

TITANIUM SPONGE FROM JAPAN AND THE UNITED KINGDOM

**Determinations of the Commission in
Investigations Nos. 731-TA-161
and 162 (Preliminary) Under the
Tariff Act of 1930, Together
With the Information Obtained
in the Investigations**

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UNITED STATES INTERNATIONAL TRADE COMMISSION

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Note--Information which would reveal the confidential operations of individual concerns may not be published and, therefore, has been deleted from this report. Such deletions are indicated by asterisks.

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

Investigations Nos. 731-TA-161 and 162 (Preliminary)

TITANIUM SPONGE FROM JAPAN AND THE UNITED KINGDOM

Determinations

On the basis of the record 1/ developed in the subject investigations, the Commission determines, pursuant to section 733(a) of the Tariff Act of 1930 (19 U.S.C. § 1673b(a)), that there is a reasonable indication that an industry in the United States is threatened with material injury by reason of imports of titanium sponge 2/ from Japan (investigation No. 731-TA-161 (Preliminary)) and the United Kingdom (investigation No. 731-TA-162 (Preliminary)), which allegedly are being, or are likely to be, sold in the United States at less than fair value (LTFV). 3/

Background

On November 28, 1983, petitions were filed in proper form with the Commission and the Department of Commerce by counsel on behalf of the RMI Company, Niles, Ohio, alleging that imports of titanium sponge from Japan and the United Kingdom are being, or are likely to be, sold in the United States at LTFV within the meaning of section 731 of the Tariff Act of 1930 (19 U.S.C. § 1673). Accordingly, effective November 28, 1983, the Commission instituted preliminary antidumping investigations Nos. 731-TA-161 and 162 (Preliminary)

1/ The record is defined in sec. 207.2(i) of the Commission's Rules of Practice and Procedure (19 CFR § 207.2(i)).

2/ For purposes of these investigations, the term "titanium sponge" includes all imports of such merchandise, whether entered into the United States under item 629.14 of the Tariff Schedules of the United States (TSUS) or under the provisions of part 3A of schedule 8 of the TSUS.

3/ Commissioner Haggart determines that there is a reasonable indication that an industry is materially injured by reason of imports of titanium sponge from Japan and the United Kingdom, which allegedly are being, or are likely to be, sold in the United States at less than fair value (LTFV).

under section 733(a) of the Act to determine whether there is a reasonable indication that an industry in the United States is materially injured, or is threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports of such merchandise.

Notice of the institution of the Commission's investigations and of a conference to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, D.C., and by publishing the notice in the Federal Register on December 7, 1983 (48 F.R. 543910). A clarification of the scope of the Commission's investigations was published in the Federal Register on December 14, 1983 (48 F.R. 55645). The conference was held in Washington, D.C., on December 20, 1983, and all persons who requested the opportunity were permitted to appear in person or by counsel.

VIEWS OF COMMISSIONERS PAULA STERN, VERONICA A. HAGGART, AND SEELEY G. LODWICK

We determine that there is a reasonable indication that an industry in the United States is threatened with material injury by reason of imports of titanium sponge from Japan allegedly sold at less than fair value (LTFV), and that there is a reasonable indication that an industry in the United States is threatened with material injury by reason of imports of titanium sponge from the United Kingdom allegedly sold at LTFV. 1/ 2/

Although domestic demand for titanium sponge increased between 1980 and 1981, it declined sharply in 1982 and continued to decline during January-September 1983. Production, capacity utilization, and employment decreased; inventories increased. There was also a sharp decline in profitability. Imports from Japan decreased between 1981 and 1982, but increased during January-September 1983. Imports from the United Kingdom were negligible during the period under investigation. Significant increases in imports from both countries as a result of Government procurement of titanium sponge are expected in 1984. The domestic industry has been adversely

1/ Commissioner Haggart determines that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of titanium sponge from Japan allegedly sold at LTFV and by reason of imports of titanium sponge from the United Kingdom allegedly sold at LTFV. The U.S. General Services Administration contracts for titanium sponge upon which the petitioner's claim of injury is based have already been lost to imports from Japan and the United Kingdom. See discussion infra at 10-16.

2/ The issue of cumulation was raised by the parties. See e.g., RMI Co.'s postconference brief at 15-19; Timet's postconference brief at 8; postconference brief of Billiton Metals, Inc., at 25. For purposes of these preliminary investigations, we assessed the impact of the Japanese and United Kingdom imports separately. However, we do not preclude cumulation in any final investigation if the information obtained therein so warrants.

affected by the loss of Government contracts in the emerging Government procurement market segment. Prices in the domestic commercial market have also been negatively affected. Both Japan and the United Kingdom have titanium-sponge-producing capacity that is available for titanium sponge exports, and the United States is a likely market for such exports.

The domestic industry

Under section 771(4)(A) of the Tariff Act of 1930, the term "industry" is defined as "the domestic producers as a whole of a like product, or those producers whose collective output of the like product constitutes a major proportion of the total domestic production of that product." 3/ A "like product" is one "which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation" 4/

The subject of these investigations is titanium sponge, a porous, brittle metal which has a high strength-to-weight ratio and is highly ductile. It is an intermediate product that is used to produce titanium ingot, slab, billet, bar, plate, and sheet. Titanium has low thermal and electrical conductivity and is one of the most corrosion-resistant structural metals. 5/

Titanium and its alloys are widely used in the airframes and engines of high-performance military and commercial aircraft, powerplant surface condensers, missiles, space vehicles, and a wide variety of chemical-processing and chemical-handling equipment. In recent years, about

3/ 19 U.S.C. § 1677(4)(A) (1980).

4/ 19 U.S.C. § 1677(10) (1980).

5/ Commission Report (Report) at A-1.

60 percent of U.S. titanium metal consumption has been in aerospace applications; 20 percent has been used as an additive to steel and other alloys; and 20 percent has been consumed in other industrial uses. 6/

The production of titanium sponge involves a process of chlorination and reduction of certain titanium concentrates. The concentrates react with chlorine gas and coke in a fluidized-bed reactor to form impure titanium tetrachloride, which is then combined with magnesium (the Kroll process) or sodium (the Hunter process) to form titanium sponge and a chloride salt. The salt and the residual magnesium or sodium metal must then be separated from the titanium sponge in a purification process. 7/ Both the Kroll process and the Hunter process result in products containing their own characteristic impurities. 8/ However, these differences in physical characteristics of titanium sponge as a result of the particular production process are not significant. 9/

Both the imported and the domestically produced titanium sponge are produced using the Kroll or Hunter process and are vacuum distilled or acid

6/ Id.

7/ In the basic Kroll process, residual magnesium chloride and magnesium metal are separated from the sponge by vacuum distillation, or by an inert gas sweep, or by acid leaching. In the basic Hunter process, titanium sponge and sodium chloride are leached in dilute hydrochloric acid solution to dissolve the salt. The washed titanium sponge is then dried, screened to remove fines, and pressed into compact blocks. Report at A-2.

8/ These impurities can be divided into two categories: nonvolatiles, such as oxygen and iron, and volatiles, such as magnesium and magnesium chloride in the Kroll process and sodium and sodium chloride in the Hunter process. Minimizing the volatiles in titanium sponge is significant in simplifying and improving the subsequent melting operations. Neither leaching nor vacuum distillation can remove all volatiles, although the latter method removes considerably more. Report at A-2-A-3.

9/ Certain independent melters have expressed a preference for magnesium reduction/vacuum distillation titanium sponge for reasons of efficiency. Report at A-3.

leached to remove the impurities. 10/ Whether titanium sponge is produced by the Kroll process or the Hunter process and is vacuum distilled, acid leached, or swept with inert gas, it is put to the same use by purchasers and can be used for the same applications. 11/ Therefore, we conclude that regardless of the production process utilized, the domestically produced titanium sponge constitutes a single like product and, consequently, the domestic industry consists of the U.S. producers of titanium sponge. Five U.S. companies produced titanium sponge during the period covered by the investigations: RMI Co. (the petitioner), Oregon Metallurgical Corp. (Oremet), Titanium Metals Corp. of America (Timet), International Titanium, Inc. (ITI), and Teledyne Wah Chang Albany (Teledyne). 12/ 13/

Condition of the domestic industry

The bulk of U.S. production of titanium sponge is consumed captively to produce ingots, which are either sold or further worked into semifinished and finished products. 14/ Only a small percentage of titanium sponge is sold

10/ Purification by inert gas sweeping is practiced by one domestic producer but not by any of the Japanese or United Kingdom producers. Report at A-2.

11/ See Petition at 2, 5; Transcript of Proceedings (Tr.), Conference of Dec. 20, 1983, at 15, 28; RMI's postconference brief at 6, 13; Timet's postconference brief at 3-4.

12/ Teledyne Wah Chang Albany is not to be confused with Teledyne Allvac, a nonintegrated producer of titanium bar products which imports titanium sponge for use in its operations. Teledyne Allvac appeared at the conference in opposition to the petition. See Tr. at 145-147 and Conference Exhibit 8.

13/ One other company, Western Zirconium Co., has the capacity to produce titanium sponge, but did not do so during the period covered by the investigation. Report at A-6-A-7.

14/ As noted above, titanium sponge is an intermediate product used by titanium mill product producers, melters of titanium sponge into ingot, and product converters. RMI, Timet, Teledyne, and Oremet are vertically integrated; ITI and Western Zirconium are not. (Teledyne and Western Zirconium are not currently producing titanium sponge.) Report at A-6-A-8, A-11.

commercially to independent melters. 15/ An important new element in the condition of the titanium sponge industry is Government procurement for the National Defense Stockpile. 16/

Titanium sponge is a structural metal that is subject to sharp swings in supply and demand. The recent acute shortage of supply and increased demand which began in December 1978 and continued through 1980 was due to the increase in commercial aerospace activity. 17/ The aerospace industry, which accounts for about 60 percent of U.S. consumption, and the steel alloy industry, which accounts for 20 percent of U.S. consumption, have both encountered poor conditions since 1980. In spite of the downturn in these industries, demand for titanium sponge continued to increase in 1981 before declining sharply in 1982 and during January-September 1983, compared with that in the corresponding period of 1982. 18/ The downturns in the consuming industries adversely affected the performance of the domestic titanium sponge industry.

The domestic demand for titanium sponge in the United States increased substantially from 59.3 million pounds in 1980 to 64.3 million pounds in 1981 and then dropped to 35.2 million pounds in 1982. During January-September 1983, apparent U.S. consumption was 24.7 million pounds, compared with 29.0 million pounds during the corresponding period of 1982. 19/

15/ Commercial sales annually accounted for less than 7 percent of total U.S. production in the period covered by the investigations. Report at A-11.

16/ Titanium sponge stockpiled by GSA is not intended for domestic consumption except in a national emergency. See 50 U.S.C. § 98f.

17/ See Conference Exhibit 3 at 1, 9.

18/ Id. See also Report at A-8-A-9.

19/ Report at A-8-A-9.

Most of the key indicators of the condition of the domestic titanium sponge industry reflect a sharp decline in 1982, which continued during January-September 1983. Although production increased from 50.4 million pounds in 1980 to 55.7 million pounds in 1981, it decreased sharply to 32.9 million pounds in 1982. During January-September 1983, production decreased to 20.0 million pounds, compared with 28.1 million pounds in the corresponding period of 1982. 20/

Total U.S. capacity increased 17 percent from 51.4 million pounds per year in 1980 to 60.4 million pounds per year in 1982 in response to the favorable market conditions existing at that time. 21/ Although demand fell off in 1982, some capacity expansion continued in January-September 1983, 22/ in the hope that the market would recover. No significant long-term recovery is in sight. 23/

Capacity utilization rose from 98.0 percent in 1980 to 99.2 percent in 1981, but, like production, it decreased sharply in 1982 to 54.5 percent and decreased further to 42.8 percent during January-September 1983, compared with 62.2 percent in the corresponding period of 1982. 24/ Because of the small size of the commercial market, domestic shipments of titanium sponge represent only a small fraction of U.S. production. Even so, domestic shipments declined between 1980 and January-September 1983. 25/ Exports also represent

20/ Id. at A-10.

21/ Id.

22/ One domestic producer, ITI, is a newcomer and has produced titanium sponge only since 1982. ITI has announced plans to expand its capacity over the next few years. Report at A-8.

23/ Tr. at 17-19, 47; RMI's postconference brief at 38-39.

24/ Report at A-11.

25/ Id. at A-12.

an insignificant share of U.S. titanium sponge production. U.S. Department of Commerce data indicate that exports declined from 226,000 pounds in 1980 to 116,000 pounds in 1981, to 72,000 pounds in 1982, and to zero during January-September 1983, compared with 60,000 pounds in the corresponding period of 1982. 26/

U.S. titanium sponge producers generally do not keep substantial inventories on hand, but instead attempt to tailor production output to either captive needs or arm's-length sales as they arise. In 1980 and 1981, total inventories amounted to about 6 percent of annual production. However, with poor market conditions in 1982 and January-September 1983, inventories accounted for up to 16 percent of production. 27/

Employment of production and related workers producing titanium sponge and the number of hours worked by such employees declined during the period covered by the investigations. 28/ Although the average number of production and related workers producing titanium sponge increased in 1981 by 2.0 percent and the number of hours worked increased by 6.8 percent, the average number of production and related workers, as well as the number of hours worked, fell sharply in 1982 and declined again in January-September 1983. 29/

26/ Id. at A-9.

27/ Id. at A-12.

28/ Commissioner Stern notes that employment in domestic establishments producing titanium sponge declined between 1980 and 1983, with a significant decrease occurring between 1981 and 1982, followed by a decline during January-September 1983, compared with the corresponding period of 1982. The average employment of all persons decreased by 0.6 percent from 1980 to 1981 and by an additional 14.1 percent in 1982. During January-September 1983, employment declined by 15.0 percent from the number of persons employed in the corresponding period of 1982. Report at A-13.

29/ Id. at A-12-A-14.

It was difficult to evaluate the financial experience of the U.S. titanium sponge producers as a group. 30/ However, the information obtained in these preliminary investigations indicates that the titanium sponge industry suffered a sharp decline in profitability between 1980 and 1983. 31/ Although one producer showed some recovery in profitability in 1983, it was only marginal.

In sum, the economic and financial data depict a domestic industry in a vulnerable state.

Injury

The petition and the supporting domestic producers' injury allegations are predicated largely on the October 1983 GSA purchase of 4,500 tons of titanium sponge for the National Defense Stockpile. This was GSA's first major unencumbered purchase of titanium sponge for the stockpile in more than 20 years. The bidding was open to both U.S. and foreign entities. Bids were

30/ It was impossible to achieve usable aggregate data for various reasons. First, financial statements associated with titanium sponge operations were submitted by only three of six U.S. producers, and one of those reporting had not produced titanium sponge since before the fourth quarter of 1982. Second, one producer had only begun operations in 1982 and had not yet established a normal operating pattern. Third, while one produced for the commercial market, the other two consumed most of their own titanium sponge in downstream operations. In addition, we note that the wide disparity in the size of the producers' operations must be considered in assessing the aggregate picture because of possible distortion by the largest firm's data. Should these investigations return to the Commission for final determinations, it is expected that more complete data will be forthcoming.

31/ See generally Report at A-14-A-20.

solicited on three types of titanium sponge. 32/ GSA sought to purchase 9 million pounds of titanium sponge in nine lots of 1 million pounds each. GSA apparently had no preference for any one type of titanium sponge, since it asked for bids up to the maximum 9 million pounds for each type. Although titanium sponge purchased for the National Defense Stockpile may enter the United States duty free, GSA imputed a duty of 17 percent ad valorem to each foreign bid for purposes of comparisons with domestic bids. 33/

GSA's Federal Property Resources Service awarded four contracts to three firms as a result of bids received on September 2, 1983. 34/ The awards were made on the basis of price alone as all bids met GSA specifications. 35/ Philipp Brothers, Inc. (Phibro) received two contracts for delivery of titanium sponge produced in Japan. One contract calls for delivery of 2,500 short tons of type A titanium sponge for a total amount of \$16,000,000; the other is for 500 short tons of type C titanium sponge valued at \$3,200,000. 36/ Billiton Metals, Inc. (Billiton) was awarded a contract to deliver 500 short tons of type C titanium sponge produced in the United Kingdom. The Billiton contract value is \$2,920,000. 37/ The only domestic producer to be awarded a contract was Timet. Timet received a contract for

32/ GSA categorizes titanium sponge as type A, B, or C, depending upon the process used in its manufacture. Titanium sponge produced by magnesium reduction/vacuum distillation is classified as type A. That produced by magnesium reduction/inert gas sweep or by magnesium reduction/acid leaching is classified as type B. Titanium sponge produced by sodium reduction/acid leaching is type C. Report at A-3.

33/ See Report at A-4, A-34-A-36, Appendix C at A-50-A-51.

34/ See Petition at Appendix 1; Report at A-35-A-36.

35/ Report at A-34-A-36.

36/ This amounts to \$6,400 per ton or \$3.20 per pound for both contracts. Report at A-36, Appendix C at A-52-A-54.

37/ This amounts to \$5,840 per ton or \$2.92 per pound. Report at A-36, Appendix C at A-52-A-54.

1,000 short tons of type B titanium sponge valued at \$7,140,000. 38/ The GSA contracts provide that all titanium sponge must be delivered by October 28, 1984. 39/

Japan.--The volume of titanium sponge to be imported in 1984 as a result of the GSA contracts represents a significant increase in the volume imported from Japan. Imports from Japan increased from 9.2 million pounds in 1980 to 10.0 million pounds in 1981, and then fell to 2.9 million pounds in 1982. During January-September 1983, imports from Japan amounted to 2.6 million pounds, compared with 2.2 million pounds during the corresponding period of 1982. Japan will export 6 million pounds of titanium sponge to the United States in 1984 as a result of the GSA stockpile purchase alone. 40/

Although GSA officials could not say when or in what quantities new solicitations for titanium sponge would be made, there is information on the record that indicates that such solicitations are likely. 41/ The latest Stockpile Report to the Congress (October 1982-March 1983) shows that the stockpile goal for titanium sponge is set at 195,000 short tons. Currently,

38/ This amounts to \$7,140 per ton or \$3.57 per pound. Report at A-36, Appendix C at A-52-A-54.

39/ Petition at Appendix 1; Report at A-35.

40/ As noted previously, this industry is subject to sharp swings in supply and demand. See discussion, supra, at 7. The ratio of imports from Japan to total U.S. consumption declined from 1980 to 1982, but increased significantly in January-September 1983. Such imports accounted for 15.6 percent of apparent U.S. consumption in 1980 and 1981 and 8.1 percent in 1982. In January-September 1983, these imports accounted for 10.6 percent of consumption, compared with 7.7 percent in the corresponding period of 1982. Report at A-29. The petitioner estimates that the total GSA purchase accounts for 15 to 20 percent of total U.S. demand projected for titanium sponge in 1984, and that GSA imports from Japan will account for a 13.6-percent share of the U.S. market. RMI's postconference brief at 18.

41/ Report at A-36.

GSA has 32,331 tons in inventory. 42/ Moreover, the soft market and the low prices make this an ideal time for GSA to purchase titanium sponge at low cost. Finally, GSA and the Federal Emergency Management Agency (FEMA) have emphasized the high priority of titanium sponge in the overall stockpile requirements. 43/

These facts indicate the emerging importance of the U.S. Government procurement market to the U.S. titanium sponge industry and the clear portent for additional loss of market share to imports from Japan. Importers of titanium sponge from Japan can enter strong bids in response to any future solicitations of titanium sponge for the stockpile, given their knowledge of competing bids on the recent GSA solicitations.

In the commercial market, offer prices, ex-dock, duty paid, for Japanese titanium sponge show a steady decline over the period covered by the investigation. 44/ This decline is paralleled by an increase in the number and total value of contracts won by importers of sponge from Japan. The value of commercial contracts to supply Japanese titanium sponge won by Phibro in 1983 increased significantly. 45/

42/ Stockpile Report at 20. Although titanium sponge has a shelf life of more than 10 years, much of the stockpiled titanium sponge, which was purchased more than 20 years ago, may no longer be suitable for national defense because of deterioration. See Tr. at 82-84.

43/ This priority was reiterated strongly during the recent GSA bid and award process. A letter from FEMA to GSA dated Oct. 5, 1983, states, "Titanium sponge is among the materials accorded the highest acquisition priority by the President, as announced in the White House press release of March 13, 1984." The letter goes on to conclude, "We see a compelling and urgent need to acquire titanium sponge for the stockpile." Letter from Bernard A. Maguire, Assistant Director, National Preparedness Programs, Federal Emergency Management Agency, to Carroll Jones, Federal Property Resources Services, GSA.

44/ See Report at A-33.

45/ Id.

The information in these preliminary investigations indicates that the low bids offered for Japanese-produced titanium sponge for the GSA contract had an adverse impact on prices in the commercial market. Confirmed price data regarding 1983 offer prices (bids) for contracts not yet awarded indicate a willingness by importers to quote even lower bids in the post-GSA award period. In fact, the bids quoted were significantly below the winning Japanese bid (including the imputed duty added for purposes of bid comparisons) to supply titanium sponge to GSA. Moreover, the bid to supply Japanese titanium sponge at allegedly LTFV prices has adversely affected a contract already won by a domestic producer to supply a major nonintegrated melter's needs for 1983, 1984, and 1985. The pattern of declining offer prices and this example of post-GSA award price undercutting underscores the likelihood that these imports of titanium sponge from Japan will suppress prices and/or capture an increased share of the market.

In addition to the increased volume of imports in 1984 stemming from the GSA transaction and its potential adverse impact, other indicators of a threat of material injury are the existence of substantial idle foreign capacity available for export and the attractiveness of the United States as an export market, as indicated by the continued attempts of foreign producers to market titanium sponge in this country.

In response to increased world demand during 1980 and 1981 and projected further increases in 1982 and beyond, the collective Japanese capacity rose by 122 percent from 35.8 million pounds per year in 1979 to 79.6 million pounds per year in 1983. Current overall capacity utilization is estimated to be approximately 35 percent. ^{46/} The Japanese producers have demonstrated an

^{46/} See generally Report at A-22-A-24.

ability and intent to compete in the U.S. market. With low domestic demand in Japan, Japanese producers can achieve volume production by selling in the U.S. market at low prices.

United Kingdom.---The volume of imports of titanium sponge from the United Kingdom during the period covered by the investigations was negligible when compared with total U.S. imports during the period. Such imports did, however, increase significantly in January-September 1983 over those in the previous periods. Additionally, at least 1 million pounds of titanium sponge will be imported in 1984. 47/

The Billiton contract from GSA amounts to \$2.9 million. 48/ Billiton's lowest bid to GSA was to supply United Kingdom titanium sponge at \$3.37 per pound (\$2.92 plus the imputed duty added for purposes of bid comparisons). This bid significantly undercut the losing domestic bids, which ranged from a low of \$3.79 per pound to \$6.25 per pound. 49/

As is the case with respect to imports from Japan, other indicators of a threat of material injury by reason of titanium sponge imported from the United Kingdom are the existence of substantial idle United Kingdom titanium-sponge-producing capacity and the United States as a probable market for United Kingdom titanium sponge exports. The United Kingdom titanium sponge industry comprises a single, newly formed company. Its plant has

47/ Id. at A-29. As stated previously, the petitioner speculates that the total GSA purchase accounts for 15 to 20 percent of total U.S. demand projected for titanium sponge in 1984, and that United Kingdom imports resulting from the GSA sale alone will represent approximately 2.5 percent of the U.S. market. See n. 40 supra.

48/ Report at A-36, A-52.

49/ Id. at Appendix C at A-53-A-54.

an annual capacity of 11 million pounds per year. 50/ Although a substantial portion of its output will be allocated to a customer of its predecessor, the remainder will be directed to the European and U.S. markets. 51/ With low demand in Europe, the United Kingdom producer can achieve volume production by selling in the U.S. market at low prices.

Conclusion

On the basis of the foregoing discussion, we determine that there is a reasonable indication that the U.S. titanium sponge industry is threatened with material injury by reason of imports of titanium sponge from Japan and by reason of imports of titanium sponge from the United Kingdom, allegedly being, or likely to be, sold in the United States at less than fair value. 52/

50/ Id. at A-24-A-25. Because this producer was scheduled to begin operations in October 1983, it is not operating at close to full capacity.

51/ Report at A-24.

52/ See n. 1 supra.

VIEWS OF CHAIRMAN ALFRED E. ECKES

Determination

I determine that there is a reasonable indication that an industry in the United States is threatened with material injury by reason of imports of titanium sponge from Japan which are allegedly sold at less than fair value. I also determine that there is a reasonable indication that an industry in the United States is threatened with material injury by reason of imports of titanium sponge from the United Kingdom which are allegedly sold at less than fair value. 1/

Domestic industry

As defined in section 771(4)(A) of the act, the term "industry" means "the domestic producers as a whole of a like product, or those producers whose collective output of the like product constitutes a major proportion of the total domestic production of that product." 2/ The term "like product" means a product which is like, or in the absence of like, most similar in characteristics and uses with, the imported article under investigation. 3/

Titanium sponge is the imported article subject to this investigation. It is produced either by the Kroll process (magnesium reduction/vacuum distillation) or by the Hunter process (sodium reduction/acid leaching). 4/

1/ The issue of cumulation was raised by the parties. See e.g., RMI Co.'s postconference brief at 15-19; Timet's postconference brief at 8; postconference brief of Billiton Metals, Inc., at 25. For purposes of these preliminary investigations, I assessed the impact of the Japanese and United Kingdom imports separately. However, I do not preclude cumulation in any final investigation if the information obtained therein so warrants.

2/ 19 U.S.C. § 1677(4)(A) (1980).

3/ 19 U.S.C. § 1677(10) (1980).

4/ See generally, Commission Report (Report) at A-2 through A-3 and A-22 through A-24.

The domestic product is titanium sponge made by the same two processes as the imported article, or by two similar processes (magnesium reduction/inert gas sweep and magnesium reduction/acid leaching). 5/ Each method results in a product which differs slightly from the others in physical characteristics. 6/ Despite these minor variations, 7/ both imported and domestically produced sponge types 8/ are substitutable and are used to produce titanium ingot, slab, billet, bar, plate, and sheet. The 1983 U.S. General Services Administration (GSA) purchase (discussed below) also indicates that the various types of sponge are similar. GSA solicited bids on all three types of titanium sponge because any sponge type is acceptable to the processor/manufacturers. 9/ For these reasons domestically produced titanium sponge is

5/ Report at A-2.

6/ For example, the various types of titanium sponge may contain slightly different percentages of titanium, iron, and volatile impurities.

7/ Such minor differences in physical characteristics or uses of a product do not provide an appropriate basis for finding several different like products and thus several domestic industries (S. Rep. No. 249, 96th Cong., 1st Sess. 90-91 (1979)).

8/ These "types" depend on the process used to produce the titanium sponge: Sponge produced by magnesium reduction/vacuum distillation is classified by GSA as type A; that produced by magnesium reduction/inert gas sweep or by magnesium reduction/acid leaching, as type B; and that produced by sodium reduction/acid leaching, as type C. Report at A-2 through A-3.

9/ There is information of record that independent melters have a preference for type A sponge, because it has fewer impurities. Further, they claim they are not adequately equipped to process high-volatile sponge (Report at A-3). Nevertheless, domestic sponge can be and is used by independent melters in their operations.

"like" the imported product, and the domestic industry consists of the U.S. producers of titanium sponge. 10/

Condition of the domestic industry

Here I concur generally with my colleagues' discussion of this subject and conclude that there is a reasonable indication that the domestic industry is experiencing material injury. In particular, I note that the domestic industry has experienced a dramatic decline in production and capacity utilization in 1982 and 1983. Also, average employment has fallen sharply in the same time period from a 3-year high in 1980. Income-and-loss data, supplied by three U.S. producers, provide further evidence of injury to the domestic industry in 1982 and 1983.

Threat of material injury

In my judgment this investigation in the preliminary phase involves a threat of injury. The domestic industry bases its petition and supporting injury allegations on the impact of the October 1983 GSA decision to purchase

10/ The issue of whether the Commission should broaden its investigation of the domestic industry to include domestic production of titanium mill products as opposed to domestic production of titanium sponge was raised in this investigation. Most of the domestic sponge is manufactured by integrated producers, which utilize their sponge in captive production of titanium mill products. Moreover, it has been alleged that domestic producers refused to sell sponge to competing nonintegrated producers of titanium products. The legislatively prescribed standard for defining "industry" is a determination of what domestically produced product is "like" the imported article. The article which the petition alleges is being imported and sold or offered for sale at less than fair value is titanium sponge, not mill products. Traditionally, injury has been judged in light of the impact of the imports under investigation upon the production of the same or similar goods in the United States. Furthermore, a small percentage of sponge is sold to producers which purchase it as a raw material for use in their mill business (Report at A-30; see also Timet's postconference brief at 2-3). Thus, for purposes of this preliminary investigation, the domestic industry comprises the U.S. producers of titanium sponge. Those producers are RMI Co. (the petitioner); Oregon Metallurgical Corp. (Oremet); Titanium Metals Corp. of America (Timet); International Titanium, Inc. (ITI); Teledyne Wah Chang Albany; and Western Zirconium Co.

4,500 tons of titanium sponge for the National Defense Stockpile. The contracts provide for future delivery of this sponge by October 28, 1984.

GSA's Federal Property Resources Service awarded four contracts to three firms as a result of bids received on September 2, 1983. Philipp Brothers, Inc. (Phibro), received two contracts for delivery of sponge produced in Japan. One contract calls for delivery of 2,500 short tons (5.0 million pounds) of titanium sponge for a total amount of \$16,000,000; the other involves 500 short tons (1.0 million pounds) of titanium sponge valued at \$3,200,000. These transactions both involve \$6,400 per ton or \$3.20 per pound. 11/ Billiton Metals, Inc. (Billiton), also secured a contract to deliver 500 short tons (1.0 million pounds) of titanium sponge produced in the United Kingdom. The Billiton contract is worth \$2,920,000 (\$5,840 per ton or \$2.92 per pound). 12/ The only domestic producer to be awarded a contract was Timet. It received a contract for 1,000 short tons (2.0 million pounds) of titanium sponge valued at \$7,140,000 (\$7,140 per ton or \$3.57 per pound). 13/

As a result of GSA's purchases, there will be a significant increase in the volume of titanium sponge imported from Japan and the United Kingdom in 1984, compared with the volume imported in 1982 and during January-September 1983. Imports from Japan increased from 9.2 million pounds in 1980 to 10.0 million pounds in 1981 and then fell to 2.9 million pounds in 1982. During January-September 1983, imports from Japan amounted to 2.6 million

11/ Phibro's effective bid for purposes of GSA's evaluation was \$3.69 (\$3.20 plus 17-percent duty).

12/ Billiton's effective bid for purposes of GSA's evaluation was \$3.37 (\$2.92 plus 17-percent duty).

13/ Petition at Appendix 1.

pounds, compared with 2.2 million pounds during the corresponding period of 1982. Japan will export 6 million pounds of sponge to the United States in 1984 as a result of GSA's stockpile purchase alone. 14/

Prices of Japanese titanium sponge declined steadily throughout the period of investigation. 15/ This decline parallels an increase in the number and total value of contracts that importers have won in the commercial market, including the successful bid for 6 million pounds of sponge awarded to importers of Japanese sponge. Excluding the \$19.2 million GSA award, Phibro significantly increased the value of its contracts to supply Japanese sponge in 1983.

Imports from the United Kingdom followed a different pattern. The volume of United Kingdom sponge imported during the period covered by the Commission's investigation was negligible when compared with total U.S. imports during that period. However, as a result of the GSA purchase, at least 1 million pounds will be imported in 1984. 16/ Billiton's bid of \$3.37 per pound was the lowest bid received by GSA. 17/ It significantly undercut the losing domestic bids, which ranged from a low of \$3.79 per pound to a high of \$6.25 per pound. 18/

Although GSA officials could not say when or in what quantities additional solicitations for titanium would be made, the record in this investigation indicates that further solicitations are likely. 19/ For

14/ Report at A-29.

15/ Id. at A-31, A-33.

16/ See Report at A-29.

17/ See Report at A-35 and Appendix C.

18/ Id. at Appendix C.

19/ Id. at A-36.

example, the latest Stockpile Report to the Congress (October 1982-March 1983) shows that the stockpile goal for titanium sponge is 195,000 short tons. Currently, GSA has only 32,331 tons in inventory, 20/ and some of this may be useless for strategic military purposes. 21/ With prices low and the market for titanium sponge soft, the present would seem to be an ideal time for GSA to purchase more titanium. Finally, GSA and the Federal Emergency Management Agency (FEMA) have emphasized the high priority of titanium sponge in overall stockpile requirements. This priority was reiterated strongly during the recent GSA bid and award process. A letter from FEMA to GSA dated October 5, 1983, stated, "Titanium sponge is among the materials accorded the highest acquisition priority by the President, as announced in the White House press release of March 13, 1984." The letter concluded, "We see a compelling and urgent need to acquire titanium sponge for the stockpile." 22/

More recent confidential pricing information, 23/ which has been confirmed, indicates that importers are willing to quote prices lower than those received by GSA. In a subsequent bid, importers quoted prices significantly below the winning GSA bid to supply Japanese sponge. Moreover,

20/ Stockpile Report at 20.

21/ An estimated one-third of the titanium sponge now in the stockpile was purchased in the 1950's and has since deteriorated so that it is no longer suitable for aircraft applications. See Transcript of Proceedings, Conference of December 20, 1983, at 82 and 83.

22/ Letter dated Oct. 5, 1983, from Bernard A. Maguire, Assistant Director, National Preparedness Programs, Federal Emergency Management Agency, to Carroll Jones, Federal Property Resources Service, GSA.

23/ Petition at 16-17; RMI's postconference brief at 32-33.

the GSA contract to supply Japanese sponge at allegedly LTFV prices has affected another contract already won by a domestic producer to supply a major nonintegrated melter's needs for 1983, 1984, and 1985.

In addition to the increased volume of imports in 1984 stemming from the GSA transaction and its imminent adverse impact, there are other indications of a threat of material injury. These include the existence of substantial idle foreign capacity available for export and the attractiveness of the United States as an export market. In particular, the four Japanese sponge producers have abundant capacity. 24/ Responding to increased world demand during 1980 and 1981 and to projected further increases in 1982 and beyond, Japanese industry increased its capacity 122 percent from 35.8 million pounds per year in 1979 to 79.6 million pounds per year in 1983. Its current overall capacity utilization is estimated to be approximately 35 percent. 25/

In the United Kingdom there is a single, newly formed producer. Its plant has an annual capacity of 11 million pounds per year, and was scheduled to begin production in October 1983. Although a substantial portion of its output will be allocated to a long-established domestic customer, the remainder is targeted for the European and U.S. markets. 26/

The likely consequence of substantial excess capacity in both Japan and the United Kingdom, coupled with low domestic demand, is a continued effort to achieve volume production by selling in the U.S. market at low prices.

Conclusion

In conclusion, during these preliminary investigations the Commission has found evidence that imports of titanium sponge will increase significantly in 1984 and that price undercutting has occurred in procurement. In addition,

24/ These four producers are Osaka Titanium Co., Ltd.; Toho Titanium Co., Ltd.; Nippon Soda, Ltd.; and Showa Titanium Co. (Report at A-23).

25/ See Report at A-22 through A-24.

26/ See Report at A-24.

the Commission has learned that Japanese and United Kingdom producers have underutilized capacity and a strong incentive to export their titanium sponge to the U.S. market. 27/ These factors, coupled with the prospect of further GSA stockpile purchases, provide a reasonable indication that imports, allegedly being sold at LTFV, threaten an industry in the United States with material injury.

27/ Should this case come back for a final investigation, I would hope to learn more about foreign capacity and capacity utilization as well as Japanese and United Kingdom plans to market titanium sponge in the United States. 24

INFORMATION OBTAINED IN THE INVESTIGATIONS

Introduction

On November 28, 1983, petitions were filed in proper form with the U.S. International Trade Commission and the U.S. Department of Commerce by counsel on behalf of RMI Co., Niles, Ohio, alleging that imports of titanium sponge from Japan and the United Kingdom are being, or are likely to be, sold in the United States at less than fair value (LTFV) and that an industry in the United States is materially injured or threatened with material injury by reason of imports of such merchandise. Accordingly, the Commission instituted preliminary investigations under section 733(a) of the Tariff Act of 1930 to determine whether there is a reasonable indication that an industry in the United States is materially injured, or is threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports of such merchandise into the United States.

Notice of the institution of the Commission's investigations and of a conference to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, D.C., and by publishing the notice in the Federal Register of December 7, 1983 (48 F.R. 54910). A clarification of the scope of the Commission's investigations was published in the Federal Register of December 14, 1983 (48 F.R. 55645). 1/ The conference was held in Washington, D.C., on December 20, 1983. 2/ The Commission voted on these cases at its meeting on January 5, 1984. The statute directs that the Commission make its determination within 45 days after its receipt of a petition, or in these cases, by January 12, 1984.

The Product

Description and uses

Titanium sponge is a porous, brittle metal, which has a high strength-to-weight ratio and is highly ductile. It is an intermediate product used to produce titanium ingot, slab, billet, bar, plate, and sheet. Titanium has low thermal and electrical conductivity and is one of the most corrosion resistant structural metals.

Because of its desirable properties, titanium and its alloys are widely used in the airframes and engines of high-performance military and commercial aircraft, in powerplant surface condensers, in missiles and space vehicles, and in a wide variety of chemical-processing and chemical-handling equipment. In recent years, about 60 percent of U.S. titanium metal consumption has been in aerospace applications; 20 percent, for additives to steel and other alloys; and 20 percent, for other industrial uses.

1/ Copies of the Commission's notices are presented in app. A.

2/ A list of witnesses appearing at the Commission's conference is presented in app. B.

Production processes

The production of titanium sponge involves a process of chlorination and reduction of titanium concentrates (ilmenite (FeTiO_3) or rutile (TiO_2)). The concentrates react with chlorine gas and coke in a fluidized-bed reactor to form impure titanium tetrachloride (TiCl_4), sometimes referred to as "tickle". The titanium tetrachloride is then combined with magnesium (Kroll process) or with sodium (Hunter process) to form titanium sponge and a chloride salt. The salt and residual magnesium or sodium metal must then be separated from the titanium sponge in a purification process.

In the basic Kroll process, residual magnesium chloride and magnesium metal are separated from the sponge by vacuum distillation, by an inert gas sweep, or by acid leaching, as follows.

Vacuum distillation: In this process the reactor pot is heated to a temperature of 900 °C, and a vacuum (less than 100 microns of mercury) is applied to recover the magnesium chloride by condensation. Vacuum distillation is employed by Teledyne Wah Chang Albany, Albany, Oreg., by International Titanium Inc., Moses Lake, Wash., and by Western Zirconium, Ogden, Utah. It is the standard purification step used in the Soviet Union. It is also used in Japan by Toho Titanium Co., Ltd., and Osaka Titanium Co., Ltd.

Inert gas sweep: This process involves sweeping the heated reaction pot with helium gas to reduce volatile magnesium chloride and magnesium to a low level, and subsequently recovering them by condensation. This method is used by Oregon Metallurgical Corp., Albany, Oreg.

Acid leaching: In this process the reaction pot is cooled in a "dry" chamber to avoid reaction of retained salts in the sponge with moisture in the air. The magnesium chloride and residual magnesium metal are leached out using a buffered nitric/hydrochloric acid solution, and the titanium sponge is recovered. This method is used by Titanium Metals Corp., Henderson, Nev.

In the basic Hunter process, titanium sponge and sodium chloride (the combined reaction product is referred to as "spalt") are mechanically chipped from the reactor pot, crushed to lumps approximately 3/8 inch in diameter, and leached in dilute hydrochloric acid solution to dissolve the salt. The washed sponge is dried, screened to remove fines, and pressed into compact blocks. The Hunter process is used by the petitioner, RMI Co., at its Ashtabula, Ohio, plant. It is also used by Nippon Soda, Ltd., of Japan, and by Deeside Titanium, Ltd., of the United Kingdom.

Both the Kroll process and the Hunter process result in products containing their own characteristic impurities. These impurities can be categorized into two groups: nonvolatiles, such as oxygen and iron; and volatiles, such as magnesium and magnesium chloride in the Kroll process and sodium and sodium chloride in the Hunter process. The Kroll process results in higher iron impurity content near the reaction pot walls; the Hunter process results in a more homogeneous product.

According to a recent study by the National Research Council, ^{1/} neither leaching nor vacuum distillation can remove all volatiles, although the latter method removes considerably more. Minimizing volatiles in the sponge is significant in simplifying and improving subsequent melting operations. Efficiency of the vacuum arc melting of sponge into ingots is reduced by the evolution of volatiles. The volatiles condense on the mold and mar the ingot surface, thereby increasing furnace maintenance costs and requiring the use of larger vacuum pumping systems. The integrated domestic producers have found it economical to employ vacuum arc melting with steam ejectors to back up large vacuum diffusion pumps as the final purification step for acid-leached sponge. This refining is an integral part of the melting and casting of the ingot. However, the independent melters claim they are not adequately equipped to handle high-volatile sponge.

The U.S. General Services Administration (GSA) purchases titanium sponge for utilization in the National Defense Stockpile. GSA categorizes titanium sponge as type A, B, or C, depending upon the process used in its manufacture. Sponge produced by magnesium reduction/vacuum distillation is classified as type A; that produced by magnesium reduction/inert gas sweep or by magnesium reduction/acid leaching, as type B; and that produced by sodium reduction/acid leaching, as type C. GSA specifications for each type are presented in table 1.

Table 1.--Titanium sponge: GSA specifications for product to be utilized in the National Defense Stockpile, by components

(In percent, dry-weight basis)			
Component ^{1/}	Type A	Type B	Type C
Titanium-----	99.60	99.10	99.60
Nitrogen-----	.01	.015	.015
Carbon-----	.02	.025	.02
Sodium-----	-	-	.19
Magnesium-----	.08	.50	-
Aluminum-----	-	.07	-
Chlorine-----	.10	.20	.10
Iron-----	.08	.10	.04
Silicon-----	.04	.04	.04
Hydrogen-----	.005	.03	.05
Oxygen-----	.10	.10	.10
Water-----	.02	.02	.02
Other (max.)-----	.05	.05	.05

^{1/} The specifications for titanium content are the minimum allowable; those for the other components are the maximum.

Source: U.S. Department of Commerce.

^{1/} National Materials Advisory Board, Titanium: Past, Present, and Future, Washington, 1983, pp. 52-54.

U.S. tariff treatment

Imports of titanium sponge are currently classified for tariff and reporting purposes under item 629.1420 of the Tariff Schedules of the United States Annotated (TSUSA). Prior to 1980, such imports were classified under item 629.1520. The current column 1 (most-favored-nation) rate of duty 1/ for such imports is 16.5 percent ad valorem (table 2). As a result of agreements made during the Tokyo round of the Multilateral Trade Negotiations (MTN), the rate was reduced from 18 percent in 1980 and 1981 to 17.5 percent in 1982, 17 percent in 1983, and 16.5 percent in 1984. This rate is scheduled to be reduced further, in annual stages, to 15 percent ad valorem, effective January 1, 1987. The rate applicable to imports from least developed developing countries (LDDC's) 2/ is 15 percent ad valorem, and the column 2 rate 3/ is 25 percent ad valorem. Imports of these items are not eligible for duty-free treatment under the Generalized System of Preferences (GSP). 4/ When the U.S. Government purchases imported titanium sponge for the National Defense Stockpile, such imports are entered duty-free under TSUSA item 833.00. Findings of dumping have been issued, and antidumping duties are currently assessed on the basis of those findings, on imports of titanium sponge from the Soviet Union. 5/

Nature and Extent of Alleged Sales at LTFV

The petition alleges that imports of titanium sponge from Japan and the United Kingdom are being sold in the United States at LTFV. Specifically, it alleges that sales of such products in the United States are made at prices which are less than the cost of production. The petition presents cost-of-production estimates (using an in-house titanium-sponge-process cost model) for three Japanese producers and for the sole producer in the United Kingdom. These estimates are compared with actual contract prices accepted by GSA in purchasing titanium sponge from Japan and the United Kingdom for the National Defense Stockpile. On the basis of these comparisons, the petition alleges

1/ Col. 1 rates are applicable to imported products from all countries except those Communist countries and areas enumerated in general headnote 3(f) of the TSUSA. However, these rates do not apply to products of developing countries where such articles are eligible for preferential tariff treatment provided under the Generalized System of Preferences (GSP) or under the "LDDC" column.

2/ The preferential rates in the "LDDC" column reflect the full U.S. MTN concession rates implemented without staging for particular items which are the products of LDDC's enumerated in general headnote 3(d) of the TSUSA.

3/ Col. 2 rates apply to products imported from those Communist countries enumerated in general headnote 3(f) of the TSUSA.

4/ The GSP, under title V of the Trade Act of 1974, provides duty-free treatment for specified eligible articles imported directly from designated beneficiary developing countries. GSP, implemented by Executive Order No. 11888, of Nov. 24, 1975, applies to merchandise imported on or after Jan. 1, 1976, and is expected to remain in effect until Jan. 4, 1985.

5/ U.S. Tariff Commission, Titanium Sponge From the U.S.S.R.: Determination of Injury in Investigation No. AA1921-51 . . ., TC 255, July 1968.

Table 2.--Titanium sponge: U.S. rates of duty as of Jan. 1, 1980,
Jan. 1, 1984, and Jan. 1, 1987

1978 and 1979 TSUSA item No.	1980-83 TSUSA item No.	Article description	Rate of duty				
			Col. 1		"LDDC" column	Col. 2	
			Jan. 1, 1980	Jan. 1, 1984			
629.1520	629.1420	Titanium sponge.....	18% ad val.	16.5% ad val.	15% ad val.	25% ad val.	
833.00	833.00	Articles for the General Services Administra- tion: Materials certified by it to the Commissioner of Customs to be strategic and critical materials procured under the Strategic and Critical Materials Stock Piling Act (50 U.S.C. 98-98h)					
			Free	Free	1/	Free.	

1/ Not applicable.

dumping margins of 38 to 53 percent for Japanese sponge and 115 percent for sponge from the United Kingdom.

U.S. Producers

The production of titanium sponge is a capital- and technology-intensive operation, and consequently the total number of sponge producers worldwide is relatively small. Six companies in the United States have the capacity to produce titanium sponge (table 3), but only the following four actually produced sponge in 1983:

Titanium Metals Corp. of America (Timet), jointly owned by NL Industries and Allegheny International, Inc.

RMI Co. (RMI), owned by National Distillers & Chemical Corp. and United States Steel Corp.

Oregon Metallurgical Corp. (Oremet), publicly owned, with Armco Steel Corp. as the major stockholder.

International Titanium Inc. (ITI), owned principally by Ishizuka Research Institute and Mitsui & Co., Ltd., both of Japan, and by Wyman-Gordon Co. and other U.S. interests.

Those having sponge-producing capacity but not producing in 1983 are as follows:

Teledyne Wah Chang Albany, owned by Teledyne Industries, Inc.

Western Zirconium Co., owned by Westinghouse Electric Co.

The following tabulation, compiled from data obtained in response to the Commission's questionnaires, lists the principal producers and each firm's share of total U.S. production of titanium sponge in 1982:

<u>Firm</u>	<u>Market share</u> <u>(percent)</u>
ITI-----	***
Oremet-----	***
RMI-----	***
Timet-----	***

Of the four firms currently producing titanium sponge, three are vertically integrated. Two producers, Timet and ITI, purchase rutile from Australia and from it produce titanium tetrachloride for reduction to sponge. Other sponge producers purchase their titanium tetrachloride from Gulf and Western, a large manufacturer of titanium pigments, which also require titanium tetrachloride as a raw material.

Table 3.--Titanium sponge: Principal U.S. producers, locations of their establishments, types of production process, and annual production capacity, 1983

Firm	Location	Process	Annual capacity <u>1/</u> Million pounds
ITI-----	Moses Lake, Wash.	Magnesium reduction/vacuum distillation.	***
Oremet-----	Albany, Oreg.	Magnesium reduction/inert gas sweep.	***
RMI-----	Ashtabula, Ohio	Sodium reduction/acid leach.	***
Teledyne Wah Chang.	Albany, Oreg.	Magnesium reduction/vacuum distillation	***
Timet-----	Henderson, Nev.	Magnesium reduction/acid leach.	***
Western Zirconium.	Ogden, Utah	Magnesium reduction/vacuum distillation	<u>2/</u> ***

1/ As of Sept. 30, 1983.

2/ Estimated.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Timet has been producing sponge at its Henderson, Nev., facility, using the basic Kroll process, since the early 1950's. The company is currently pursuing a \$50 million modernization program (most of the plant's electrolytic cells for making magnesium date from World War II), which will include a capacity expansion from its current level of * * * pounds per year to 32 million pounds per year. As an integrated producer, Timet also has the capacity to produce 34 million pounds of titanium ingot per year.

RMI has produced sponge at its Ashtabula, Ohio, plant, using the Hunter process, since 1957. RMI recently invested \$3.5 million in a 4-million-pound-per-year expansion of its sponge plant, and another \$8 million in expanding its Niles, Ohio, melting plant. RMI's current sponge-producing capacity is * * * million pounds per year; its ingot-producing capacity is 24 million pounds per year.

Oremet has produced sponge in Albany, Oreg., using magnesium reduction and an inert gas sweep, since 1966. The plant is integrated from sponge to finished titanium articles. Oremet recently completed a 50-percent expansion of its sponge facility, as well as a \$5 million expansion of its mill products facility. Oremet's current sponge-producing capacity is * * * million pounds per year; its ingot-producing capacity is 16 million pounds per year.

ITI is a newcomer to the industry, producing sponge only since early 1982. ITI uses magnesium reduction followed by vacuum distillation at its new \$25 million plant at Moses Lake, Wash. While ITI's current sponge-producing capacity is about * * * pounds per year, there are plans to double that capacity in the next few years. At present, ITI produces only sponge. However, Wyman-Gordon, which owns more than 40 percent of ITI, has announced plans to invest \$24 million over the next 2 years to build a new 3-million-pound-per-year ingot facility and an ingot-forging operation at its Grafton, Mass., plant.

Teledyne Wah Chang Albany had been producing zirconium metal by a Kroll-type process since the late 1950's. Because of a depressed market for zirconium and a nationwide shortage of titanium, the company converted its idle equipment in 1980 to produce titanium sponge at a rate of * * * to * * * pounds per year. In its response to the Commission's questionnaire, the firm stated, "* * *." Teledyne Wah Chang's practical capacity in 1983 was reported to be * * * pounds per year.

Western Zirconium converted about 1 million pounds of its unused zirconium production capacity to titanium sponge production in 1981. The company employs magnesium reduction followed by vacuum distillation.

U.S. Importers

The net importer file maintained by the U.S. Customs Service identifies 10 firms that imported titanium sponge from Japan during September 1981-September 1982. There were no imports of titanium sponge reported from the United Kingdom during that period, although one firm is believed to have imported some sponge after June 1983. One importer of sponge from Japan (* * *) is a major metals trader, and another (* * *) is a domestic titanium sponge producer. The remaining firms are independent melters which produce ingot, slab, or mill products from sponge. At least three of the independent melters identified by Customs as the importers of record contend that they do not import directly, but purchase from the large metals trader.

Apparent U.S. Consumption

Apparent U.S. consumption of titanium sponge increased from 59.3 million pounds in 1980 to 64.3 million pounds in 1981 before falling to 35.2 million pounds in 1982 (table 4). During January-September 1983, apparent consumption was 24.7 million pounds, compared with 29.0 million pounds during the corresponding period of 1982.

The ratio of imports to apparent consumption in 1980 and 1981 was about twice what it was in the following periods. The reason is that in those

Table 4.--Titanium sponge: U.S. production, imports for consumption, exports of domestic merchandise, change in producers' and importers' inventories, and apparent U.S. consumption, 1980-82, January-September 1982, and January-September 1983

Item	1980	1981	1982	January-September--	
				1982	1983
U.S. production					
1,000 pounds--	50,414	55,734	32,909	28,051	19,960
Imports-----do----	9,366	11,398	2,860	2,240	2,964
Exports-----do----	226	116	72	60	0
Increase (decrease) in U.S. producers' and importers' inven- tories---1,000 pounds--	269	2,763	537	1,201	(1,805)
Apparent consumption					
1,000 pounds--	59,285	64,253	35,160	29,030	24,729
Ratio of imports to--					
Production----percent--	18.6	20.5	8.7	8.0	14.8
Consumption-----do----	15.8	17.7	8.1	7.7	12.0

Source: Production, imports, and changes in inventories compiled from data submitted in response to questionnaires of the U. S. International Trade Commission; exports compiled from official statistics of the U.S. Department of Commerce.

earlier years, apparent consumption of sponge exceeded domestic production capacity; imports were necessary to fill the gap. ^{1/}

The petitioner's claim of material injury, or the likelihood thereof, in these investigations centers principally on sales allegedly at LTFV by producers in Japan and the United Kingdom to GSA for the National Defense Stockpile. Importers argue that such sales were not at LTFV and that the stockpile purchase was separate from the commercial market for titanium sponge in the United States.

This was GSA's first major unencumbered purchase of titanium sponge for the stockpile in 20 years. The bidding was open to both U.S. and foreign entities. Bids were solicited on all types of sponge (i.e., types A, B, and C). GSA sought to purchase 9 million pounds of sponge in nine lots of 1 million pounds each. GSA apparently had no preference for any one type of sponge, since it asked for bids up to the maximum 9 million pounds for each type.

^{1/} All but one (* * *) of the five producers that responded to the Commission's questionnaires reported that they had either imported titanium sponge or had purchased imported titanium sponge during 1980-82. The principal source of such imports was Japan; other countries included the Soviet Union and the Peoples' Republic of China.

Although sponge purchased for the National Defense Stockpile may enter the United States duty-free, GSA was required in this case to add a duty rate of 17 percent ad valorem to each foreign bid for purposes of comparing it with domestic bids. The reasoning apparently was that, in a normal competitive setting, the purchaser would have had to pay that duty on imported material.

The contracts were let in October 1983, with delivery scheduled for no later than October 1984. A 6-million-pound contract was awarded to Philipp Brothers, Inc., a selling agent for Japanese producers; a 2-million-pound contract went to the domestic producer Timet; and a 1-million-pound contract was won by Billiton Metals, Inc., a subsidiary of Billiton, U.K., which owns 62.5 percent of Deeside Titanium, Ltd. GSA's purchase of titanium sponge for the National Defense Stockpile is discussed further in a later section of this report.

Consideration of Material Injury to an Industry in the United States

U.S. production, capacity, and capacity utilization

Total U.S. production increased from 50.4 million pounds in 1980 to 55.7 million pounds in 1981 and then dropped by 41 percent to 32.9 million pounds in 1982 (table 5). During January-September 1983, total production amounted to 20.0 million pounds, compared with 28.1 million pounds in the corresponding period of 1982.

The dramatic decline in production in 1982 reflected a recurring pattern that has plagued the U.S. titanium industry since its beginning in the late 1940's. The dominant factor in the market has been and continues to be the aerospace industry. Unfortunately, titanium producers have had to rely on demand projections (from both the military and commercial sectors), which tend to be unreliable, because of changes in a complex mosaic of factors. These factors include U.S. military strategies, U.S. Government budget allocations for defense spending, the general state of the economy, the strengths and weaknesses of the U.S. commercial airline industry, and competition from foreign aircraft manufacturers. ^{1/} In 1980 and 1981, the pieces in the mosaic were aligned to create the best market ever for titanium sponge, but by 1982, the pattern had shifted for the worse. The industry has attempted to cultivate the industrial (i.e., nonaerospace) market in order to smooth out demand, but the importance of that market remains secondary to aerospace applications.

Meanwhile, total U.S. practical capacity increased 17 percent from 51.4 million pounds per year in 1980 to 60.4 million pounds per year in 1982. With the drop in demand in 1982, production capacity expansion slowed markedly. Capacity utilization rose from 98.0 percent in 1980 to 99.2 percent in 1981, but, like production, fell sharply, to only 54.5 percent in 1982 and 42.8 percent during January-September 1983.

^{1/} National Materials Advisory Board, op. cit., p. 13.

Table 5.--Titanium sponge: U.S. production, practical capacity, ^{1/} and capacity utilization, 1980-82, January-September 1982, and January-September 1983

Item	1980	1981	1982	January-September--	
				1982	1983
Production:					
For captive use					
1,000 pounds--	***	***	***	***	***
For external sale					
1,000 pounds--	***	***	2/ ***	2/ ***	2/ ***
Total-----do-----	50,414	55,734	32,909	28,051	19,960
Capacity-----do-----	51,446	56,200	60,400	45,125	46,650
Capacity utilization					
percent--	98.0	99.2	54.5	62.2	42.8

^{1/} Practical capacity was defined as the greatest level of output a plant can achieve within the framework of a realistic work pattern. Producers were asked to consider only machinery and equipment in place and ready to operate; scheduled downtime for maintenance could be considered as a factor limiting practical capacity, but overtime, materials, and other costs could not.

^{2/} Estimated.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

The great bulk (currently 90 percent or more) of total U.S. capacity for and production of titanium sponge are accounted for by Timet, RMI, and Oremet, all of which consume most of their sponge in captive melting operations. Although the fourth active producer, ITI, is not itself vertically integrated, a substantial part of it is owned by a producer of downstream titanium products (Wyman-Gordon). All of ITI's production is for domestic sale, but to date its production has been limited by three factors: (1) small practical capacity, (2) production inefficiencies inherent in the start up process, and (3) low market demand.

U.S. producers' domestic and export shipments

U.S. producers' combined domestic market shipments and their export shipments were never more than 7 percent of total U.S. production in the periods covered by these investigations (table 6). The remainder of their output was further processed into more advanced products by the sponge producers. The rise or fall of market shipments did not appear to follow the general pattern of production and demand for titanium sponge during that time. From *** pounds in 1980, domestic market shipments fell by *** to *** pounds in 1982, and then increased to *** pounds in January-September 1983. The upturn in 1983 was attributable to ITI's increasing output following its start up in 1982.

Table 6.--Titanium sponge: U.S. producers' domestic market and export shipments, 1980-82, January-September 1982, and January-September 1983

Item	1980	1981	1982	January-September--	
				1982	1983
Domestic shipments:					
Quantity--1,000 pounds--	***	***	***	***	***
Value----1,000 dollars	***	***	<u>1/</u> ***	<u>1/</u> ***	<u>1/</u> ***
Unit value---per pound--	***	***	<u>1/</u> ***	<u>1/</u> ***	<u>1/</u> ***
Export shipments:					
Quantity--1,000 pounds--	***	***	***	***	***
Value----1,000 dollars--	***	***	***	***	***
Unit value---per pound--	***	***	***	***	***

1/ Estimated.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

U.S. producers' inventories

U.S. sponge producers do not generally keep substantial inventories on hand, but instead attempt to tailor production output to either captive needs or arm's-length sales as they arise. In 1980 and 1981, total inventories amounted to about 6 percent of annual production. However, with poor market conditions in 1982 and January-September 1983, inventories accounted for up to 16 percent of production. End-of-period inventories, as reported by U.S. producers in response to the Commission's questionnaires, are presented in the following tabulation:

	Quantity (1,000 pounds)
As of Dec. 31--	
1979-----	2,523
1980-----	2,879
1981-----	3,645
1982-----	5,157
As of Sept. 30--	
1982-----	6,138
1983-----	3,534

U.S. employment, wages, and productivity

In domestic establishments producing titanium sponge, the average employment of all persons decreased by 0.6 percent from 1980 to 1981 and fell by 14.1 percent in 1982 (table 7). During January-September 1983, employment declined by an additional 15.0 percent from the number employed in the corresponding period of 1982. The average number of production and related workers followed a similar pattern, although the percentage declines were

Table 7-Average number of employees, total and production and related workers, in U.S. establishments producing titanium sponge, and hours worked by the latter, 1980-82, January-September 1982, and January-September 1983

Item	1980	1981	1982	January-September--	
				1982	1983
Average employment:					
All persons:					
Number-----	3,679	3,656	3,140	3,315	2,818
Percentage change----	<u>1/</u>	-0.6	-14.1	<u>1/</u>	-15.0
Production and related workers producing--					
All products:					
Number-----	2,683	2,643	2,143	2,309	1,899
Percentage change-----	<u>1/</u>	-1.5	-18.9	<u>1/</u>	-17.8
Titanium sponge:					
Number-----	***	***	***	***	***
Percentage change-----	<u>1/</u>	2.0	-17.5	<u>1/</u>	-25.1
Hours worked by production and related workers producing--					
All products:					
Number----thousands--	5,998	5,916	4,711	3,774	3,177
Percentage change----	<u>1/</u>	-1.4	-20.4	<u>1/</u>	-15.8
Titanium sponge:					
Number----thousands--	1,707	1,823	1,358	1,110	840
Percentage change----	<u>1/</u>	6.8	-25.5	<u>1/</u>	-24.3

1/ Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

deeper. Hours worked by production and related workers producing all products declined by 1.4 percent from 1980 to 1981, and by an additional 20.4 percent in 1982. Compared with hours worked in January-September 1982, those worked in the corresponding period of 1983 were down by 15.8 percent.

Employment of production and related workers producing titanium sponge and the number of hours worked by such employees followed the same general pattern, except in 1981. In that year, the average number of production and related workers increased by 2.0 percent and the hours worked by such employees rose by 6.8 percent. However, both fell sharply in 1982 and again in January-September 1983. That hours worked by production and related workers producing only titanium sponge followed the same general trend as that of workers producing all products should be expected, since the facilities of the integrated producers are dedicated exclusively to titanium products. It follows that if demand for the finished or semifinished product is off, the raw material sponge operation will also be slowed.

Wages and total compensation paid to production and related workers producing all products and those paid to production and related workers producing only titanium sponge are shown in table 8. The difference between total compensation and wages is an estimate of workers' benefits.

Data on labor productivity, hourly compensation, and unit labor costs in the production of titanium sponge are presented in table 9. Labor productivity increased by about 4 percent from 1980 to 1981, and then declined by 21 percent in 1982. Productivity in January-September 1983 was down 6 percent from that in the corresponding period of 1982.

Hourly compensation (excluding fringe benefits) increased from \$10.90 per hour in 1980 to \$12.81 per hour in January-September 1983. Although hourly compensation did not decline during the period under investigation, the rate of increase slowed considerably in 1983. Unit labor costs jumped by almost 35 percent in 1982, probably because producers were reluctant to lay off skilled workers during the slump in demand.

Financial experience of U.S. producers

Three U.S. producers, RMI, ITI, and Teledyne Wah Chang Albany, furnished income-and-loss data relative to their titanium sponge operations. ^{1/} As was indicated previously, ITI commenced production of titanium sponge in early 1982, Teledyne Wah Chang ceased producing titanium sponge in August 1982, and the bulk of RMI's titanium sponge production is consumed within the company as a raw material in the manufacture of titanium metal products. Two other firms, Oremet and Timet (both of which also consume the great bulk of their titanium sponge production in the manufacture of titanium metal products) supplied data pertaining to their investment in productive facilities, capital expenditures, and research and development expenditures. Because of the diverse nature of the titanium sponge operations of the three firms which

^{1/} In its response to the Commission's questionnaire, Timet, * * *, stated, " * * * ."

Table 8.—Wages and total compensation 1/ paid to production and related workers in establishments producing titanium sponge, 1980-82, January-September 1982, and January-September 1983

Item	1980	1981	1982	January-September—	
				1982	1983
Wages paid to production and related workers producing—					
All products:					
Value—1,000 dollars—	68,930	75,179	64,585	51,161	44,202
Percentage change—	<u>2/</u>	9.1	-14.1	<u>2/</u>	-13.6
Titanium sponge:					
Value—1,000 dollars—	18,611	22,289	17,367	14,167	10,761
Percentage change—	<u>2/</u>	19.8	-22.1	<u>2/</u>	-24.0
Total compensation paid to production and related workers producing—					
All products:					
Value—1,000 dollars—	97,484	107,572	95,552	75,723	66,272
Percentage change—	<u>2/</u>	10.3	-11.2	<u>2/</u>	-12.5
Titanium sponge:					
Value—1,000 dollars	25,090	30,457	24,256	19,672	15,385
Percentage change—	<u>2/</u>	21.4	-20.4	<u>2/</u>	-21.8

1/ Includes wages and contributions to social security and other employee benefits.

2/ Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 9.--Labor productivity, hourly compensation, and unit labor costs in the production of titanium sponge, 1980-82, January-September 1982, and January-September 1983

Item	1980	1981	1982	January-September--	
				1982	1983
Labor productivity:					
Quantity					
pounds per hour--	29.5	30.6	24.2	25.3	23.7
Percentage change-----	<u>1/</u>	3.7	-20.9	<u>1/</u>	-6.3
Hourly compensation: <u>2/</u>					
Value-----per hour--	\$10.90	\$12.23	\$12.79	\$12.76	\$12.81
Percentage change-----	<u>1/</u>	12.2	4.6	<u>1/</u>	0.4
Unit labor costs: <u>3/</u>					
Value-----per pound--	\$0.50	\$0.55	\$0.74	\$0.70	\$0.77
Percentage change-----	<u>1/</u>	10.0	34.5	<u>1/</u>	10.0

1/ Not available.

2/ Based on wages excluding fringe benefits.

3/ Based on total compensation paid to production and related workers.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

supplied income-and-loss data, the following sections discusses each firm's operations separately.

RMI.--Total net sales of titanium sponge by RMI were * * * in 1982, down * * * percent from the level of * * * achieved in 1981 and down * * * percent from the level of * * * achieved in 1980 (table 10). Net sales were * * * during January-September 1983, compared with * * * in the corresponding period of 1982. Intracompany sales rose from * * * percent of RMI's total titanium sponge sales in 1980 to * * * percent in 1982; they * * * during January-September 1983.

RMI posted operating * * * of * * *, or * * * percent of net sales, and * * *, or * * * percent of net sales, in 1980 and 1981, respectively. In 1982, RMI * * * an operating * * * of * * *, or * * * percent of net sales. During January-September 1983, it * * * an operating * * * of * * *, or * * * percent of net sales, compared with an operating * * * of * * *, or * * * percent of net sales, in the corresponding period of 1982.

Manufacturing costs (cost of goods sold) * * * from * * * percent of net sales in 1980 to * * * percent of net sales in 1982. Such costs * * * to * * * percent of net sales during January-September 1983, compared with * * * percent in the corresponding period of 1982. The company reported * * *.

Table 10.--Income-and-loss experience of RMI Co. on its operations producing titanium titanium sponge, 1980-82, January-September 1982, and January-September 1983 1/

Item	1980	1981	1982	Jan.-Sept.--	
				1982	1983
Net sales: <u>2/</u>					
Trade-----1,000 dollars--	***	***	***	***	***
Intracompany-----do-----	***	***	***	***	***
Total-----do-----	***	***	***	***	***
Cost of goods sold: <u>2/</u>					
Raw materials-----do-----	***	***	***	***	***
Direct labor-----do-----	***	***	***	***	***
Other factory costs-----do-----	***	***	***	***	***
Total-----do-----	***	***	***	***	***
Gross income or (loss)-----do-----	***	***	***	***	***
General, selling, and administra-					
tive expenses-----1,000 dollars--	***	***	***	***	***
Operating income or (loss)---do----	***	***	***	***	***
Other income or (expense), net					
1,000 dollars--	***	***	***	***	***
Net income or (loss) before					
income taxes-----do-----	***	***	***	***	***
Depreciation and amortization					
expense-----1,000 dollars--	***	3/ ***	***	***	***
Cash flow from operations---do----	***	***	***	***	***
Ratio to net sales:					
Cost of goods sold-----percent--	***	***	***	***	***
Operating income or (loss)					
percent--	***	***	***	***	***
Net income or (loss) before					
income taxes-----percent--	***	***	***	***	***
Ratio of intracompany net sales to					
total net sales-----percent--	***	***	***	***	***

1/ RMI's accounting year ends on Dec. 31.

2/ Sales and cost data include operations producing pot sponge, fines, and so forth.

3/ A change was made in RMI's method of calculating depreciation.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

ITI.--International Titanium, Inc., commenced production of titanium sponge in March 1982 and reported its first sales during its accounting year ended May 31, 1983. Net sales were * * * during this period and * * * during the 4-month interim period ended September 30, 1983 (table 11). The value of such sales * * *; as a result, the company * * * equal to * * * percent and * * * percent, respectively, of net sales in the two reporting periods. Overall, ITI has * * * since it began operations, and it has accumulated a * * * of * * *.

Teledyne Wah Chang Albany.--Total net sales of titanium sponge by Teledyne Wah Chang increased from * * * in 1980 to * * * in 1981 before declining by * * * percent to * * * in 1982 (table 12). Sales during January-September 1983 were down * * * percent from those in the corresponding period of 1982. Intracompany sales followed a similar pattern, accounting for * * * to * * * percent of the firm's total sales of titanium sponge in 1980-82 but * * * percent in January-September 1983.

Teledyne Wah Chang's operating * * * from * * *, or * * * percent of net sales, in 1980 to * * *, or * * * percent of net sales, in 1982. In January-September 1983, the company reported an operating * * * of * * *, or * * * percent of net sales, compared with an operating * * * of * * *, or * * * percent of net sales, during January-September 1982.

Manufacturing costs (cost of goods sold) * * * from * * * percent of net sales in 1980 to * * * percent of net sales during January-September 1983. General, selling, and administrative expenses varied with net sales, accounting for * * * to * * * percent of sales.

Investment in productive facilities.--Five firms supplied data concerning their investment in productive facilities used in the production of titanium sponge. Their aggregate investment in such facilities, valued at cost, rose annually from \$56.3 million as of December 30, 1980, to \$147.1 million as of September 30, 1983. The book value of such assets rose from \$19.6 million to \$99.3 million during this period, as shown in the following tabulation:

	<u>Original cost</u> <u>(1,000 dollars)</u>	<u>Book value</u> <u>(1,000 dollars)</u>
As of Dec. 31--		
1980-----	56,347	19,609
1981-----	87,115	47,650
1982-----	107,685	64,532
As of Sept. 30--		
1982-----	106,587	64,411
1983-----	147,136	99,285

Table 11.--Income-and-loss experience of International Titanium, Inc., on its operations producing titanium sponge, accounting years ended Dec. 31, 1981, May 31, 1982, and May 31, 1983, and the 4-month interim period ended Sept. 30, 1983

Item	Accounting year ended--			Interim period ended 9/30/83
	Dec. 31, 1981	May 31, 1982	May 31, 1983	
Net sales (trade)---1,000 dollars--	***	***	***	***
Cost of goods sold:				
Raw materials-----do-----	***	***	***	***
Direct labor-----do-----	***	***	***	***
Other factory costs-----do-----	***	***	***	***
Total-----do-----	***	***	***	***
Gross income or (loss)-----do-----	***	***	***	***
General, selling, and administrative expenses-----1,000 dollars--	***	***	***	***
Operating income or (loss)-----do-----	***	***	***	***
Other income or (expense), net 1,000 dollars--	***	***	***	***
Net income or (loss) before income taxes-----1,000 dollars--	***	***	***	***
Depreciation and amortization expense-----do-----	***	***	***	***
Cash flow from operations-----do-----	***	***	***	***
Ratio to net sales:				
Cost of goods sold-----percent--	***	***	***	***
Gross loss-----do-----	***	***	***	***
General, selling, and administrative expenses-----percent--	***	***	***	***
Operating loss-----do-----	***	***	***	***
Net loss before taxes-----do-----	***	***	***	***

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 12.--Income and loss experience of Teledyne Wah Chang Albany on its operations producing titanium sponge, 1980-82, January-September 1982, and January-September 1983 ^{1/}

Item	1980	1981	1982	Jan.-Sept.--	
				1982	1983
Net sales:					
Trade-----1,000 dollars--	***	***	***	***	***
Intracompany-----do----	***	***	***	***	***
Total-----do----	***	***	***	***	***
Cost of goods sold:					
Raw materials-----do----	***	***	***	***	***
Direct labor-----do----	***	***	***	***	***
Other factory costs-----do----	***	***	***	***	***
Total-----do----	***	***	***	***	***
Gross income or (loss)-----do----	***	***	***	***	***
General, selling, and administra-					
tive expenses-----1,000 dollars--	***	***	***	***	***
Operating income or (loss)---do----	***	***	***	***	***
Other income or (expense), net					
1,000 dollars--	***	***	***	***	***
Net income or (loss) before					
income taxes-----do----	***	***	***	***	***
Depreciation and amortization					
expense-----percent--	***	***	***	***	***
Cash flow from operations----do----	***	***	***	***	***
Ratio to net sales:					
Cost of goods sold-----percent--	***	***	***	***	***
Operating income or (loss)					
percent--	***	***	***	***	***
Net income or (loss) before					
income taxes-----percent--	***	***	***	***	***
Ratio of intracompany net sales to					
total net sales-----percent--	***	***	***	***	***

^{1/} Teledyne Wah Chang's accounting year ends Dec. 31.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Research and development expenditures.--Four firms supplied data on research and development expenditures incurred in developing U.S.-produced titanium sponge. Such expenditures were as follows:

	Expenditures (1,000 dollars)
1980-----	***
1981-----	***
1982-----	***
January-September--	
1982-----	***
1983-----	***

Capital expenditures.--Capital expenditures for land, buildings, and machinery and equipment used in the production of titanium sponge rose from \$6.0 million in 1980 to \$38.7 million and \$63.1 million in 1981 and 1982, respectively. Such expenditures amounted to \$79.7 million during January-September 1983, compared with \$50.7 million in the corresponding period of 1982 (table 13). ITI, the 1982 entrant into the production of titanium sponge, accounted for * * * of total U.S. capital expenditures in 1981, * * * in 1982, and * * * in January-September 1983.

Table 13.--U.S. producers' capital expenditures for land, buildings, and machinery and equipment used in the production of titanium sponge, 1980-82, January-September 1982, and January-September 1983

(In thousands of dollars)					
Item	1980	1981	1982	Jan.-Sept.--	
				1982	1983
Land and land improvements----	***	***	***	***	***
Building or leasehold improvements-----	***	***	***	***	***
Machinery, equipment, and fixtures-----	***	***	***	***	***
Total-----	5,992	38,694	63,076	50,727	79,732

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Capital and investment.--U.S. producers were asked to describe any actual or potential negative effects of imports of titanium sponge from Japan and the United Kingdom on their firms' growth, investment, and ability to raise capital. Excerpts from their replies are shown below.

ITI.---* * *.

RMI.---* * *.

Teledyne Wah Chang Albany.---* * *.

Consideration of the Threat of Material Injury to an Industry in the United States

In its examination of the question of the threat of material injury to an industry in the United States, the Commission may take into consideration such factors as the rate of increase in LTFV imports, the rate of increase in U.S. market penetration by such imports, the amount of imports held in inventory in the United States, and the capacity of producers in the countries subject to these investigations to generate exports (including the availability of export markets other than the United States). A discussion of the rates of increase in imports of titanium sponge and of their U.S. market penetration is presented in a later section of this report.

U.S. importers' inventories

End-of-period inventories of titanium sponge from Japan, as reported by importers in response to the Commission's questionnaires, are shown in the following tabulation:

<u>Date</u>	<u>Quantity</u> <u>(1,000 pounds)</u>	<u>Ratio of inventories</u> <u>to reported imports</u> <u>(percent)</u>
Dec. 31, 1980-----	570	6.1
Dec. 31, 1981-----	2,567	22.5
Sept. 30, 1982-----	1,275	44.6
Dec. 31, 1982-----	1,592	71.0
Sept. 30, 1983-----	1,410	47.6

No end-of-period inventories of sponge from the United Kingdom were reported for any of the above periods, except for a relatively insignificant amount in 1983.

The titanium sponge industry of Japan

The Japanese titanium sponge industry comprises four producers having a total production capacity of nearly 80 million pounds per year, as shown in the following tabulation:

<u>Producer</u>	<u>Capacity</u> <u>(million pounds</u> <u>per year)</u>
Osaka Titanium Co., Ltd-----	39.6
Toho Titanium Co., Ltd-----	32.4
Nippon Soda, Ltd. (New Metals Industries)-----	4.8
Showa Titanium Co-----	2.8
Total-----	79.6

In response to increased world demand during 1980 and 1981 and to projected further increases in 1982 and beyond, the collective Japanese capacity rose by 122 percent from 35.8 million pounds per year in 1979 to 79.6 million pounds per year in 1983. Current overall capacity utilization is estimated to be approximately 35 percent, with Osaka operating at 28 percent; Toho, at 45 percent; Nippon Soda, at 33 percent; and Showa, at 0 percent. ^{1/} Toho's higher operating rate is probably attributable to the fact that it is vertically integrated to produce downstream ingot.

Osaka, founded in 1952, operates its plant at Amagasaki using a magnesium reduction/vacuum distillation process. The most recent phase of its capacity expansion, completed at yearend 1981, resulted in an 11-million-pound-per-year facility which is highly automated, featuring computer control in all phases of production. At yearend 1982, Osaka had reduced its operating rate from 45 percent of capacity to 40 percent. Further reductions followed in February 1983 (to 32 percent) and in May 1983 (to 28 percent). ^{2/} Osaka produces 4.8 million pounds of sponge per year for Nippon Soda, Ltd., on consignment.

Toho operates its plant in Chigasakin Kanagawa Prefecture, also using the magnesium reduction/vacuum distillation process. Toho had closed down its plant in early December 1982 and laid off 583 of its 833 workers with pay, because of high inventories (13 percent of production capacity) and poor demand. ^{3/} The plant reopened on January 11, 1983, and by May 1983 was operating at 45 percent of capacity. In 1981, Toho had 6 million pounds per year of titanium-ingot-producing capacity. ^{4/} In May 1983, it was reported that Toho hoped to expand into other downstream products, namely bar and tube. ^{5/}

Nippon Soda's New Metals Industries plant, operating at Nihougi since 1980, uses a sodium reduction/acid leach process. At year end 1982, the company was operating at only half of capacity, and in January 1983, at one-third.

Showa Titanium, a joint venture of Showa Denko K.K. and Ishizuka Research Institute, started trial operations at its Toyama plant in November 1983. It

^{1/} Metals Week, Feb. 7, 1983 and May 23, 1983.

^{2/} Ibid., Jan. 17, 1983.

^{3/} Ibid., Jan. 17, 1983.

^{4/} National Materials Advisory Board, op. cit., p. 130.

^{5/} Metals Week, May 23, 1983.

plans to enter commercial production by January 1984 with an operating rate of 50 percent of capacity. The new plant utilizes an improved magnesium reduction/vacuum distillation process developed by Ishizuka. The process reportedly lowers energy consumption while increasing quality and yield of product. 1/ Ishizuka also has some ownership interest in the U.S. producer ITI, which itself employs the new Ishizuka process.

According to data published by the U.S. Bureau of Mines, Japanese production of titanium sponge during 1980-82 and January-September 1983 followed the same trend as U.S. production. Aggregate Japanese production rose by 29 percent from 42.5 million pounds in 1980 to 55.0 million pounds in 1981 and then fell by 32 percent to 37.2 million pounds in 1982 and to 17.0 million pounds in January-September 1983 (equivalent to an annual rate of 22.7 million pounds, or 39 percent less than 1982 production).

Japanese exports of titanium sponge to all markets increased from 17.8 million pounds in 1980 to 22.1 million pounds in 1981, and then declined to 7.7 million pounds in 1982 (table 14). In terms of quantity, 41.0 percent of Japanese exports went to the United States in 1980. That percentage rose slightly to 42.9 percent in 1981, and then dropped to 23.2 percent in 1982. Although Japanese export data for 1983 are not yet available, U.S. statistics on imports from Japan indicate that Japan exported 1.5 million pounds of sponge to the United States in January-September 1983. As a result of the recent GSA purchase of sponge for the National Defense Stockpile, Japan will export at least 6 million pounds of sponge to the United States in 1984. The GSA purchase is further discussed in a later section of this report.

The titanium sponge industry of the United Kingdom 2/

In 1978, IMI Titanium, Ltd., the sole European titanium sponge producer at the time, announced that it would not replace its old, worn-out equipment and would cease sponge production in 1982. IMI's largest customer, Rolls Royce, which uses titanium in its aerospace operations, then approached the U.K. Government with its concerns about a steady supply of sponge meeting the necessary specifications for aerospace use. The U.K. Government agreed to plan and finance a new plant, but soon balked. Rolls Royce took it upon itself to carry the project through. The result was Deeside Titanium, Ltd., jointly owned by Rolls Royce (20 percent), IMI (17.5 percent), and Billiton, U.K. (62.5 percent).

Deeside's 11-million-pound-per-year plant, located at Clwyd, North Wales, was completed in July 1983 and was scheduled to begin sponge production in October 1983, using a sodium reduction/acid leach process. The company expects to be operating at 50 percent of capacity by early 1984, market conditions permitting. Predictably, a substantial part of Deeside's output will go through IMI (for melting/alloying) to Rolls Royce. The remaining product is targeted for the European and U.S. markets.

1/ American Metal Market, Nov. 22, 1983.

2/ The information in this section is taken from Metal Bulletin Monthly, October 1982.

Table 14.--Titanium sponge: Japanese exports, by principal markets, 1980-82

Market	1980	1981	1982
Quantity (million pounds)			
United States-----	7.3	9.5	1.8
Canada-----	0	<u>1/</u>	<u>1/</u>
Europe-----	10.5	12.6	5.9
Total-----	17.8	22.1	7.7
Percent of total			
United States-----	41.0	42.9	23.2
Canada-----	-	<u>2/</u>	<u>2/</u>
Europe-----	59.0	57.1	76.8
Total-----	100.0	100.0	100.0

1/ Less than 0.05 million pounds.

2/ Less than 0.05 percent.

Source: Japan Tariff Association, Japan Exports and Imports.

Note.--The data presented on exports to the United States in this table differ somewhat from official U.S. statistics on U.S. imports of sponge from Japan.

Deeside recently won a bid for the sale of 1 million pounds of sponge to GSA for the National Defense Stockpile. It is for this contract that Deeside has been named by the petitioner as a respondent in these investigations. The GSA purchase is discussed in a later section of this report.

Consideration of the Causal Relationship Between Alleged Material Injury or the Threat Thereof and Imports Allegedly Sold at LTFV

Import data presented in table 15 reflect official U.S. statistics of the U.S. Department of Commerce, while those in table 16 were reported by U.S. importers in response to questionnaires of the Commission. The data in table 16 are used in this section for purposes of analysis. 1/

1/ Import data reported by importers in response to Commission questionnaires are within 15 percent of those reported by the U.S. Department of Commerce, except those for January-September 1983. For that period, questionnaire data are 55 percent higher. The Commission's staff attempted to find an explanation for the difference in imports (as reported by Commerce and as reported to the Commission) in January-September 1983 but, given the time constraints in these 45-day investigations, was unable to do so. For the purposes of this report (e.g., in computing apparent domestic consumption and the ratio of imports to consumption) imports reported in response to the Commission's questionnaires have been used.

Table 15.--Titanium sponge: U.S. imports for consumption, by principal sources, 1980-82, January-September 1982, and January-September 1983

Source	1980	1981	1982	January-September--	
				1982	1983
	Quantity (1,000 pounds)				
Japan-----	7,378	11,384	2,567	2,467	1,517
United Kingdom-----	1/	0	0	0	11
Chile-----	62	0	0	0	0
France-----	29	0	0	0	0
West Germany-----	33	0	0	0	0
U.S.S.R-----	331	220	88	88	386
People's Republic of China-----	1,620	1,261	48	48	1
Republic of Korea-----	0	110	0	0	0
Taiwan-----	102	6	0	0	0
All other-----	0	0	6	6	0
Total-----	9,553	12,981	2,709	2,609	1,914
	Value (1,000 dollars)				
Japan-----	39,120	81,031	16,753	16,222	5,332
United Kingdom-----	1	-	-	-	36
Chile-----	426	-	-	-	-
France-----	212	-	-	-	-
West Germany-----	241	-	-	-	-
U.S.S.R-----	2,741	1,746	160	160	913
People's Republic of China-----	16,423	9,823	287	287	5
Republic of Korea-----	-	791	-	-	-
Taiwan-----	1,051	124	-	-	-
All other-----	0	-	32	32	-
Total-----	60,214	93,515	17,232	16,700	6,286

1/ Less than 500 pounds.

Table 15.--Titanium sponge: U.S. imports for consumption, by principal sources, 1980-82, January-September 1982, and January-September 1983--
Continued

Source	1980	1981	1982	January-September--	
				1982	1983
	Unit value (per pound)				
Japan-----	\$5.30	\$7.12	\$6.53	\$6.58	\$3.52
United Kingdom-----	33.27	-	-	-	3.40
Chile-----	6.90	-	-	-	-
France-----	7.38	-	-	-	-
West Germany-----	7.28	-	-	-	-
U.S.S.R-----	8.29	7.94	1.81	1.81	2.37
People's Republic of China-----	10.14	7.79	5.95	5.95	4.15
Republic of Korea-----	-	7.18	-	-	-
Taiwan-----	10.29	19.32	-	-	-
All other-----	-	-	5.75	5.75	-
Average-----	6.30	7.20	6.36	6.40	3.28

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note.--Import data reported by importers in response to Commission questionnaires are within 15 percent of those reported by the U.S. Department of Commerce, except those for January-September 1983. For that period, questionnaire data are 55 percent higher. The Commission's staff attempted to find an explanation for the difference in imports (as reported by Commerce and as reported to the Commission) in January-September 1983 but, given the time constraints in these 45-day investigations, was unable to do so. For the purposes of this report (e.g., in computing apparent domestic consumption and the ratio of imports to consumption) imports reported in response to the Commission's questionnaires have been used.

Table 16.--Titanium sponge: U.S. imports, by principal sources, 1980-82, January-September 1982, and January-September 1983

Source	1980	1981	1982	January-September--	
				1982	1983
	Quantity (1,000 pounds)				
Japan-----	9,243	10,030	2,860	2,240	2,622
United Kingdom-----	***	***	0	0	11
All other countries-----	***	***	0	0	331
Total-----	9,366	11,398	2,960	2,240	2,964
	Value (1,000 dollars) <u>1/</u>				
Japan-----	54,000	83,155	22,825	18,167	9,977
United Kingdom-----	***	***	-	-	44
All other countries-----	***	***	-	-	1,275
Total-----	54,964	95,645	22,825	18,167	11,296
	Unit value (per pound) <u>1/</u>				
Japan-----	\$5.84	\$8.29	\$7.98	\$8.11	\$3.80
United Kingdom-----	***	***	-	-	4.00
All other countries-----	***	***	-	-	3.85
Average-----	5.87	8.39	7.98	8.11	3.81

1/ Landed, duty paid value.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

U.S. imports

From all sources.--Imports of titanium sponge from all sources increased from 9.4 million pounds in 1980 to 11.4 million pounds in 1981, and then dropped sharply to 3.0 million pounds in 1982 (table 16). Imports during January-September 1983 amounted to 3.0 million pounds, compared with 2.2 million pounds in the corresponding period of 1982.

From Japan.--Imports from Japan increased from 9.2 million pounds in 1980 to 10.0 million pounds in 1981, and then fell to 3.0 million pounds in 1982. During January-September 1983, imports from Japan amounted to 2.6 million pounds, compared with 2.2 million pounds during the corresponding period of 1982. Japan will export 6 million pounds of sponge to the United States in 1984 as a result of the GSA stockpile purchase alone.

From the United Kingdom.--Imports from the United Kingdom declined from * * * pounds in 1980 to nil in 1982, and amounted to only 11,000 pounds in January-September 1983. Such imports will amount to at least 1 million pounds in 1984 because of GSA's stockpile purchase.

U.S. market penetration

Imports from all sources.--Market penetration by imports of titanium sponge from all countries increased from 15.8 percent in 1980 to 17.7 percent in 1981 (table 17). However, such imports were necessary in those 2 years, because domestic production capacity was not sufficient to meet demand. Such penetration dropped in 1982 to 8.1 percent and then increased to 12.0 percent, in January-September 1983.

Table 17.--Titanium sponge: Ratios of imports to apparent U.S. consumption, by specified sources, 1980-82, January-September 1982, and January-September 1983

Source	(In percent)				
	1980	1981	1982	January-September--	
				1982	1983
Japan-----	15.6	15.6	8.1	7.7	10.6
United Kingdom-----	***	***	-	-	1/
All countries-----	15.8	17.7	8.1	7.7	12.0

1/ Less than 0.05 percent.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Imports from Japan.--Market penetration by sponge imports from Japan amounted to 15.6 percent of apparent U.S. consumption in both 1980 and 1981, and then declined to 8.1 percent in 1982. It then increased to 10.6 percent in January-September 1983. Because of the GSA purchase, imports from Japan will increase substantially in 1984, but that material is not intended for domestic consumption except in a national emergency.

Imports from the United Kingdom.--Market penetration of imports from the United Kingdom declined from * * * percent of apparent U.S. consumption in 1980 to nil in 1982, and was less than 0.05 percent in January-September 1983. As with imports from Japan, imports from the United Kingdom will be up in 1984 because of the GSA purchase, but that material is not likely to enter U.S. consumption in the foreseeable future.

Prices

The commercial or merchant market for titanium sponge consists of a small group of nonintegrated melters producing titanium ingot, billet, plate, sheet, strip, and bar. These purchasers number fewer than 10, of which perhaps 5 or 6 can be considered major melters. ^{1/} They include * * *. Among these, * * * is the largest titanium sponge account in terms of its contracts over the period January 1981-September 1983. Sales to the merchant market accounted for less than 7 percent of total titanium sponge production by domestic producers in each year during 1980-83.

Titanium sponge is usually sold on contracts, with scheduled monthly deliveries for a period as long as a year or more. Quantities involved range from a minimum of 20,000 to 50,000 pounds to as much as 1.5 million pounds. Prices are quoted in dollars and cents per pound. Lead time on contracts is generally 2 or 3 months. Contracts are let on a competing bid basis that is formal at times, but more often is an informal comparison of competing quotes or offer prices. According to RMI, melters at times limit the opportunity to quote to selected vendors and do not always offer competing vendors the opportunity to quote on the same quantity of product. It is not a policy among domestic producers to announce contract awards to the media, nor do purchasers divulge the facts of an award in terms of quantity or price in many instances.

As a basis for obtaining data for price comparisons, the Commission requested that producers and importers provide price quotes made to melters of titanium sponge for the 10 largest tonnage contracts on which they bid, whether or not their respective firms were awarded the contract, for each of the periods 1981, 1982, and January-September 1983. These data are presented in aggregate form in table 18. They show the overall quantity of titanium sponge on which bids were made, the number of bids made, the number of bids or contracts won, and the ratios of quantity won to overall quantity on which bids were made. The data base consists of responses from two producers, RMI

^{1/} Transcript of the conference, p. 158.

Table 18.--Titanium sponge: Total quantity of contracts bid on by domestic producers and importers and number and quantity of bids won and lost, 1981, 1982, and January-September 1983.

Period and bidding firm	Total quantity bid	Number of bids made	Bids won		Bids lost		Bids won and lost as a share of quantity bid		
			Number	Quantity	Number	Quantity	Bids won	Bids lost to imports from--	United Kingdom
	1,000 pounds					1,000 pounds		Percent	
1981:									
RMI-----	***	***	***	***	***	***	***	1/	1/
Oremet-----	***	***	***	***	***	***	***	***	***
Timet-----	***	***	***	***	***	***	***	***	***
Phibro-----	***	***	***	***	***	***	***	2/	1/
1982:									
RMI-----	***	***	***	***	***	***	***	1/	1/
Oremet-----	***	***	***	***	***	***	***	1/	1/
Timet-----	***	***	***	***	***	***	---	***	***
Phibro-----	***	***	***	***	***	***	***	2/	***
January-September 1983:									
RMI-----	***	***	***	***	***	***	***	1/	1/
Oremet-----	***	***	***	***	***	***	***	***	***
Timet-----	***	***	***	***	***	***	***	1/	1/
Phibro-----	***	***	***	***	***	***	***	2/	1/

1/ Not available.
2/ Not applicable.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

and Oremet, and from one importer, Philipp Brothers, Inc. (Phibro). 1/

RMI and Phibro provided the only consistent data for comparing market presence and competitive position on an annual aggregate basis. In 1981, when demand was strong and supply somewhat constrained, RMI bid on * * * contracts that totaled * * * to * * * pounds, 2/ but was awarded * * * contract for * * * to * * * pounds by * * *. That contract amounted to * * * percent of the total quantity on which RMI had bid. Phibro bid on * * * contracts in 1981 involving * * * different purchasers. 3/ * * * contracts were awarded to Phibro; the * * * quote, to supply * * *, was * * *. Although both RMI and Phibro were awarded contracts to supply * * *, the contracts were not in response to the same request for bids and were for different quantities. There was no head-to-head competition between RMI and Phibro on any of the other contracts on which either firm bid. Oremet did not provide any instances of bids made in 1981.

As demand plummeted in 1982, prices declined and the number of requests for quotes to supply titanium sponge shrank. RMI and Phibro each supplied * * * instances of bids. RMI bid for * * * contracts which together amounted to * * * pounds of titanium sponge; 4/ * * *. Phibro won * * * contracts to supply * * * pounds of sponge. 5/ In no instance were RMI and Phibro quoting to the same melter. Oremet quoted on * * * pounds of titanium sponge overall in responding to * * * possible contracts, but won * * * contracts for a total of * * * pounds. * * * of the * * * contracts were to supply sponge to * * *. Although RMI and Oremet * * * in 1982, neither domestic producer * * *.

Competition quickened in 1983, according to data received from RMI and Phibro. RMI bid on * * * contracts involving * * * melters and a total of * * * pounds of titanium sponge; it won * * * pounds from * * *. 6/ Phibro quoted on * * * contracts involving * * * melters and a total of * * * pounds of titanium sponge; 7/ it won * * * of the * * * contracts. In two instances, Phibro and RMI were in head-to-head competition for the awards. The first instance involved competing quotes to * * * for * * * contracts for a total amount ranging from * * * to * * * pounds of sponge to be delivered * * *. RMI won the contract. The second contract involved competing quotes to * * * to supply * * * pounds of titanium sponge in * * *. Phibro won that contract.

A comparison of competing prices of RMI and Phibro and margins of underselling or overselling by imports is presented in table 19. No head-to-head bid comparisons are possible for 1981 or 1982. However, the price series for both domestic sponge and sponge imported from Japan do show a downward trend that began in December 1981 and continued through 1982 and into

1/ Importers' questionnaire responses were received from six melters that purchased titanium sponge for their own account, not for resale to others.

2/ * * * purchasers were involved: * * *. Each of these melters requested quotes on a quantity range, rather than on a single specific quantity.

3/ * * *.

4/ RMI responded to requests for quotes from * * *.

5/ Phibro quoted to * * *.

6/ RMI also quoted to * * *.

7/ Phibro responded to requests for bids from * * *.

Table 19.---Titanium sponge: Contracts awarded, by awarding and winning firms, 1981, 1982, and January-September 1983

[illegible]

1/ Ex-dock, duty paid.

1/ EX-HOCK, ONLY
2/ Not available.

3/ F.O.B. mill.

4/ Specific quote is for ***.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

1983. As noted previously, RMI and Phibro competed in bids to * * * and * * * in 1983. RMI underbid Phibro by * * * per pound, or * * * percent, to win the * * * contract in * * * with a bid of * * * per pound. In contrast, Phibro underbid RMI on * * * by * * * per pound in * * *, or by * * * percent, respectively.

Producers and importers were asked to provide the same data for bids made to supply the merchant market on contracts that have not yet been awarded. Phibro provided only one example. The firm has responded to a request from * * * to supply * * * pounds of titanium sponge in * * *. No domestic producers provided data on competing bids.

GSA purchase of titanium sponge for the National Defense Stockpile

GSA's Federal Property Resources Service (FPRS) announced on August 2, 1983, that it would purchase 4,500 tons of primary titanium (i.e., titanium sponge) for the National Defense Stockpile. Solicitations requesting quotes (bids) were mailed to a list of responsible vendors on that date. The solicitation (RFQ) requested specific price quotes on three types of titanium sponge--types A, B, and C--for a minimum quantity of 500 tons and a maximum quantity of 4,500 tons for each type. ^{1/} In other words, nine individual bids, each for 500 tons, were requested for each of the three types of titanium sponge.

FPRS was guided in its request for quotes on three types of titanium sponge by requirements set by the Federal Emergency Management Agency (FEMA), which provided a precedent for the solicitation. According to GSA officials, the allocation would be one-third for each of the three types of titanium sponge. Basically, the logic behind the request for bids on each of the three types was to afford the opportunity to bid to a broader spectrum of firms. So designed, said a GSA official, the solicitation for quotes on three types of sponge had two benefits: it permitted small producers to bid and it enabled FPRS to aggregate a combination of the lowest prices for types A, B, and C titanium sponge for the lowest overall expenditure in purchasing 4,500 tons. As for the question of substitutability, the GSA official noted that in melted form the three types are all acceptable to users, but melters have a preference for type A because it has fewer impurities. If only type A bids were received, all melters could accept such titanium sponge.

GSA set a relatively short turnaround time for response to the bid request. Solicitations were to be returned in 30 days, and the bid awards

^{1/} Type A titanium sponge is magnesium reduced and vacuum distilled; type B is magnesium reduced and either inert gas swept or acid leached; and type C is sodium reduced and acid leached. Initially a type D titanium sponge was included. Type D is titanium sponge produced in granules by an electrolytic process. Although Dow Chemical and Howmet have made type D sponge in pilot production efforts, there are no existing facilities for producing the type D product. Reportedly highly energy efficient, this process might be a prime candidate for any future titanium plant that might be considered.

were scheduled to be announced on September 2, 1983. Between the return of the bids and the announcement of the awards by GSA, two protests were filed with the General Accounting Office by bidding vendors, one by Oremet and one by Billiton Metals. Oremet objected to the lack of a Buy American preference clause in the GSA solicitation. Billiton criticized the fact that import duties were added to the bid price. GSA officials acknowledged that it was unusual to add duties to the bid price for imported products. This departure from normal procurement practice, they explained, was in response to advice from William Brock, the United States Trade Representative (USTR). In a letter to GSA, 1/ Ambassador Brock, who had determined that there were insufficient grounds for a national security exception for GSA's stockpile purchase of titanium sponge, 2/ recommended that import duties be calculated for purposes of determining the awards; however, the duties were not actually to be collected. GSA explained that import duties were calculated on each bid to supply an imported product, but such duties were only included for evaluation of the bids prior to awards. According to GSA, if dumping duties are assessed, they should be paid. 3/

GSA informed all bidders of the two protests. Bidders had 10 days to respond to the two protests. RMI responded but missed the 10-day period, so the awards were made on October 28, 1983. The awards were made on the basis of price quotes on supplying increments of 500 tons of titanium sponge, not on an equal allocation for each of the three categories of sponge.

FPRS awarded contracts to three firms. Philipp Brothers, Inc., received two contracts to supply titanium sponge imported from Japan. One contract involved 2,500 tons of type A titanium sponge bid in five increments of 500 tons each at \$6,400 per ton, or \$3.20 per pound. A smaller contract was awarded to Phibro to supply 500 short tons of type C titanium sponge from Japan at the same price. Timet was awarded a contract for 1,000 tons of type B titanium sponge at an average price of \$7,140 per ton, or \$3.57 per pound. Billiton Metals won an award to supply 500 tons of type C titanium sponge imported from the United Kingdom at \$5,840 per ton, or \$2.92 per pound. The quantity and value of the four contracts awarded to each firm is shown are the following tabulation: 4/

1/ A copy of the letter is presented in app. C.

2/ GSA had intended to include a Buy American preference in its RFQ. As a result of the determination by the USTR, however, no such preferences could be given domestic suppliers for the stockpile purchase.

3/ Interview with David C. Warlich, GSA/FPRS, nonfuel minerals economist, Dec. 14, 1983. However, the question of who (if anyone) would be held liable for any antidumping duties that might be assessed on titanium sponge imported from Japan or the United Kingdom, whether imported directly by GSA or by a private firm for the account of GSA, has not been resolved. See, for example, the transcript of the conference, pp. 19-22, 78-79, 139-140, and 150. In his letter to GSA, the USTR noted the possibility of dumping duties as a potential cost factor and suggested that GSA clearly state in its bid solicitations that, in the event antidumping duties were imposed, such duties would not be waived and would not be borne by the Government. GSA did not follow this suggestion.

4/ A summary of all bids received by GSA is shown in app. C.

<u>Firm</u>	<u>Type of sponge</u>	<u>Quantity (short tons)</u>	<u>Value (million dollars)</u>
Phibro-----	A	2,500	16.00
Phibro-----	C	500	3.20
Timet-----	B	1,000	7.14
Billiton Metals-----	C	500	2.92

Announcement of the awards triggered a legal move by RMI, which had submitted a losing bid. Counsel for RMI sought temporary and permanent injunctions to prevent the implementation of the award. Judge Pratt of the U.S. District Court of Washington, D.C., denied the injunction. GSA had argued that the need for the titanium sponge is high priority. ^{1/} A letter to GSA from FEMA said there is a "compelling and urgent need" for the titanium sponge. Judge Pratt indicated that he based his determination on this argument.

In its posthearing brief, counsel for RMI submitted data (table 3 on p. 44 of the brief) purporting to show the cost to the firm of the loss of the GSA contract. Because RMI's production in 1984 will be lower than it would have been if it had been awarded the 4 million pounds of titanium sponge it hoped to supply to GSA (RMI bid on only part of the total GSA contract of 9 million pounds), the firm's capacity utilization rates will consequently be lower and its unit cost of production will be higher (both fixed costs, such as depreciation and taxes, and certain raw-material costs) because they will be allocated over a smaller output base. The brief also shows that the firm's marginal costs of producing the additional 4 million pounds for GSA were projected to amount to * * * per pound, in comparison with projected unit costs of * * * per pound without the contract. RMI's bid price to the GSA, \$3.79 per pound, would have resulted in a profit of * * * per pound, or * * * percent of the sales value of this 4 million pounds.

Appreciation of the U.S. dollar

Table 20 presents indexes of producer prices in the United States, Japan, and the United Kingdom and indexes of the nominal and real exchange rates for the U.S. dollar against the Japanese yen and the British pound from January-March 1981 (the base period) through July-September 1983. As shown in the table, the yen was devalued in nominal terms by 18 percent against the dollar since the base period, whereas the pound was devalued by 53 percent against the dollar. Because of Japan's low inflation rate (about 1 percent) over the 11-quarter period, the yen was devalued in real terms by approximately 24 percent against the dollar, or 6 percentage points more than the nominal

^{1/} The latest Stockpile Report to the Congress (October 1982-March 1983) shows that GSA has 32,331 tons of titanium sponge in stock. The largest amount required for U.S. defense needs is 195,000 tons. GSA officials could not say when or in what quantities new solicitations for titanium sponge would be made. They did emphasize the high priority of this material in the overall stockpile requirements.

Table 20.--Indexes of producer prices in the United States, Japan, and the United Kingdom, and indexes of the nominal and real exchange rates for the U.S. dollar against the Japanese yen and the British pound, by quarters, January 1981-September 1983

Period	U.S. producer price index	Japan (January-March 1981=100.0)				United Kingdom			
		Producer price index	Nominal exchange rate index 1/	Real exchange rate index 1/	Real exchange rate index 1/	Producer price index	Nominal exchange rate index 1/	Real exchange rate index 1/	Real exchange rate index 1/
1981:									
January-March----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
April-June-----	102.4	101.1	107.0	108.4	103.3	103.3	111.0	110.0	110.0
July-September----	103.3	102.4	112.8	113.8	105.5	105.5	125.8	123.2	123.2
October-December--	103.2	102.1	109.3	110.5	107.9	107.9	122.6	117.3	117.3
1982:									
January-March----	104.0	102.5	113.6	115.3	108.9	108.9	125.1	119.5	119.5
April-June-----	104.2	102.8	118.8	120.4	110.6	110.6	129.8	122.3	122.3
July-September----	104.8	103.8	125.9	127.1	111.8	111.8	133.9	125.5	125.5
October-December--	104.8	103.7	126.3	127.6	113.1	113.1	140.0	129.7	129.7
1983:									
January-March----	104.9	101.7	114.7	118.3	114.7	114.7	150.8	137.9	137.9
April-June-----	105.2	100.7	115.6	120.8	116.9	116.9	148.5	133.6	133.6
July-September----	106.3	100.9	118.0	124.3	117.8	117.8	153.0	138.1	138.1

1/ Based on nominal exchange rates expressed in units of foreign currency per U.S. dollar.

Source: International Monetary Fund, International Financial Statistics, December 1983.

devaluation. In contrast, the United Kingdom's high inflation rate over the same period (approximately 18 percent) resulted devaluation of the pound in real terms by approximately 38 percent against the dollar, or 15 percentage points less than the nominal devaluation.

Lost revenue

One domestic producer, * * *, provided 12 instances of alleged lost revenue as a result of reducing its prices in the face of competing titanium sponge imported from Japan. These examples involved five purchasers and a total of almost 3.9 million pounds of sponge.

One instance named * * * as the purchaser of * * * pounds of sponge in 1983 after * * * reduced its initial offer price from * * * to * * * per pound. Alleged lost revenue in this instance amounted to * * *. * * * explained the circumstances of the competition. * * * did ask * * * for a quote on the stated amount. * * * was * * *, but * * * was willing to * * * in order to * * *. ^{1/} Only recently has * * *, according to * * *.

* * *. * * * did not state the * * * price for Japanese titanium sponge. * * * reduced its price to * * *. * * * quoted * * * f.o.b. mill. * * * said that transportation costs for the competing products are * * *. As for terms, because of * * *, a vendor * * * is required to * * * basis. * * * offered * * * in order to * * *. * * * would like to * * * and * * *.

At about the same time as the above transaction, * * * asked * * * to bid on * * * pounds of sponge for * * * delivery. * * * has not responded to the request. * * * noted that * * * does have some problems with the * * * sponge that * * * produces. The * * * system at * * * can't handle the * * * product adequately, said * * *, adding that it would take * * * in capital expenditures per furnace to correct this problem. No such investment is required for the * * * or * * * product.

Another instance named * * * as purchasing from * * * in * * * after * * * reduced its initial offer prices. The first instance involved * * * pounds of sponge offered * * * at an initial price of * * * per pound, which was then reduced to * * * per pound. * * * involved * * * pounds of titanium sponge offered * * * at * * * per pound and then reduced to * * * per pound. * * *'s alleged lost revenue * * * totaled * * *. * * * were allegedly made in the face of competition from titanium sponge imported from Japan. * * * of * * * confirmed both purchases. * * * emphasized that the need to be competitive in the downstream mill product market required buying titanium sponge at the lowest possible price. Even then, * * * loses sales to integrated producers, according to * * *. * * * recently lost an order for * * * to * * *, which quoted * * * per pound against the * * * quote of * * * per pound. According to * * *, the * * * price for the * * * sponge would have to be in the realm of * * * per pound to * * *. * * * commented that prices in 1981 were artificially high because of demand and the industry

^{1/} * * *.

structure. He added that the drop in prices since then is "exaggerated" and has not matched the drop in mill product prices, thus creating a cost/price squeeze in the downstream titanium products. 1/

* * * also identified * * * alleged instances of sales made to * * * in 1983 after price reductions because of competing Japanese products. These 1983 purchases involved * * *. Offer prices were cut from * * * to * * * per pound on * * *. Alleged lost revenue totaled * * * for * * *.

One purchaser, * * *, named in * * * instances of alleged lost revenue, could not be contacted.

1/ * * * also confirmed * * * purchase of * * * pounds of titanium sponge from * * * in * * * after the initial offer price was reduced from * * * to * * * per pound. * * * noted that this * * *. He added that * * * had purchased sponge from * * * at * * * per pound in 1983.

APPENDIX A

FEDERAL REGISTER NOTICES OF THE COMMISSION'S INVESTIGATIONS

[Investigations Nos. 731-TA-161 and 162
(Preliminary)]

**Titanium Sponge From Japan and the
United Kingdom; Institution of
Preliminary Antidumping
Investigations**

AGENCY: International Trade
Commission.

ACTION: Institution of two preliminary
antidumping investigations and
scheduling of a conference to be held in
connection with the investigations.

EFFECTIVE DATE: November 28, 1983.

SUMMARY: The United States International Trade Commission hereby gives notice of the institution of investigations Nos. 731-TA-161 and 162 (Preliminary) under section 733(a) of the Tariff Act (19 U.S.C. 1673(a)) to determine whether there is a reasonable indication that an industry in the United States is materially injured, or is threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports from Japan and the United Kingdom of titanium sponge, provided for in item 629.14 of the Tariff Schedules of the United States (1983), which are alleged to be sold in the United States at less than fair value:

FOR FURTHER INFORMATION CONTACT: Mr. David Beck (telephone 202-523-0325) or Ms. Therese Palmer (telephone 202-523-0270), U.S. International Trade Commission, 701 E St. NW., Washington, D.C. 20436.

SUPPLEMENTARY INFORMATION:

Background

These investigations are being instituted in response to a petition filed in proper form on November 28, 1983, by the RMI Company, Niles, Ohio. The Commission must make its determinations in these investigations within 45 days after the date of the filing of the petition, or by January 12, 1984 (19 CFR 207.17).

Participation

Persons wishing to participate in these investigations as parties must file an entry of appearance with the Secretary to the Commission, as provided for in 201.11 of the Commission's Rules of Practice and Procedure (19 CFR 201.11), not later than seven (7) days after the publication of this notice in the Federal Register. Any entry of appearance filed after this date will be referred to the Chairman, who shall determine whether to accept the late entry for good cause shown by the person desiring to file the notice.

Service of Documents

The Secretary will compile a service list from the entries of appearance filed in these investigations. Any party submitting a document in connection with the investigations shall, in addition to complying with section 201.8 of the Commission's rules (19 CFR 201.8), serve a copy of each such document on all other parties to the investigations. Such service shall conform with the requirements set forth in section 201.16(b) of the rules (19 CFR 201.16(b)), as amended by 47 FR 33682, Aug. 4, 1982).

In addition to the foregoing, each document filed with the Commission in the course of these investigations must include a certificate of service setting forth the manner and date of such service. This certificate will be deemed proof of service of the document. Documents not accompanied by a certificate of service will not be accepted by the Secretary.

Written Submissions

Any person may submit to the Commission on or before December 27, 1983, a written statement of information pertinent to the subject matter of these investigations (19 CFR 207.15). A signed original and fourteen (14) copies of such statements must be submitted (19 CFR 201.8).

Any business information which a submitter desires the Commission to treat as confidential shall be submitted separately, and each sheet must be clearly marked at the top "Confidential Business Data." Confidential submissions must conform with the requirements of § 20.6 of the Commission's rules (19 CFR 201.6). All written submissions, except for confidential business data, will be available for public inspection.

Conference

The Director of Operations of the Commission has scheduled a conference in connection with these investigations for 9:30 a.m. on December 20, 1983, at the U.S. International Trade Commission Building, 701 E Street NW., Washington, D.C. Parties wishing to participate in the conference should contact Mr. Beck (202-523-0325), not later than December 19, 1983, to arrange for their appearance. Parties in support of the imposition of antidumping duties in these investigations and parties in opposition to the imposition of such duties will each be collectively allocated one hour within which to make an oral presentation at the conference.

Public Inspection

A copy of the petition and all written submissions, except for confidential business data, will be available for public inspection during regular business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 701 E Street, NW., Washington, D.C.

For further information concerning the conduct of these investigations and rules of general application, consult the Commission's Rules of Practice and Procedure, part 207, subparts A and B (19 CFR part 207, as amended by 47 FR 33682, Aug. 4, 1982), and part 201, subparts A through E (19 CFR part 201,

as amended by 47 FR 33682, Aug. 4, 1982). Further information concerning the conduct of the conference will be provided by Mr. Beck.

This notice is published pursuant to § 207.12 of the Commission's rules (19 CFR 207.12)

Issued: December 1, 1983.

Kenneth R. Mason,

Secretary.

[FR Doc. 83-32916 Filed 12-6-83; 8:45 am]

BILLING CODE 7020-02-M

[Investigations Nos. 731-TA-161 and 162
(Preliminary)]

**Titanium Sponge From Japan and the
United Kingdom**

AGENCY: International Trade
Commission.

ACTION: The definition of the products included within the scope of these investigations is hereby clarified to include titanium sponge imported under the provisions of part 3A of schedule 8 of the Tariff Schedules of the United States (TSUS).

EFFECTIVE DATE: December 7, 1983.

SUMMARY: Effective November 28, 1983, the United States International Trade Commission instituted antidumping investigations Nos. 731-TA-161 and 162 (Preliminary) under section 733(a) of the Tariff Act (19 U.S.C. 1673b(a)) to determine whether there is a reasonable indication that an industry in the United States is materially injured, or is threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports from Japan and the United Kingdom of titanium sponge, provided for in item 629.14 of the TSUS, which are alleged to be sold in the United States at less than fair value. On December 1, 1983, the Commission was notified by counsel for the petitioner that it wished to amend the description of all imported merchandise to clarify that the petition covers all titanium sponge imported from Japan or the United Kingdom, whether entered into the United States under TSUS item 629.14 or under a different TSUS number for Government importations. Accordingly, this notice hereby clarifies the scope of these investigations to include titanium sponge imported under the provisions of part 3A of schedule 8 of the TSUS.

FOR FURTHER INFORMATION CONTACT:
Mr. David Beck (telephone 202-523-0325), U.S. International Trade Commission, 701 E St. NW., Washington, D.C. 20436.

This notice is published pursuant to section 207.12 of the Commission's rules (19 CFR 207.12).

APPENDIX B

LIST OF WITNESSES APPEARING AT THE COMMISSION'S CONFERENCE

CALENDAR OF PUBLIC CONFERENCE

Investigations Nos. 731-TA-161 and 162 (Preliminary)

TITANIUM SPONGE FROM JAPAN AND THE UNITED KINGDOM

Those listed below appeared as witnesses at the United States International Trade Commission's conference held in connection with the subject investigations on December 20, 1983, in the Hearing Room of the USITC Building, 701 E Street NW., Washington, D.C.

In support of the imposition of antidumping duties

Verner, Liipfert, Bernhard and McPherson--Counsel
Washington, D.C.
on behalf of--

RMI Company (Niles, Ohio)

John Hornbostel, General Counsel and Secretary
Dominic Strollo, Vice President--Commercial Operations
Richard Ivory, Assistant Controller

John D. Greenwald)
Elaine Frangedakis)--OF COUNSEL
Lynn Holec)

Plaia, Schaumberg & deKieffer--Counsel
Washington, D.C.
on behalf of--

Titanium Metals Corp. of America (Pittsburgh, Pa.)

E. Niles Kenyon, Vice President, Sales and Marketing
Fred Steinberg, General Counsel

Herbert C. Shelley)
Donald E. deKieffer)--OF COUNSEL

Oregon Metallurgical Corp. (Albany, Oreg.)

Frank Caputo, President

Bill von Glahn, Assistant Counsel, Armco, Inc.

Covington & Burling--Counsel
Washington, D.C.
on behalf of--

International Titanium Inc. (Moses Lake, Wash.)

Harvey M. Applebaum--OF COUNSEL

In opposition to the imposition of antidumping duties

Busby, Rehm and Leonard, P.C.--Counsel
Washington, D.C.
on behalf of--

Philipp Brothers, Inc. (New York, N.Y.)

John F. Lee, Senior Vice President, Philipp Brothers, Inc.
John G. Reilly, Principal, ICF, Inc.

David Busby)
Will E. Leonard)--OF COUNSEL

Howmet Turbine Components Corp. (Whitehall, Mich.)

Roland A. Paul, General Counsel
Donald H. Turner, Vice President, Titanium Alloy Operations

Teledyne Allvac (Monroe, N.C.)

Thomas Williams, Director of Purchasing
David R. Gray, Counsel, Teledyne, Inc.

Dempsey & Dunderhill--Counsel
Washington, D.C.
on behalf of--

Billiton Metals, Inc. (New York, N.Y.)

David Dempsey--OF COUNSEL

APPENDIX C

CERTAIN DOCUMENTS RELATING TO THE STOCKPILE PURCHASE BY THE GSA

THE UNITED STATES TRADE REPRESENTATIVE
WASHINGTON
20506

June 23, 1983

Mr. Gerald P. Carmen
Administrator, General Services
Administration
18th and F Streets N.W.
Washington, D.C. 20405

To	Rec'd	Due
D	6/29	7/12
Coord with		
Signature of A		
Appro Action		
Information		
Cy of Reply to		
Info to		
A AD L		

Dear Gerry:

As you may know, I recently reviewed a request from the Federal Emergency Management Agency (FEMA) for a national security exception from the international Government Procurement Code for GSA's purchases of titanium sponge for the National Defense Stockpile. FEMA's desire was to limit competition for these purchases to domestic sources.

Having reviewed the facts of this case, including the views of GSA, I determined that there were not sufficient grounds for a national security exception. However, in the course of our review of FEMA's request, it came to our attention that there was a related trade policy question involving tariffs.

It is our understanding that GSA normally has the Customs Service waive duties in the case of stockpile purchases and does not include these duties in evaluating bids. I am writing to advise you that from the standpoint of U.S. trade policy, I believe that duties should not be waived in this case, at least in the evaluation process.

Tariffs are a legitimate form of protection to domestic industry which is employed by almost all countries. As foreign tariffs impair U.S. exports and domestic tariffs raise costs for our own end users, we are committed to negotiating reciprocal tariff reductions with our trading partners. However, I believe that it is unwise and counter productive to our efforts to reduce tariffs on a reciprocal basis for us to waive tariffs on a unilateral basis.

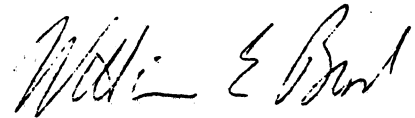
In this particular case, I understand that the only likely foreign competitors are Japanese firms. Given our current trade situation, I believe that it would be difficult to justify giving the Japanese the benefits of duty free treatment without getting anything in return for U.S. exports to Japan. It would be even more difficult to justify such waiver of duties in light of the depressed state of the domestic titanium sponge industry. These concerns would be

alleviated if duties were included at the bid evaluation stage.

Another point which you may wish to consider involves allegations that Japanese firms may offer titanium at dumped prices. It is impossible to evaluate these allegations before bidding has even begun. Nevertheless, you may wish to consider this possibility in preparing bid documentation. In particular, you could make clear in your solicitation documentation and contract clauses that in the event that injurious dumping is found and anti-dumping duties are imposed, such duties, bonds or duty deposits will not be waived and that they will not be borne by the government. This would protect GSA from the possibility of unanticipated and unnecessary expenses.

I appreciate your taking the time to consider these concerns. Please feel free to contact me or my staff if you have any questions.

Very truly yours,

A handwritten signature in dark ink, appearing to read "William E. Brock". The signature is fluid and cursive, with the first name "William" being the most prominent part.

WILLIAM E. BROCK

WEB:sdps



General
Services
Administration

Federal
Property

Resources Service Washington, DC 20406

Date : September 29, 1983

y to
of : DSA

Subject: Recommended Titanium Awards - Solicitation-GS0083-DxxC-0011

To : DS

The attached abstract shows the recommended awards discussed 9/27/83 in your office at the meeting attended by LD, DSM, DSS, and Mr. Norton. Lots circled in red would result in the following:

<u>Contractor</u>	<u>Type</u>	<u>Quantity</u>	<u>Total Amount</u>
Philipp Brothers	A	2,500st	\$16,000,000.00
Timet	B	1,000st	\$7,140,000.00
Philipp Brothers	C	500st	\$3,200,000.00
Billiton Metals	C	500st	\$2,920,000.00
Total		4,500st	\$29,260,000.00

Summary

<u>Type</u>	<u>Quantity</u>	<u>Source</u>
A	2,500st	Japan
B	1,000st	Domestic
C	1,000st	United Kingdom

The approach used awards to the lowest bidder in increments of 500st each until the maximum quantity authorized by FEMA letter of July 20, 1983, is reached.

Based on available market information and the competition evident in the bidding pattern, award as outlined is recommended as fair and reasonable and in the best interests of the Government.

James D. Clark
Acting Director
Stockpile Acquisitions Division

Concurrences: LD _____

DSM _____

TITANIUM SOLICITATION GS0083-DXXC-0011
 FOR PROCUREMENT OF UP TO 4,500 SHORT TONS
 BID OPENING DATE SEPTEMBER 2, 1983

ITEM NO.	TYPE/QUANTITY SHORT TON	COMPANY	NAME
		PHILIPP BROTHERS FIRMS OFFERING MATERIAL FROM DESIGNATED COUNTRIES	PHILIPP BROTHERS BILLITON METALS OREGON METALL. CORP. DOMESTIC
TYPE A			
1A	500	6,400 (7,387) 6/	
1B	500	6,400 (7,387)	
1C	500	6,400 (7,387)	
1D	500	6,400 (7,387)	
1E	500	6,400 (7,387)	
1F	500	6,400 (7,387)	
1G	500	6,400 (7,387)	
1H	500	6,400 (7,387)	
1I	500	6,400 (7,387)	
TYPE B			
2A	500		\$ 7,946
2B	500		7,770 3/
2C	500		7,720 4/
2D	500		
2E	500		
2F	500		
2G	500		
2H	500		
2I	500		
TYPE C			
3A	500	6,400 (7,387)	\$ 5,840 (\$6,741)
3B	500		7,020 (8,121)
3C	500		7,020 (8,121)
3D	500		7,020 (8,121)
3E	500		7,020 (8,121)
3F	500		7,020 (8,121)
3G	500		7,800
3H	500		7,800
3I	500		7,800

FOOTNOTES

- 1/ TIMET STATED THAT ITS BID PRICES ARE INTERCHANGEABLE BETWEEN ITEMS, AT THE OPTION OF GSA
- 2/ CHINA TYPE UNKNOWN - NONRESPONSIVE BID
- 3/ PRICE CONTINGENT UPON AWARD OF ITEM 2A
- 4/ PRICE CONTINGENT UPON AWARD OF ITEMS 2A AND 2B
- 5/ TIMET OFFERED "FOR A MINIMUM ORDER OF FOUR (4) ITEMS, DEDUCT \$.05/LB FROM ALL ITEMS PRICED ABOVE \$3.50."
 I.E., \$100/ST WOULD APPLY ON ITEMS 2A-2H OR \$.03/LB ON A MINIMUM ORDER OF THREE (3) ITEMS, I.E., \$60/ST
 WOULD APPLY ON ITEMS 2A-2H
- 6/ PRICE SHOWN IN PARENTHISES EQUALS BID PRICE WITH APPLICABLE CUSTOMS DUTIES ADDED PER U.S. CUSTOMS SERVICE

TINET DIVISION
DOMESTIC 1/

TELEDYNE WAH CHANG
DOMESTIC

INTER. TITANIUM CORP.
DOMESTIC

RMI COMPANY
DOMESTIC

EMPIRE STATE INC.
CHINA 2/

\$ 12,500

\$ 8,240

\$ 8,300 5/
8,300 5/
7,900 5/
7,900 5/
7,900 5/
7,580 5/
7,580 5/
7,280 5/
7,000 5/

\$ 7,580
7,580
7,580
7,580

