

Complaint

78 F.T.C.

(g) Their business is other than selling hearing aids to the public for a profit.

2. Misrepresenting in any manner:

(a) The nature or purpose of their business.

(b) The education or training of their sales personnel.

(c) The efficacy of their hearing aids.

3. Failing to deliver a copy of this order to cease and desist to all operating divisions of the corporate respondents and to all officers, managers and salesmen, both present and future, and any other person now engaged or who becomes engaged in the sale of hearing aids as respondents' agent, representative or employee; and failing to secure a signed statement from each of said persons acknowledging receipt of a copy thereof.

4. Failing to notify the Commission at least thirty (30) days prior to any proposed change in the corporate respondents such as dissolution, assignment or sale resulting in the emergence of a successor corporation, the creation or dissolution of subsidiaries or any other change in the corporations which may affect compliance obligations arising out of the order.

It is further ordered, That the initial decision, as modified by the accompanying opinion, and as above modified, be, and it hereby is, adopted as the decision of the Commission.

It is further ordered, That the respondents herein shall, within sixty (60) days after service upon it of this order, file with the Commission a report, in writing, setting forth in detail the manner and form in which it has complied with this order.

IN THE MATTER OF

KENNECOTT COPPER CORPORATION

ORDER, OPINION, ETC., IN REGARD TO THE ALLEGED VIOLATION OF SEC. 7
OF THE CLAYTON ACT

Docket 8765. Complaint, Aug. 5, 1968—Decision, May 5, 1971

Order requiring the nation's largest copper mining corporation with headquarters in New York City to divest itself within six months of the largest coal producer in the United States with headquarters in St. Louis, Mo., and not to make further acquisitions in the coal industry for the next ten years without prior Federal Trade Commission approval.

COMPLAINT

The Federal Trade Commission has reason to believe that Kennecott Copper Corporation, a corporation, has acquired the business

744

Complaint

and assets of Peabody Coal Company, a corporation, in violation of Section 7 of the Clayton Act, as amended (15 U.S.C. Sec. 18); and therefore, pursuant to Section 11 of said Act, issues this complaint stating its charges as follows:

I

DEFINITIONS

1. For the purpose of this complaint the following definitions shall apply:

- (a) "Coal" includes bituminous and sub-bituminous coal.
- (b) "The Mountain Region" consists of Colorado, Utah, Wyoming, New Mexico, Montana, Arizona, Idaho, and Nevada.

II

RESPONDENT

Kennecott Copper Corporation

2. Respondent Kennecott Copper Corporation, herein referred to as "Kennecott," is a corporation organized and existing under the laws of the State of New York, with its executive offices located at 161 East 42nd Street, New York, New York.

3. Kennecott is the largest copper producer in the United States having accounted for approximately 33% of the 1,372,000 tons of primary copper produced domestically during 1966. Kennecott is also a substantial producer of lead, zinc, molybdenum and silver and is the nation's second largest producer of gold.

4. Kennecott's Western Mining Divisions operate four copper, and related metals, mining properties located in New Mexico (Chino Mines Division), Nevada (Nevada Mines Division), Arizona (Ray Mines Division), and Utah (Utah Copper Division).

5. Kennecott also operates an electrolytic copper refining plant at Baltimore, Maryland (Kennecott Refining Corporation), as well as a copper and other metal-producing and fabricating facility in Cleveland, Ohio (Chase Brass & Copper Company).

6. Kennecott, as a producer, smelter, refiner, and fabricator of copper and other metal products, consumes substantial amounts of electrical energy. During 1965 its total dollar purchases of electricity amounted to approximately \$3,000,000, some 30% of which was purchased for use by its Western Mining Divisions.

7. Kennecott consumes varying quantities of natural gas, fuel oil and coal for energy purposes. During 1965, 225,000 tons of coal were purchased by Kennecott, approximately 134,000 tons of which were

bought by its Nevada Mines Division. Kennecott uses such fuels principally to generate substantial quantities of electrical power, primarily for use in its metal mining and processing operations. On occasion Kennecott has also sold certain quantities of electrical power to utility companies and others.

8. During 1966 Kennecott and its wholly owned subsidiaries had sales of metals and metal products of \$739,714,423 which, with miscellaneous revenues of \$11,124,110, resulted in a net income of \$125,375,300. Total consolidated assets of Kennecott as of December 31, 1966 were \$1,075,245,000. Kennecott's rate of return on stockholders' investment during 1966 was 13.6%. Among all industrial corporations, Kennecott ranked 55th in terms of assets and 111th in terms of sales in 1966.

9. Beginning on or about April 1963, Kennecott undertook an intensive investigation of the feasibility of entering the coal industry on a local, regional, national and international scale. During the course of this investigation, Kennecott, among other things, engaged outside coal consultants; studied the availability of coal lands and leases; attempted to negotiate options to purchase selected coal reserves; negotiated an option to purchase coal reserves; had drilling and engineering studies conducted to determine the extent of coal reserves on the optioned land; explored the possibility of supplying the coal then being used by its Nevada Mines Division; studied the possibility of converting its Utah Copper Division to use coal; contacted potential purchasers of coal; investigated the competitive structure of local and regional coal markets; studied the cost of transporting coal; made detailed analyses of the profit potentials of a coal operation; and concluded it could mine coal as efficiently as any of the major national coal companies.

10. In June 1965 Kennecott's board of directors approved purchase of the Knight-Ideal coal reserves in Carbon County, Utah, and allocated funds for the opening and operating of a coal mine with a projected annual capacity of 1,165,000 tons, which would have made it one of the largest coal operations in the West. The coal to be produced was intended to be used by Kennecott to supply a part of its Utah Copper Division fuel requirements, all of its Nevada Mines Division fuel requirements, and to make sales to outside customers. During 1964 the Knight-Ideal Coal Company had mined 185,000 tons of coal from these Carbon County reserves.

11. Subsequent to its purchase of the Knight-Ideal reserves, Kennecott incorporated a Utah subsidiary, Kennecott Coal Company, to mine, sell and ship coal and to perform all functions ancillary

thereto. Kennecott Coal Company applied for and received acceptance for associate membership in the National Coal Association. Kennecott examined and bid upon coal lands in the immediate vicinity of the Knight-Ideal reserves, and recommended the purchase of additional coal lands, leases and options. Kennecott undertook a search for an experienced coal operating and marketing executive to assist its subsidiary in entering the coal industry and explored the possibility of acquiring certain local and regional coal companies. Such activities continued until Kennecott initiated plans to acquire Peabody Coal Company.

12. At all times relevant herein, Kennecott has sold and shipped its products in interstate commerce throughout the United States and is engaged in "commerce" within the meaning of the Clayton Act.

III

Peabody Coal Company

13. Peabody Coal Company, herein referred to as "Peabody," is a corporation organized and existing under the laws of the State of Illinois, with its principal office and place of business located at 301 North Memorial Drive, St. Louis, Missouri.

14. Peabody is one of the two leading producers of coal in the United States, having accounted for approximately 10.1% of the 530 million tons of coal produced domestically during 1966. In addition, during 1966, Peabody sold some 8,000,000 tons of brokerage coal produced by other coal companies.

15. Approximately 77% of Peabody's total coal sales are made to electric utility companies, making Peabody the nation's leading supplier of coal to such customers.

16. Peabody operates approximately 37 wholly-owned domestic mines (with an interest in 6 additional domestic mines) in the States of Alabama, Colorado, Illinois, Indiana, Kentucky, Missouri, Ohio and Oklahoma with additional operations being planned for Arizona. As of mid-1967, Peabody owned, leased or held under option in excess of 5.5 billion tons of estimated recoverable coal reserves located in fourteen States. In addition to such recoverable reserves, Peabody owns, leases, has under option or otherwise controls substantial acreage known to contain large amounts of coal, most of which is located in certain Western States.

17. Peabody's principal domestic marketing areas are the North Central and South Central regions of the United States. In addition, Peabody is aggressively expanding its marketing areas with

sizable long-term contracts in the Southeast and Southwest. Peabody also has extensive reserves of coal in sections of the Western and Southwestern States which offer promising opportunities for substantial tonnages of new business.

18. During 1966 Peabody and its subsidiaries had coal sales and other revenues of \$233,923,483 providing a net income of \$26,279,973. Total consolidated assets of Peabody as of December 31, 1966, were \$315,629,163. Peabody's rate of return on stockholders' investment during 1966 was 14.6%. Among all industrial corporations, Peabody ranked 186th in terms of assets and 317th in terms of sales in 1966.

19. Kennecott's activities relating to its planned entry into the coal business were known to Peabody and caused it both to recognize Kennecott as a probable entrant and to undertake certain steps to discourage or prevent such entry.

20. At all times relevant herein, Peabody has sold and shipped its products in interstate commerce throughout the United States and is engaged in "commerce" within the meaning of the Clayton Act.

IV

The Nature of Trade and Commerce

21. Total domestic coal production in 1966 approximated 530 million tons having a mine mouth value of approximately \$2.4 billion. Coal production in 1966 was approximately 20 million tons greater than in 1965.

22. In 1954 the four largest producers accounted for 15.8%, and the eight largest for 23.6%, respectively, of total domestic coal production.

23. This growth in concentration has been accompanied by a trend toward fewer but larger companies, with the number of concerns producing over 1 million tons of coal annually having declined by approximately 42% between 1949 and 1966. Mergers and acquisitions have contributed to the increase in concentration and the decline in the number of companies, with the three largest coal companies having acquired approximately 25 coal producers since January 1, 1955.

24. Electric power utility companies have become increasingly important as consumers of coal. In 1955 they represented approximately 33% and in 1966 approximately 54% of total domestic coal consumption.

25. Total coal production in the Mountain Region approximated 16.4 million tons in 1966. Of the eight States comprising the Moun-

Complaint

tain Region, Colorado's production of 5.2 million tons and Utah's 4.6 million tons ranked them first and second, respectively, in both the Mountain Region and among all coal-producing States west of the Mississippi River.

26. In 1966 the four largest producers accounted for about 40% and the eight largest for about 63% of the total coal produced in the Mountain Region. In the State of Utah the top four companies accounted for approximately 75% of total coal production.

27. In 1955 electric power utilities consumed approximately 9% of the coal produced in the Mountain Region. By 1964 their consumption represented approximately 42% of the total coal produced in this area.

v

The Proposed Acquisition

28. A tentative agreement, signed July 1, 1966, and subsequently formalized on March 17, 1967, provided that Kennecott would acquire all of the business and assets of Peabody. Stockholders of Peabody approved the acquisition on January 26, 1968. On or about March 29, 1968, a subsidiary of Kennecott exchanged approximately \$74 million in cash for the business and assets of Peabody, subject to the reservation of a production payment from Peabody's coal properties which was sold by Peabody for about \$400 million in cash.

29. The combined assets of the two companies in 1966 were as great as the 44th largest industrial corporation as contrasted to Kennecott's rank of 55th in that year.

vi

Violations

30. The effect of the acquisition of Peabody by Kennecott has been, or may be, to lessen competition substantially or to tend to create a monopoly in violation of Section 7 of the Clayton Act, in the following ways, among others:

(a) The acquisition of Peabody by Kennecott has eliminated a substantial competitive factor in the coal business in Utah, the Mountain Region, and the United States and relevant portions thereof;

(b) Kennecott has been permanently eliminated as a substantial potential entrant into the production and sale of coal in Utah, the Mountain Region, and the United States and relevant portions thereof;

(c) Kennecott has been permanently eliminated as a substantial potential entrant into the production and sale of coal to electric utility companies in Utah, the Mountain Region, and the United States and relevant portions thereof;

(d) Kennecott has been permanently eliminated as a substantial potential competitor having an actual and potential influence upon competition in the coal industry in Utah, the Mountain Region, and the United States and relevant portions thereof;

(e) Concentration may be substantially increased, and the possibility of future deconcentration has been substantially reduced, in the production and sale of coal in Utah, the Mountain Region, and the United States and relevant portions thereof;

(f) The substitution of Kennecott, with its vast resources as the leading company in the copper industry and its existing relationships with utility companies, tends unduly to increase barriers to the entry of new competition, and to deprive smaller coal companies of an equal opportunity to compete in the sale of coal in Utah, the Mountain Region, and the United States and relevant portions thereof; and

(g) Users of coal have been, or may be, denied the benefits of free and open competition in the sale of coal in Utah, the Mountain Region, and the United States and relevant portions thereof.

Mr. Joseph J. O'Malley, Mr. Wilbur W. Sacra, Jr., and Mr. Charles Kadish, supporting the complaint. (Mr. Larry D. Sharp, Law Clerk, on the Brief.)

Sullivan & Cromwell, New York, N.Y., by Mr. Arthur H. Dean, Mr. Roy H. Steyer, Mr. John L. Warden, and Mr. John M. McCarthy; and Howrey, Simon, Baker & Murchison, Wash., D.C., by Mr. William Simon, Mr. John Bodner, Jr., and Mr. Francis A. O'Brien, for respondent.

INITIAL DECISION BY DONALD R. MOORE, HEARING EXAMINER

MARCH 9, 1970

CONTENTS

	<i>Page</i>
Preliminary Statement.....	752
Findings of Fact.....	754
I. Kennecott Copper Corporation.....	754
II. Peabody Coal Company.....	756
III. The Acquisition.....	758
IV. Line of Commerce.....	762
V. The Coal Industry—Its Recent History, Its Structure, and Its Relationship to Other Fuels.....	765

	<i>Page</i>
A. Introduction.....	765
B. Principal Witnesses on Coal.....	775
C. Types of Coal.....	769
D. Coal in the Post-War Period (1947-1967).....	772
1. Changes in Coal-Consumption Patterns.....	772
2. Changes in Production, Transportation, and Marketing Techniques.....	775
E. Present State of the Coal Business.....	788
1. Geography.....	788
2. Industry Structure.....	791
F. Competition of Coal and Other Energy Resources.....	795
1. General.....	795
2. Nuclear Energy.....	797
3. Other Competitive Factors.....	800
G. The Future of Coal.....	800
1. Demand by Electric Utilities.....	800
2. Coal Conversion to Synthetic Fuels.....	803
H. Potential Entrants into the Production and Sale of Coal.....	804
VI. Kennecott as a Potential Entrant into the Coal Industry.....	808
A. Introduction.....	808
B. Incentives for Diversification.....	808
C. Consideration of Diversification into Oil.....	812
1. Employment of Oil Expert.....	812
2. The Report on Oil.....	813
3. Acquisition Efforts.....	814
D. Consideration of Diversification into Coal.....	815
1. Preliminary Steps.....	815
2. Purchase of the Knight-Ideal Coal Reserves.....	816
3. Coal Vis-a-vis Other Diversification Possibilities.....	858
4. Interest in Coal Exploration.....	860
5. The Search for a Coal Executive.....	862
6. The Focus on Peabody.....	865
E. Capability of De Novo Entry.....	867
1. Relationship between Copper and Coal.....	868
2. Differences in Marketing.....	871
3. Comparison with Utah Construction & Mining Co.....	872
4. Availability of Coal Personnel.....	874
5. Availability of Coal Reserves and Water.....	876
6. Prospects for a Kennecott Coal Operation Based on the Knight-Ideal Reserves.....	877
VII. Probable Effects on Competition.....	884
A. The Question of Relevant Geographic Markets.....	885
B. Utah.....	887
C. The Mountain Region.....	889
D. The Area West of the Mississippi River.....	891
E. The Nation.....	891
F. Conclusory Finding.....	891
Summary and Analysis.....	892
I. Introduction.....	892
A. Nature of the Acquisition.....	893

Initial Decision	78 F.T.C.
	<i>Page</i>
B. The Pleadings.....	893
C. The Issues.....	895
II. "Line of Commerce" and "Section of the Country".....	896
III. Kennecott as a Potential Entrant Into Coal.....	898
IV. Lack of Evidence of Probable Adverse Effect on Competition.....	903
A. Limited Industry Recognition of Kennecott as a Potential Entrant.....	903
B. Structure of the Coal Industry.....	905
C. Other Potential Entrants.....	908
D. Competition From Other Fuels.....	909
E. Complaint Counsel's Per Se Theory.....	911
Conclusions.....	912
Order.....	913

PRELIMINARY STATEMENT

The complaint in this proceeding was issued by the Federal Trade Commission on August 5, 1968, and was duly served on respondent. The complaint charges that respondent violated Section 7 of the Clayton Act, as amended, by reason of its acquisition of the business and assets of the Peabody Coal Company. Respondent filed its answer on October 11, 1968, admitting in part and denying in part the various factual allegations of the complaint and essentially denying any violation of law.

Following a series of prehearing conferences, the trial commenced on January 27, 1969, and concluded on June 11, 1969. Evidentiary hearings, at which 54 witnesses gave oral testimony, were held on 48 hearing days in New York, New York, San Francisco, California, Salt Lake City, Utah, and Washington, D.C. As a part of the hearings, the hearing examiner, in the company of counsel for both sides, made a physical inspection of some of the operations concerned in the case, including two of Peabody's coal mines in Illinois (strip and underground); Kennecott's open pit copper mine in Utah, together with related facilities; and certain coal mining properties and facilities in Carbon County, Utah.

The record consists of more than 6,400 pages of trial transcript and approximately 450 documentary exhibits comprising several thousand pages.

At the hearings, testimony and other evidence were offered in support of and in opposition to the allegations of the complaint. Such testimony and evidence have been duly recorded and filed. The parties were represented by counsel and were afforded full opportunity to be heard, to examine and to cross-examine witnesses, and to introduce evidence bearing on the issues.

After the presentation of evidence, proposed findings of fact and

conclusions of law and a proposed form of order, accompanied by supporting briefs, were filed by counsel supporting the complaint and by counsel for respondent. Reply briefs were also filed by counsel for both parties. Those proposed findings not adopted either in the form proposed or in substance are rejected as lacking support in the record or as involving immaterial matters.

Having heard and observed the witnesses and having carefully reviewed the entire record in this proceeding, together with the proposed findings and briefs filed by the parties, the hearing examiner makes the following findings of fact, enters his resulting conclusions, and issues an appropriate order.

As required by Section 3.51(b)(1) of the Commission's Rules of Practice, the findings of fact include references to the principal supporting items in the record. Such references are intended to serve as convenient guides to the testimony and to the exhibits supporting the findings of fact, but they do not necessarily represent complete summaries of the evidence considered in arriving at such findings. Where reference is made to proposed findings submitted by the parties, such references are intended to include their citations to the record.

References to the record are made in parentheses, and certain abbreviations are used:

CPF—Numbered paragraphs in the Proposed Findings of Fact, Conclusions of Law and Order filed by counsel supporting the complaint.

CPF-Br—Arguments and proposed conclusions in the nature of a brief contained in complaint counsel's Proposed Findings of Fact, Conclusions of Law and Order (see *infra*, p. 4).

CRB—Complaint Counsel's Reply to Respondent's Brief and Proposed Findings of Fact.

CX—Commission Exhibit.

RPF—Numbered paragraphs in Respondent's Proposed Findings of Fact and Conclusions of Law.

RB—Respondent's Brief.

RRB—Respondent's Reply Brief and Exceptions.

RRB-Ex—Respondent's exceptions (keyed to page numbers and contained in Respondents Reply Brief and Exceptions; see *infra*, p. 4).

RX—Respondents Exhibit.

Tr.—Transcript.

References to the proposed findings of counsel are to paragraph numbers preceded by "CPF" or "RFP," while references to the

briefs are to page numbers. Complaint counsel's arguments and proposed conclusions, in the nature of a brief, are interwoven with their proposed findings in a single document entitled "Proposed Findings of Fact, Conclusions of Law and Order." When reference is made to such material, as distinguished from numbered proposed findings (CPF), the citation is "CPF-Br," keyed to page numbers—for example, CPF-Br, pp. 19-20. Respondent filed its proposed findings and its brief separately, followed by a document entitled "Respondent's Reply Brief and Exceptions." The exceptions contained in this document are abbreviated "RRB-Ex" and keyed to the page numbers.

Sometimes references to testimony cite the name of the witness and the transcript page number without the abbreviation "Tr."—for example, Milliken 6295.

FINDING OF FACT

Kennecott Copper Corporation

Respondent Kennecott Copper Corporation (hereinafter referred to as "Kennecott" or as "respondent") is a corporation organized and existing under the laws of the State of New York, with executive offices at 161 East 42nd Street, New York, New York (Complaint and Answer, par. 2).

Kennecott was incorporated in 1915 (CX 6, p. 1) and has been engaged in the mining of copper and associated metals since that time (C. D. Michaelson 5422-23).

Kennecott is the largest copper producer in the United States, having accounted for approximately 33 percent of the 1,372,000 tons of primary copper produced domestically during 1966. Kennecott is also a substantial producer of molybdenum and silver and is the nation's second largest producer of gold. Kennecott is also a producer of lead and zinc. (Complaint and Answer, par. 3.)

Kennecott owns and operates four copper mines in the United States (Milliken 6301; C. D. Michaelson 5426). Each mine is a separate operating division within the Western Mining Divisions (sometimes referred to as "WMD"), which in turn, is a part of the Metal Division of the company: (1) the Utah Copper Division in Utah (sometimes referred to as "UCD"), (2) the Nevada Mines Division in Nevada, (3) the Ray Mines Division in Arizona, and (4) the Chino Mines Division in New Mexico. (Complaint and Answer, par. 4; C. D. Michaelson 5421, 5426; CX 9, p. 7.) Each of these mines is over 50 years old (C. D. Michaelson 5426-27).

Kennecott also operates a fifth copper mine. El Teniente mine in Chile, of which it is part owner. Kennecott had owned and operated

this mine for more than 50 years, but in 1967 it sold a 51 percent interest to Chile. Kennecott retains a 49 percent interest in the mine through its subsidiary, Braden Copper Company, which operates the mine under a management contract. (CX 9, pp. 9, 21, 26; C. D. Michaelson 5452.)

Kennecott Refining Corporation, a subsidiary of respondent Kennecott, operates an electrolytic copper refining plant in Anne Arundel County, Maryland. Through another subsidiary, Chase Brass & Copper Company, sometimes referred to as "Chase"), respondent Kennecott fabricates some copper and brass products. (Complaint and Answer, par. 5.) The principal customers for the copper and brass products manufactured by Chase are the automobile and construction industries and the electrical equipment manufacturers, such as General Electric and Westinghouse (C. D. Michaelson 5423).

Kennecott operates two lead and zinc mines in Missouri and Utah and partially owns a relatively small subsidiary that produces iron and titanium slag (CX 9, pp. 11, 13; Milliken 6301).

Before Kennecott acquired the assets of Peabody Coal Company in 1968, Kennecott's business was confined almost entirely to the production of copper and its by-products, such as gold, silver, and molybdenum, and the fabrication of certain copper and brass products by Chase (CX 9; C. D. Michaelson 5422-24). All of Kennecott's production of copper is sold in raw form to processors, with about 13 percent sold to Chase (C. D. Michaelson 5426). The company derives about 90 percent of its net income from its copper and copper-related operations (Milliken 6301).

As a producer, smelter, refiner, and fabricator of copper and other metal products, Kennecott consumes substantial amounts of electrical energy (Complaint and Answer, par. 6; RX 13-N, 13-Z-1). Respondent takes issue with the characterization "substantial" (Answer, par. 6; RRB-Ex 5), but for the purposes of these findings, the characterization may be accepted on the basis of the statistical record: Electrical power consumed each year by the Utah Copper Division alone totals 1.1 billion kilowatt hours (RX 13-Z-1), and the Magna power plant, with a capacity of 175,000 kilowatts, can produce enough power for a city of 350,000 population (RX 117). The issue to which this has primary relevance (Complaint, paragraph 30(f)) seemingly has been abandoned by complaint counsel. (Compare CPF-Br, par. (i)(1)-(7), pp. 125-26, with Complaint, par. 30(a)-(g).) (For further detail, see also CX 106.)

Kennecott consumes varying quantities of natural gas, fuel oil, and coal for energy purposes. During 1965, Kennecott purchased 225,000 tons of coal, of which approximately 134,000 tons were

bought by its Nevada Mines Division. Kennecott uses such fuels principally to generate substantial quantities of electric power, primarily for use in its metal-mining and processing operations. On occasion, Kennecott has sold some electric power to utility companies and others. (Complaint and Answer, par. 7; RX 13-N.) Respondent again questions the term "substantial" and dismisses its power sales as *de minimis*. (Answer, RRB-Ex 6.) However, substantially the same comment that was made in the preceding paragraph is applicable here. (For further detail, see CX 105A-B.)

During 1966, Kennecott and its wholly-owned subsidiaries had sales of metals and metal products of \$739,714,423 which, with miscellaneous revenues of \$11,124,110, resulted in a net income of \$125,375,300. Total consolidated assets of Kennecott as of December 31, 1966, were \$1,075,245,000. Kennecott's rate of return on stockholders' investment during 1966 was 13.6 percent. (Complaint and Answer, par. 8.) Among United States industrial corporations listed in "Fortune's 500" for 1966, Kennecott ranked 55th in terms of assets and 111th in terms of sales (CX 188, p. 6).

Although respondent denies the allegation that "Kennecott has sold and shipped its products in interstate commerce throughout the United States," it admits that at all times relevant to this proceeding it has been engaged in "commerce" within the meaning of the Clayton Act (Complaint and Answer, par. 12).

II. Peabody Coal Company

Prior to March 29, 1968, Peabody Coal Company (hereinafter referred to as "Peabody") was a corporation organized and existing under the laws of the State of Illinois, with its principal office and place of business located at 301 North Memorial Drive, St. Louis, Missouri. On or about March 29, 1968, Peabody changed its name to PDY Coal Company and transferred its business and certain assets to a wholly-owned subsidiary of Kennecott, also named Peabody Coal Company, which was organized under the laws of the State of Delaware. (Complaint and Answer, pars. 13, 28; CX 162 Z-16, Z-28-29.) Unless otherwise indicated, references to "Peabody" in these findings are intended to refer to the Illinois corporation.

Peabody was one of the two leading producers of coal in the United States. In 1966 it produced approximately 52.8 million tons of coal, or approximately 10 percent of the 530 million tons of coal produced domestically in that year. In addition, Peabody sold approximately 8.3 million tons of coal produced by others. (Complaint and Answer, par. 14.) In 1967 Peabody accounted for 59.4 million

tons of the coal industry's total production of 552.6 million tons. The other industry leader was Consolidation Coal Company, which produced 51.4 million tons in 1966 and 56.5 million tons in 1967. (CX 183; RX 170 A-C.)

In 1966, approximately 77 percent of Peabody's coal sales were made to electric utility companies. Peabody was the nation's leading supplier of coal to such companies. (Complaint and Answer, par. 15.)

Peabody operated approximately 37 wholly-owned domestic mines and had an interest in 6 additional domestic mines in the States of Alabama, Colorado, Illinois, Indiana, Kentucky, Missouri, Ohio, and Oklahoma, with additional operations planned for Arizona (Complaint and Answer, par. 16).

In 1966 approximately 84 percent of the coal mined by Peabody came from strip mines. The profitability of its strip mines was materially higher than that of its underground mines. (CX 162-R.)

As of mid-1967, Peabody owned, leased, or held under option more than 5.5 billion tons of proved recoverable coal reserves located in 14 States—Alabama, Arizona, Colorado, Illinois, Indiana, Kansas, Kentucky, Missouri, Montana, New Mexico, North Dakota, Ohio, Oklahoma, and Wyoming. All of its reserves were bituminous, except for the reserves in Montana and Wyoming (lignite and sub-bituminous), North Dakota (lignite), and Colorado (bituminous and lignite). These reserves are about equally divided between strip and underground. However, the reserves assigned to active mines comprises nearly 700 million tons of strip reserves and nearly 225 million tons of underground reserves. (Complaint and Answer, par. 16; CX 162 S-T.)

In addition, Peabody owned, leased, had under option, or otherwise controlled substantial acreage in the West which was known to contain large amounts of coal but which had not been fully explored or tested for mineability. (Complaint and Answer, par. 16; CX 162-T.)

On October 23, 1967, a consent judgment was entered by the United States District Court for the Northern District of Illinois requiring Peabody to divest as an operating business coal properties producing 6 million tons of coal a year and having the ability to continue to produce coal at that rate for 20 years. The judgment also precludes Peabody from acquiring any operating coal company or mine in Illinois or neighboring states for 10 years and limits its acquisition of reserves in the same area for 5 years. *United States v. Peabody Coal Company*, 1967 Trade Cas., ¶ 72,213 (N.D. Ill. 1967).

As of mid-1967, Peabody's principal domestic marketing areas were the North Central and South Central States. In addition, Peabody was aggressively expanding its marketing areas, with sizable, long-term contracts in the Southeast and Southwest. Peabody also had extensive reserves of coal in Western and Southwestern States that offered promising opportunities for substantial tonnages of new business. (Complaint and Answer, par. 17.) One contract provides for the delivery by Peabody of a minimum of 117 million tons of coal from the Black Mesa area of Arizona to a power station to be built at Davis Dam in Nevada, starting in 1970 and continuing for 35 years (CX 152 D-E, CX 162-R).

During 1966, Peabody and its subsidiaries had coal sales and other revenues of \$233,923,483 that provided a net income of \$26,279,973. Total consolidated assets of Peabody as of December 31, 1966, were \$315,629,163. Peabody's rate of return on stockholders' investment during 1966 was 14.6 percent. (Complaint and Answer, par. 18; CX 162-O, W.) Among United States industrial corporations listed in "Fortune's 500" for 1966, Peabody ranked 186th in terms of assets and 317th in terms of sales (CX 188, p. 14).

At all times relevant to this proceeding, Peabody has sold and has shipped its products in interstate commerce and has been engaged in "commerce" within the meaning of the Clayton Act (Complaint and Answer, par. 20; CX 118, p. 8; CX 119, p. 8; CX 120, pp. 8-9; CX 121, p. 8).

In addition to its domestic operations, Peabody owned 58 percent of an Australian company that operated a large metallurgical (coking) coal mine in Australia. Most of its output was sold to the Japanese steel industry. (CX 162-U.)

III. The Acquisition

The first reference to the possible acquisition of Peabody by Kennecott was in the course of a conference that Frank R. Milliken, president of Kennecott, had on July 29, 1965, with C. D. Michaelson, vice president for mining, and C. H. Burgess, vice president for exploration, on the general subject of "Commodity Objectives of Exploration Department."¹ In a discussion of activities relating to coal, mention was made of the possible acquisition of coal companies as such rather than the purchase of reserves or the discovery of reserves, and Mr. Burgess expressed the view that the acquisition of coal companies would make for faster progress. On the subject of coal companies that might be purchased, Mr. Milliken mentioned

¹ Other aspects of this conference are considered *infra*, pp. 860-61.

Peabody and Island Creek, but not on any definitive basis. Instead, Mr. Milliken referred to the fact that Kennecott had engaged a consultant on coal in Utah and wondered whether it should employ a consultant to advise it on coal in the rest of the United States and elsewhere in the world. Mr. Burgess suggested that the Paul Weir Company, of Chicago, one of the nation's leading coal consulting firms be contacted for further advice (CX 81 A-C; Milliken 6362-63, 6402-04). Mr. Burgess had been acquainted with Clayton G. Ball, president of Paul Weir Company, for more than 30 years. Mr. Burgess visited with Mr. Ball in his Chicago office from time to time and had on occasion discussed coal in a casual manner. (Ball 4302-04, 4277-79.)

As far as the record shows, there was no followup on the suggestions made at the July meeting until the following spring. Kennecott's first dealing with Peabody regarding acquisition originated with a suggestion made to Mr. Burgess when he met in Chicago on March 17, 1966, with Mr. Ball and Paul Weir, chairman of the board of Paul Weir Company. Mr. Burgess indicated that Kennecott was interested in making a substantial diversification investment in coal. (CX 94 A-B; Ball 4303-04.) In the course of the conference² Mr. Weir mentioned that Peabody might be available for acquisition (P. Weir 4383-85).

Following the meeting of March 17, 1966, and pursuant to Mr. Burgess' suggestion, Paul Weir informed Merl C. Kelce, chairman and chief executive officer of Peabody, that Kennecott was interested in talking with him (Kelce 3688, CX 94-B. On April 19, 1966, Mr. Kelce and the former general counsel of Peabody, met with Mr. Burgess in New York to discuss the possible sale of the Peabody properties to Kennecott. This was the first time any Peabody representative had discussed with any Kennecott representative a possible sale of Peabody to Kennecott. (Kelce 3687-88; Mullins 3588.)

Peabody's management had already determined that it wished to sell the company's business and assets and had already engaged in negotiations with several other companies for that purpose. The two principal executives of Peabody were positive that Peabody would be sold; it was only a question of when and to whom. (Mullins 3588-98; Kelce 3672-82.)

A combination of business conditions and personal considerations led to the decision to sell Peabody. There was great concern at the time about competition from nuclear energy, as many utilities were ordering nuclear power plants. Peabody's two largest customers,

² This conference is treated in greater detail *infra*, pp. 865-67.

TVA and Commonwealth Edison Company of Chicago, which accounted for 15 million to 20 million tons of Peabody's coal sales of between 50 million and 60 million tons, had made substantial commitments and plans for nuclear-fueled plants at prices that compared very favorably with Peabody's prices for coal. At the same time there was also great concern about governmental regulation of air pollution to limit the sulphur content of coal to 1 percent, when the sulphur content of Peabody's coal ranged from 3.5 percent to 4 percent. This combination of business circumstances had a depressing effect upon the coal business. Peabody stock had fallen from a high of \$46 in 1965 to the low \$30's in early 1966 because of the threat of nuclear power and air pollution. In addition, for reasons of health and age, the Kelce brothers—whose family constituted Peabody's largest shareholder group—did not want to continue active management of the company. (Kelce 3674-76; CX 162-P.)

At the April 1966 meeting, the parties did not enter into any detailed negotiations. The meeting simply confirmed that Peabody was for sale, that it had had prior merger discussions with other companies, and that it would like to talk with Kennecott. After Mr. Burgess reported these facts to Mr. Milliken, active merger negotiations followed and eventually resulted in the agreement by Kennecott to acquire Peabody. (Milliken 6364.)

Agreement between the Kennecott and Peabody managements to seek approval of their respective boards of directors for the acquisition of Peabody's business by Kennecott was reached early in July 1966. On July 8, 1966, Kennecott's president wrote its directors, briefly outlining the proposed transaction and placing before them the question of whether Kennecott should proceed. (CX 153 A-B.)

Enclosed with the letter to the directors was a report on the proposed acquisition that discussed in considerable detail Kennecott's need for diversification directed toward (1) the long-term future of the company and (2) the short-term investment of existing cash and projected surplus cash flow, aggregating approximately \$600 million. The report also discussed the present business and future prospects of Peabody and the coal industry generally. (CX 154 A-Z-7.)

On July 13, 1966, the Peabody acquisition proposal was considered by the executive committee of Kennecott's board (CX 156 A-B), and was given a general expression of approval by the board on July 15, 1966 (CX 157 A-C.)

On July 19, 1966, the president of Kennecott and the chairman and chief executive officer of Peabody executed an agreement in prin-

ciple for the acquisition of Peabody's assets by Kennecott at a price designed to yield \$47.50 in cash for each share of Peabody common stock outstanding. The agreement recited that the parties should proceed to develop a definitive contract, that Kennecott should undertake an audit, investigation, and independent appraisal of Peabody, and that the agreement to be developed would be subject to the approval of the boards of directors of both companies and of the Peabody shareholders and would also be subject to the obtaining of satisfactory tax rulings and the working out of satisfactory financial arrangements. (CX 155.)

By March 17, 1967, Kennecott had received financial audit material from independent accountants and a preliminary evaluation of Peabody's mining properties and equipment from Paul Weir Company (CX 162 Z-4), and agreement was reached as of that date for the sale to a wholly-owned subsidiary of Kennecott of all Peabody's coal properties (subject to a reserved production payment in the primary amount of \$400 million),³ other assets (with certain exceptions), and business. (CX 162 Z-16, Z-28.) Kennecott's obligation to proceed was subject to, among other things, the execution of a satisfactory agreement for the purchase of the production payment, the receipt of the necessary tax rulings, and the final report of the Paul Weir Company (CX 162 Z-33-35).

Following the receipt of further reports from Paul Weir Company on November 15, 1967, and March 13, 1968 (CX 163, CX 164), the acquisition was finally consummated on March 29, 1968. On that date, Kennecott, through a subsidiary, acquired the business and substantially all the assets of Peabody for \$285 million in cash and the assumption of certain liabilities (approximately \$36.5 million), subject, however, to a production payment that was sold by Peabody to a third party (Green River Coal Company) for \$300 million. The production payment provided in substance for the payment to the owner thereof of an amount equal to 95 percent⁴ of the "net mine revenue" (as defined in the conveyance) from Peabody's mines until the owner has received \$300 million plus an amount equal to 6.775 percent per annum on the unliquidated balance of the primary sum of \$300 million, computed monthly. This meant that a substantial portion of Peabody's net revenues would be dedicated for about 10 years to the liquidation of the production payment; but after the

³ Later reduced to \$300 million. The production payment arrangement was a means of financing the transaction, in the nature of a loan that, together with the cash paid by Kennecott, yielded immediate cash to Peabody for paying certain indebtedness and for liquidation (CX 154 G-H; CX 166 A-Z-52; Weir 4365-68; 4376-79).

⁴ In the initial months of operation of a mine, the percentage is lower.

retirement of the production payment, all earnings were to accrue to Kennecott. (Answer, par. 28; CX 9, p. 3; CX 154 G-H; CX 161, p. 13; CX 166 A-Z-52.)

IV. Line of Commerce

At the outset it is necessary to delineate the line of commerce to be considered in testing the competitive effects of the acquisition. Complaint counsel would limit the product line to bituminous and sub-bituminous coal (CPF-Br., pp. 7-9, 32), whereas, despite some initial vacillation (Tr. 123, 127-28, 132, 135), respondent urges (RB, p. 6) that the line of commerce should not be limited to coal but should encompass competing fuels in a market variously denominated as an "energy market" (for example, Netschert 3932-35) or a "boiler fuels" market (Fox 6069, 6237-40, 6245) or, perhaps, in view of the importance of such fuels in the generation of electric power, an electric utility market.⁵ Respondent also takes the position that if coal is deemed to be the relevant product line, it should include lignite in addition to bituminous and subbituminous coal and should exclude from the bituminous category, metallurgical or coking coal, so as to recognize a "steam coal" market as distinguished from a coking coal market.⁶ In any event, respondent says that in assessing the competitive impact of the challenged acquisition, consideration must be given to the competition that exists between coal and other fuels. (RB, p. 6.)

Despite their differences in approach, counsel are not really too far apart, and their positions may be accommodated in the view taken by the examiner. On the one hand, complaint counsel concede, as they must, the existence of inter-fuel competition, and possibly even an "energy market," at least in relation to the generation of electric power (CPF-Br., pp. 19-20), but they insist that coal is, in any event, a recognizable submarket of such a total energy market (CPF-Br., pp. 28, 32). On the other hand, respondent concedes, as it must, the existence of "an identifiable coal industry" (RRB-Ex. pp. 20a, 26a), which it tacitly recognizes as a submarket of the energy market, with much of its evidence actually predicated on coal as a line of commerce. Respondent does not specifically define the metes and bounds of any alternative line of commerce. Essentially,

⁵ Compare "Respondent's Preliminary Statement on the Relevance of Evidence Relating to Competition Between Coal and Other Fuels" with complaint counsel's response thereto.

⁶ "Steam coal" is a shorthand term comprehending all bituminous coal, sub-bituminous coal, and lignite coal except bituminous coal of coking quality. See Section V, subsection C, *infra*, p. 771.

respondent simply contends that inter-fuel competition must be recognized in any realistic appraisal of the competitive effects of Kennecott's acquisition of Peabody.

Thus, although there is an economic basis for respondent's espousal of a total energy market or a boiler fuels market, the record establishes the existence of a distinct coal industry as a submarket of such a broader market. There is industry, Government, and public recognition of the coal industry as a separate economic entity; and coal has peculiar characteristics and uses, as well as specialized vendors and distinct customers.⁷

Moreover, coal as a line of commerce embraces the products of the acquired company, and coal is the line of commerce in which, according to the complaint, the removal of Kennecott as a potential competitor had its impact.

Although finding coal to be the relevant line of commerce, the examiner felt compelled, nevertheless, to consider the impact of inter-fuel competition, particularly in coal's major market—the electric utility market. The relevance of this competition was established by emphasis in the complaint on the utility industry as an increasingly important market for coal (Complaint, pars. 24, 27, 30(c), 30(f)); and complaint counsel not only acknowledge that the coal industry's major growth since 1954 has been due to its ability to meet the demands of electric utilities, but they also forecast a vast expansion of this market (CPF 31-32, 35). In addition, the record establishes that in 1966, 77 percent of Peabody's sales were made to electric utilities, making Peabody the nation's leading supplier of coal to such companies (CPF 11).

Factually, legally, and pragmatically, it is reasonable, therefore, to consider coal as the product market and at the same time to take into account the competition that other fuels offer to coal.

There remain for resolution two questions regarding the definition of coal as the product line—whether lignite should be included with bituminous and sub-bituminous and whether coking coal should be excluded from the bituminous category so as to segregate a coking coal market from a steam coal market.⁸

On the basis of the detailed findings that follow in Section V, subsection C (*infra*, p. 769), the examiner finds that for completeness, lignite should be included in the definition of coal as the prod-

⁷ *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 (1962); *United States v. Bethlehem Steel Corp.*, 168 F. Supp. 576, 589-94 (S.D.N.Y. 1958).

⁸ Both parties seem to be in agreement that for purposes of this case, anthracite may be excluded from consideration (*infra*, p. 769, fn. 10).

uct line in this case. It is not apparent to the examiner why complaint counsel insist on the exclusion of lignite from their definition of coal, unless it be the fact that its exclusion from certain statistics may show a somewhat higher degree of coal industry concentration than would exist if lignite were included. But complaint counsel concede—in fact, they insist on—the relative insignificance of lignite production in the overall totals of coal production (RPF-Br., p. 9), and they rely on statistics that include lignite, including two of the exhibits that they presented, through a Commission economist (CX 180 and CX 183). As a practical matter, inclusion or exclusion of lignite is not important, but the examiner is satisfied, on the basis of the record as a whole, that its inclusion is proper for the purposes of this case.

As to respondent's proposal to exclude coking coal from the bituminous category, the detailed findings in Section V, subsection C (*infra*, p. 769) demonstrate a valid basis for distinguishing between the market for coking coal and the market for steam coal—a distinction leading complaint counsel to view them as separate submarkets, even while opposing the exclusion of coking coal from consideration (CPF-Br., pp. 29-32).

Nevertheless, the examiner has considered it inappropriate in a case dealing with competition in the coal industry to exclude coking coal. It is true that a substantial amount of coking coal production is the captive production of steel companies and is used almost exclusively for steel-making purposes, but coking coal is also produced by independent coal companies, and its production and sale constitute a part of the coal industry.⁹ Although there is testimony that Peabody produced no coking coal in the United States (Mullins 3606), there is also an indication of Peabody's ownership of coking coal reserves with at least some limited production (Lee 1705-06), and it has already been noted that Peabody is a substantial producer of coking coal in Australia (*Supra*, p. 758). Moreover, the record establishes that the interest of Kenne-cott management in coal embraced coking coal as well as steam coal (CX 14). The determination not to exclude coking coal from the definition of coal does not, however, preclude exclusion from certain tabulations for purposes of analysis—compare, for example, RX 147 A-B and RX 148; Netschert 3925-26).

On consideration of the facts of record and the arguments of

⁹ It is worth noting that Bureau of Mines coal production statistics do not treat coking coal separately, but its specialized use does appear, of course, in consumption statistics (Netschert 4206).

counsel, therefore, the examiner finds and concludes that the appropriate line of commerce (the product line) is coal, consisting of bituminous, sub-bituminous, and lignite, but that for purposes of analysis it is necessary to take into account the competition that exists between coal and other fuels.

Moreover, although metallurgical or coking coal is included in some of the industry statistics, it must be recognized that, generally speaking, this case is primarily concerned with "steam coal" rather than with coking coal and that coking coal and steam coal are not competitive products. Just as other fuels may be considered in analyzing the state of competition in the coal industry, so may coking coal be excluded for the purpose of analyzing competitive factors in the coal industry.

V. The Coal Industry—Its Recent History, Its Structure, and Its Relationship to Other Fuels

A. INTRODUCTION

As set forth in Section II (*supra*, p. 756), Peabody Coal Company was engaged in the production and sale of coal, and it is in this line of commerce that, according to the complaint, Kennecott's acquisition of Peabody created the probability of a substantial lessening of competition in violation of Section 7 of the Clayton Act, as amended. Accordingly, the examiner having found (Section IV, *supra*, p. 762) that coal is the relevant line of commerce in which to test the legality of the acquisition, it is necessary to examine the coal industry in some depth—its history, its structure, its principal markets, and its probable future, as well as the nature of competition, including the competition of other fuels.

B. PRINCIPAL WITNESSES ON COAL

Testimony and exhibits covering these subjects were presented by some three dozen witnesses, most of them called by respondent. The principal witnesses testifying on various aspects of the coal industry are listed below.

1. *Officers of Peabody*

The following officers of Peabody Coal Company testified about the nature of the coal business in the United States:

Merl C. Kelce, former chief executive officer (Tr. 3654A, 3665, 3672);
Thomas C. Mullins, president and chief executive officer (Tr. 3544);
Edwin R. Phelps, senior vice president, operations (Tr. 3329);

Hugh B. Lee, Jr., vice president and general sales manager (Tr. 1509);
Richard E. Miller, senior vice president, sales (Tr. 3851); and
Arthur S. Macke, vice president, underground operations (Tr. 3725-26).

2. *Other Coal Industry Executives*

Other coal industry executives who testified about the business were:

Stuart Colmon, chairman of the board, Zeigler Coal & Coke Company (Tr. 5214);

Allen D. Christensen, former president, Utah Construction Company (now Utah Construction & Mining Co.) (Tr. 5159-60);

Albert L. Reeves, senior vice president, secretary, and director, Utah Construction & Mining Co. (Tr. 1201-02);

A. G. Gossard, general manager of coal operations, Kerr-McGee Corporation (Tr. 5879); and

Ralph B. Harry, assistant treasurer, National Coal Association (Tr. 579).

3. *Coal Consultants*

Six men who were consultants to coal companies and other companies interested in the coal business also testified:

Paul Weir, chairman of the board, Paul Weir Company (Tr. 4383);

Dr. Clayton G. Ball, president, Paul Weir Company (Tr. 4277-78);

John P. Weir, executive vice president, Paul Weir Company (Tr. 4336);

Neil Robinson, president, Robinson & Robinson (Tr. 4390-91);

Claude P. Heiner, president, C. P. Heiner & Company, Inc., (Tr. 2307, 2318);
and

Earl R. McMillan (Tr. 933).

4. *Public Utility Executives*

Philip Sporn, former president of American Electric Power Company, testified as an expert witness about competition in the sale of coal and other fuels to electric utilities and about the development of commercial nuclear energy. Mr. Sporn began his employment with the American Electric Power Company in 1920; he became vice president and chief engineer in 1934 and president in 1947. During the time that Mr. Sporn was president of American Electric Power, it became the nation's largest privately owned electric utility in terms of electricity generated, and it achieved the lowest costs of any electric utility system in the country. American Electric Power owns about 650 million tons of coal reserves, and mines about 25 percent of its own requirements of coal. Its coal mining operations were built up under Mr. Sporn's active supervision.

From 1952 to 1967, Mr. Sporn was also chief executive officer of Ohio Valley Electric Corporation, a company formed at the request of the Atomic Energy Commission to supply all the power requirements of a new diffusion plant, and in that capacity, it negotiated

and supervised the handling of a coal supply contract for over 115 million tons then the largest contract in the history of the coal business.

Mr. Sporn retired as president of American Electric Power in 1961, but continued to serve as chairman of the company's system development committee until 1967. He has held various government and private positions, relating to the development of nuclear energy, and he was chairman of the executive advisory committee for the Federal Power Commission's National Power Survey 1962-1964. The value of Mr. Sporn's work in the field of nuclear energy and in energy generally was publicly recognized by the Joint Committee on Atomic Energy, of the Congress of the United States in February 1968, when a series of analyses prepared for the Committee by Mr. Sporn were published as a report of the Joint Committee entitled *Nuclear Power Economics—1962 through 1967* (Sporn 4481, 4483-4506; RX 187 A-C). Mr. Sporn is one of the nation's leading authorities on energy and the electric utility industry.

In addition, the following executives of investor-owned public utility companies testified as to fuel purchasing and various other aspects of the electric utility business:

- Gordon R. Corey*, chairman of the finance committee and director, Commonwealth Edison Company (Tr. 4704-05);
- Don C. Frisbee*, president, Pacific Power & Light Company (Tr. 5234-35);
- Elwood F. McGuire*, manager of plant engineering, Minnesota Power & Light Company (Tr. 4580-82);
- Robert P. O'Brien*, vice president, Southern California Edison Company (Tr. 5269);
- James H. Zornes*, production manager, Nevada Power Company (Tr. 4741);
- E. M. Naughton*, chairman of the board, Utah Power & Light Co. (Tr. 3201);
- E. Allan Hunter*, president and general manager, Utah Power & Light Co. (Tr. 2937); and
- Paul Blanchard*, retired vice president, Utah Power & Light Co. (Tr. 3182).

5. U.S. Government Officials

Ernest B. Tremmel, director since 1961 of the Division of Industrial Participation, United States Atomic Energy Commission, testified on the development and competitive position of commercial nuclear energy. Mr. Tremmel has been active in the United States atomic energy program since 1943, when he joined the Manhattan Engineer District. (Tremmel 5099-5103; RX 215 A-B.) Also,

Joe D. Turner, chief of the Branch of Mining Operations, United States Department of the Interior, who testified regarding federally-owned coal lands (Tr. 871-72);

Leslie J. Bishop of the Bureau of Reclamation, United States Department of the Interior, who testified regarding water resources (Tr. 644); and

G. Edward Larson, chief of the Division of Contracts and Administration, Office of Coal Research, United States Department of the Interior (Tr. 5736), who testified concerning research and development work being done on the conversion of coal to synthetic fuels.

6. *Utah Coal Industry Witnesses*

Testifying as expert economic witnesses on the coal business in Utah were:

Dr. ElRoy Nelson, vice president and economist, First Security Corporation, a bank holding company in Salt Lake City, Utah (Tr. 2150-57), and

Frank C. Hachman, an economist on the faculty of the University of Utah and senior author of an extensive study on Utah coal and its future prospects made for the Utah State Planning Coordinator (Tr. 3094-95, 3104-05).

Others who testified concerning the coal business in Utah and related subjects were:

Paul L. Shields, who was a consultant for Kennecott (Tr. 1335-36);

John Peperakis, manager of Kaiser Steel Corporation's Sunnyside Coal Mines (Tr. 2783-84);

Robert M. Von Storch, general superintendent of Western District Coal, United States Steel Corporation (Tr. 2978), and

Shirl C. McArthur, manager of the Deseret Coal Mine of the Latter Day Saints Church, president of Castle Valley Mining Co., and mayor of Huntington, Utah (Tr. 2693).

7. *Witnesses on Economics and Marketing*

Dr. Bruce C. Netschert, director of the Washington office of National Economic Research Associates, Inc., testified as an expert witness on changes in the coal business and the general competition among energy resources. Dr. Netschert has a bachelor's degree in geology and a doctorate in economics from Cornell University. He has been involved in natural resource economics for his entire professional life commencing in 1949, and has concentrated in the area of energy resources since 1955. During his career he has been employed by several government agencies, including the Bureau of Mines, the President's Materials Policy Commission, the Office of Defense Mobilization, and the Central Intelligence Agency. From 1955 to

