPont could earn future profits equal to those it was passing up in the mid-1970s only if existing competitors were dissuaded from expanding, it does not necessarily follow that actions leading to that result should constitute an illegal attempt to monopolize. As we have observed, DuPont's ability to pursue its strategy derived from substantial economic efficiencies; it did not stem from below cost pricing, false plant announcements, construction of excess capacity or other plainly anticompetitive conduct. Complaint counsel contend, however, that notwithstanding these efficiencies and DuPont's conceded right to expand, there were less restrictive alternatives available that would have less adverse competitive consequences. In particular, they cite DuPont's own more moderate expansion program—a program discarded in favor of the more aggressive growth plan in 1972—which contemplated only expansion of existing plants. More generally, complaint counsel and their expert witness, Professor Shepherd, urged that DuPont should have pursued *any* less aggressive strategy than the one it did. In other words, respondent should not have attempted to capture all the growth in the market, thereby making it more difficult for competitors to expand to the scale justified by DuPont's technology.

While it is proper and desirable to consider alternative courses of conduct open to DuPont, we firmly believe the course chosen was not unreasonable. When DuPont conceived its strategy in 1972, its estimates of demand growth and supply shortfall seemed reasonable,

and there has been no suggestion to the contrary. In competing for this growth, DuPont realized that even expansion of its existing plants to their practical limits could not satisfy all of the additional demand expected through the early 1980s. A new plant would be required. To build such a plant at efficient scale, afforded by DuPont's developed technology, meant that there would be little, if any, room left for expansion by competitors. Yet, to deny DuPont the opportunity to compete for all of the projected demand growth unduly penalizes its technological success. To require respondent to build a smaller, less efficient plant, or no plant, under these circumstances would be an unjustified restraint on competitive incentives and an unjustified denial of the benefits of competition to consumers.

To be sure, DuPont had another alternative. It could have licensed its technology to competitors, as suggested by complaint counsel, thereby enabling respondent's rivals to close the technological gap more quickly. But, in the context of this case, we can find no basis for concluding that DuPont's refusal to license its technology, whether taken separately or together with the other conduct, was unjustified. There is no evidence, for example, that respondent used unreasonable means to acquire its know-how, or that it joined with others in preventing access by competitors. Complaint counsel cite no authority for the proposition that DuPont should have [49]licensed its technology, and we are aware of none.⁴⁰ Whatever may be the proper result in other factual settings, we are not persuaded that the refusal to license in this situation provides a basis for liability; in fact, imposition of a duty to license might serve to chill the very kind of innovative process that led to DuPont's cost advantage.

Turning to the pricing options available to respondent, there is, of course, no evidence that DuPont priced below its costs, since the case was not tried on such a theory. As for the issue of limit pricing, the literature discussed previously suggests that predation may occur even in circumstances where prices are above the dominant firm's costs (whether measured by average variable or average total cost). In this respect, it seems clear that respondent sought to price in a fashion that took account of the propensities and abilities of

⁴⁰ To the contrary, the recent *Berkey* and *IBM* cases suggest that firms (monopolists and non-monopolists) that have achieved success through superior products and business acumen, and not unlawful anticompetitive conduct, are under no duty to license or disclose their technology to their rivals. *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.2d 263 (2d Cir. 1979); *California Computer Products, Inc. v. IBM Corp.*, 613 F.2d 727 (9th Cir. 1979); *Transamerica Computer Co. v. IBM Corp.*, 481 F. Supp. 965 (N.D. Cal. 1979); *ILC Peripherals Leasing Corp. v. IBM Corp.*, 458 F. Supp. 423 (N.D. Cal. 1978). Here, DuPont's refusal to license its technology is not a factor that would make otherwise reasonable behavior unreasonably anticompetitive. And, if the other conduct were itself unreasonable, the refusal to license would add little to the case, except, of course, as a possible basis for remedial action. See also *SCM Corp. v. Xerox Corp.*, 463 F. Supp. 983 (D. Conn. 1978).

competitors to expand, although the firm's pricing decisions were affected at least in part by independent economic forces, such as demand conditions. Given this situation, it can be argued that these pricing policies went too far, that they transformed an otherwise legitimate method of expansion into an unlawful course of conduct.

We do not agree. DuPont's pricing strategy stemmed from its clear cost advantage over competitors and occurred in conjunction with its long-term plan to capture future market growth, a plan which we have pointed out before was consistent with foreseeable demand and scale economies. Thus, this is not a case where DuPont was attempting solely to preserve its market power through selective, temporary price cuts to deter new entry or expansion by existing competitors. Even complaint counsel do not attack respondent's pricing as an independent violation; rather they argue that it is unlawful as part of a broader pattern of behavior. For our part, even if DuPont's pricing can be characterized as a form of limit pricing, we do not find it to be unreasonable, absent at least some evidence of below-cost pricing, [50] in view of the firm's cost advantage, its market position and its legitimate expansion efforts. While there may be circumstances where above cost pricing is unjustifiably exclusionary, those circumstances clearly are not present here.

We also do not find that DuPont's announcements of its early plans to build an unidentified additional facility or its later announcements identifying the De Lisle plant were unfairly exaggerated or misleading threats or signals in the strategic sense suggested by the commentators. Because of the lead time required for obtaining environmental permits and for completing construction, DuPont's early disclosure of its plans appears logical. The documents also reflect DuPont's strong belief that unfavorable customer reaction could be expected if it cancelled or postponed De Lisle for any significant length of time, so that there were disincentives to making false or exaggerated announcements. Had these announcements been false or grossly disproportionate, under circumstances suggesting they served little purpose except to mislead and discourage competition, there might have been a basis for liability. Cf. *Bergjans Farms Dairy Co.* But that is not the case before us. Moreover, DuPont's decisions to scale back the size of De Lisle and delay its start-up are attributable, in large measure, to unforeseen changes in supply and demand and therefore do not render the otherwise justified announcements unreasonable.

As an additional argument, complaint counsel contend that DuPont's cost advantage is largely fortuitous, owing to technology developed many years before. Without expressly suggesting that the

result should be different had DuPont developed the ilmenite process in 1972, complaint counsel nevertheless argue that DuPont's allegedly superior skills and business acumen should be given little weight. More specifically, they contend that DuPont had demonstrated no contemporaneous technological superiority because it has not "recently distinguished itself as an organizational innovator," citing Williamson, *Dominant Firms and the Monopoly Problem: Market Failure Considerations*, 85 Harv. L. Rev. 1512, 1527 (1972) (emphasis in original). But the point of Williamson's discussion is whether an established monopolist should be able to defend against a charge of monopolization on traditional grounds of business acumen or historic accident, where such causes bear little relationship to the reasons for the firm's continuing dominance. The issues here are considerably different.

We believe it would be anomalous to downgrade the significance of DuPont's technological superiority simply because the fruits were not reaped simultaneously with the discovery of the process. It may well be that DuPont anticipated possible future shortages of rutile and other ores back in the '40s and '50s, even though it could not have anticipated precisely the events that occurred in the late '60s. In any event, DuPont's development of an alternative supply source reflects the kind of skill and foresight that should be encouraged, whether the benefits materialize immediately or at some later date. [51]

With the possible exception of *Alcoa*, which involved repeated increases in output by a monopolist, there is nothing in the case precedents to suggest that DuPont's expansion program unnecessarily heightened entry barriers or otherwise unreasonably excluded competition. Nor does the conduct appear to be sufficiently similar to the preemptive kinds of expansion described by Professors Scherer and Williamson to warrant condemnation. To the extent that the effects of DuPont's expansion bear any resemblance to those models, a review of factors such as those suggested by Scherer's rule-of-reason approach would still call for a finding of reasonableness.⁴¹

It may be that DuPont ultimately will achieve a monopoly share of the market. As its share increases, other firms may find it harder to capture the efficiencies enjoyed by DuPont due to the scale economies associated with the ilmenite process. Those effects should be weighed carefully, and we have done so. Antitrust policy wisely disfavors monopoly, but it also seeks to promote vigorous competitive behavior. Indeed, the essence of the competitive process is to induce

⁴¹ See discussion of Scherer's criteria at pp. 40-41, *supra*.

firms to become more efficient and to pass the benefits of the efficiency along to consumers. That process would be ill-served by using antitrust to block hard, aggressive competition that is solidly based on efficiencies and growth opportunities, even if monopoly is a possible result. Such a view, we believe, is entirely consistent with the "superior skill, foresight and industry" exception in *Alcoa* and subsequent cases, for those decisions clearly indicate that monopolies may be lawfully created by superior competitive ability.⁴²

As we have previously indicated, DuPont engaged in conduct consistent with its own technological capacity and market opportunities. It did not attempt to build excess capacity or to expand temporarily as a means of deterring entry. Nor did respondent engage in other conduct that might tip the scales in the direction of liability, such as pricing below cost, making false announcements about future expansion plans, or attempting to lock up customers in requirements contracts to assure the success of its growth plans. In short, we find DuPont's conduct to be reasonable. Accordingly, we affirm the ALJ's dismissal of the complaint.

FINAL ORDER

This matter has been heard by the Commission upon the appeal of complaint counsel from the initial decision and upon briefs and oral argument in support of and in opposition to the appeal. For the reasons stated in the accompanying Opinion, the Commission has determined to sustain the initial decision. Complaint counsel's appeal is denied. Accordingly,

It is ordered, That the complaint is dismissed.

⁴² If a monopoly results that proves impervious to competitive inroads and is unjustified by scale economies or other efficiencies, antitrust action in this or some other forum may be warranted, even in the absence of abusive conduct. See note 23 *supra*; see also Statement of the Federal Trade Commission to the National Commission for the Review of Antitrust Laws and Procedures (Nov. 17, 1978), Report to the President and the Attorney General, 407. That, however, is an issue entirely different from the one before us.

Modified Order

96 F.T.C.

IN THE MATTER OF
SKF INDUSTRIES, INC., ET AL.

MODIFIED ORDER IN REGARD TO ALLEGED VIOLATION OF THE
FEDERAL TRADE COMMISSION ACT

Docket 9046. Decision, July 5, 1979—Modified Order, October 21, 1980

In accordance with the settlement agreement reached by respondents and Commission counsel without adjudication, and filed with the Court of Appeals for the Second Circuit on July 23, 1980, this modified order revises the "final order" issued by the Commission on July 5, 1979 (44 FR 47926, 94 F.T.C. 6), by changing, among other things, the amount of TRB that SKF may sell to Federal Mogul and the requirements for publishing the provisions of the order.

MODIFIED ORDER TO CEASE AND DESIST

Respondents SKF Industries, Inc. ("SKF"), and Federal-Mogul Corporation ("FM") having filed in the United States Court of Appeals for the Second Circuit petitions for review of the Commission's "Final Order" herein dated July 5, 1979; and a stipulation dated July 23, 1980, by and among SKF, FM and counsel for the Commission having been entered into and filed with the Court of Appeals, pursuant to which the parties agreed and consented to entry by the Court of Appeals, without adjudication of any issue of law or fact, of an order modifying said "Final Order" in accordance with said stipulation and directing that said "Final Order," as so modified, be enforced; and the Court of Appeals having thereupon entered an Order, dated August 25, 1980, remanding the proceeding to the Commission with directions to modify said "Final Order" in accordance with said stipulation:

Now, therefore, it is hereby ordered, That the aforesaid "Final Order" be, and hereby is, modified in accordance with the order of the Court of Appeals to read as follows:

FINAL ORDER

I

This Order shall be deemed to be final as of December 31, 1979, and be binding on Federal-Mogul Corporation ("FM"), SKF Industries, Inc. ("SKF"), their subsidiaries or any person under the control of FM or SKF, their successors and assigns, and their officers, agents, representatives and employees.