TUNGSTEN ORE CONCENTRATES FROM THE PEOPLE'S REPUBLIC OF CHINA

Determination of the Commission in Investigation No. 731-TA-497 (Final) Under the Tariff Act of 1930, Together With the Information Obtained in the Investigation

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UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation No. 731-TA-497 (Final)

TUNGSTEN ORE CONCENTRATES FROM THE PEOPLE'S REPUBLIC OF CHINA

Determination

On the basis of the record[1] developed in the subject investigation, the Commission determines, pursuant to section 735(b) of the Tariff Act of 1930 (19 U.S.C. § 1673d(b)) (the act), that an industry in the United States is materially injured[2] or threatened with material injury[3] by reason of imports from the People's Republic of China of tungsten ore concentrates,[4] provided for in heading 2611.00.00 of the Harmonized Tariff Schedule of the United States, that have been found by the Department of Commerce to be sold in the United States at less than fair value (LTFV).

Background

The Commission instituted this investigation effective July 9, 1991, following a preliminary determination by the Department of Commerce that

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

[2] Acting Chairman Brunsdale and Commissioner Lodwick determine that an industry in the United States is materially injured by reason of imports of the subject merchandise.

[3] Commissioners Rohr and Newquist determine that an industry in the United States is threatened with material injury by reason of imports of the subject merchandise. Pursuant to section 735(b)(4)(B) of the act (19 U.S.C. § 735(b)(4)(B)), they further determine that they would not have found material injury by reason of the subject imports but for any suspension of liquidation of entries of that merchandise.

[4] For purposes of this investigation, tungsten ore concentrates are defined as any concentrated or upgraded form of raw tungsten ore, whether high- or low-grade. High-grade tungsten ore concentrates are defined as a concentrated form of tungsten ore containing 65 percent or more by weight of tungsten trioxide (WO_3). Low-grade tungsten ore concentrates are defined as a concentrated form of tungsten ore containing less than 65 percent by weight of WO_3. Low-grade tungsten ore concentrates include tungsten slimes, which have a concentration of less than 35 percent by weight of WO_3.

imports of tungsten ore concentrates from the People's Republic of China were being sold at LTFV within the meaning of section 733(b) of the act (19 U.S.C. § 1673b(b)). Notice of the institution of the Commission's investigation and of a public hearing 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, DC, and by publishing the notice in the Federal Register of July 31, 1991 (56 F.R. 36167). The hearing was held in Washington, DC, on September 26, 1991, and all persons who requested the opportunity were permitted to appear in person or by counsel.

VIEWS OF THE COMMISSION

On the basis of the information obtained in this final investigation we have made an affirmative determination. Acting Chairman Brunsdale and Commissioner Lodwick determine that an industry in the United States is materially injured by reason of imports of tungsten ore concentrate (TOC) from the People's Republic of China. [1] Commissioners Rohr and Newquist determine that an industry in the United States is threatened with material injury by reason of imports of TOC from the People's Republic of China. [2] [3]

I. Like Product and Domestic Industry

To determine whether "material injury" exists, the Commission must first make factual determinations with respect to the "like product" and the "domestic industry." 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..." [4] In turn like product is defined as "a product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation..." [5] The Commission's decision regarding like product is essentially a factual determination.

The Department of Commerce has defined the imported product subject to this investigation as follows:

> ...tungsten ore concentrates. This includes any concentrated or upgraded form of raw tungsten ore, whether high- or low-grade.

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[1] See Additional Views of Acting Chairman Brunsdale and Additional Views of Commissioner Lodwick.
[2] See Additional Views of Commissioners Rohr and Newquist.
[3] For the reasons stated in the preliminary determination, we again conclude that the industry is established and that material retardation of the establishment of an industry is not an issue.
[4] 19 U.S.C. § 1677(4).
[5] 19 U.S.C. § 1677(10).

> High-grade tungsten ore concentrates are defined as a concentrated form of tungsten ore concentrates containing 65 percent or more by weight of tungsten trioxide. Low-grade tungsten ore concentrates are defined as a concentrated form of tungsten ore containing less than 65 percent by weight of tungsten trioxide. Low-grade tungsten ore concentrates include tungsten slime, which has a concentration of less than 35 percent by weight of tungsten trioxide. Tungsten ore concentrates are used in the production of intermediate tungsten products such as APT, tungstic oxide, and tungstic acid. [6]

In determining which domestic product is like the imported product subject to investigation, we apply the standards "like" and "most similar in characteristics and uses" on a case-by-case basis. [7] In analyzing like product issues we generally consider a number of factors including: (1) physical characteristics and uses, (2) interchangeability, (3) channels of distribution, (4) common manufacturing facilities and production employees, (5) customer perceptions, and, where appropriate (6) price. [8] No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a given investigation. The Commission looks for clear dividing lines between like products, [9] and has found minor distinctions to be an insufficient basis for finding separate like

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[6] 56 Fed. Reg. 47738 (September 20, 1991).

[7] ASCOFLORES, 693 F. Supp. 1165, 1169 (Ct Int'l Trade 1988) (like product determination essentially one to be based on the unique facts of each case); Sweaters Wholly or in Chief Weight of Manmade Fibers from Hong Kong, the Republic of Korea and Taiwan, Inv. Nos. 731-TA-448-450 (Final), USITC Pub. 2312 at 4-5 (September 1990).

[8] See, e.g., Sweaters Wholly or in Chief Weight of Manmade Fibers from Hong Kong, the Republic of Korea and Taiwan, Inv. Nos. 731-TA-448-450 (Final), USITC Pub. 2312 at 4-5 (September 1990); ASCOFLORES, 693 F. Supp. at 1170 n.8.

[9] See, e.g. Heavy Forged Handtools from the People's Republic of China, Inv. No. 731-TA-457 (Final), USITC Pub. 2357 (February 1991); Fresh and Chilled Atlantic Salmon from Norway, Inv. No. 731-TA-454 (Preliminary), USITC Pub. 2272 (April 1990); Antifriction Bearings (Other than Tapered Roller Bearings) and Parts Thereof from the Federal Republic of Germany, France, Italy, Japan, Romania, Singapore, Sweden, Thailand, and the United Kingdom, Inv. Nos. 303-TA-19 and 20, 731-TA-391-399 (Final), USITC Pub. 2185 (May 1989).

products. [10]

In its preliminary determination, the Commission found that there was one like product, all TOC. [11] Further, the Commission defined the domestic industry to be U.S. producers of all tungsten ore concentrates which in this investigation consists of two producers, petitioner United States Tungsten Corporation (U.S.T.C.) and Curtis Tungsten Inc. [12]

In this final investigation, respondents GTE Products Corporation (GTE), MINMETALS, and CNIEC (hereinafter collectively referred to as "respondents") continue to argue, as they did in the preliminary investigation, that the like product should include products such as ammonium paratungstate (APT) that are derived from TOC, as well as TOC. [13]

In this final investigation, GTE contends in the alternative that the Commission should treat the grade of tungsten with a tungsten trioxide content of less than 35 percent, referred to for purposes of this opinion as either "tungsten slime" or very low-grade TOC [14], as a separate like product from the higher grades of TOC. [15] In support of this argument, GTE contends that tungsten slime differs significantly in its physical characteristics and uses

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[10] ASCOFLORES, 693 F. Supp. at 1168-69; S. Rep. 249, 96th Cong., 1st Sess. 90-91 (1979).
[11] Tungsten Ore Concentrates from the People's Republic of China, 731-TA-497 (Preliminary), USITC Pub. 2367 (March 1991) at 6 (Preliminary Opinion).
[12] Preliminary Opinion at 14.
[13] See, e.g., Hearing Tr. at 173; GTE's Prehearing brief at 5; MINMETALS Prehearing brief at 3-11; Hearing Tr. at 127.
[14] Although the term slime can refer to a very low grade concentrate, "slime" in the most technical sense refers to a fine, powdery substance which is created by the over-grinding of the ore in the concentration process. This "slime" is not amenable to the gravity separation method used to produce concentrates because the particles have been ground too find for successful separation of the tungsten-bearing mineral from the other minerals present; however, concentrates can be produced from this powdery substance by using slime tabling or flotation methods.
[15] GTE Prehearing brief at 6-18.

from higher grades of TOC, noting that tungsten particles recovered from high-grade TOC are larger and coarser than particles recovered from very low-grades of TOC. [16] GTE also contends that very low-grade ores generally have a higher level of impurities than the higher grades of TOC. [17]

GTE argues further that very low-grade TOC has different end uses than higher grades of TOC, [18] that tungsten slime travels in different channels of distribution than higher grades of TOC, [19] and that the higher grades of TOC are perceived by consumers as a different product from tungsten slime. [20] In addition, GTE contends that slime is not economically interchangeable with the higher grades of TOC because it costs more to manufacture APT from low-grade TOC than from high-grade TOC. [21] MINMETALS agrees with GTE that if the Commission does not broaden its like product to include intermediate tungsten products, it should find that tungsten slime is a separate like product from higher-grade tungsten concentrates. [22]

As in our preliminary investigation, we find that the like product includes all grades of tungsten ore concentrates, and does not include APT. We note that grades of TOC are generally divided into three categories based upon the percent of tungsten in the ore concentrates: high grade, which consists of TOC containing 65 percent or more by weight of WO_3; low-grade,

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[16] We believe that at least one of respondent GTE's arguments may stem from using the word slime interchangeably to refer to both a subset of low-grade TOC and to slime in the technical sense as if they were the same thing. See n. 14, supra.

[17] GTE's Prehearing Brief at 6-9; Hearing Tr. at 62-63.

[18] GTE's Prehearing Brief at 10-11; GTE's Posthearing brief at 4; Hearing Tr. at 80.

[19] GTE's Prehearing Brief at 11; Hearing Tr. at 64-65.

[20] GTE's Prehearing Brief at 12; Hearing Tr. at 64.

[21] GTE's Prehearing Br. at 12-16; Hearing Tr. at 63-64.

[22] See, e.g., Hearing Tr. at 21, 127-129; MINMETALS Prehearing Brief at 12-20; MINMETALS Posthearing Br. at 2-7.

which consists of TOC containing less than 65 percent by weight of WO_3; and slime, a very low-grade TOC containing less than 35 percent WO_3. [23] All grades of TOC are available in units of WO_3 . [24] The grade is determined by the extent of processing applied to the tungsten ore. [25] High-grade concentrates contain a proportionately lower content of material other than tungsten than low-grade concentrates, including slime. [26] The quality of the TOC varies within each grade of TOC. [27]

Although we recognize that some users of TOC perceive that slime is different from higher grades of TOC, this is not true for petitioner. Petitioner, a consumer of TOC, can use all grades interchangeably, and by virtue of its like product argument has asserted that it perceives all grades of TOC to be the same product. [28] Further, petitioner and Curtis Tungsten can produce very low-grade and higher grades of TOC on existing equipment using the same workers. [29]

In addition, all TOC, regardless of grade, can be used to produce APT and other intermediate tungsten products. In fact, approximately 90 percent of TOC is converted into APT. [30] The remaining ten percent is used primarily in the production of ferrotungsten. [31] [32] Additional data which are business

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[23] Final Staff Report at A-46.
[24] Final Staff Report at A-3.
[25] Final Staff Report at A-4.
[26] Id.
[27] Final Staff Report at A-45.
[28] See, e.g., Hearing Tr. at 31, 34.
[29] Hearing Tr. at 27, 53; Final Staff Report at A-18, n. 45 and accompanying text and A-24.
[30] Final Staff Report at A-3.
[31] Id. at B-16.
[32] We also note that while there are price differences among the grades, because of the absence of open market sales of the only domestically produced slime, there are not sufficient data to measure the consistency of price differences among grades in the United States as a factor. See Final Staff Report at A-57, Table 24.

proprietary support our conclusion. [33]

In light of the overall similarities in characteristics and uses of all grades, the evident similarity in production processes of the grades, the overlap in the channels of distribution for the grades, and the perception of similarity by at least one user, we find that these facts provide an appropriate basis for including all grades of TOC in the like product definition. [34]

Accordingly we find that there is one like product: all grades of tungsten ore concentrates. [35] Further, we define the domestic industry to be U.S. producers of all tungsten ore concentrates which in this investigation consists of two companies, petitioner and Curtis Tungsten. [36]

II. Condition of the Industry

In assessing the condition of the domestic industry, [37] we consider, among other factors, U.S. consumption, production, shipments, capacity utilization, inventories, employment, wages, financial performance, capital investment, and research and development expenditures. [38] No single factor is dispositive, and in each investigation we consider the particular nature of the industry involved and the relevant economic factors that have a bearing on

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[33] See, e.g., Final Staff Report at A-13, A-17 n.37, A-17, A-47.
[34] We note that the presence of measurably significant price differences among the grades would not change our conclusion.
[35] For the reasons stated in our preliminary determination, we also conclude that APT is not part of the like product definition in this investigation. Preliminary Opinion at 4 - 14.
[36] For the reasons stated in the preliminary opinion, we continue to conclude that it is not appropriate to exclude petitioner as a related party.
[37] Although we have included Curtis Tungsten's data in our discussion of the condition of the industry where it is available, because we were unable to use some of Curtis's financial data and because petitioner produced the vast majority of TOC during the period of investigation, much of our discussion of condition of the industry has necessarily focused on petitioner.
[38] See 19 U.S.C. § 1677(7)(C)(iii).

the state of the industry. [39] [40]

United States apparent consumption of TOC by quantity fell by 11.2 percent from 1988 to 1989, by 0.2 percent in 1990, and by 12.6 percent from the January-June 1990 to January-June 1991. In terms of value, total reported U.S. consumption fell by 9 percent from 1988 to 1989, by 17.5 percent from 1989 to 1990, and by 15.4 percent from January-June 1990 to the same period in 1991. [41] [42]

United States production of TOC increased from 1988 to 1989 and then fell from 1989 to 1990 to levels well below 1988 levels. Domestic production dropped significantly from interim 1990 to interim 1991. [43]

Capacity utilization trends were similar to production trends, increasing slightly from 1988 to 1989 and falling from 1989 to 1990 to levels below 1988 levels. Capacity utilization declined substantially from interim 1990 to interim 1991. [44]

Domestic shipments, which are essentially all captive shipments made by petitioner, increased significantly both by quantity and by value from 1988 to

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[39] See 19 U.S.C. § 1677(7)(C)(iii), which require us to consider the condition of the industry in the context of the business cycle and conditions of competition that are distinctive to the domestic industry. See also H.R. Rep. 317, 96th Cong., 1st Sess. at 46; S. Rep. 249, 96th Cong., 1st Sess. at 88.

[40] We note that petitioner has consented to the disclosure of industry trends. Letter of Counsel for petitioner to Secretary Mason, October 25, 1991.

[41] Final Staff Report at A-15 and Table 4.

[42] The data do not include Government stockpile dispositions in 1988 and 1989. The data also do not include the consumption of TOC reported by consumers of tolled product because of the questionable reliability of the information provided to the Commission on this issue. Staff Report at A-14, Table 4 n.1. It does not appear, however, that the trends would change significantly even if the Commission were to have included tolled product. Final Staff Report at B-26, Table G-1.

[43] Final Staff Report at A-25, Table 9, A-24, Table 8.

[44] Final Staff Report at A-24, Table 8.

1989 and then declined substantially from 1989 to 1990. Domestic shipments by quantity and value also declined significantly from the interim period of 1990 to the interim period of 1991. [45]

The number of hours worked increased from 1988 to 1989, and then declined from 1989 to 1990 to levels significantly below 1988 levels. This measure also showed a substantial decline from the interim period of 1990 to the interim period of 1991. Wages paid to workers showed a similar trend. [46]

Net sales, which are essentially all captive sales by petitioner, increased from 1988 to 1989, and then decreased significantly from 1989 to 1990. Net sales also showed a substantial decline from the interim period of 1990 to the interim period of 1991. [47]

Finally, we wish to comment on an issue that has arisen with respect to the financial data that each of us will discuss. We note that of necessity we must rely on the financial data which were developed by petitioner specifically for this investigation. However, each of us have made adjustments in our analysis of that data for the method of allocating SG&A expenses suggested by the staff, as we have concluded that the method of allocating SG&A expenses used by petitioner may have understated their financial performance. [48] We note, however, that both the trends and our conclusion would have been the same regardless of which method we utilized. [49]

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[45] Final Staff Report at A-27 Table 10.
[46] Final Staff Report at A-28, including Table 11.
[47] Final Staff Report at A-30, Table 13.
[48] See Final Staff Report at A-30. Petitioner was unable to provide sufficient documentation to staff to support what the staff viewed to be a disproportionate allocation of SG&A expenses to the TOC operations in light of the percentage of overall sales represented by estimated sales of TOC.
[49] We also note that one of the results of accepting respondent GTE's criticism of the method petitioner used to calculate its transfer price would be to worsen the reported financial performance of the domestic industry.

Additional Views of Commissioners David B. Rohr and Don Newquist

We determine that the domestic industry producing tungsten ore concentrates (TOC) is threatened with material injury by reason of imports of TOC from the People's Republic of China (PRC or China) found by the Department of Commerce (DOC) to be sold in the United States at less than fair value (LTFV). We further determine pursuant to section 735(b)(4)(B) that we would not have made a present material injury determination but for the suspension of liquidation of entries of the imported merchandise. In making our determination, we particularly note that the domestic industry is vulnerable to the adverse effects of LTFV imports. Further we note that, through both price and volume effects, the threat of material injury by reason of LTFV imports from China is real and that actual injury is imminent.

Vulnerability of the Industry

For purposes of our analysis of the vulnerability of the tungsten ore concentrates industry, we incorporate the analysis contained in the Condition of the Industry section of the Views of the Commission.[1] We further note that our assessment of the financial condition of this industry supports the conclusion that this industry is experiencing performance difficulties.[2]

In making our determination, we relied on no single indicator, but note that the indicators as a whole reveal a consistent pattern of declining performance.[3] Overall, our

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[1] *See* Views of the Commission, *supra*, at p.8. We note that we concur in the unanimous Views of the Commission as to the definition of the like product and domestic industry. *See*, Views of the Commission at p.3.

[2] In analyzing these data, we recognize that much of the financial data in this investigation are constructs and allocations, but that, overall, the financial record supports our conclusion that the industry is vulnerable to the effects of imports.

[3] In particular, we are mindful of the fact that the two domestic producers are all that remain of an industry that as recently as twelve years ago consisted of at least 50 producing mines. We make this observation solely in the context of explaining the vulnerability of the domestic industry and do not imply any examination of the various causal factors that contributed to this decline over the entire period of its secular decline.

evaluation of the condition of the industry producing TOC is that it has weakened to the point of being very susceptible to the effects of LTFV imports. We therefore analyze the threat posed by Chinese imports in the context of the industry's apparent vulnerability.

The Statutory Factors

Section 771(7)(F) of the Tariff Act of 1930 directs the Commission to determine whether a U.S. industry is threatened with material injury by reason of unfair imports "on the basis of evidence that the threat of material injury is real and that actual injury is imminent."

The factors the Commission must consider in the threat analysis are:

(I) if a subsidy is involved, such information as may be presented to it by the administering authority as to the nature of the subsidy (particularly as to whether the subsidy is an export subsidy inconsistent with the Agreement),

(II) any increase in production capacity or existing unused capacity in the exporting country likely to result in a significant increase in imports of the merchandise to the United States,

(III) any rapid increase in United States market penetration and the likelihood that the penetration will increase to an injurious level,

(IV) the probability that imports of the merchandise will enter the United States at prices that will have a depressing or suppressing effect on domestic prices of the merchandise,

(V) any substantial increase in inventories of the merchandise in the United States,

(VI) the presence of underutilized capacity for producing the merchandise in the exporting country,

(VII) any other demonstrable adverse trends that indicate probability that importation (or sale for importation) of the merchandise (whether or not it is actually being imported at the time) will be the cause of actual injury,

(VIII) the potential for product shifting if production facilities owned or controlled by the foreign manufacturers, which can be used to produce products subject to investigation(s) under section 1671 or 1673 of this title or to final orders under section 1671e or 1673e of this title, are also used to produce the merchandise under investigation,

(IX) in any investigation under this title which involves imports of both raw agricultural product (within the meaning of paragraph (4)(E)(iv) and any product processed from such raw agricultural product, the likelihood there will be increased imports, by reason of product shifting, if there is an affirmative determination by the Commission under section 705(b)(1) or 735(b)(1) with respect to either the raw agricultural product or the processed agricultural product (but not both), and

(X) the actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the like product.[4]

In addition, the Commission must consider whether dumping findings or antidumping remedies in markets of foreign countries against the same class of merchandise suggest a threat of material injury to the domestic industry. [5]

Initially, we note that items (I), (VIII), and (IX) are not legally relevant to our determination in this investigation. This investigation involves dumping of a single non-agricultural product. Further, there is no information indicating the development of derivative or more advanced products that would involve item (X). We therefore focus our analysis on the remaining factors.

Before we discuss the statutory factors that we consider relevant in this investigation, it is important to set out certain conditions of trade which affect our consideration of several of the statutory factors. First, the Chinese decided to suspend the writing of new contracts for TOC exports in early 1991.[6] This policy coincides roughly with the filing of this petition in January 1991. Since then, there has been a short-term suspension of market activity, as the Chinese, having also been sanctioned in the EC market in late 1990, proceeded to stockpile concentrates both in the United States and in China.[7] In the meantime, despite de facto suspension of new contracts, the Chinese continued to ship TOC to the United States under existing contracts at increasing levels and incurred significant importer inventory build-up.[8] In terms of their future export behavior, the Chinese suppliers have committed to nothing but their own export agenda, and they have, in our view, the ability and incentive to continue to seek to increase import

[4] 19 U.S.C. § 1677(7)(F)(i), as amended by 1988 Act sections 1326(b), 1329.
[5] See 19 U.S.C. § 1677(7)(F)(iii), as amended by 1988 Act, section 1329.
[6] Report at A-37.
[7] Report at A-39 and A-35.
[8] Report at A-35, A-37, and A-43.

volumes directed to the U.S. market and the vulnerable domestic industry.[9]

The first of the statutory elements we consider is capacity. Items (II) and (VI) of the statutory factors require the Commission to evaluate the capacity status of the foreign industry because the ability of the foreign industry to produce and export additional product to the United States is, necessarily, an important factor in determining whether the domestic industry is "threatened." We begin by noting that one element of capacity to produce tungsten ore concentrates is the availability of the raw material. It is estimated that almost one-half of total worldwide reserves of tungsten are located in China.[10] To a large extent, decisions with regard to these reserves are under the control of a single state run enterprise, the China Non-Ferrous Metals Industry Corp. (CNNC).[11]

We note that official statistics regarding the Chinese capacity to produce TOC provide one version of Chinese capacity. However, we conclude that the data collected by the Commission provide a better indication of the actual potential of the Chinese industry to produce additional tonnages of TOC for export to the U.S. market, should they decide to do so.[12] Confidentiality prohibits a discussion of the Commission's data or its divergence from published statistics. We are satisfied that Chinese capacity availability over a reasonably imminent time frame supports the determination that Chinese LTFV imports pose a threat to the domestic industry.[13]

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[9] *See Philipp Brothers, Inc. v. United States*, 640 F. Supp. 1340, 1346 (CIT 1986)(the Commission may disregard or give little weight to tactical maneuvering after the filing of an antidumping petition); *Rhone Poulenc, S.A. v. United States*, 592 F. Supp. 1318,1324-25 (CIT 1984).

[10] Report at A-36.

[11] Report at A-36.

[12] The U.S. Bureau of Mines provided an estimate of PRC capacity in 1990 as 21,000 MTW with a capacity utilization rate of 100 percent. The Bureau, however, cautions that for centrally planned economies capacity figures are usually incomplete or unavailable and therefore based merely on estimates. The data which the Commission obtained from respondents differ substantially from that of either the U.S. Bureau of Mines or the United Nations Conference on Trade and Development (UNCTAD), the international source for tungsten statistics.

[13] Report at A-37, Table 18.

While the basic ability of a foreign industry to increase overall production is important in itself,[14] we recognize that it is also important to analyze whether the additional production from the available or projected capacity is likely to be directed at the United States market. The information before us suggests an affirmative answer to this question.

The importance of exports to the Chinese producers is apparent, with a substantial share of exports directed to the U.S. market over recent years.[15] Moreover, recent trends and developments indicate a growing dependency. A very significant percentage of Chinese exports were directed to the U.S. market in the first six months of 1991, significantly greater than the U.S. share of exports during the first six months of 1990.[16]

In September 1990, antidumping investigations in the EC heightened the importance of the alternative U.S. market to the Chinese by requiring price undertakings on TOC exports to that important market.[17] In our view, the very significant decline in Chinese exports to markets other than the United States during the first half of 1991 reflects the impact of the EC action, and makes the diversion of additional exports to the U.S. market even more certain and necessary for the Chinese.[18]

Two of the factors, (III) and (V), focus on the impact of recent import trends, and the likelihood of whether imports will increase to injurious levels, as well as the

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[14] We note that item (VI), for example, speaks simple of the *presence* of excess capacity is a factor which adds to the threat posed from LTFV imports.
[15] Report at A-37.
[16] Report at A-37.
[17] We note that the statute requires us to consider the impact dumping findings or antidumping duties in other markets might have on the future course and impact of imports. On September 24, 1990, the EC Council of Ministers accepted a price undertaking to settle an antidumping investigation involving imports of Chinese TOC into the European Communities. The actual undertaking is not, of course, made public, but the underlying antidumping duty would have been over 42 percent. We note that this decision makes the U.S. market an even more important outlet for Chinese TOC. Report at A-39.
[18] We have also considered the impact that the recent expiration of an OMA between the United States and the PRC regarding APT might have on the future course of imports of Chinese TOC. It may be that removal of the OMA may shift some Chinese TOC production, which would otherwise have been exported, to APT for export. There is no evidence that such a shift, if any, would be of sufficient magnitude to remove the pressure on the TOC industry from TOC imports.

consideration of any substantial increase in U.S. inventories. Despite the temporary suspension of new export sales contracts as of January 1, 1991, Chinese producers continued to honor contracts made prior to that date, which resulted in continued and increasing exports to the United States during the most recent period. In fact, imports for the first half of 1991 were 3,052 MTW, a significant increase over the same six months in 1990, and only 22 percent less than total imports for all of 1990.[19]

Information developed regarding Chinese producers' inventories, coupled with Chinese vast ore reserves[20] and the importance of the U.S. market, provide important indications that any downturn in imports, in the absence of an antidumping order, will be temporary and self-serving.

Our analysis of inventory levels leads us to conclude that the domestic industry has not yet felt the full impact of imports already entered into the United States, but not yet sold, particularly when viewed in light of the additional volume of merchandise stockpiled in China and readily available for export to the U.S. market. First, a review of end-of-period inventory data shows that importers' inventories at the end of June 1991 were 1,161 MTW, more than three times the level at the same time in 1990.[21] This level represents more than one-third of the shipments of imports during the six-month period.[22] From another perspective, one-third of the TOC imported during that period remains to be sold.[23] At the same time, questionnaire data indicate inventories are building rapidly in China. In 1990, a significant percentage of production ended up in producers' inventories, but, at the end of the first six months of 1991, a much greater share of production was in inventory.[24]

In sum, as of June 30, 1991, combined importers' inventories and Chinese producers'

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[19] Report at A-40.
[20] There is little doubt as to the dominance of China in the world market as a supplier of tungsten ore concentrates. Almost one-half of the world's estimated tungsten reserves are located in China, and, in 1990, China is reported to have produced over one-half of the total world production of tungsten ore concentrates. Report at A-36.
[21] Report at A-35.
[22] *Id.*
[23] *Id.*
[24] Report at A-37, Table 18.

inventories were significantly higher than six months earlier at the end of 1990.[25] This represents a substantial inventory overhang on the market which contributes to the threat posed by LTFV Chinese imports.

Item (IV) requires the Commission to consider what effects imports are likely to have on prices as part of its threat analysis. Because essentially all of domestic TOC was produced for captive consumption during the period of the investigation, price comparisons are of limited probative value in the context of this particular investigation.[26] Nevertheless, to the extent that such information is available, price comparisons do tend to corroborate that Chinese imports have a depressing effect on prices for TOC in the United States. Further, the information regarding the so-called "make or buy" decision of the largest U.S. producer shows the important role of the low-priced LTFV Chinese imports in determining the volume of U.S. production.[27]

In the absence of significant open market sales, we examined publicly available data on world pricing reported in the *London Metal Bulletin* (LMB) and U.S. pricing data reported in the industry periodical *Metals Week*. There is substantial evidence that Chinese sales have a major impact on the overall world price for TOC and that the presence or absence of the Chinese from the marketplace has a discernible impact on world prices. LMB prices for TOC generally dropped throughout the period from 1988 to the end of 1990.[28] Metals Week prices show similar trends.[29]

However, between the fourth quarter of 1990 and the first quarter of 1991, world prices began to rise and rose considerably. A variety of factors may have contributed to this rise. There was an increase in activities requiring the expenditure of tungsten end products, the EC antidumping investigation resulted in price increases in that market, and the Chinese announced they would suspend the writing of new TOC export contracts.

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[25] Report at A-35, Table 17, and A-37, Table 18.
[26] Report at A-47.
[27] Report at B-27.
[28] Report at A-52.
[29] *Id.*

Because of their dominant position in the market as a world supplier, the Chinese decision to stop writing TOC export contracts in January 1991, which has already been discussed, is unquestionably the most important reason behind the price increase. We conclude that the Chinese have demonstrated significant control over world prices which, in turn, have an impact on the domestic industry. Given the apparent role of this investigation in motivating the Chinese decision, we cannot assume that the Chinese would continue to limit their presence in the U.S. market in the absence of an affirmative determination in this investigation.[30] We note the unilateral nature of the action and the lack of any binding commitment to continue the policy. If exports resume, as the information suggests, prices would then return to the previous downward deleterious trend, clearly resulting in injury to the domestic industry. The prices of future Chinese imports must be perceived as having a materially injurious effect on the domestic industry.

No Present Injury "But For" the Suspension of Liquidation

When we make a determination under section 735 that a domestic industry is threatened with material injury by reason of LTFV imports, we are also required to make a further determination under section 735(b)(4)(B). This determination is whether material injury by reason of the LTFV imports (present injury) would have been found "but for" any suspension of liquidation of entries of the merchandise. In our view, there is not sufficient evidence on the record for us to conclude that during the period between the suspension of liquidation and our final determination that imports would have increased and the condition of the industry continued to deteriorate to the extent that we would have found present injury. We therefore make a negative determination.

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[30] We note that imports of Chinese TOC into the United States remained significant for the first six months of 1991, even in the presence of this cessation of new contracts.

ADDITIONAL VIEWS OF ACTING CHAIRMAN ANNE E. BRUNSDALE

Tungsten Ore Concentrates from the People's Republic of China
Inv. No. 731-TA-497 (Final)

I find that an industry in the United States is materially injured by reason of imports of tungsten ore concentrates (TOCs) from the People's Republic of China.

The Views of the Commission deal with the issues of like product and condition of the industry and I have little to add to that discussion here. I agree that there is a single like product consisting of all TOCs, regardless of the level of concentration, and that downstream products, such as ammonium paratungstate (APT) and other tungsten intermediates, are not part of the like product.[1] I also agree that the domestic industry consists of two firms -- petitioner, U.S. Tungsten

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[1] I would note that the Commission's discussion of why all grades of tungsten ore concentrates are part of the same like product is generally consistent with my approach of focusing on consumer and producer substitutability. (For a more complete discussion of my approach to like product issues, see Polyethylene Terephthalate Film, Sheet, and Strip from Japan and the Republic of Korea, Invs. Nos. 731-TA-458 and 459 (Final), USITC Pub. 2383 (May 1991) at 31-43 (Dissenting Views of Acting Chairman Anne E. Brunsdale).) The Commission's discussion relies on two key considerations, the ability of petitioner to use different grades of TOCs interchangeably in its APT production process and the fact that all grades of TOCs are used to produce APT. Both of these are arguments that the various grades of TOC are substitutable in consumption either directly, as indicated by petitioner's ability to produce APT from different grades of TOC, or indirectly, as indicated by the fact that all TOCs are used almost exclusively to produce the same downstream products even where they cannot be used in the same plant.

Corporation (USTC), and Curtis Tungsten.[2] I accept as accurate the description of the condition of the industry presented in the Views of the Commission.[3] Unlike my colleagues, however, I do not believe that an independent legal determination of material injury based on the condition of the industry is either required by the statute or useful in determining whether a domestic industry is materially injured by reason of dumped imports.[4]

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[2] The issues of related parties and material retardation were adequately addressed in the Commission's opinion in the preliminary investigation. (Tungsten Ore Concentrates From the People's Republic of China, Inv. No. 731-TA-497 (Preliminary), USITC Pub. 2367 (March 1991) at 14-16 and 18 n. 49 (Views of the Commission))

[3] I note the Commission opinion does not discuss the financial condition of the industry or changes in employment because this information is confidential. I discuss employment levels in the section entitled "Other Effects on the Domestic Industry," below. Looking at the financial data, I note that petitioner reported [***] throughout the period of investigation. As a percent of sales, its [***] amounted to [***] percent in 1988, [***] percent in 1989, [***] percent in 1990, and [***] percent and [***] percent in the first half or 1990 and 1991 respectively. (These data are derived from staff's reallocation of petitioner's selling, general, and administrative expenses as reported in the Staff Report at A-30. On the basis of either economic or accounting logic, the method petitioner used to allocate these expenses seems totally inappropriate.)

[4] See Certain Light-Walled Rectangular Pipes and Tubes from Taiwan, Inv. No. 731-TA-410 (Final), USITC Pub. 2169 (March 1989) at 10-15 (Views of Chairman Brunsdale and Vice Chairman Cass). I do, however, find the discussion of the condition of the domestic industry helpful in determining whether any injury resulting from dumped imports is material.

Here I set forth my views on the statutorily directed issue of whether "an industry in the United States is materially injured ... by reason of [the dumped] imports".[5]

Material Injury by Reason of Dumped Tungsten Ore Concentrates

As in other Title VII cases that have come before the Commission, I have used economic analysis in arriving at my decision in this case. I have also examined the information in the record on changes in the performance of the domestic industry over the period of the investigation. However, an analysis of changes in the industry's condition does not permit me to separate the effect of dumped imports from the many other factors that may have had a positive or negative effect on the domestic industry.[6]

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[5] 19 U.S.C. 1673d(b)(1).

[6] The Commission has often noted the legislative history of the 1979 Act, which states that when determining whether there is material injury "by reason of" the imports subject to investigation, the Commission may consider factors other than imports, but does not weigh causes. See S. Rep. No. 249, 96th Cong., 1st Sess. 74-75 (1979). I understand this language to distinguish causation analysis in Title VII investigations, in which the "unfair" imports must cause material injury before there can be an affirmative determination, from the determination of whether imports are a "substantial" cause -- *i.e.*, greater than any other cause -- of serious injury in Section 201 investigations. Under the language of Title VII, we still must find a causal connection between the imports and material injury -- i.e., the imports must cause material injury -- notwithstanding what other factors may be contributing to the state of the domestic industry. The language of the statute and the standard rules of English grammar permit no other reading.

Economic analysis allows me to gauge with reasonable certainty, using the information on the record, how producers and consumers have reacted to the changing conditions in the marketplace brought about by the dumped imports. In analyzing the effect of these imports, I must determine how the dumping has affected demand for the domestic like product. I know from basic economic principles that the unfair imports will tend to reduce demand for the domestic product. However, the size of any reduction in a particular case will depend on the facts in that case. After determining how the dumping is affecting demand for the domestic product, I can then ascertain the effects on the price of the domestic like product and the quantity that is sold, as well as the effects on other indicators of industry performance such as employment, investment, and capacity utilization.[7]

The Unique Nature of the Analysis in This Case. Two factors make this case unusual. First, the petitioner accounted for such a large share of U.S. TOC production during the period of investigation that determining whether the domestic industry is materially injured is, for all intents and purposes, the same as

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[7] To say that dumping reduces the demand for the domestic product is to say that, at a constant price, the quantity of the domestic product sold would decline. Whether this decline in demand will manifest itself in a decline in the actual quantity of sales, in the price of the product, or both depends upon the interaction of demand and supply considerations in the market.

determining whether USTC is materially injured.[8] Even if the dumping is having massive effects on the well-being of Curtis Tungsten, the only other U.S. producer, it is implausible that this amounts to material injury to the industry as a whole unless USTC is also being materially injured.

Second, USTC is only suffering material injury if the dumped imports are substantially depressing the price of fairly traded TOC imports. In most cases, material injury can result from a small suppression or depression in price combined with a significant reduction in the quantity of production. However, this cannot occur in the present case. USTC's tungsten mine has [***].[9] This resulted in a very large decline in the domestic industry's production and revenues. Similarly, [***] would provide a very material improvement in the industry's condition. However, absent such an occurrence, a change in the price of TOCs would have no material effect on the domestic industry. Based on USTC's own statements, it would only be profitable to [***] if the price of TOCs increased substantially from the price level that existed in December 1991.[10] Thus, the focus of my analysis

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[8] U.S. Tungsten accounted for [***] percent of TOC production in the United States between the beginning of 1988 and June of 1991. (Staff Report at A-24, Table 8)

[9] Staff Report at A-22 - A-23.

[10] Specifically, USTC indicated in February 1991 that the price would have to rise to approximately [***] per metric ton unit (MTU) and be expected to remain at that level for several months before it would be profitable to [***]. In December 1990, the

(continued...)

is almost exclusively on how the dumping affects the price of TOCs.[11]

Market Penetration of Unfair Imports and the Dumping Margin. The investigation has shown that dumping is having a very large effect, at least on the price of the Chinese TOCs. The Department of Commerce determined that the dumping margin was a whopping 151 percent, indicating that the price of the Chinese TOCs is far below fair levels.[12] And, whether on quantity or value, Chinese imports made up more than half of U.S. apparent consumption during 1988, 1989, and 1990, and almost half of U.S. consumption in the first half of 1991.[13]

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[10](...continued)
price was $37 per MTU. (Staff Report at A-25 - A-26)
Since the beginning of 1991, the price has risen significantly, reaching a price of $59 per MTU as of September 23, 1991. (Id.) This increase is apparently the result of a Chinese decision to suspend the writing of new export contracts for TOCs in January 1991. (Id. at A-46, n. 96) However, this has not [***], perhaps due to uncertainty about the duration of the suspension.

[11] Because small changes in price or production are not relevant to my analysis in the current case, I do not base my determination on an explicit consideration of the various elasticities that I frequently discuss in my opinions in Title VII cases. Such elasticities are most appropriate when considering small changes. For example, the elasticity of domestic supply is defined as the percentage increase in domestic production that would result from a 1 percent increase in the price of the product.

[12] Id. at A-9.

[13] Id. at A-45, Table 22.

Effect on Prices and Volumes Sold by the Domestic Industry. Data on the dumping margin and import volume alone do not answer the central question in this investigation -- whether the dumped imports have materially injured the domestic industry. As suggested above, that answer depends on how the dumping affects the prices of not only the subject imports but also of TOCs imported from countries other than China that are fairly traded.

While the size of the dumping margin clearly demonstrates that the dumping is significantly depressing or suppressing the price of the Chinese imports, it does not directly address the effect of the dumping on the price of TOCs imported from other countries. And unless the dumped imports have also substantially depressed the price of these TOCs, the dumping may just have resulted in an increase in the volume of sales by the Chinese at the expense of other foreign producers. In such a case, eliminating the dumping would not improve the fortunes of the domestic TOC producers -- specifically, the fortunes of USTC. Rather, it would just improve the fortunes of other foreign producers of TOCs.

In examining the effect of the dumping on the price of imports from foreign countries other than China, I consider first the existence of excess TOC production capacity in these countries. Unless there is sufficient excess capacity in the rest of the world to permit U.S. purchasers of TOCs to meet their needs without buying any of the subject imports, it will still be

necessary to buy some TOCs from China at the higher, non-dumped price. Furthermore, competition among purchasers will lead to a substantial rise in the price of other fairly traded TOC imports.[14]

Examining the available data on world excess capacity does not persuade me that there is sufficient capacity for U.S. purchasers to satisfy their needs without purchasing at least some TOCs from China. The U.S. imported roughly 4,000 MTW of TOCs from China in 1988 and 1990, 5,484 MTW in 1989, and 3,052 MTW in the first six months of 1991.[15] In 1990, there was excess capacity to produce up to 6,400 MTW of TOCs in countries other than the United States and China, which appears to suggest that there is sufficient capacity outside of China to meet U.S. needs.[16] However, 3,350 MTW of this excess capacity is located in the countries of Canada and Sweden, and there was no production in those countries in 1990.[17] Without production in Canada or Sweden, there is not enough capacity to replace U.S.

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[14] I assume for purposes of this discussion that any higher price that would result from the absence of dumping would have no significant effect on the quantity of TOCs demanded by firms in the United States. This assumption is discussed below. I am also assuming a high degree of substitutability between TOCs produced in China and those produced in other foreign countries. This assumption is supported by the evidence in the record. (See Economic Memorandum at 22.)

[15] Staff Report at A-43, Table 19.

[16] Id. at A-10, Table 2.

[17] Id.

purchases from China, and it seems unlikely that these shut-down facilities would begin production without a substantial increase in the price of TOCs.[18]

There is one other consideration that could limit any increase in the price of fairly traded TOC imports. Approximately 90 percent of TOCs consumed in the U.S. are used to produce APT.[19] Imposing duties on Chinese TOCs could simply result in purchasers of APT substituting imported APT for the domestic product they now purchase. If this would occur without causing a large increase in the price of imported APT, U.S. imports of Chinese TOCs could be eliminated without increasing imports from other countries. Instead, we would just import less TOC and produce less APT. In this case, imposition of the dumping duties would not result in any significant increase in the price of TOCs, and therefore the necessary change in petitioner's production would not occur. Dumping would not be causing material injury. On the other hand, if a large increase in U.S. demand for imported APT would lead to a substantial increase in the price that must be paid for such imports, U.S. producers would find it profitable to continue purchasing at least some imported TOCs even at increased prices, and it would

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[18] Specifically, I am not persuaded, absent evidence to the contrary, that the price increase necessary to induce production in the mines in Canada and Sweden is less than that [***].

[19] Id. at A-85.

be much more likely that the necessary change in USTC's production would occur.[20]

The question then is whether the United States could increase imports of APT without causing a substantial increase in the world price of APT. In spite of my request in the preliminary determination in this matter that information on this issue be provided in any final investigation,[21] there is no evidence on the record that suggests that there is sufficient excess capacity to permit the United States to increase its purchases of imported APT substantially without inducing a substantial price increase. Indeed, it would be somewhat surprising if replacing a significant amount of U.S. APT

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[20] This reasoning demonstrates that there should be a close relationship between the prices of TOC and APT, a position that respondents attempted to dispute. According to respondents there is no relationship between the two sets of prices. (See, *e.g.*, Pre-Hearing Brief of China National Metals and Minerals Import and Export Corporation and China National Nonferrous Metals Import and Export Corporation at 30-35 and Pre-Hearing Brief on Behalf of GTE Products Corporation and General Electric Lighting at 41-50.) I believe that respondents' argument is incorrect. While there can be temporary disruptions in the relationship between the prices of the two products, in general there must be a relationship since TOCs are the principal component of APT, accounting for about three-quarters of its cost. (Economics Memorandum at 21) Furthermore, the record suggests that empirically there generally appears to be a close relationship between the price of APT and the price of TOCs. (Staff Report at A-54) (In their Post-Hearing brief, respondents GTE Products and General Electric Lighting appear to substantially soften their position and agree that there is a relationship, though it can be temporarily disrupted. Post-Hearing Brief on Behalf of GTE Products Corporation and General Electric Lighting at Attachment 2.)

[21] Preliminary Opinion at 29 n. 88.

production with imports did not cause a significant increase in the price of APT. In recent years, approximately 17.5 percent of world APT production has taken place in the United States.[22] There is no evidence to suggest that there is sufficient excess capacity in the rest of the world to permit even a large fraction of this level of production to be shifted to foreign countries without causing a substantial price increase.

In conclusion, the record in this investigation does not support a finding that the price of TOCs from countries other than the People's Republic of China would not rise significantly if the dumping of TOC imports from China were eliminated. As a result, it appears likely that there would be a significant change in the levels of production and revenues of USTC, and of the entire domestic industry producing tungsten ore concentrates.

Other Effects on the Domestic Industry. In addition to considering the impact of dumping on the volume of sales made by the domestic industry and the price at which those sales occurred, the statute directs us to examine "the impact of such merchandise on domestic producers of like products".[23] In conducting this examination, we are instructed to consider such

[22] Report at A-8, Table 1.

[23] 16 U.S.C. 1677(7)(B)(i)(III).

factors as industry employment, investment, and utilization of capacity.[24]

In general, the effect of dumping on these factors follows from the effect on volume and price. For example, the effect on industry employment is directly related to the effect on volume, since the employment level in an industry will generally rise or fall with changes in the quantity produced. In the current case, the record shows that there was a very substantial decline in industry employment corresponding to the large decline in the output of the domestic industry.[25]

Investment levels depend on the expected future profitability of an industry. If dumping causes significant declines in industry prices or sales and if these declines are expected to persist into the future, firms may not find it profitable to engage in as much investment as they would absent the dumping. Again, the material impact on production and revenues may well have led to a significant reduction in investment. Petitioner's assertion that little development work has been done recently at its Pine Creek mine because of the low prices resulting from the dumping may well be correct.[26]

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[24] 19 U.S.C. 1677(7)(C)(iii).

[25] Report at A-28, Table 11. See particularly note 4 to that table.

[26] Petitioner's Post-Hearing Brief at 9.

Conclusion

I find that the domestic industry producing tungsten ore concentrates is materially injured by reason of imports from the People's Republic of China that are being sold at less than fair value. The dumping margin found by the Department of Commerce is high, suggesting that the price of the Chinese imports is substantially below fair levels. Further, the Chinese account for a very large share of U.S. consumption of TOCs. Given the level of imports from China and the demand and supply conditions in other countries, absent the dumped Chinese imports, it would not be possible to satisfy U.S. needs for TOCs or for the downstream products like APT without a substantial increase in the price of TOCs. A substantial increase in the price of TOCs would likely lead to a substantial increase in domestic production. That the dumping has substantially depressed or suppressed the price of TOCs and has led to a substantial decline in production is sufficient evidence to find that the domestic industry is materially injured.

Additional Views of Commissioner Lodwick[1]

In evaluating the U.S. tungsten ore concentrates (TOC) industry, it is apparent that the condition of the industry deteriorated toward the end of the period for which data were obtained in the investigation. As indicated in the Commission's joint views, many economic factors showed declines or had negative trends. In addition, there is some data and testimony in the record showing that the U.S. TOC industry has performed worse than expected within the context of a business cycle and expected business performance.

While U.S. TOC consumption by quantity fell slightly faster than U.S. TOC production from 1988 to 1990, U.S. TOC production by value, as calculated by transfer prices, fell faster than the value of U.S. TOC consumption.[2] Consequently, U.S. producers lost U.S. market share by value from 1988 to 1990 and from Jan.-June 1990 to Jan.-June 1991 during a period of falling U.S. TOC consumption.[3] In addition, the industry had less than satisfactory income-or-loss margins throughout the period, whether using the information submitted in the questionnaires (questionnaire basis) or by using the computations under the alternative allocation method (alternative basis) calculated by staff. Combined with factors such as falling capacity utilization and rising inventories, the information gathered in this investigation and the "breakeven point" analysis in the staff report shows the U.S. TOC industry's financial performance is indeed less than satisfactory.[4 5] The industry had [* * * * *] and the book

[1] I join the discussion of the definition of the like product and the condition of the industry in the Views of the Commission, supra.
[2] Final Staff Report at A-45, Table 22.
[3] Final Staff Report at A-45, Table 22, and at A-14, Table 4.
[4] Final Staff Report at A-24, 27-30.

value of its assets declined. This demonstrates that the industry was unable to replace aging assets much less make capital expenditures for new capital investments.[6]

The present deterioration of the industry's assets can affect the future profitability of the mines and influence startup decisions if the mines partially or completely close.[7] Indicators for the interim periods suggest that the U.S. industry's operations were not as active as would be desireable. While U.S. TOC consumption declined slightly from January-June 1990 to January-June 1991, the domestic TOC industry supplied only a very small share of U.S. consumption in January-June 1991.[8] I therefore conclude that the domestic industry producing tungsten ore concentrates is materially injured.

Material Injury by Reason of LTFV Imports

Before examining the impact of subject imports on the U.S. TOC industry, I would like to note some background information about general behavior and trends in this industry in the time periods before the three year time period of this investigation to assist in understanding

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[5](...continued)
[5] It is also notable that the United States was the world's third largest consumer of TOC, behind the U.S.S.R. and China, in 1990. However, while the United States has available capacity to be the world's third largest producer of TOC, the United States has very low capacity utilization and has imported a vast majority of its TOC needs in 1990. Final Staff Report at A-8, Table 1, at A-10, Table 2, at A-29, Table 8 and at A-45, Table 22. This implies that while U.S. TOC producers have the productive capacity to dominate the U.S. market, their small U.S. market share gives them little price-setting power within the U.S. market; their "make or buy" or "produce or not produce" decisions are based on U.S. prices set primarily by imports who are predominantly Chinese. If the U.S. TOC industry has little price setting power, it is not surprising that a large volume of production or sales would be required for the U.S. industry to enjoy satisfactory financial performance. Final Staff Report at A-31.
[6] See Petitioners Posthearing Brief, p. 9, and Final Staff Report at B-32.
[7] By literally "mining" their capital assets and its developed ore base, U.S. TOC producers can reduce their short term losses but will face major investment requirements in the purchasing of new capital assets and the further development of their ore body in the future.
[8] Final Staff Report at A-14, Table 4.

the conditions of competition that are distinctive to this industry.[9] Information about LMB prices from 1980 onward indicates that per-unit values have fallen sharply between 1980 and 1990 from about $140 per MTU at the beginning of 1980 to about $43 per MTU at the end of 1990. The Chinese generally increased their shipments of TOC to the United States during that period, from 919 MTW in 1980 to 3,921 MTW in 1990, while non-Chinese countries reduced their shipments from 4,240 MTW in 1980 to 2,499 MTW in 1990. In an effort to determine whether there is a relationship between prices and decisions by U.S. TOC mines to close, I have examined background information on U.S. TOC mine closures and world TOC prices from 1980 to the present. There appears to be a relationship between falling world prices and decisions by U.S. mines to close.[10] [11] In sum, as per-unit values of tungsten ore concentrates fell in the 1980s, the Chinese increased their presence in the U.S. market while non-Chinese imports decreased their presence and many U.S. mines have closed.[12]

Information gathered for the period of investigation indicates that imports of Chinese produced TOC dominated U.S. consumption of TOC. During the 1988-90 time period, Chinese shipments of TOC imports, though declining in volume, commanded over a 50% U.S. market share.[13] They were able to increase their U.S. market share from 1988 to 1990 in both quantity and value terms during a period of falling U.S. consumption. However, shipments of Chinese-produced imports, by quantity and value, lost market share from interim 1990 to interim 1991.

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[9] 19 U.S.C. 1677(c).
[10] Final Staff Report at A-23, B-23, and Figure 6 at A-53.
[11] The "make vs. buy" decisions and breakeven analyses conducted by the U.S. industry indicates that these mining firms make their production decisions based in part on real and expected prices. Final Staff Report at A-25, A-31, and B-28.
[12] In 1979, there were approximately 50 operating mines in the United States. By 1983, the number had been reduced to five; currently, there are only two. Final Staff Report at A-23.
[13] Final Staff Report at A-45, Table 22. These Chinese import shipment figures represent data from the Commission's questionnaire and are comparable to data for U.S.-produced and non-Chinese import shipments.

This drop in Chinese imports between interim periods, however, roughly coincided with the filing of this case on January 23, 1991, and the suspension of writing new export sales contracts, effective January 1, 1991, by the Chinese government.[14]

Because essentially all domestic TOC was produced for captive consumption during the period of investigation, price comparisons are of limited value in this investigation, However, we note that public price series available from the London Metal Bulletin (LMB) and Metals Week[15] indicate that TOC prices generally fell from mid-1988 to the end of 1990 before rising sharply during interim 1991.[16] [17] The average Metals Week per MTU price fell from a high of $67.24 in April-May 1988 to a low of $38.58 in October and November 1990, but then rose rapidly to $65.45 in June 1991. Chinese high-grade TOC imported by U.S. firms for their own use follow a similar price trend exhibited in the LMB and the Metals Week price series.[18] Prices of high-grade ore concentrates imported from China by U.S. firms for their own use fell from April-June 1989 to April-June 1991.[19] Chinese slime imported by U.S. firms for their own use also exhibited similar declines in price during the period of investigation.

Since all U.S. TOC production is valued at a transfer price, it is difficult to compare

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[14] See Philipp Brothers, Inc. v. United States, 640 F. Supp. 1340, 1346 (CIT 1986) ("the Commission may disregard or give little weight to tactical maneuvering after the filing of an antidumping petition") Rhone Poulenc, S.A.V. United States, 592 F. supp 1318, 1324-25 (CIT 1984).

[15] Metals Week prices represent high-low ranges of spot purchase prices in the United States by consumers of TOC and is more representative of the U.S. market than those of the LMB. Final Staff Report at A-50.

[16] Final Staff Report at A-50-52.

[17] Just as Chinese imports dominate U.S. consumption, Chinese TOC supplies account for about 50% of world tungsten ore concentrate. It would appear that Chinese TOC exports play a large role in determining both world and U.S. TOC prices. Final Staff Report at A-46. Also note the sharp rise in world prices and the drop in Chinese exports between January-June 1990 and January-June 1991. Final Staff Report at A-37, Table 18 and A-52, Table 23.

[18] Final Staff Report at A-57, Table 24.

[19] Id.

domestic transfer prices with imported prices. However, it is notable that the transfer price valuation of U.S. slime and scrap follows the general decline in public prices.[20] Despite this decline in the transfer price, Chinese slime prices undersold U.S. slime transfer prices in nearly all instances during the period of investigation.

I note that, like the behavior exhibited by U.S. TOC producers in the early and mid 1980s, the U.S. industry's operating difficulties during the period of investigation and its decision to reduce its production also occurred as U.S. and world prices were falling or were low relative to earlier periods.[21] During the period of investigation, one U.S. TOC producer responded to falling world and U.S. import TOC prices from 1988 to 1990 by reducing its production levels and continuing to exhibit unsatisfactory performance.[22] [23] However, I recognize this decision to reduce production levels in 1990 was also tempered by carryovers of TOC inventory from 1989.[24] The result of this decision to reduce production levels had the effect of easing the firm's financial situation, although operating income's share of net sales declined only slightly

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[20] Domestic transfer prices are derived by discounting the low LMB price each month by a percentage that is business proprietary.

[21] Final Staff Report at A-23, A-24 and Figure 7 at A-56.

[22] Final Staff Report at Table 9 and 13.

[23] This behavior is also consistent with an upward sloping supply curve in economic theory which posits that there is a positive relationship between price and quantities supplied. This type of supply curve indicates that producers faced with falling prices will no longer find it profitable to produce marginal units of production with costs greater than the price offered for those marginal units and that the producers will respond by curtailing production.

It is important to note that this type of behavior assumes that all costs are not fixed in the long run. However, in this industry characterized by relatively large per-unit fixed costs in the short run, firms may not decide to cut production levels much in the face of price declines. Cutting their production levels would reduce their contribution profits faster than selling the original production levels at lower prices. As long as they can sell production at price levels above their short run marginal costs, they may continue production at those levels for a while though they are selling at below long run per unit marginal cost. The hope of these firms is that they can obtain prices above long run marginal cost during periods of strong demand and recover any short run losses incurred during a period of weak demand. [* * * * *]

[24] Final Staff Report at A-25.

between 1988 and 1990.[25] [26] Another U.S. firm, Curtis Tungsten, seeking to reopen a mine during the period of investigation, has only been able to produce at low levels and has had difficulty in obtaining financing due in part to low priced TOC from China.

However, by the end of 1990, U.S. Tungsten Corp's production was well below historical levels and Curtis Tungsten was still producing at low levels. U.S. Tungsten Corp. indicated it [* * * * *]. But LMB TOC prices have fallen steadily from 1988 to the end of 1990. However, in 1991, world prices began to rise, due in part to reduced Chinese exports and the dominant role Chinese exports play in the world market.[27] Despite the world price increases of TOC and APT in interim 1991, it appears that U.S. tungsten ore mining companies were unwilling to make a commitment to mine in substantial quantities and have chosen to purchase imported TOC or mine at very low levels instead.[28] Thus, it is evident that imports of Chinese

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[25] This is true whether using the questionnaire basis or the alternative basis. Final Staff report at A-30.

[26] Interest expenses and depreciation declined very slightly from 1988 to 1990 while Cost of Goods Sold and SG&A costs declined sharply as production levels declined. This is consistent with cost behavior in a capital-intensive industry reducing its production levels; its fixed expenses still remain constant though the firm has been able to sharply reduce its variable costs by reducing the production of its marginal units with high costs.

[27] Final Staff Report at A-36-39. The Chinese reportedly reduced exports to protect their tungsten resources and to help stabilize world prices. This helps illustrate the market power the Chinese have in this market. This market power by the Chinese may also increase the uncertainty of U.S. producers concerning future TOC prices if true Chinese intentions concerning world prices are unknown.

[28] During periods of declining consumption, the "make or buy" decision may take on greater importance than during periods of steady or increasing consumption. During periods of expanding consumption, it could be argued that purchases of TOC imports merely augment domestic TOC production, to "make and buy", in order to meet the increased demand for TOC to make downstream products. The effect of imports during periods of expanding consumption may be to suppress prices and forestall additional production by U.S. producers so U.S. producers' contribution profits would not increase as much as they may have in the absence of imports. However, during periods of declining consumption and falling prices, TOC producing firms must make painful decisions whether to "make or buy." TOC imports purchased by TOC producers making downstream products will directly displace that producer's TOC production. This will sharply lower that producer's contribution profits for its TOC operations, though

(continued...)

TOC by U.S. producers and downstream users in addition to falling world prices, as influenced by Chinese exports, during most of the period of investigation played more than an insignificant role in causing U.S. TOC producers to reduce their production of TOC to below prior levels.[29] Therefore, I find that U.S. producers of TOC have been materially injured by reason of LTFV imports of TOC from China.

[28](...continued)
profits from the downstream product and overall firm profits may improve by the purchase of the TOC import instead of producing the TOC domestically. The effect of U.S. TOC producers purchasing the TOC imports during periods of declining consumption would be to displace U.S. TOC production and sharply lower TOC contribution profits.

[29] In this investigation, considerable effort was put into determining the validity of cost allocations and transfer prices, the price effects between upstream and downstream markets and product substitutability. Whether or not a "make or buy" decision breakpoint can be reasonably established with the information gathered in this investigation is less important than whether or not U.S. TOC producers did make or buy TOC. While I consider these issues are complex and relevant to this investigation, I find that the behavior of U.S. TOC producers when faced with large volumes of imported Chinese TOC at falling prices to be the most persuasive factor in reaching my determination.

INFORMATION OBTAINED IN THE INVESTIGATION

Introduction

Following a preliminary determination by the U.S. Department of Commerce (Commerce) that imports of tungsten ore concentrates[1] from the People's Republic of China (China) are being, or are likely to be, sold in the United States at less than fair value (LTFV) (56 F.R. 31387), the U.S. International Trade Commission, effective July 9, 1991, instituted investigation No. 731-TA-497 (Final) under section 735(b) of the Tariff Act of 1930 (19 U.S.C. § 1673d(b)) to determine whether an industry in the United States is materially injured or 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 investigation and establishment of a schedule for its conduct, including a public hearing to be held in connection with the investigation, was posted in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and published in the Federal Register on July 31, 1991 (56 F.R. 36167). A copy of the Commission's institution notice is presented in appendix A. The hearing was held in Washington, DC, on September 26, 1991. A list of participants in the hearing is presented in appendix B.

In its final determination, as published in the Federal Register on September 20, 1991 (56 F.R. 47738), Commerce determined that imports of tungsten ore concentrates from China are being, or are likely to be, sold in the United States at LTFV. Commerce's Federal Register notice is presented in appendix C. The applicable statute directs that the Commission make its final injury determination within 120 days after an affirmative preliminary determination by Commerce or 45 days after an affirmative final determination by Commerce (whichever is later), or in this case by November 5, 1991. The Commission briefing and vote on this investigation was held on October 28, 1991.

Background

This investigation results from a petition filed by counsel for U.S. Tungsten Corp., Danbury, CT, on January 23, 1991, alleging that an industry in the United States is materially injured or threatened with material injury by

[1] For purposes of this investigation, tungsten ore concentrates are defined as any concentrated or upgraded form of raw tungsten ore, whether high- or low-grade. High-grade tungsten ore concentrates are defined as a concentrated form of tungsten ore containing 65 percent or more by weight of tungsten trioxide (WO_3). Low-grade tungsten ore concentrates are defined as a concentrated form of tungsten ore containing less than 65 percent by weight of WO_3. Low-grade tungsten ore concentrates include tungsten slimes (also referred to in this report as "very low-grade tungsten ore concentrates"), which have a concentration of less than 35 percent by weight of WO_3. Tungsten ore concentrates are provided for in heading 2611.00.00 of the Harmonized Tariff Schedule of the United States (HTS) (item 601.54 of the former Tariff Schedules of the United States (TSUS)).

reason of LTFV imports of tungsten ore concentrates from China.[2] In response to that petition the Commission instituted investigation No. 731-TA-497 (Preliminary) under section 733 of the Tariff Act of 1930 (19 U.S.C § 1673b(a)) and, on March 11, 1991, determined that there was a reasonable indication of material injury.[3]

The Commission has not conducted any previous investigations on tungsten ore concentrates, although two intermediate tungsten products were the subject of an investigation conducted by the Commission under section 406 of the Trade Act of 1974.[4] Additional information regarding the 4-year orderly marketing agreement (OMA)[5] resulting from the section 406 investigation is presented in appendix D. Note that the information presented in the body of this report consists primarily of information concerning tungsten ore concentrates; other information concerning intermediate tungsten products is presented in appendix E. Also, for a discussion of the European Commission investigation concerning imports of certain tungsten products from China, see the section of this report entitled "EC investigation."

The Product

Description and uses

Tungsten is a silver-gray metal that has good corrosion resistance and good thermal and electrical conductivity. Tungsten is one of the heaviest elements, has the highest melting point of all metals, and at higher temperatures has the highest tensile strength (maximum load divided by surface area) of all metals. Its chemical symbol is "W", for wolfram, its German name.

Tungsten is found and produced on nearly all continents, and occurs as WO_3 in the minerals scheelite ($CaWO_4$) and wolframite ($(Fe,Mn)WO_4$).[6] Tungsten may also occur in association with molybdenum, copper, tin, bismuth, or antimony minerals. Tungsten ore is mined primarily by underground methods, and is milled to prepare tungsten-bearing materials known as concentrates that can be treated to recover tungsten and associated byproduct and coproduct metals. Milling operations are usually conducted at or near the mine site.

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[2] The petition also mentioned the possibility that the establishment of a tungsten ore concentrate industry in the United States is materially retarded by LTFV imports from China.

[3] U.S. International Trade Commission, Tungsten Ore Concentrates From the People's Republic of China (investigation No. 731-TA-497 (Preliminary)), USITC publication 2367, Mar. 1991.

[4] USITC, Ammonium Paratungstate and Tungstic Acid From the People's Republic of China (investigation No. TA-406-11), USITC publication 1982, June 1987.

[5] Since no action was taken to prevent the expiration of the OMA, it automatically expired on Sept. 30, 1991.

[6] Types of wolframite are ferberite ($FeWO_4$), huebnerite ($MnWO_4$), and wolframite ($(Fe,Mn)WO_4$).

The subject of this investigation is tungsten ore concentrates, which may take one of two forms, depending on the proximity of the consumer to the producer. In the case of the petitioner, with few or no transportation concerns,[7] concentrates take the form of a froth that is decanted during the flotation/separation stage of production. In the case of most other producers, however, the concentrates must be dried and packaged for transportation in order to be commercially viable.

The form in which tungsten ore concentrates are commercially available is in units of WO_3; however, because much of the available public information worldwide is collected in terms of "contained tungsten," this report will refer to metric tons of contained tungsten (MTW) to quantify trade data.[8] In addition, tungsten ore concentrates are generally sold in quantities of short ton units (STU) of WO_3 in the United States and metric ton units (MTU) of WO_3 in other countries.[9] For the purposes of this report, pricing will be presented in terms of dollars per MTU.

Most tungsten ore concentrates are converted into one or more intermediate products before final fabrication into end-use products.[10] End uses for tungsten in 1990 were metalworking, mining, and construction machinery and equipment, 67 percent; lamps and lighting, 12 percent; electrical and electronic machinery and equipment, and transportation, 10 percent; and other, principally chemicals and ceramics, 11 percent.[11]

The extreme hardness of tungsten makes it a preferred metalworking material for use in cutting edges of machine tools subject to intense wear or abrasion, and for use in metal surfaces in forming and shaping dies. The mining and petroleum industries, for example, use considerable quantities of tungsten carbide in drill bits, in the cutting edges of earth-moving equipment, and in crushing machinery. Tungsten wire is used as the filament in electric lamps and as cathodes for electronic tubes. Disks produced from tungsten rods and sheet are used in automotive distributor points and as the contact point in numerous manufactured products. Tungsten is also used as an alloy constituent in the production of high-speed steels, superalloys, and nonferrous alloys to improve wear, abrasion, shock, and corrosion resistance.

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[7] The petitioner uses all of its concentrate production internally in the production of intermediate tungsten products, primarily ammonium paratungstate (APT), at the same site.

[8] 1 MTW = 2,204.62 lb W = 1,261 kg WO_3 = 2,780 lb WO_3.

[9] 1 MTU = 10 kg WO_3; 1 STU = 20 lb WO_3; 1 MTU = 1.1023 STU; 1 MTW = 139 STU = 126.1 MTU.

[10] Approximately 90 percent of tungsten ore concentrate is converted into APT, the most common intermediate product. Most of the APT is then reduced to tungsten metal powder and processed into tungsten carbide powder for fabrication into end-use products. Kennametal, Inc. (Kennametal), however, bypasses the production of APT in the production of tungsten carbide powder from the tungsten ore concentrate through an exothermic reaction of ingredients, causing a simultaneous reduction and carburization.

[11] U.S. Bureau of Mines.

Manufacturing process

Once the tungsten ore is extracted or mined from the earth, the tungsten mineral undergoes numerous stages of crushing and grinding, each further processing the material into a finer form. The stages are carried out first by jaw crushers, then by roll-type crushers, a rod mill, and a grate-type ball mill. By stage crushing and grinding, the tungsten is recovered from the mineral without overgrinding, which would produce fines or slimes.[12] Tungsten ore is concentrated to increase the level of tungsten (as contained WO_3, in chemical combination with various other minerals) in the material. The degree of concentration (i.e., grade) is determined by the extent of processing applied to the tungsten ore, while the quality of the concentrate is determined primarily by the amount of impurities present.[13] High-grade concentrates (65 percent by weight of WO_3 and above) contain a proportionately lower content of other minerals than low-grade concentrates (less than 65 percent WO_3) and are generally less costly to use in downstream production processes.[14]

Separation of the tungsten from the other materials may be accomplished through a variety of methods--principally, flotation, gravity, or magnetic separation. Flotation, the method used by a number of producers worldwide, including the petitioner and some producers in China, to separate the

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[12] For the purposes of this investigation, tungsten slime is a very low-grade tungsten ore concentrate containing 35 percent or less by weight of WO_3; however, the meaning of slime in the tungsten industry seems to be somewhat ambiguous. Although tungsten slime may be more frequently, but more loosely, referred to by industry participants simply as a very low-grade tungsten ore concentrate, it is, in the most technical sense, defined as a fine, powdery substance generally containing particles of less than 50 microns in size. This powdery substance, which is created by the overgrinding of the ore in the concentration process, is not amenable to the gravity separation method used to produce concentrates, because the particles have been ground too fine for successful separation of the tungsten-bearing mineral from the other minerals present; however, concentrates can be produced from this powdery substance by using slime tabling or flotation methods.

[13] Minerals such as molybdenum, silicon, phosphorous, iron, magnesium, and calcium may be considered impurities.

[14] Respondents argue that slimes (i.e., very low-grade tungsten ore concentrates containing less than 35 percent by weight of WO_3) contain a higher level of impurities than high-grade tungsten ore concentrates and that these products are much more costly to use than high-grade concentrates in APT production because the larger volume and weight of the very low-grade tungsten ore concentrates increase the cost of energy, labor, reagents, equipment, transportation, and waste disposal (i.e., hazardous and industrial). Respondents also argue that the presence of molybdenum is especially undesirable because it decreases tungsten recovery. That is, for every unit of molybdenum extracted from the tungsten material, an equal unit of tungsten is lost. Transcript of the hearing, pp. 63-64.

Petitioner, however, asserts that almost every tungsten mine in the world that has an APT plant on site intentionally uses a low-grade tungsten ore concentrate because it is most economically efficient to do so. Posthearing brief by counsel on behalf of petitioner, p. 2 and exhibit 1.

materials,[15] involves the selective removal of minerals from an ore slurry with the use of chemical reagents and air. The reagent causes the specific mineral to adhere to the froth, which is decanted from the flotation cell. Gravity separation involves capturing the heavier tungsten mineral through a variety of methods. A suspension of the tungsten-bearing and non-tungsten-bearing particles (in water) flows over vibrating or shaking tables or through cone or spiral systems such that gravity separates the tungsten-bearing particles, which can then be collected. Finally, magnetic separation involves the use of magnets to capture iron/tungsten particles.

Substitute products

There is no direct substitute for tungsten metal in the production of tungsten products; however, tungsten scrap, which appears in many forms and reenters the tungsten production process at many different stages, may be considered a substitute for tungsten ore concentrates by the consumers of this product.[16] Consumption of tungsten scrap in the United States, which, according to the United Nations Conference on Trade and Development (UNCTAD) sessional working group, has been negatively affected by the abundant supply of concentrates, prevailing low prices, and limited market outlets for recycled materials, was recently estimated at approximately 23 percent of total consumption of U.S. tungsten ore concentrates.[17]

For a discussion on pricing of tungsten scrap, see the section of this report entitled "Prices," and for a discussion on substitute products for the intermediate and other derivative tungsten products, see appendix E.

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[15] ***, and it is believed that the process in China is somewhat more labor-intensive. In particular, the process in China may be at least partially accomplished through the hand-sorting of the tungsten-bearing mineral. "Development of Technology and Production of China's Tungsten Industry," paper presented by Zhao Ruihe at the Fourth International Tungsten Symposium, Sept. 1987. Also based on conversations with ***; ***; and Gerald Smith, U.S. Bureau of Mines, on Aug. 28, 1991.

[16] Gerald Smith, U.S. Bureau of Mines, indicated that a portion of the physically reclaimed scrap reenters the tungsten process at a point subsequent to the intermediate tungsten production stage and may not be considered a direct substitute for tungsten ore concentrates.

[17] UNCTAD Secretariat, Discussions of the Sessional Working Group: Review of the Current Market Situation and Outlook, Dec. 10, 1990. According to questionnaire responses received by the Commission, three of the five U.S. consumers of tungsten ore concentrates and two of the nine U.S. traders/brokers of tungsten ore concentrates reported purchases of tungsten scrap during the period of investigation. Also, Teledyne Wah Chang Huntsville (Teledyne) is a consumer of tungsten scrap, as well as other intermediate tungsten products, in the production of tungsten powders.

U.S. tariff treatment

Imports of tungsten ore concentrates are classified in HTS heading 2611.00.00, along with the ore itself. The column 1-general rate of duty on tungsten ore concentrates (including those from China) is 37.5 cents per kilogram on tungsten content, which amounted to a calculated 7.8-percent ad valorem equivalent in 1990 for Chinese tungsten ore concentrates.[18] Imports of tungsten ore concentrates are eligible for duty-free entry under the Generalized System of Preferences, the United States-Canada free-trade agreement, the Caribbean Basin Economic Recovery Act, and the United States-Israel free-trade agreement. The column 2 duty rate is $1.10 per kilogram on tungsten content.

The Nature and Extent of Sales at LTFV

On the basis of comparisons of U.S. price (USP) and foreign market value (FMV), Commerce has determined[19] that imports of tungsten ore concentrates from China are being, or are likely to be, sold in the United States at LTFV. Commerce also determined, based on best information available (BIA), that the amount by which the FMV exceeds the USP is equal to 151 percent.

Commerce's investigation involved China National Metals and Minerals Import and Export Corp. (MINMETALS) and China National Nonferrous Metals Import and Export Corp. (CNIEC), exporters of the subject merchandise. As stated in Commerce's preliminary determination, MINMETALS and CNIEC failed to report information necessary to establish FMV.[20] Because of the materially deficient nature of the questionnaire responses, Commerce used BIA in making its final determination, in this case, estimates submitted by the

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[18] The actual duty collected in 1990 was much less than the calculated duty because of the temporary suspension of duties on imports of tungsten ore concentrates from countries with most-favored-nation status, effective Oct. 1, 1988 through Dec. 31, 1990. During this time period, imports from those countries with most-favored-nation status were granted duty-free entry for tungsten ore concentrates upon importer request, by noting the appropriate HTS provision from chapter 99 on entry documents.

[19] This discussion is based on Commerce's final LTFV determination notice, which is presented in app. C.

[20] MINMETALS and CNIEC failed to report factors of production information, such as the types and quantities of raw materials employed, the skill level and number of hours of labor required, and types and amounts of energy consumed.

petitioner.[21] Furthermore, Commerce, lacking usable responses, determined that verification was inappropriate.

In its preliminary determination, Commerce directed the U.S. Customs Service (Customs) to suspend liquidation of all entries of tungsten ore concentrates from China that are entered, or withdrawn from warehouse, for consumption on or after July 10, 1991, and to require a cash deposit or posting of a bond equal to 151 percent ad valorem. In its final determination, Commerce directed Customs to continue the suspension pending the Commission's final determination.

The World Market

World consumption

As shown in table 1, worldwide consumption of tungsten ores and concentrates fell from 1986 to 1987, increased from 1987 to 1988, and fell from 1988 to 1990 to a 5-year low of 41,820 MTW.[22] From 1988 to 1990, increases occurred primarily in China, India, and the Republic of Korea, while other major consuming countries experienced a levelling off or declining trend in the consumption of tungsten ores and concentrates.

The UNCTAD Secretariat attributes the drop in consumption of ores and concentrates in developed market-economy countries to a weakening demand in the market rather than to imported intermediate materials. It also noted that the expansion of tungsten ore and concentrate consumption in China could be attributed to the rapid development of plant facilities, particularly for producing intermediate tungsten products. This apparently accompanies China's economic reform policy and the national policy to increase exports of higher value-added products.[23]

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[21] The petitioner's estimate of USP is based on U.S. Bureau of Census data on imports of high- and low-grade tungsten ore concentrates from China, as adjusted for foreign inland freight.

Also, the petitioner alleges that China is a non-market-economy country within the meaning of section 773(c) of the act. Accordingly, FMV is calculated by the petitioner for China using a constructed value based on certain factors of production valued in the market economy countries of India and Peru. The petitioner also added the statutory minimums of 10 percent for selling, general, and administrative expenses and 8 percent for profit, in accordance with section 773(e)(1)(B) of the act.

[22] Although the period for which the Commission requested data in its questionnaires was from January of 1988 through June of 1991, for background and informational purposes, some of the information presented in this report includes periods of time prior to (or subsequent to) that period.

[23] UNCTAD Secretariat, Review of Current Market Situation.

Table 1
Tungsten ores and concentrates: Worldwide consumption, by countries, 1986-90

(In MTW)

Item	1986	1987	1988	1989	1990
North America:					
Canada	12	10	10	10	10
Mexico	42	64	9	5	5
United States	4,804	5,506	7,832	7,725	7,300
Total	4,858	5,580	7,851	7,740	7,315
South America:					
Argentina	25	65	30	38	30
Brazil	672	867	753	688	670
Total	697	932	783	726	700
Africa:					
South Africa	250	203	242	173	200
Total	250	203	242	173	200
Europe:					
Austria	2,000	2,000	2,100	1,800	1,800
Belgium-Luxembourg	30	50	50	2	0
Bulgaria	100	100	100	100	100
Czechoslovakia	1,300	1,300	1,300	1,300	1,300
France	667	269	34	0	0
German Democratic Rep.	300	300	300	300	300
Germany, Fed. Rep. of	1,720	1,863	2,144	2,576	500
Hungary	400	400	500	500	400
Italy	80	86	20	0	0
Netherlands	350	300	330	350	300
Poland	1,264	744	424	0	0
Portugal	40	20	0	0	0
Spain	159	20	20	0	0
Sweden	855	567	550	600	550
United Kingdom	580	100	50	50	50
U.S.S.R.	15,000	15,000	14,500	14,500	13,000
Total	24,845	23,119	22,422	22,078	18,300
Asia:					
China	8,500	9,000	9,000	9,000	11,000
India	230	250	87	200	200
Japan	2,145	2,119	1,980	1,578	1,500
Korea, North	800	500	500	500	500
Korea, Republic of	1,987	1,950	1,580	2,000	2,000
Total	13,662	13,819	13,147	13,278	15,200
Oceania:					
Australia	94	200	120	130	100
New Zealand[1]	5	5	5	5	5
Total	99	205	125	135	105
World total	44,411	43,858	44,570	44,130	41,820

[1] Data from Tungsten Statistics, 1990, Annual Bulletin of the UNCTAD Committee on Tungsten.

Source: Tungsten Minerals Yearbook, 1990, U.S. Bureau of Mines, except as noted.

World capacity, production, and capacity utilization

Worldwide mine and mill rated end-of-period capacity,[24] production, and capacity utilization for 1990 are presented in table 2. According to the U.S. Bureau of Mines, as of December 31, 1990, approximately 42 percent of the world's capacity to mine and mill tungsten ore concentrates was located in China, while the United States possessed 7 percent of the world's capacity (figure 1). In addition, China milled over one-half of the world's tungsten ore concentrates in 1990. Data on trends of world production of tungsten ore concentrates are presented in table 3. The U.S. production data presented were compiled from data submitted in response to Commission questionnaires; all other data are from the U.S. Bureau of Mines. These data generally show an overall declining trend in worldwide production from 1986 to 1990. Further, estimates for 1991 indicate a slight decline.[25]

According to the U.S. Bureau of Mines--

> During 1990 China continued to be the dominant supplier of tungsten products to the world market. Concentrate, APT, and ferrotungsten prices generally remained low while market opportunities were limited by a supply-demand imbalance. Many Western World producers believed that much of the problem rested with China's failure to place adequate controls on its production, distribution, and pricing policies. As a result of the depressed market, most tungsten mines in the United States and other Western nations remained closed or were operated at reduced capacity during the year. Also, two other mines, one in Australia and one in Brazil, were added to the list of closed mines during the year. Market conditions generally offered little or no economic incentive for producers to explore or develop other tungsten resources.[26]

A list of world tungsten ore mine closings in the 1980s is presented in appendix F.

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[24] Rated capacity is defined as the maximum quantity of product that can be produced in a period of time on a normally sustainable long-term operating rate, based on the physical equipment of the plant, and given acceptable routine operating procedures involving labor, energy, materials, and maintenance. Capacity includes both operating plants and plants temporarily closed that, in the Bureau of Mines' judgment, can be brought into production within a short period of time with minimum capital expenditure. Mine capacity for tungsten is based on published reports, maximum production statistics, and estimates. The latter are utilized particularly for the centrally planned economy countries, where capacity information is either incomplete or unavailable. Tungsten Minerals Yearbook, 1990, U.S. Bureau of Mines.

[25] Gerald Smith, U.S. Bureau of Mines, telephone conversation with USITC staff, Mar. 1, 1991.

[26] Tungsten Minerals Yearbook, 1990, U.S. Bureau of Mines.

Table 2
Tungsten ore concentrates: Worldwide end-of-period rated capacity,[1] production, and capacity utilization, by countries, 1990

(In MTW)

Item	End-of-period capacity	Production	Capacity utilization
North America:			
Canada	3,000	0	0.0
Mexico	300	200	66.7
United States	3,700	(2)	(2)
Total or average	7,000	(2)	(2)
South America:			
Argentina	40	16	40.0
Bolivia	1,300	1,200	92.3
Brazil	500	422	84.4
Peru	1,200	1,200	100.0
Total or average	3,040	2,838	93.4
Europe:			
Austria	1,300	1,250	96.2
Czechoslovakia	50	50	100.0
Portugal	1,400	1,405	100.4
Spain	100	80	80.0
Sweden	350	0	0.0
U.S.S.R.	9,200	8,800	95.7
Total or average	12,400	11,585	93.4
Africa:			
Rwanda	150	100	66.7
Uganda	10	4	40.0
Zaire	30	14	46.7
Zimbabwe	30	1	3.3
Total or average	220	119	54.1
Asia:			
Burma	500	300	60.0
China	21,000	21,000	100.0
India	20	13	65.0
Japan	300	250	83.3
Korea, North	1,000	1,000	100.0
Korea, Republic of	1,500	1,255	83.7
Malaysia	10	0	0.0
Mongolia	500	500	100.0
Thailand	500	290	58.0
Turkey	200	100	50.0
Total or average	25,530	24,708	96.8
Oceania:			
Australia	2,250	900	40.0
New Zealand	10	0	0.0
Total or average	2,260	900	39.8
World total or average	50,450	40,350[3]	86.3[4]

[1] Includes capacity at operating mines as well as mines on standby basis as of Dec. 31, 1990.

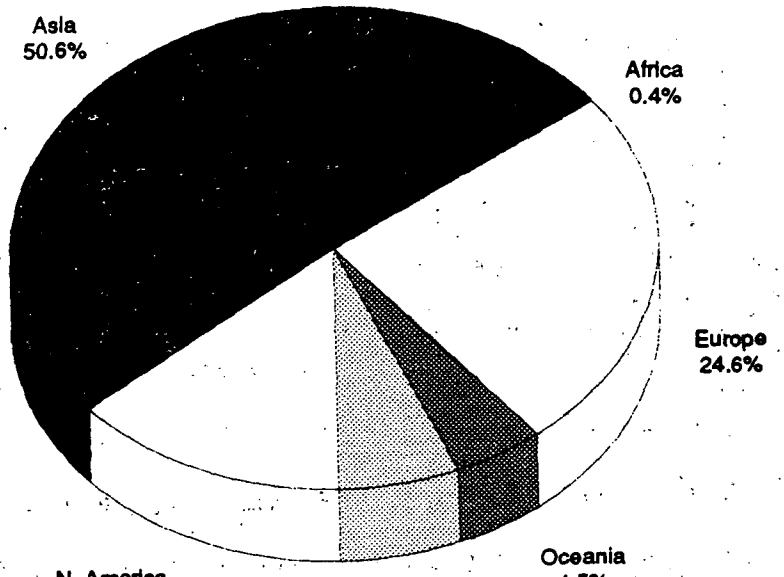
[2] U.S. data is "withheld" by the U.S. Bureau of Mines to avoid disclosing proprietary data.

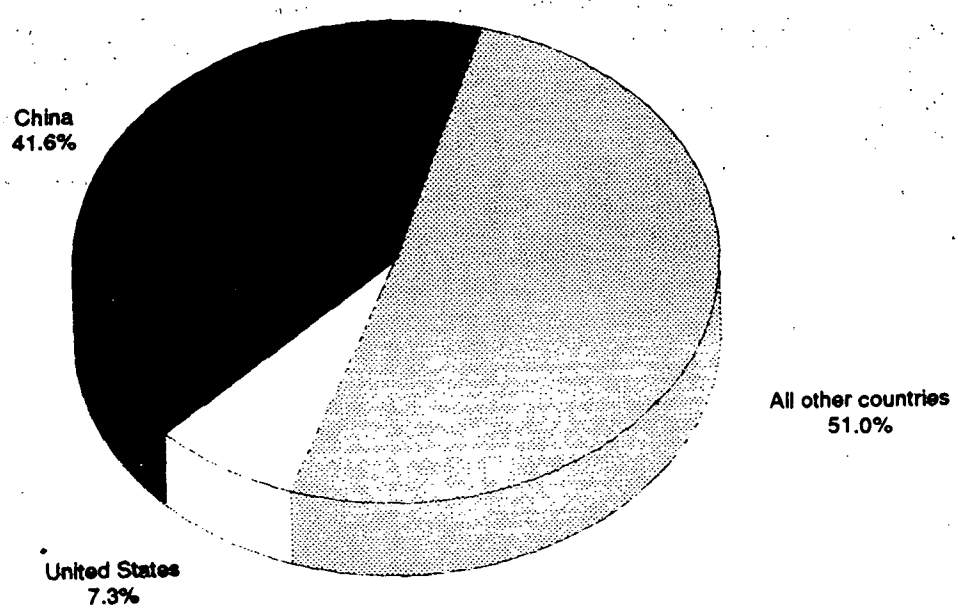
[3] Excluding U.S. production.

[4] Based on capacity and production excluding the United States.

Source: Tungsten Minerals Yearbook, 1990, U.S. Bureau of Mines.

Figure 1
Tungsten ore concentrates: Rated end-of-period capacity, 1990





Source: Tungsten Minerals Yearbook, 1990, U.S. Bureau of Mines

Table 3
Tungsten ore concentrates: World production, 1986-90

(In MTW)

Item	1986	1987	1988	1989	1990
China	15,000	21,000	21,000	21,000	21,000
United States	780	34	***	***	***
All other countries	27,700	21,440	21,202	21,099	19,350
Total	43,480	42,474	***	***	***

Source: Tungsten Minerals Yearbook, 1990, U.S. Bureau of Mines, and compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

United Nations Conference on Trade and Development (UNCTAD)

The UNCTAD Committee on Tungsten convened its 22d session in Geneva, Switzerland, in December 1990. In this session the Secretariat reported a pessimistic worldwide outlook for the tungsten industries, noting that declining tungsten prices are expected to continue in the immediate future, given a persistent oversupply of material and weakening demand.[27] The delegation from China indicated that the main cause for the deteriorating tungsten market was the steady decline in the domestic demand of the major tungsten consumers.

The Secretariat indicated that the tungsten market is one characterized by oversupply, low prices, closed mines, and idle plant capacities for intermediate products in several tungsten-consuming countries. It also indicated that the outlook for demand points to little likelihood of any substantial improvement and that the tungsten economy will be influenced by developments in Eastern Europe and Asia, as well as by disarmament decisions and environmental considerations.[28]

[27] The report delivered by the Secretariat was prepared based on data collected in the summer of 1990.

[28] UNCTAD Secretariat, Review of Current Market Situation.

The U.S. Market

Apparent U.S. consumption

According to estimates calculated by the U.S. Bureau of Mines, apparent U.S. consumption of tungsten ore concentrates fell by 1.4 percent from 1988 to 1989 and by 5.5 percent in 1990, as shown in the following tabulation (in MTWs):

Product	1988	1989	1990
Tungsten ore concentrates...	7,832	7,725	7,300

Data on apparent U.S. consumption reported by the five known U.S. consumers of tungsten ore concentrates as reported in response to the Commission's questionnaires are presented in table 4.[29] The petitioner, U.S. Tungsten Corp., produces a very low-grade tungsten ore concentrate (i.e., *** percent by weight of WO_3)[30] and purchases *** tungsten ore concentrates for captive consumption in the production of other tungsten products.[31] The other four U.S. consumers[32] simply purchase high-grade tungsten ore concentrates and

[29] The Commission's data on apparent U.S. consumption, as reported in response to the Commission's questionnaires and presented in tables 4 and 22, are generally somewhat less than the data published by the U.S. Bureau of Mines. Data presented in tables 4 and 22, however, do not include the consumption of tungsten ore concentrates in the production of APT under tolling agreements because (1) the tolling information provided may include the consumption of scrap, as well as tungsten ore concentrates, (2) incomplete and conflicting tolling information was provided by traders/brokers, and (3) information provided on tolling arrangements may have been inconsistently reported. See app. G for the staff's estimates of the effect of the inclusion of tolled tungsten ore concentrates on apparent U.S. consumption and market penetration.

[30] ***, telephone conversation with USITC staff, ***.

[31] The petitioner asserts that although its APT facility is capable of consuming very low-, low-, and high-grade tungsten ore concentrates, it is more economically efficient for its concentrate facility to produce a very low-grade as opposed to a higher-grade tungsten ore concentrate. Posthearing brief by counsel on behalf of petitioner, p. 2 and exhibit 1.

The only other current U.S. producer, Curtis Tungsten, Inc., does not captively consume the product.

[32] These firms are Canada Tungsten Mining Corp. (Canada Tungsten), General Electric Products Corp. (GE), GTE Products Corp. (GTE), and Kennametal. During the period for which data were collected in the investigation, Teledyne produced intermediate and downstream tungsten products from tungsten scrap, ***.

Table 4
Tungsten ore concentrates: Apparent U.S. consumption, 1988-90, January-June 1990, and January-June 1991[1]

Item	1988	1989	1990	January-June-- 1990	1991
	Quantity (MTW)				
Company transfers of--					
U.S. product	***	***	***	***	***
Chinese product	***	***	***	***	***
Product by any other source	***	***	***	***	***
Apparent U.S. consumption	7,887	7,006	6,990	3,784	3,309
	Value (1,000 dollars)				
Company transfers of[2]--					
U.S. product	***	***	***	***	***
Chinese product	***	***	***	***	***
Product by any other source	***	***	***	***	***
Apparent U.S. consumption	53,271	48,480	40,006	21,480	18,163
	Unit value (per MTW)				
Company transfers of[2]--					
U.S. product	$***	$***	$***	$***	$***
Chinese product	***	***	***	***	***
Product by any other source	***	***	***	***	***
Apparent U.S. consumption	6,754	6,920	5,723	5,677	5,489

[1] Consumption data were reported by five U.S. consumers of tungsten ore concentrates. Data as presented above are actual U.S. consumption of purchased and produced tungsten ore concentrates, as reported. The data do not include Government stockpile dispositions of 524 MTW and 466 MTW in 1988 and 1989. No stockpile dispositions were made in 1990, and values are not available for 1988 and 1989 because the dispositions were made under the Ferroalloy Upgrading Program. For a more comprehensive discussion, see the section of this report entitled "U.S. Government stockpiles." The data also do not include the consumption of tungsten ore concentrates reported by consumers of tolled concentrates, because of the questionable reliability of the information provided in response to the Commission's request. See app. G for the staff's estimates of the effect of the inclusion of tolled tungsten ore concentrates on apparent U.S. consumption and market penetration.

[2] The values presented for company transfers by U.S. Tungsten Corp. of U.S.-produced concentrates are based on ***. The values presented for company transfers by consumers of Chinese-produced concentrates and concentrates produced by all other countries are based on the valuation of imports at cost.

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

consume the product in the production of other tungsten products.[33] These five firms account for all known U.S. consumption of tungsten ore concentrates. The firms and their shares of U.S. consumption of tungsten ore concentrates in 1990 are presented in figure 2.

As reported, total U.S. consumption, by quantity, fell by 11.2 percent from 1988 to 1989, by 0.2 percent in 1990, and by 12.6 percent from January-June 1990 to January-June 1991.[34] In terms of value, total reported U.S. consumption fell by 9.0 percent from 1988 to 1989, by 17.5 percent in 1990, and by 15.4 percent from January-June 1990 to January-June 1991.[35]

The unit values of the tungsten ore concentrates consumed in the United States increased from 1988 to 1989 and fell in 1990. For the interim periods of 1990 and 1991, the unit values of the U.S.-produced tungsten ore concentrates consumed ***, while the unit values of all other tungsten ore concentrates consumed, including those from China, ***. In virtually all periods for which data are presented, the unit value of U.S.-produced tungsten ore concentrates consumed in the United States is *** than that of all other tungsten ore concentrates consumed in the United States.

U.S. producers

There are two known U.S. producers of tungsten ore concentrates: U.S. Tungsten Corp. and Curtis Tungsten, Inc. (Curtis Tungsten). The Commission sent producers' questionnaires to these firms and received completed responses from both firms. Presented in table 5 are the producers, their shares of 1990 production, position on the petition, and the locations of their production facilities.

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[33] Respondents argue that it is much more costly to use very low-grade tungsten ore concentrates in the production of APT and are unaware of any other substantial consumer in the world that uses the same grade of tungsten ore concentrates that petitioner uses. Transcript of the hearing, pp. 64-65. They also assert that it matters not which type of concentrate (i.e., wolframite, huebnerite, ferberite, and scheelite) is used in producing other tungsten products, as long as the minimum specifications concerning WO_3 and impurities are met. They add, however, that scheelite is approximately 16 percent more expensive for GTE and GE to process than is wolframite because calcium is more difficult to extract than is iron. Prehearing brief by counsel on behalf of GTE and GE, p. 3, testimony of John J. Fedorchak of GTE, p. 2, and posthearing brief by counsel on behalf of GTE and GE, exhibit 4.

In addition, Kennametal's production process requires a blend of wolframite and scheelite tungsten ore concentrates. "Tungsten Carbide: Crystals By the Ton," Journal of Crystal Growth, vol. 89, 1988.

[34] Although apparent U.S. consumption declined during January 1988 through June 1991, the U.S. Bureau of Mines indicated that U.S. demand in primary tungsten end-use sectors, which are ultimately keyed to the use of tungsten ore concentrates, was reportedly moderately strong during 1990, increasing by approximately 6 percent from 1989. Tungsten Minerals Yearbook, 1990, U.S. Bureau of Mines.

[35] Values provided by U.S. Tungsten Corp. are constructed based on ***.

Figure 2
Tungsten ore concentrates: Share of U.S. consumption, by consumers, 1990

Note.--Does not include consumption of tolled tungsten ore concentrates.

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

Table 5
Tungsten ore concentrates: U.S. producers, shares of reported U.S. production in 1990, position on the petition, and production locations

Firm	Share of production Percent	Position	Location
Curtis Tungsten	***	Supports	Andrew Mine, Los Angeles County, CA
U.S. Tungsten Corp	***	Supports	Pine Creek Mine, Bishop, CA
Total	100.0		

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

Curtis Tungsten, Inc.--Curtis Tungsten was registered by the Securities and Exchange Commission on December 28, 1988, to sell shares of its common stock, and completed its sale of the initial offering of common stock on June 28, 1989. Revenues realized from this sale enabled production of scheelite concentrates to begin at a relatively low level during the last quarter of 1989 at its Andrew Mine near Los Angeles, CA. The mine and mill had not been operated since 1985. In a letter dated January 23, 1991, Curtis Tungsten indicated that the firm's mill closed in August 1990 due to extreme drought conditions in southern California. Previously, in a letter of support of the petition written by Curtis Tungsten, dated October 22, 1990, the firm identified the cause of the firm's "low rate" of "current production" as mainly low prices of tungsten ore concentrates caused by LTFV imports from China. Mr. Curtis asserts that both the drought and the low-priced tungsten ore concentrates from China caused the firm's low rate of production and its difficulty in obtaining financing.[36]

The firm currently claims the ability to produce any grade of tungsten ore concentrate through 70 percent WO_3 sourced from relatively rich veins containing 4 percent WO_3. In fact, the firm has been gearing up for production to satisfy a contract with GTE finalized in August 1991. The contract is for *** MTW of WO_3 per month from *** to ***, and up to *** MTW of WO_3 per month from *** to ***.[37]

Curtis Tungsten, in an attempt to increase its assets, entered into an agreement with Gartung Industries, Inc. in July 1990 for the purchase of stock

[36] Transcript of the hearing, p. 49.

[37] The contract specifies that tungsten ore concentrates sold by Curtis Tungsten to GTE must meet the minimum specification of *** percent WO_3. From *** until ***, the minimum WO_3 content should *** to *** percent and Curtis Tungsten should use "***." The first shipment to GTE is expected in mid-October 1991. Transcript of the hearing, p. 54.

in the Strawberry tungsten mine and mill.[38] This mine and mill, which last operated in December 1986, reportedly contains a *** percent WO_3 ore body[39] and could become operational in approximately ***.[40]

U.S. Tungsten Corp.--U.S. Tungsten Corp., owned by Strategic Minerals Corp. (STRATCOR), mines scheelite tungsten ore and mills tungsten ore concentrates at its Pine Creek facilities near Bishop, CA. The mine reportedly contains *** tons of proven ore reserves at *** percent by weight of WO_3.[41] Also, the ore reportedly includes relatively high levels of molybdenum, relatively low levels of magnesium, iron, and silica, and essentially no arsenic.[42]

The tungsten ore concentrates produced by U.S. Tungsten Corp. are solely very low-grade tungsten ore concentrates of *** percent by weight of WO_3[43] and serve as a supplement to a *** quantity of imported *** feedstock from ***, for the company's production of ammonium paratungstate (APT). All of the firm's production of tungsten ore concentrates is internally consumed in the production of APT.[44] Although U.S. Tungsten Corp. indicated that for the period for which data were collected in the investigation it has only produced very low-grade tungsten ore concentrates, it does claim the current capability to produce high-grade tungsten ore concentrates suitable for sale in the commercial market.[45] The firm is somewhat unclear concerning the economic feasibility of making commercial sales of tungsten ore concentrates in the future, but it has indicated that such sales are a possibility. It also

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[38] Curtis Tungsten *** for the Strawberry mine and mill. ***. Press release dated July 3, 1990, and telephone conversation with ***.

[39] The average world grade of mined ore is approximately 0.5 percent. Philip T. Stafford, Vice President, Curtis Tungsten, Inc., letter dated Oct. 22, 1990.

[40] Tungsten Minerals Yearbook, 1990, U.S. Bureau of Mines. Conversation with ***.

[41] Petitioner also reports *** tons of probable ore reserves of *** percent WO_3 and *** tons of inferred ore reserves at *** percent WO_3. Posthearing brief by counsel on behalf of petitioner, pp. 7-8 and exhibit 3.

[42] Posthearing brief by counsel on behalf of petitioner, pp. 8-9.

[43] The very low-grade tungsten ore concentrates produced by petitioner for use in its APT production facilities are not to be confused with slime in the most technical sense, i.e., a fine, powdery substance generally containing particles of less than 50 microns in size. Posthearing brief by counsel on behalf of petitioner, p. 11, and telephone conversation with ***.

[44] The firm also produces ***.

[45] Counsel for petitioner explains that it would require *** for U.S. Tungsten Corp. *** to produce high-grade tungsten ore concentrates. That is, to produce very low-grade tungsten ore concentrates of *** percent by weight of WO_3, the ore slurry must *** and to produce high-grade tungsten ore concentrates of *** percent by weight of WO_3, the ore slurry must ***. According to counsel, *** would be necessary to accomplish ***. Telephone conversation with ***.

indicated that it would not be practical or economical to produce a higher grade tungsten ore concentrate for its captive use.[46]

U.S. importers

Importers' questionnaires were sent to 21 firms. Five firms responded that they did not import tungsten ore concentrates during the period for which data were collected in the investigation, two firms did not respond to the Commission's request for information, and three firms provided incomplete responses.[47] Fourteen firms reported imports of tungsten ore concentrates from China during the period for which data were collected in the investigation; nine are traders/brokers and five are consumers. Six of the nine U.S. traders/brokers and all of the consumers that have been identified as importers of tungsten ore concentrates have provided complete responses to the Commission's request for data. In 1990, the 11 importing firms providing complete data are believed to have accounted for approximately *** of imports of tungsten ore concentrates from China.

U.S. traders/brokers.--U.S. traders/brokers are firms that import tungsten ore concentrates and offer the subject product for sale to consumers. Much of the imported product is sold on a "back-to-back" basis, although a small amount of the imported product may be held in inventory before sale to consumers.

U.S. consumers of imported tungsten ore concentrates.--There are currently four U.S. consumers of imported tungsten ore concentrates: GE, GTE, Kennametal, and U.S. Tungsten Corp. A fifth U.S. consumer of tungsten ore concentrates, Canada Tungsten, opened an APT plant in August 1988, but since March 1990 has not been in operation.[48] Except where noted, questionnaire data presented in this report are believed to account for all known purchases, whether direct imports or domestic purchases of the imported product, by the five consumers of tungsten ore concentrates.

Presented in table 6 are the U.S. consumers of imported tungsten ore concentrates, their shares of reported 1990 U.S. consumption of Chinese-produced tungsten ore concentrates, position on the petition, and their locations. During the period for which data were collected in the investigation, *** U.S. consumers of tungsten ore concentrates, ***, imported

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[46] The petitioner indicated that on a worldwide basis, almost every mine that has an APT plant on site intentionally produces very low-grade tungsten ore concentrates because it is most economically efficient to do so. Transcript of the hearing, pp. 26 and 35; posthearing brief by counsel on behalf of petitioner, pp. 2 and 10 and exhibit 1; and transcript of the conference, pp. 35-37, 42-44, and 55-57.

Petitioner's counsel also explained that if U.S. Tungsten Corp. found it economically feasible to produce high-grade tungsten ore concentrate for the commercial market, it would *** because it would be most economical to do so. Telephone conversation with ***.

[47] Questionnaire responses were not received ***. Partial questionnaire responses were received from ***.

[48] In its questionnaire response, the firm reported that ***. ***.

Table 6
U.S. consumers of imported tungsten ore concentrates,[1] shares of reported consumption of Chinese-produced tungsten ore concentrates in 1990, position on the petition, and tungsten product production locations

Firm	Share of consumption	Position	Location
	Percent		
Canada Tungsten	***	***	Ft. Madison, IA
GE	***	Opposes	Cleveland, OH
GTE	***	Opposes	Towanda, PA
Kennametal	***	***	Fallon, NV Latrobe, PA Henderson, NC
U.S. Tungsten Corp	***	Petitioner	Bishop, CA
	100.0		

[1] These five firms are estimated to account for all known U.S. consumption of tungsten ore concentrates.

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

and purchased *** concentrates. U.S. Tungsten Corp. imported and purchased *** tungsten ore concentrates during the same period.[49]

U.S. Government stockpiles

The Defense Logistics Agency (DLA) of the U.S. Department of Defense is the agency responsible for maintaining the U.S. tungsten stockpile.[50] Because the U.S. tungsten stockpile inventory had been above the stockpile goal for many years, the United States had not been a purchaser of tungsten ore concentrates for the stockpile, but instead was a net seller through the mid-1980s. Prior to December 1986, tungsten ore concentrates had been disposed of not only for cash, but also as a part of the Ferroalloy Upgrading Program (1982) under which tungsten was made available to certain ferroalloy processors as payment for the processing of ferroalloys for the U.S. Government.[51] Disposals were made on this barter-type arrangement under the Ferroalloy Upgrading Program in 1988, but were made on the basis of a cash-conversion agreement in 1989.

[49] Of the Chinese product imported and domestically purchased by U.S. Tungsten Corp. ***. Of the total product imported and domestically purchased by the petitioner ***.

[50] Since 1972, the U.S. General Services Administration (GSA) had been coordinating the sale of excess inventories of tungsten ore concentrates. In February 1988, an Executive Order designated the Secretary of Defense as the manager of the National Defense Stockpile. Subsequently, the duties of administering stockpile activities were transferred from the GSA to the DLA.

[51] *** are the only known participants in this program.

In recent years, the DLA has not disposed of significant amounts of stockpiled tungsten, to avoid further depressing already-weakened tungsten prices. Physical disposals of tungsten from the National Defense Stockpile totaled 524 MTW during 1988 and 466 MTW during 1989. These dispositions of tungsten ore concentrates from the National Defense Stockpile represented 6.6 percent of the consumption of tungsten ore concentrates in 1988 and 6.7 percent in 1989 (as reported by the U.S. Bureau of Mines).

Based on a revised assessment of military requirements in June 1990, goals for the tungsten family group in the National Defense Stockpile were increased to a level essentially equal to the existing inventory level for the tungsten family group. As of December 31, 1990, the total inventory of stockpile-grade tungsten ore and concentrates held by the Government was 24,576 MTW, while the inventory of non-stockpile-grade ore and concentrates held was 10,060 MTW. The National Defense Authorization Act for fiscal years 1990 and 1991 included no authority for disposal of tungsten from the National Defense Stockpile during 1990.[52]

Toll production

According to questionnaire responses, *** of the current U.S. consumers of tungsten ore concentrates,[53] as well as *** other U.S. tungsten processors and U.S. traders/brokers, have been involved in tolling arrangements concerning tungsten products during the period for which data were collected in the investigation.[54] The information reported on tolling agreements is for the amount of APT processed by the producer from tungsten ore concentrates and scrap delivered by the customer (table 7).

Table 7
APT: Toll production, by producers, 1988-90 and January-June 1991

Producer	Customer	Amount of APT produced
		MTW
*	*	*

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

Channels of distribution

Channels of distribution for tungsten ore concentrates differ for U.S. producers and importers, except in the case of the petitioner, which both produces and imports concentrates for captive use in the production of APT.

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[52] Tungsten Minerals Yearbook, 1990, U.S. Bureau of Mines.

[53] *** reported production under tolling agreements; however, no detailed information was provided regarding these agreements.

[54] ***.

U.S. Tungsten Corp. does not distribute ore concentrates to any processors of intermediate or downstream tungsten products. Curtis Tungsten, the other domestic producer, *** during the period for which data were collected in the investigation,[55] but has since finalized a ***-month contract with GTE for a minimum amount of tungsten ore concentrates, effective August 1, 1991. In fact, according to a company official, an estimated *** MTW of *** percent (on average) by weight of WO_3 and *** MTW of *** percent (on average) by weight of WO_3 have been produced since the period for which data were collected in the investigation and are currently inventoried for shipment.[56]

Tungsten ore concentrates produced in China are either imported directly by U.S. consumers for their own internal consumption or imported by trader/brokers for resale to consumers. During 1990, U.S. consumers of tungsten ore concentrates, i.e., Canada Tungsten, GE, GTE, Kennametal, and U.S. Tungsten Corp., accounted for an estimated *** percent of direct imports of Chinese tungsten ore concentrates, while traders/brokers accounted for the remaining *** percent.

Consideration of Alleged Material Injury

The information presented in this section of the report is based on responses to Commission questionnaires. Two producers, Curtis Tungsten and U.S. Tungsten Corp., accounting for all known U.S. production of tungsten ore concentrates during the period for which data were collected in the investigation, provided responses to the Commission's request for data.

U.S. production, capacity,[57] and capacity utilization

Production of tungsten ore concentrates in the United States during the period for which data were collected in the investigation occurred at two mines in California: U.S. Tungsten Corp.'s Pine Creek Mine and Mill, and Curtis Tungsten's Andrew Mine and Mill. Both were reportedly operated at an annual rate well below capacity. ***. Company officials explained that ***. Curtis Tungsten, which remained closed for much of the period for which data were collected in the investigation, has recently reopened to meet a contract with GTE for supplies of tungsten ore concentrates through December 1994. These and other major U.S. mine closures in the 1980s and the corresponding dates are listed in the following tabulation:

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[55] ***.

[56] Telephone conversation with ***.

[57] The "capacity" data requested in the Commission's questionnaire consisted of firms' "full production capability" to produce tungsten ore concentrates, based on the maximum level of production that their establishment could reasonably expect to attain under normal operating conditions.

Firm	Date
Union Carbide Emerson Mine.....	Closed 1985
GE Springer (Sutton) Mine.....	Opened and closed 1982
Curtis Tungsten Andrew Mine.....	Closed 1985, reopened 1989, closed mid-1990, reopened ***
U.S. Tungsten Corp. Pine Creek Mine.....	Closed 1986, reopened late 1987 on a reduced scale, ***
Gartung Industries Strawberry Mine.....	Closed December 1986
AMAX Climax Mine.....	Closed 1986 (byproduct of molybdenum production)

U.S. production of tungsten ore concentrates was once substantially higher than present levels. Based on U.S. Bureau of Mines statistics, U.S. production in 1981 was 3,600 MTW. The level of U.S. production subsequently hovered around 1,000 MTW from 1983 through 1985, when it began to fall, hitting its lowest point at 34 MTW in 1987. According to the U.S. Bureau of Mines, in 1979 there were approximately 50 operating tungsten mines in the United States. By 1983, the number had been reduced to five. Currently, there are only two.

Curtis Tungsten initially identified the cause of the firm's "low rate" of "current production" as mainly low prices of tungsten ore concentrates caused by LTFV imports of the product from China; however, it later identified the cause to be the "extreme drought conditions in southern California."[58] Also, Umetco Minerals Corp. (Umetco), a wholly-owned subsidiary of Union Carbide Corp., explained that the firm's Emerson Mine and Mill in Tempiute, NV, was closed in 1985 due to the low market price of tungsten ore concentrates in the United States. The firm has evidently maintained the facility since the closure in anticipation of an economically adequate market price for tungsten ore concentrates.[59]

Conversely, Teledyne stated that the closure of the Strawberry mine and mill was based on depletion of ore reserves,[60] GE stated that the closure at the Springer Mine was based on low APT prices,[61] and Kennametal indicated that it closed a Nevada mine and concentration facility in the 1960s and sold it to

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[58] Curtis Tungsten, letters dated Oct. 22, 1990, and Jan. 23, 1991.

[59] Umetco, letter submitted to the Commission, Feb. 11, 1991.

[60] Donald L. Bernens, Vice-President of Teledyne Firth Sterling of La Vergne, TN, affidavit submitted to the Commission.

Curtis Tungsten claims that the ore reserves are far from being depleted and has entered into a purchasing agreement with Gartung Industries Inc. (formerly Teledyne) for stock in the Strawberry mine and mill. The mine and mill, ***. Telephone conversation with ***.

[61] Kenneth James, counsel for GE Lighting Division, affidavit submitted to the Commission.

NRD Mining Ltd., Vancouver BC, in 1979 for reasons wholly unrelated to imports of tungsten ore concentrates from China.[62]

Capacity as reported by Curtis Tungsten was based on a ***-hour work week, operating *** weeks per year, and reported capacity by U.S. Tungsten Corp. was based on a ***-hour work week, operating *** weeks per year.

Total reported U.S. producers' end-of-period capacity *** throughout each calendar-year period for which data were collected in the investigation, and *** in the interim periods January-June 1990 and January-June 1991 (table 8). The *** in capacity experienced from 1988 to 1990 is explained by ***. Total reported U.S. production data show a ***-percent *** from 1988 to 1989, a ***-percent *** from 1989 to 1990, and a ***-percent *** in the interim 1991 period. Curtis Tungsten reported *** production in 1988 and *** levels of production since then; however, the firm is expected to produce and ship approximately *** MTW in the remaining months of 1991 in order to meet a contract signed with GTE on August 1, 1991.[63]

Table 8
Tungsten ore concentrates: U.S. capacity, production, and capacity utilization, by firms, 1988-90, January-June 1990, and January-June 1991[1]

Item	1988	1989	1990	Jan.-June-- 1990	1991
*	*	*	*	*	*	*

[1] Data presented are from 2 firms, accounting for all known current U.S production of tungsten ore concentrates.

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

For the period for which data were collected in the investigation, *** U.S. Tungsten Corp. reported production solely of very low-grade tungsten ore concentrates of 35 percent or less WO_3;[64] however, both firms report the capacity to produce higher grades of concentrates. In fact, Curtis Tungsten indicated that since the period for which data were collected in the investigation approximately *** MTWs of *** percent (on average) by weight of WO_3 have been produced ***.[65] Total reported U.S. capacity utilization *** from *** percent in 1988 to *** percent in 1989, but ***, to *** percent in 1990. For the interim periods January-June 1990 and January-June 1991, capacity utilization *** from *** percent to *** percent. The total reported

[62] Richard C. Hendricks, Vice President and General Manager of Kennametal, affidavit submitted to the Commission.
[63] ***. Telephone conversation with ***.
[64] U.S. Tungsten Corp.'s production during this period was actually of very low-grade concentrate of approximately *** percent by weight of WO_3.
[65] Telephone conversation with ***.

U.S. capacity utilization levels are *** than those reported by *** due to ***.

Curtis Tungsten reported that tungsten ore concentrates ***. U.S. Tungsten Corp., however, reported ***. U.S. Tungsten Corp. also produces APT at the same production site as tungsten ore concentrates; ***.

"Make vs. buy" decisions

The Commission requested the U.S. producers to discuss the "make-or-buy" decision. The responses are shown in appendix H.

Presented in table 9 are data provided by U.S. Tungsten Corp. concerning the firm's producing and purchasing patterns of tungsten ore concentrates. ***, the firm has been purchasing concentrates as well as producing tungsten ore concentrates from stocks of ore previously mined. APT is produced, in turn, from both the produced and purchased concentrates.

Table 9
Tungsten ore concentrates: U.S. Tungsten Corp.'s production, end-of-period inventories of production, shipments[1] of production, purchases, end-of-period inventories of purchases, and shipments[1] of purchases, 1988-90, January-June 1990, and January-June 1991

(In MTW)

Item	1988	1989	1990	Jan.-June-- 1990	1991
	*	*	*	*	*	*	*

[1] Shipments reported are company transfers of tungsten ore concentrates used in the production of APT.

Note.--Quantities may not reconcile due to rounding errors.

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

The primary factor considered by U.S. Tungsten Corp. in determining whether to produce or purchase tungsten ore concentrates is the level and stability of the world market price of tungsten ore concentrates. Before making a commitment to produce ***, U.S. Tungsten Corp. looks for a stable world market price that is above its costs, including those fixed in nature. Other factors taken into account include ***.

***. Prices increased from $37 per MTU in December 1990 to $59 per MTU as of September 23, 1991.[66] ***. Regardless of the increase in world market prices, U.S. Tungsten Corp. has expressed *** due to the uncertainty of the level and stability of the world market price. Company officials have

[66] Prices presented are London Metal Bulletin low wolframite prices.

explained that ***. ***. Since prices vary by grade and one mine can produce different grades of ore, the costs of mining various sections of the mine are also considered when evaluating expected profit based on world market prices and demand.[67]

For Curtis Tungsten, the question is not whether to produce or purchase, but rather whether to produce at all. The firm explains that it is not involved in purchasing tungsten ore concentrates but that its "sole operations are the mining and milling of tungsten ore to concentrate." In response to a request for information documenting the firm's breakeven point,[68] the firm provided average monthly production costs (***), tungsten ore concentrate sales, and net operational profits for seven different scenarios of mining and milling, as of ***. Variables in each scenario include number of shifts, amount of concentrating equipment used, grade of ore feed, feed rate, and the amount of ore fed. The total reported production cost of tungsten ore concentrates[69] for the seven scenarios ranged from $*** per MTU to $*** per MTU. Commission staff have concluded from the information provided that in order for Curtis Tungsten to supply GTE with the amount contracted through ***, the firm would incur production costs of about $*** per MTU.

U.S. producers' U.S. shipments (commercial and captive) and export shipments

Information on U.S. producers' U.S. shipments (commercial and captive), as discussed in this section of the report, are presented in table 10.

Commercial U.S. shipments.--There were *** U.S. commercial shipments of tungsten ore concentrates in 1988 and 1989. In 1990, *** reported ***. ***. U.S. Tungsten Corp. has been somewhat unclear concerning the feasibility of its making commercial sales of tungsten ore concentrates in the future, but it has indicated that such sales are a possibility. Although to date U.S. Tungsten Corp. has produced only very low-grade tungsten ore concentrates for captive use, it currently possesses the capability of producing high-grade tungsten ore concentrates suitable for sale in the commercial market. The firm explains that it would require *** in order to produce high-grade tungsten ore concentrates.[70]

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[67] Telephone conversations with ***.

[68] In July 1990, the American Metal Market reported the firm's breakeven point at $48 per MTU. "Chinese Tungsten Gouges Indicator," American Metal Market, July 12, 1990. In August 1991, Ronald Curtis, President, Curtis Tungsten, indicated that the firm's breakeven point was $*** per MTU and that the *** was explained by the firm's ***. Field trip notes, Aug. 9, 1991. Mr. Curtis also expressed at the hearing that the firm's breakeven point is at present "sufficiently lower than the current price" of tungsten ore concentrates. Transcript of the hearing, p. 55.

[69] Costs include mining, milling, transportation, and packaging costs.

[70] For more information on the petitioner's ability to produce high-grade tungsten ore concentrates for the commercial market, see the section of this report entitled "U.S. producers."

Table 10
Tungsten ore concentrates: Shipments by U.S. producers, by types, 1988-90, January-June 1990, and January-June 1991[1]

Item	1988	1989	1990	Jan.-June-- 1990	1991
	*	*	*	*	*	*	*

[1] Data presented are from 2 firms, accounting for all known current U.S. production of tungsten ore concentrates. Data presented exclude ***.

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

Captive U.S. shipments.--For the entire period for which data were collected in the investigation, essentially all U.S. shipments were captive U.S. shipments made by U.S. Tungsten Corp. In terms of quantity, captive shipments *** by *** percent from 1988 to 1989, *** by *** percent from 1989 to 1990, and *** by *** percent from January-June 1990 to January-June 1991. In terms of value, the trend was ***, with a ***-percent *** from 1988 to 1989, a ***-percent *** in 1990, and a ***-percent *** in the interim periods. Unit values *** by *** percent from 1988 to 1989, *** by *** percent in 1990, and *** by *** percent in the interim periods.

Export shipments.--Although there were no reported export shipments of tungsten ore concentrates by U.S. producers of the product during January 1988 through June 1991, company officials at Curtis Tungsten have indicated that the firm ***. ***.[71]

U.S. producers' inventories

Of the two U.S. producers of tungsten ore concentrates, inventories ***. U.S. Tungsten Corp. captively consumed all production of tungsten ore concentrates ***. End-of-period inventories held by *** of tungsten ore concentrates *** from *** MTW to *** MTW over the period for which data were collected in the investigation, as presented in the following tabulation:

Item	1988	1989	1990	January-June-- 1990	1991
Inventories (MTW).....	***	***	***	***	***

[71] Meeting with ***. Curtis Tungsten sources its tungsten ore concentrates from relatively rich veins containing 4 percent WO_3.

U.S. employment, wages, and productivity

U.S. Tungsten Corp. supplied full employment information (table 11). Curtis Tungsten reported ***, but that the number of production and related workers for the entire period for which data were collected in the investigation ranged from *** to ***. *** reported a reduction in the number of production and related workers of at least 5 percent or 50 workers; ***. ***. U.S. Tungsten Corp. reported a union representing its workers. According to the firm, all employees at the Pine Creek Mine and APT facility were represented by the Union for Operating Engineers until decertification in May 1990.

The number of production and related workers *** in 1989 and *** in 1990. The number of workers reported for 1990 was ***. ***. ***.[72]

Average hourly wages and hourly total compensation *** in *** periods, whereas hours worked, wages paid, and total compensation paid ***. As calculated, productivity *** and unit labor costs *** from 1988 to 1989; however, these calculations for 1990, January-June 1990, and January-June 1991 are ***.

Table 11
Number of production and related workers producing tungsten ore concentrates, hours worked,[1] wages and total compensation paid to such workers, hourly wages and hourly total compensation, productivity, and unit labor costs,[2] 1988-90, January-June 1990, and January-June 1991[3]

Item	1988	1989	1990	January-June-- 1990	1991
	*	*	*	*	*	*	*

[1] Includes hours worked plus hours of paid leave time.
[2] On the basis of total compensation paid.
[3] Data presented were reported by U.S. Tungsten Corp., whose U.S. production accounted for *** percent of total 1990 U.S. production of tungsten ore concentrates.

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

Financial experience of U.S. producers

Financial information was provided for operations on tungsten ore concentrates and for overall establishment operations by U.S. Tungsten Corp., a wholly-owned subsidiary of STRATCOR. These data, representing approximately *** percent of 1990 U.S. production of tungsten ore concentrates, are presented in this section. A *** producer,[73] Curtis Tungsten, indicated ***

[72] Telephone conversation with ***.
[73] Generally accepted accounting principles state ***. ***.

during January 1988 through June 1991. U.S. Tungsten Corp.'s income-and-loss data on the downstream product, APT, are presented in appendix I.

Onsite verification of U.S. Tungsten's data was performed; revisions for *** do not alter significantly the general *** nature of the tungsten ore concentrates' operations as originally submitted. Staff, nevertheless, believes that the *** may be *** by the use of what it considers an inappropriate SG&A allocation methodology. The reasons for this conclusion are presented in this section where an alternative SG&A allocation methodology is discussed.

Overall establishment operations.--Income-and-loss data on U.S. Tungsten Corp.'s overall establishment operations are presented in table 12. U.S. Tungsten Corp. indicated that its principal product is APT, which accounted for *** percent of its 1990 net sales, with the remainder being ***. During 1988-90 and January-June 1991, the entire production of tungsten ore concentrates by U.S. Tungsten Corp. was consumed in its APT operations, i.e., it had no external sales of tungsten ore concentrates during the period for which data were collected in the investigation.

Table 12
Income-and-loss experience of U.S. Tungsten Corp. on its overall establishment operations wherein tungsten ore concentrates are produced, fiscal years 1988-90,[1] January-June 1990, and January-June 1991

Item	1988	1989	1990	January-June-- 1990	1991
*	*	*	*	*	*	*

[1] U.S. Tungsten Corp.'s fiscal yearend is ***.
[2] Cash-flow is defined as net income or loss plus depreciation and amortization.

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

U.S. Tungsten Corp. was formed by its parent, STRATCOR, in 1986 to purchase the domestic tungsten business of Umetco, a wholly-owned subsidiary of Union Carbide Corp. The audited financial statements for each fiscal period from 1987 to 1990 indicate that the firm has ***. ***.

Tungsten ore concentrates.--Income-and-loss data for U.S. Tungsten Corp.'s tungsten ore concentrate operations are presented in table 13. Since all of U.S. Tungsten Corp.'s production of tungsten ore concentrates was consumed internally in the production of APT, ***. ***. ***.

Periodically, U.S. Tungsten Corp. determines whether to produce or purchase tungsten ore concentrates based on prevailing worldwide prices reported in the LMB and the costs of producing the ore concentrates. ***. ***. ***. ***.

Table 13
Income-and-loss experience of U.S. Tungsten Corp. on its tungsten ore concentrates operations, fiscal years 1988-90, January-June 1990, and January-June 1991

Item	1988	1989	1990	January-June-- 1990	1991
	*	*	*	*	*

[1] Cash-flow is defined as net income or loss plus depreciation and amortization.

Note.--Because of rounding, figures may not add to the totals shown.

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

U.S. Tungsten Corp. ***. ***. At the onsite verification, the company indicated that ***. This is one reason for the staff's conclusion that the selling, general, and administrative (SG&A) allocation methodology used is inappropriate. ***, staff believes a more appropriate allocation of SG&A expenses on the basis of costs is the ratio of tungsten ore concentrates' cost of goods sold to the audited corporate (overall establishment) cost of goods sold. The respective effects of the two methodologies on operating income are shown in the following tabulation (in thousands of dollars, except where noted):

Item	1988	1989	1990	January-June-- 1990	1991
Questionnaire basis:[1]					
	*	*	*	*	*
Alternative basis:[2]					
	*	*	*	*	*

[1] SG&A allocated to tungsten ore concentrates on the basis of ***.
[2] SG&A allocated to tungsten ore concentrates on the basis of tungsten ore concentrates' cost of goods sold to corporate (APT) cost of goods sold.

Depending on the SG&A allocation methodology selected, it is apparent that *** can vary considerably. Staff believes that the allocation methodology used by U.S. Tungsten is inappropriate for the following reasons; (1) ***, (2) ***, and (3) ***. U.S. Tungsten was adamant about retaining the questionnaire methodology because ***.

Breakeven analysis.--The breakeven point is the theoretical income level where all costs, variable and fixed, are fully recovered and there is zero profit. Generally, the greater the contribution margin, i.e., the difference between revenues and variable costs that contributes to the recovery of fixed costs, the fewer units, or dollars, required to reach the breakeven point. U.S. Tungsten Corp.'s ***. Breakeven analyses are presented for the most recent full year and for the two interim periods in table 14.

Table 14
Breakeven analysis for U.S. Tungsten Corp. on its tungsten ore concentrates operations, 1990, January-June 1990, and January-June 1991

Item	Based on data reported in U.S. Tungsten Corp.'s questionnaire response			Based on theoretical operations at 100 percent of capacity		
	1,000 dollars	MTW	Per MTW	1,000 dollars	MTW	Per MTW
*	*	*	*	*	*	

Note.--Because of rounding, figures may not add to the totals shown.

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

* * * * * * *

In response to requests for information documenting Curtis Tungsten's breakeven point, the firm supplied seven different theoretical profitability rates at various levels of mining and milling operations as of ***. The scenarios range from *** to ***, depending on the number of shifts, amount of concentrating equipment used, grade of ore feed, feed rate, and amount of ore fed. An average price of $*** per MTU ($*** per MTW) was used. Based on this information, it appears that Curtis Tungsten will have *** of $*** to $*** per month on the commercial contract to supply GTE with tungsten ore concentrates. Comparison of breakeven points for the two producers is difficult because Curtis Tungsten apparently did not include SG&A expenses in its computations as was done for U.S. Tungsten; however, it appears that Curtis Tungsten would, nonetheless, have a *** breakeven point because of its ***.

Investment in productive facilities.--The value of fixed assets and total assets and the return on total assets for U.S. Tungsten Corp. are presented in table 15.

Table 15
Assets of U.S. Tungsten Corp. as of the end of fiscal years 1988-90, June 30, 1990, and June 30, 1991

Item	As of the end of fiscal year--			As of June 30--	
	1988	1989	1990	1990	1991
*	*	*	*	*	*	*

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

Capital expenditures.--Capital expenditures reported by U.S. Tungsten Corp. are presented in table 16. All expenditures were for ***.

Table 16
Capital expenditures by U.S. Tungsten Corp., fiscal years 1988-90, January-June 1990, and January-June 1991

Item				January-June	
	1988	1989	1990	1990	1991
*	*	*	*	*	*	*

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

Note.--Because of rounding, figures may not add to the totals shown.

Research and development expenses.--U.S. Tungsten Corp. indicated that it had *** research and development expenditures for either its overall establishment or its tungsten ore concentrate operations.

Capital and investment.--The Commission requested the U.S. producers to describe any actual or potential negative effects of imports of tungsten ore concentrates from China on their "growth, investment, ability to raise capital, or existing development and production efforts, including efforts to develop a derivative or more advanced product." Responses are shown in appendix J.

Consideration of the Question of
Threat of Material Injury

Section 771(7)(F)(i) of the Tariff Act of 1930 (19 U.S.C. § 1677(7)(F)(i)) provides that--

> In determining whether an industry in the United States is threatened with material injury by reason of imports (or sales for importation) of any merchandise, the Commission shall consider, among other relevant factors[74]--
>
> (I) If a subsidy is involved, such information as may be presented to it by the administering authority as to the nature of the subsidy (particularly as to whether the subsidy is an export subsidy inconsistent with the Agreement),
>
> (II) any increase in production capacity or existing unused capacity in the exporting country likely to result in a significant increase in imports of the merchandise to the United States,
>
> (III) any rapid increase in United States market penetration and the likelihood that the penetration will increase to an injurious level,
>
> (IV) the probability that imports of the merchandise will enter the United States at prices that will have a depressing or suppressing effect on domestic prices of the merchandise,
>
> (V) any substantial increase in inventories of the merchandise in the United States,
>
> (VI) the presence of underutilized capacity for producing the merchandise in the exporting country,
>
> (VII) any other demonstrable adverse trends that indicate the probability that the importation (or sale for importation) of the merchandise (whether or not it is actually being imported at the time) will be the cause of actual injury,

[74] Section 771(7)(F)(ii) of the act (19 U.S.C. § 1677(7)(F)(ii)) provides that "Any determination by the Commission under this title that an industry in the United States is threatened with material injury shall be made on the basis of evidence that the threat of material injury is real and that actual injury is imminent. Such a determination may not be made on the basis of mere conjecture or supposition."

> (VIII) the potential for product-shifting if production facilities owned or controlled by the foreign manufacturers, which can be used to produce products subject to investigation(s) under section 701 or 731 or to final orders under section 736, are also used to produce the merchandise under investigation,
>
> (IX) in any investigation under this title which involves imports of both a raw agricultural product (within the meaning of paragraph (4)(E)(iv)) and any product processed from such raw agricultural product, the likelihood that there will be increased imports, by reason of product shifting, if there is an affirmative determination by the Commission under section 705(b)(1) or 735(b)(1) with respect to either the raw agricultural product or the processed agricultural product (but not both), and
>
> (X) the actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the like product.[75]

Available information on the volume, U.S. market penetration, and pricing of imports of the subject merchandise (items (III) and (IV) above) is presented in the section entitled "Consideration of the causal relationship between imports of the subject merchandise and the alleged material injury." Information on the effects of imports of the subject merchandise on U.S. producers' existing development and production efforts (item (X)) is presented in the section entitled "Consideration of alleged material injury." Item (I), regarding subsidies, and item (IX), regarding agricultural products, are not relevant in this investigation. Presented below is available information on U.S. inventories of the subject products (item (V)); foreign producers' operations, including the potential for "product-shifting" (items (II), (VI), and (VIII) above); any other threat indicators, if applicable (item (VII) above); and any dumping in third-country markets.

U.S. inventories of tungsten ore concentrates from China

End-of-period inventories of Chinese-produced tungsten ore concentrates held by the U.S. importers of record are presented in table 17.

---

[75] Section 771(7)(F)(iii) of the act (19 U.S.C. § 1677(7)(F)(iii)) further provides that, in antidumping investigations, ". . . the Commission shall consider whether dumping in the markets of foreign countries (as evidenced by dumping findings or antidumping remedies in other GATT member markets against the same class or kind of merchandise manufactured or exported by the same party as under investigation) suggests a threat of material injury to the domestic industry."

Table 17
Tungsten ore concentrates: End-of-period inventories of U.S. importers of record, by sources, 1988-90, January-June 1990, and January-June 1991[1]

Item	1988	1989	1990	January-June-- 1990	1991
	Quantity (MTW)				
China	281	607	230	354	1,161
Other sources	305	560	464	785	***
Total	586	1,167	694	1,139	***
	Ratio to U.S. shipments of imports (percent)[2]				
China	10.6	33.5	10.2	17.8	36.3
Other sources	15.9	38.1	19.5	45.6	***
Total	13.0	35.6	15.5	30.7	***

[1] Data presented are inventories reported by importers of record and do not include inventories of domestic purchases of imports. Data are believed to reflect approximately *** of the total imports of tungsten ore concentrates from China in 1990.
[2] U.S. shipments include commercial shipments and company transfers.

Note.--Ratios are calculated using data of firms supplying both numerator and denominator information.

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

Five U.S. consumers and six U.S. traders/brokers of tungsten ore concentrates reported imports of the subject product during January 1988 through June 1991.[76] For this period, *** of the reported inventories of Chinese tungsten ore concentrates were held by U.S. traders/brokers.

End-of-period inventories of tungsten ore concentrates from China as held by U.S. importers of record more than doubled from 1988 to 1989, while in 1990 they fell to a level below that reported in 1988. From the interim period January-June 1990 to January-June 1991, end-of-period inventories increased substantially. Total inventories of tungsten ore concentrates from all sources held by importers of record almost doubled from 1988 to 1989, fell 40.5 percent from 1989 to 1990, and *** from January-June 1990 to January-June 1991.

[76] Three additional traders/brokers reportedly imported during January 1988 through June 1991; however, these firms' questionnaire responses were incomplete and are not included in the presentation of data.

Ability of Chinese producers to generate exports and the availability of export markets other than the United States

China is the major supplier of primary and intermediate tungsten materials in the world market. About 47 percent of the world's estimated tungsten reserves are located in China,[77] and China currently produces over one-half of the total world production of tungsten ore concentrates.[78]

Although there are a limited number of individual-ownership mines in China, the primary Chinese producer is China Non-Ferrous Metals Industry Corp. (CNNC), a state-owned entity that describes itself as the world's leading producer and exporter of tungsten. In addition, there are two official state-owned agencies for the export of tungsten materials, namely, MINMETALS and CNIEC.[79] Affiliated firms importing tungsten ore concentrates into the United States are Chi Mei Corp., Minmetals, Inc., and Nonferrous Metals (USA) Inc.

The Commission requested information regarding Chinese operations producing concentrates. MINMETALS and CNIEC provided a response to this request. Data received by the Commission are presented in table 18. As noted in footnote 2 to table 18, the data as reported by MINMETALS and CNIEC do not agree with other publicly available data. Counsel explained that information provided is on behalf of the Chinese industry and that it stands by the accuracy of the data. He also explained that the discrepancies may be explained by less central control in China over the very low-grade tungsten ore concentrates prior to mid-1990 and by transshipments of Chinese tungsten ore concentrates through third countries.[80]

Reported capacity *** in each period for which data were collected in the investigation, while levels of production *** in 1989, *** in 1990, and *** from January-June 1990 to January-June 1991. Likewise, capacity utilization *** in 1988 to *** in 1989, and further to *** in 1990. A further *** to *** percent capacity utilization was reported in January-June 1991.

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[77] More than 90 percent of the world's estimated tungsten resources are located outside the United States. Besides China and the United States, other areas with significant resource potential are Australia, Austria, Bolivia, Brazil, Burma, Canada, North Korea, the Republic of Korea, Peru, Portugal, Spain, Thailand, Turkey, and the U.S.S.R. Tungsten: A Chapter from Mineral Facts and Problems, U.S. Bureau of Mines, 1985 edition.

[78] The tungsten ore concentrates mined and milled in China are primarily of the wolframite type. In addition, China mines and mills a much smaller amount of natural and synthetic scheelite. Synthetic scheelite is simply a calcium tungstate that is produced chemically. Transcript of the hearing, p. 50, and Tungsten Minerals Yearbook, 1990, U.S. Bureau of Mines.

[79] MINMETALS and CNIEC state ***.

[80] Specifically, counsel mentioned the role of Hong Kong and European trading companies involved in third-country transshipments. Transcript of the hearing, pp. 136-137. There are reportedly no mines or mills producing tungsten ore concentrates in Hong Kong; however, official statistics from the U.S. Department of Commerce report U.S. imports of tungsten ore concentrates from Hong Kong in the amounts of 416 MTW in 1988, 169 MTW in 1989, 44 MTW in 1990, none in the period January-June 1990, and 124 MTW in the period January-June 1991.

Table 18
Tungsten ore concentrates: Estimated Chinese capacity,[1] production, capacity utilization, end-of-period inventories, inventories as a ratio to total shipments, exports to the United States, exports to all other countries, home-market shipments, and total shipments, 1988-90, January-June 1990, and January-June 1991[2]

Item	1988	1989	1990	January-June-- 1990	1991
	*	*	*	*	*	*	*

[1] Respondents reported Chinese practical capacity to produce the subject product on the basis of *** hours per week and *** weeks per year.

[2] Data presented are estimated to represent *** percent of total Chinese exports of tungsten ore concentrates in 1988, *** percent in 1989, and *** percent in 1990. These estimates are calculated based on Chinese custom statistics supplied by counsel. Based on U.S. import statistics, the data presented are estimated to represent *** percent of Chinese exports of tungsten ore concentrates to the United States in 1988, *** percent in 1989, *** percent in 1990, *** percent in January-June 1990, and *** percent in January-June 1991.

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

End-of-period inventories *** in 1989 but *** in 1990. *** in end-of-period inventories was reported from January-June 1990 to January-June 1991. The ratio of end-of-period inventories to total shipments *** in 1988 to *** in 1989 and *** in 1990. This ratio *** in interim 1990 to *** in interim 1991. Reported shipments to the United States, which accounted for *** percent of total shipments during the period for which data were collected in the investigation, *** from 1988 to 1989, but *** from 1989 to 1990 and from interim 1990 to interim 1991. Home-market shipments and total shipments ***; however, export shipments to markets other than the United States, as well as total export shipments, *** from 1988 to 1990 and in interim 1991.

The Chinese Government's Ministry of Foreign Economic Relations and Trade (Ministry) temporarily suspended writing new export sales contracts for tungsten ore concentrates effective January 1, 1991. The ban, according to the Chinese, is set for an indefinite time period on new export sales of ores and concentrates only.[81] Contracts signed prior to the effective date were reportedly honored, which resulted in continued exports to the United States in early 1991.[82] The move, according to the Chinese, was to protect their

[81] Published reports in China and London indicated that the Chinese suspension of new export sales of tungsten ore concentrates was expected to last until early or mid-1992. "Delayed Reaction to China's Withdrawal from the U.S. Market," American Metal Market, Aug. 26, 1991.

[82] According to information received by the Commission in response to questionnaires, ***.

domestic tungsten resources[83] and help stabilize market prices.[84] The Chinese expect that the suspension will cause worldwide and U.S. sales volumes of tungsten ore concentrates to drop and prices to rise. In addition, senior officials from MINMETALS and CNIEC directed that all government subsidies be removed from tungsten production operations effective January 1, 1991.[85]

The majority of MINMETALS' and CNIEC's sales contracts on tungsten ore concentrates ***; however, the firms ***. As to the impact on U.S. consumers of tungsten ore concentrates, one U.S. consumer replied, "Most consumers in the U.S. are well covered for at least the next six months. After that, it's anybody's guess."[86]

There also seems to be concern worldwide over China's move away from exporting tungsten ores and concentrates, as well as certain intermediate tungsten products,[87] and toward downstream tungsten products not covered by the OMA or the EC price guarantees.[88] ***. ***. ***.[89] Nevertheless, UNCTAD indicated that there have been some efforts towards diversification by the Chinese to include higher value-added products. As of mid-1990, however, Chinese exports of such products as tungsten powder, tungsten carbide, tungsten wire products, and tungsten tools and drilling bits were limited.[90]

MINMETALS and CNIEC also reported ***.

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[83] The London Metal Bulletin ". . . suggests that the ban was imposed because there was some concern about China's tungsten reserves and the authorities have at last perceived that production should be linked to some kind of cost accountability. 'Most (Chinese) mines are unprofitable and domestic and international economics dictate that the selling price be more closely allied with the cost of production.'" "Traders Report Chinese Ban on Tungsten Concentrate Exports," Financial Times, Jan. 30, 1991.

"While some industry observers concluded that China's suspension of tungsten exports was done in anticipation of antidumping charges, published reports in China and London indicated the Chinese hoped to boost prices and increase foreign currency earnings when they eventually reenter the market." "Delayed Reaction to China's Withdrawal from the U.S. Market," American Metal Market, Aug. 26, 1991.

[84] The move apparently immediately pushed wolframite tungsten prices higher--from $37/MTU on Jan. 7, 1991 to $45/MTU on Feb. 11, 1991 for the LMB low quote, and from $49/MTU to $51/MTU for the LMB high quote. Prices were reported as of Sept. 23, 1991, at $59/MTU for the LMB low quote and $67/MTU for the LMB high quote.

[85] Tungsten Minerals Yearbook, 1990, U.S. Bureau of Mines.

[86] "Ante Raised in Tungsten 'War'," American Metal Market, June 28, 1991.

[87] This movement may be partially due to the OMA and to restraints imposed by the European Community on certain tungsten products.

[88] See the section of this report entitled "EC investigation" for a discussion of the EC price guarantees.

[89] Telephone conversation with ***.

[90] UNCTAD Secretariat, Review of Current Market Situation.

In response to an inquiry regarding the producers' plans to add, expand, curtail, or shut down production capability and/or production of tungsten ore concentrates in China, the respondents replied ***.[91]

Projections reported by MINMETALS and CNIEC for 1991 indicate ***. The tabulation below presents the reported projections:

Item	1991
Capacity (MTW)	***
Production (MTW)	***
Capacity utilization (percent)	***
Home-market shipments (MTW)	***
End-of-period inventories (MTW)	***[1]
Exports to--	
United States (MTW)	***
All other markets (MTW)	***

[1] As calculated by Commission staff from information provided by MINMETALS and CNIEC.

EC investigation

In response to a complaint filed by European producers of upgraded tungsten products, the European Commission initiated an antidumping investigation into imports of several tungsten products from China and from the Republic of Korea. Notice of the probe was given in December 1988. Imported materials included in the investigation were APT, tungsten metal powder, tungsten carbide, and fused tungsten carbide from both China and the Republic of Korea and tungsten oxide and tungstic acid from China. The European Commission continued to consider taking action on a similar complaint filed in April 1988 involving imports of tungsten ores and concentrates from China.

The EC's Council of Ministers reached a final decision on September 24, 1990, on the question of permanent imposition of tariffs on certain tungsten imports from China. In that decision, imports of concentrates, tungstic acid and oxide, and tungsten carbide powder and fused tungsten carbide were made subject to antidumping duties of 42.4 percent, 35 percent, and 33 percent, respectively. The duties applied to all exporters from China to the EC except MINMETALS and CNIEC, which, rather than being subjected to the imposed duties, agreed to comply with certain undisclosed minimum price guarantees for their materials. The proposed effect of these "undertakings" will be to increase the prices of the products concerned to remove the injury caused to the Community industry. Should the undertakings not be respected, or should they be terminated by the exporters, the EC may then impose antidumping duties.

[91] Questionnaire response provided by MINMETALS and CNIEC.

Consideration of the Causal Relationship Between Imports of the Subject Merchandise and the Alleged Material Injury

U.S. imports

Official import statistics of the U.S. Department of Commerce for tungsten ore concentrates are presented in the following tabulation for 1980-90, January-June 1990, and January-June 1991, and in figures 3 and 4, by quantity and value, for 1980 through 1990:[92]

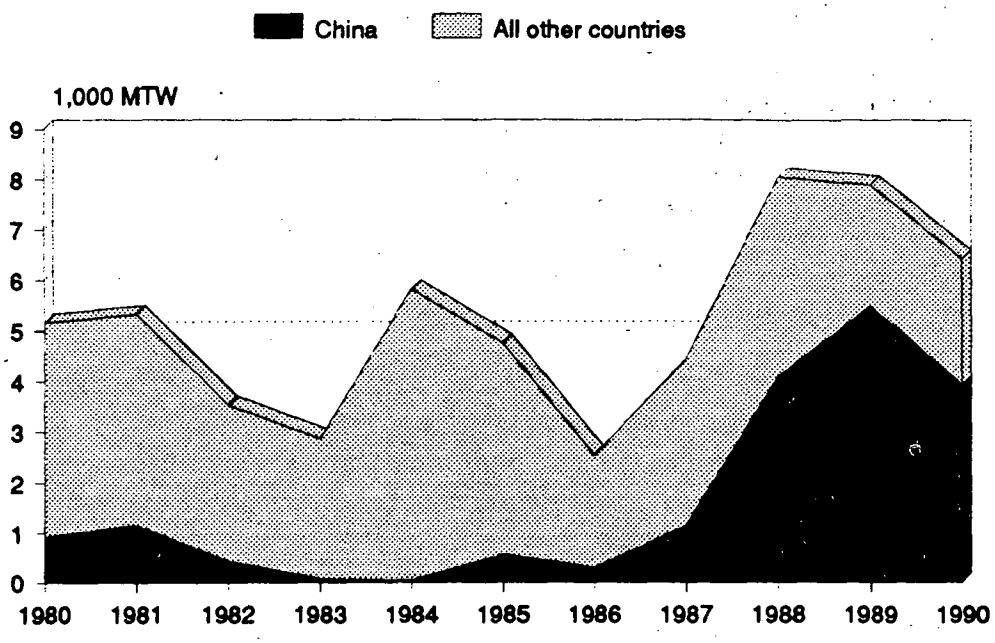
Year	China	All other countries	China	All other countries	China	All other countries
	Quantity (MTW)		Value (million dollars)		Unit value (per MTW)	
1980.....	919	4,240	17.0	72.8	$18,498	$17,170
1981.....	1,149	4,182	21.5	72.1	18,712	17,241
1982.....	425	3,103	7.7	40.5	18,118	13,052
1983.....	62	2,799	0.7	26.0	11,290	9,289
1984.....	31	5,777	0.2	53.4	6,452	9,244
1985.....	558	4,189	3.9	34.8	6,989	8,307
1986.....	292	2,234	2.0	12.8	6,849	5,730
1987.....	1,139	3,296	6.5	19.2	5,707	5,825
1988.....	4,082	3,972	26.2	25.5	6,425	6,412
1989.....	5,484	2,411	31.3	16.2	5,706	6,724
1990.....	3,921	2,499	19.6	13.3	4,998	5,306
Jan.-June--						
1990.....	2,175	1,342	10.4	7.3	4,782	5,440
1991.....	3,052	2,149	18.2	12.4	5,963	5,770

From 1980 to 1984, U.S. imports from China of tungsten ore concentrates, relative to total U.S. imports of the product, fell overall, by quantity, from 17.8 percent to less than 1 percent. However, this ratio increased to 69.5 percent of the total in 1989 before declining to 61.1 percent in 1990. For the interim period January-June 1990 compared with January-June 1991, the ratio fell from 61.8 percent to 58.7 percent.

Fourteen firms reported imports of tungsten ore concentrates from China during January 1988 through June 1991; nine are traders/brokers and five are consumers. Six of the nine U.S. traders/brokers and all of the consumers that have been identified as importers of tungsten ore concentrates during this period have provided complete responses to the Commission's request for data. The remaining three U.S. traders/brokers provided incomplete questionnaire responses. In 1990, the 11 importing firms providing complete data are believed to have accounted for approximately *** of total imports of tungsten ore concentrates from China. Commission staff regard the limited information

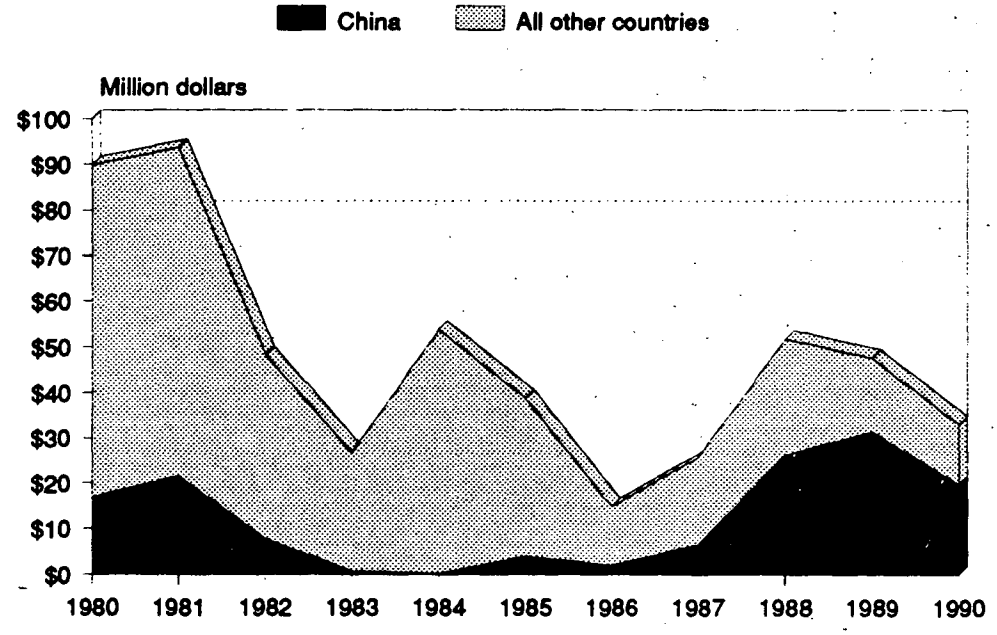
[92] Imports from China may be understated as reported in official import statistics due to a small amount of possible transshipments through Hong Kong. U.S. imports of tungsten ore concentrates from Hong Kong amounted to 416 MTW in 1988, 169 MTW in 1989, 44 MTW in 1990, none in January-June 1990, and 124 MTW in January-June 1991.

Figure 3
Tungsten ore concentrates: Quantity of U.S. imports, 1980-90



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

Figure 4
Tungsten ore concentrates: Value of U.S. imports, 1980-90



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

collected as not representative of the actual level of imports; therefore, for the purposes of this report, official import statistics are presented.

Official import statistics for tungsten ore concentrates for the period for which data were collected in the investigation are presented in table 19. U.S. imports of tungsten ore concentrates from China, in terms of quantity, increased by 34.3 percent from 1988 to 1989, fell by 28.5 percent in 1990, and increased between the interim 1990 and 1991 periods by 40.3 percent.[93] In terms of value, tungsten ore concentrates from China increased by 19.5 percent from 1988 to 1989, fell by 37.4 percent from 1989 to 1990, and rose again between interim 1990 and 1991, by 75.0 percent. Unit values fell continuously from $6,425 per MTW in 1988 to $4,998 in 1990, but increased from $4,782 to $5,963 per MTW between the interim 1990 and 1991 periods. These unit values were lower than those of imports from all other countries combined in 1989, 1990, and January-June 1990, but were higher in 1988 and in interim period January-June 1991.

Imports of tungsten ore concentrates from all other countries, in terms of quantity and value, generally fell from 1988 to 1990 and rose during interim 1991. Average unit values increased from 1988 to 1989, decreased in 1990, and increased between interim 1990 and interim 1991.

Other major exporters of tungsten ore concentrates to the United States during the period for which data were collected in the investigation were Bolivia, Peru, and Portugal. Unit values of the tungsten ore concentrates for these countries are presented in the following tabulation (per MTW):

				January-June--	
Country	1988	1989	1990	1990	1991
Bolivia.....	$6,175	$6,284	$4,574	$4,484	$4,917
Peru.....	6,209	6,328	5,390	5,456	4,968
Portugal.....	7,854	8,025	6,108	6,612	6,957

U.S. trade statistics indicate that China provided 51 percent of all U.S. imports of tungsten ore concentrates by quantity and value in 1988. The quantity and value increased to 69 percent and 66 percent, respectively, in 1989, fell to approximately 60 percent in 1990, and hovered around this level in January-June 1990 and January-June 1991.

There were *** imports of the subject product from China scheduled for delivery after June 30, 1991; however, *** U.S. traders/brokers and *** U.S. intermediate and derivative tungsten product producers reported ***.

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[93] Increases in imports of tungsten ore concentrates from China since 1987 may be partially explained by the OMA signed in September 1987; the agreement to restrict imports of APT and tungstic acid from China may have resulted in a relative shift toward the importing of other tungsten materials, one of which is concentrates.

Table 19
Tungsten ore concentrates: U.S. imports, 1988-90, January-June 1990, and January-June 1991

Source	1988	1989	1990	January-June 1990	January-June 1991
	Quantity (MTW)				
China	4,082	5,484	3,921	2,175	3,052
All other sources	3,972	2,411	2,499	1,342	2,149
Total	8,054	7,895	6,420	3,517	5,201
	Value (million dollars)[1]				
China	26.2	31.3	19.6	10.4	18.2
All other sources	25.5	16.2	13.3	7.3	12.4
Total	51.7	47.5	32.9	17.7	30.6
	Unit value (per MTW)[2]				
China	$6,425	$5,706	$4,998	$4,782	$5,963
All other sources	6,412	6,724	5,306	5,440	5,770
Average	6,419	6,017	5,118	5,033	5,884

[1] Landed, duty-paid value.
[2] Unit values were computed from the unrounded figures.

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

U.S. consumers' imports and domestic purchases of imports

Presented in table 20 are the U.S. consumers' combined imports and domestic purchases of imports of Chinese tungsten ore concentrates and the firms' shares of total U.S. imports and domestic purchases of imports of tungsten ore concentrates from China in 1990.

Throughout the period for which data were collected in the investigation, *** U.S. consumers of tungsten ore concentrates, ***, purchased solely high-grade tungsten ore concentrates. The petitioner, ***, purchased *** Chinese tungsten ore concentrates throughout the period for which data were collected in the investigation. Petitioner's purchases from *** were of ***-grade tungsten ore concentrates only.

U.S. producers' imports

U.S. Tungsten Corp. is the only U.S. producer of tungsten ore concentrates that imported the subject product during the period for which data were collected in the investigation. The firm's imports and domestic purchases of imports are presented in table 21.

Table 20
Tungsten ore concentrates: U.S. consumers' combined imports and domestic purchases of imports of Chinese tungsten ore concentrates and the firms' shares of total U.S. imports and domestic purchases of imports of tungsten ore concentrates from China, by firms, 1990

Firm	Quantity	Share of total
	MTW	Percent
Canada Tungsten	***	***
GE	***	***
GTE	***	***
Kennametal	***	***
U.S. Tungsten Corp	***	***
Total	3,639	100.0

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

Table 21
Tungsten ore concentrates: U.S. Tungsten Corp.'s imports and domestic purchases of imports, by sources, 1988-90, January-June 1990, and January-June 1991[1]

Item	1988	1989	1990	January-June-- 1990	1991
*	*	*	*	*	*	*

[1] Data presented are from U.S. Tungsten Corp., the only U.S. producer that imports or domestically purchases imported tungsten ore concentrates.

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

U.S. Tungsten Corp.'s combined imports and domestic purchases of Chinese tungsten ore concentrates ***, by quantity and value, from 1988 to 1989, but *** in 1990. *** was reported from interim 1990 to interim 1991. Combined imports and domestic purchases of tungsten ore concentrates produced in all other countries ***, by both quantity and value, from 1988 to 1990, but *** in the interim periods. Unit values for the subject product from China *** in every period, while unit values for imports from all other countries *** from 1988 to 1990 and *** between the interim periods. The unit values of Chinese tungsten ore concentrates obtained by U.S. Tungsten Corp. were *** than the average of those of all other countries during every period for which data were collected in the investigation ***.

U.S. market penetration by the subject imports

Market penetration as presented in this section is calculated using data submitted in response to the Commission's questionnaires (table 22).[94]

In terms of both volume and value, U.S. market penetration by subject imports from China increased from 1988 to 1989, fell in 1990, and fell again between January-June 1990 and January-June 1991. The drop in the Chinese share of U.S. consumption in 1990 compared with 1989 may have been partially due to reduced consumption of the imported tungsten ore concentrates in the processing of APT as an effort to correct excess APT inventories.[95]

Table 22
Tungsten ore concentrates: Company transfers of domestic product, U.S. shipments of imports, and apparent U.S. consumption, 1988-90, January-June 1990, and January-June 1991[1]

Item	1988	1989	1990	Jan.-June-- 1990	1991
*	*	*	*	*	*	*

[1] The Commission's data on apparent U.S. consumption, as reported in response to the Commission's questionnaires, do not include the consumption of tungsten ore concentrates in the production of APT under tolling agreements. See app. G for the staff's estimates of the effect of the inclusion of tolled tungsten ore concentrates on apparent U.S. consumption and market penetration.

Note.--Because of rounding, shares may not add to the totals shown.

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

[94] The Commission's data on apparent U.S. consumption, as reported in response to the Commission's questionnaires, do not include the consumption of tungsten ore concentrates in the production of APT under tolling agreements. See app. G for the staff's estimates of the effect of the inclusion of tolled tungsten ore concentrates on apparent U.S. consumption and market penetration.

[95] Review presented by Robert Bunting at the International Tungsten Industry Association Fifth International Symposium held in Budapest, Hungary, in October 1990.

Prices

Demand for tungsten ore concentrates depends on demand for intermediate tungsten products, which include APT, sodium tungstate, tungsten acid, and tungstic oxide. Because of the importance of tungsten ore concentrates as the major material input to these products, there is a close relationship between the sales prices of the ore concentrates and the intermediate products. Demand for intermediate tungsten products is keyed primarily to major end uses that depend on cutting, wear-resisting, and hard-facing materials. Examples of important end products include the cutting edges of certain machine tools and earthmoving equipment, drill bits, crushing machinery, filaments for electric lamps, automotive distributor points, and alloys to improve wear, abrasion, shock, and corrosion resistance.

Although tungsten ore concentrates are sold as a commodity product, the distribution of the world's capacity and reserves gives China the ability to influence the level of supply and price throughout the world. Both the petitioner and respondents agreed that this influence can be seen in the U.S. market.[96] [97] China has traditionally been the world's largest supplier of primary and intermediate tungsten material, with about 47 percent of known world tungsten reserves and 42 percent of world capacity. China typically supplies about 50 percent of the world's tungsten concentrate.[98] Based on UNCTAD statistics for exports of tungsten products, China accounted for about 26 percent, by value, of world trade in tungsten products in 1989.[99]

Prices of tungsten ore concentrates vary by grade, quality, and the quantity and types of impurities in the concentrates. Quality varies within each grade of tungsten ore concentrate. Grades are generally divided into three categories based upon the percent of tungsten in the ore concentrates: high-grade, which consists of tungsten ore concentrate containing 65 percent or more by weight of WO_3; low-grade, which consists of tungsten ore concentrate containing less than 65 percent by weight of WO_3; and slime, which is either a very low-grade tungsten ore concentrate containing less than 35 percent WO_3 or another low-grade tungsten product.[100] High-grade tungsten ore

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[96] Since China's decision in January 1991 to stop issuing new contracts for tungsten ore concentrates, prices have increased sharply. LMB low and high price quotes for wolframite increased by 46 and 22 percent, respectively, between January and June 1991. Typically, Chinese prices are reflected in the LMB low price quote.

[97] Transcript of the conference, pp. 50-51, and 99-100. According to the U.S. Bureau of Mines, because China is the major supplier of primary and intermediate tungsten material in the world market, its marketing practices are influential in shaping the tungsten price structure. Tungsten Minerals Yearbook, 1988, U.S. Bureau of Mines.

[98] Tungsten Minerals Yearbook, 1990, U.S. Bureau of Mines.

[99] China exported tungsten oxides and hydroxides, tungstates (including APT, calcium tungstate, and sodium tungstate), tungsten carbide, ferrotungsten and ferro-silico-tungsten, wrought tungsten, and unwrought tungsten in 1989. Tungsten Statistics, UNCTAD, May 1991, pp. 62-68.

[100] For the purposes of this investigation, tungsten slime is a very low-grade tungsten ore concentrate containing 35 percent or less by weight of WO_3;

(continued...)

concentrate is more expensive than the lower grades. U.S. Tungsten Corp. produces only a very low-grade concentrate, commonly referred to as slime, which is transported on a conveyor belt directly into its APT production. At this stage, the tungsten concentrate is in the form of an ore slurry. U.S. imports from China included all three grades of tungsten ore concentrates.[101]

The decision to purchase a particular grade of ore concentrate depends on the related cost of converting the ore into an intermediate product and upon the costs of transportation. Because of the lower tungsten content and higher impurity level of low-grade ore concentrates, the cost of converting them into intermediate tungsten products generally is greater than the cost of converting high-grade ore concentrates, in terms of both labor and equipment. Also, although the cost of transporting a ton of low-grade ore is the same as that for high-grade ore, the transportation cost per unit of contained tungsten for low-grade ore is greater. Users of high-grade ore reported that very low-grade ores, which generally contain higher levels of impurities, also carry much higher environmental costs associated with disposal of waste products and waste water.[102]

The petitioner stated, however, that in its production of APT, its use of its very low-grade concentrates provides for the most economical and efficient operation of its facilities. Since its APT plant is located next to its tungsten ore concentrate plant, the petitioner incurs no transportation costs. Thus, concentrating tungsten ore to a very low grade saves expenses in ore concentration, while still allowing the production of high-quality APT.[103]

Because U.S. producers of tungsten ore concentrates had no commercial sales during the investigation period, consumers had no experience with which to judge domestic reliability of supply or compare quality of the domestic and imported materials. However, because of the known differences in the grade of tungsten ore concentrates produced by the petitioner and those imported from China by the other users of concentrates, it is widely believed that the petitioner's concentrates are not comparable to the imported product used by

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[100] (...continued)
however, the meaning of slime in the tungsten industry seems to be somewhat ambiguous. Although tungsten slime may be more frequently, but more loosely, referred to by industry participants simply as a very low-grade tungsten ore concentrate, it is, in the most technical sense, defined as a fine, powdery substance generally containing particles of less than 50 microns in size. This powdery substance, which is created by the over-grinding of the ore in the concentration process, is not amenable to the gravity separation method used to produce concentrates because the particles have been ground too fine for successful separation of the tungsten-bearing mineral from the other minerals present; however, concentrates can be produced from this powdery substance by using slime tabling or flotation methods.

[101] During the period of investigation, ***.

[102] Transcript of the hearing, pp. 63-64.

[103] The petitioner submitted information indicating that three other firms producing tungsten ore concentrates and APT at the same locations, in the Soviet Union, Austria, and Korea, also concentrate tungsten ore to a very low grade (less than 35 percent by weight of WO_3). Posthearing brief by counsel on behalf of petitioner, p. 2 and exhibit 1.

other purchasers of tungsten ore concentrates (i.e., high-grade concentrates containing 65 percent by weight of WO_3 or higher).[104] While consumers of concentrates did not report that ***, they did state that lower-grade concentrates carry higher transportation, processing, and waste-disposal costs, as well as lower APT yields on an equivalent unit basis.

Impurities in tungsten ore concentrates affect prices because they are difficult and costly to remove. The greater the amount of impurities, and the greater the difficulty in removing them, the greater the costs of transforming tungsten ore concentrates into an intermediate tungsten product. Elements that are considered impurities, such as molybdenum, silica, tin, bismuth, copper, and arsenic, differ in the ease of removal. Molybdenum is the most difficult of these elements to remove. GTE estimated that for every unit of molybdenum removed during processing, an equivalent amount of tungsten is lost.[105] Different manufacturing facilities vary in their ability to remove the impurities. In addition, a particular problem mentioned by *** is that tungsten ore concentrates may contain high levels of arsenic or silica, both of which are considered to be hazardous materials in terms of the environmental impact of their waste disposal. Disposal of industrial waste costs approximately $*** per ton, while disposal of hazardous waste costs about $*** per ton.[106]

Some manufacturers specify very pure ore concentrates (i.e., containing very low levels of impurities), typically from mines in Portugal or Bolivia, because the impurities affect the physical properties of the products produced at their facilities. The tungsten ore concentrates produced both in the United States and in China contain varying levels of molybdenum and other impurities, which affect both the overall quality and the prices of the concentrates.

When buying imported tungsten ore concentrates, purchasers generally contact several suppliers and indicate quantity, specifications (e.g., grade and maximum allowable impurity levels), and delivery schedule. In most cases, the low bid among suppliers able to meet the requirements is awarded the sale.

Most suppliers of imported tungsten ore concentrates know their competitors, and there is little difference in the quality of the concentrates they are able to supply. In addition to China, purchasers reported using tungsten ore concentrates imported from Bolivia, Brazil, Peru, Portugal, Rwanda, and Thailand. In response to a question in the Commission's importers'/purchasers' questionnaire, only one company, ***, reported requesting price reductions on concentrates from its suppliers due to competitiveness and downward pressure on sales prices of APT.

Tungsten ores are available in two groupings: wolframite and scheelite. Most of the world's production of tungsten is in the wolframite grouping. The wolframite grouping includes tungsten that is combined with iron, manganese, or a combination of the two metals; these are, respectively, ferberite, or $FeWO_4$, heubnerite, or $MnWO_4$, and wolframite, or $(Fe,Mn)WO_4$. Scheelite ($CAWO_4$)

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[104] Transcript of the hearing, pp. 62-69; questionnaire responses of ***.
[105] Transcript of the hearing, p. 64.
[106] Conversation with ***. Also see transcript of the hearing, pp. 63-64.

is tungsten that is combined with calcium. The tungsten ore concentrate produced in the United States is scheelite and that imported from China is primarily heubnerite. The quality of an ore deposit varies within each grouping--there are rich and poor deposits of both wolframite and scheelite. Several respondents believe that the petitioner's scheelite deposit contains a low tungsten content,[107] whereas the other U.S. producer, Curtis, is considered to have a deposit with a high tungsten content.[108] A producer of tungsten intermediate products noted that as long as the tungsten content and the impurity levels are within reason and are comparable, either type of tungsten ore can be used.[109]

According to ***, the historical price relationship between wolframite and scheelite has been fairly close on average, although an increased availability of wolframite has depressed its world market price (as reflected in the London Metal Bulletin[110]), while the world market price for scheelite has remained stable. Producers, importers, and purchasers of tungsten ore concentrates are divided on whether prices for wolframite and scheelite concentrates should be combined or kept separate for purposes of this investigation. Those arguing to keep the prices separate stated that the end markets served by the ore concentrates are different, with scheelite serving primarily the steel alloy and filament wire markets, and wolframite serving primarily the carbide and heavy alloy markets. Those arguing to combine the prices noted that a high proportion of all concentrates is used in the manufacture of APT, and all domestic manufacturers of APT have the capability of using either wolframite or scheelite in their production processes. *** reported that scheelite has commanded a premium price since about 1984, but according to the London Metal Bulletin, the wolframite low price has been above the scheelite low price since May 9, 1991.

As mentioned earlier, tungsten ore concentrates are sold in units of WO_3 in either MTUs or STUs, equivalent to one percent of a metric or short ton, respectively. Prices are either in dollars per MTU or per STU. There are no price lists; all prices are established at metal exchanges such as the London Metal Exchange and the New York Mercantile Exchange. Payment terms vary from payment on delivery to net 45 days. Most importers quote prices on more than one basis, with c.i.f. reported as the quote most often used. Lead times

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[107] GTE argued that the petitioner's allegedly poor ore deposit makes its deposits difficult to concentrate to acceptable levels for sale and that high impurity levels or undesirable elements lead to high processing costs. However, the petitioner responded that such assertions were inaccurate, adding that tungsten ore concentrate grade is unrelated to the grade of the ore body. Petitioner stated that it concentrates to the level that is most economical for its production of APT. According to the petitioner, its Pine Creek mine has above average proven ore deposits. Transcript of the hearing, pp. 66-68 and posthearing brief of the petitioner, pp. 7-9.

[108] Curtis' ore veins contain 4 percent WO_3, with low impurity levels. The world average is approximately 0.5 percent WO_3. Curtis Tungsten, letter dated Oct. 22, 1990.

[109] Transcript of the hearing, p. 96.

[110] The London Metal Bulletin is one of several public price series reporting price quotations for tungsten ore concentrates. Further discussion of these price series is provided later in this section.

range from 1 to 6 months. *** reported that shipments of Chinese tungsten ore concentrates are often late. Transportation costs are not a primary consideration when purchasing tungsten ore concentrates, and typically range from 1 to 5 percent of the cost of purchase. Chinese tungsten ore concentrates are either sold directly to manufacturers of intermediate tungsten products, or through trader/brokers.

There are several public price series available for tungsten ore concentrates: the London Metal Bulletin (LMB), which is published semi-weekly; Metals Week, which is published weekly in the United States; and the International Tungsten Indicator (ITI), which is published twice monthly.[111] The LMB quotes prices separately for wolframite and scheelite,[112] based on actual transaction prices reported by producers, traders, and purchasers. The LMB quotations are published as a high-low range of prices in Western Europe for wolframite concentrates graded at 65 percent by weight of WO_3 or higher and scheelite at 70 percent by weight of WO_3 or higher. Producers, importers, and purchasers agreed generally that the LMB quotations reflect world pricing, and are more widely used in contracts as the basis for determining prices than are quotations in other publications.

The Metals Week quotations are published as a high-low range of spot-purchase prices in the United States by consumers of tungsten ore concentrates containing more than 65 percent by weight of WO_3 and may be more representative of the U.S. market than those of the LMB. The quotations combine both wolframite and scheelite concentrates. Although the Metals Week quotations are based upon far fewer transactions than the LMB quotations, these price series are closely associated (figure 5). Figure 5 and table 23 show that both the Metals Week and the LMB prices generally declined throughout 1988-90 and then increased in 1991; however, as shown in figure 6, prices fell much further in 1980-87 than they did in 1988-90.[113]

The ITI incorporates in its quotes both wolframite and scheelite concentrates and both spot and long-term-contract prices. Because the average grade of the tungsten ore concentrates sold varies with each biweekly

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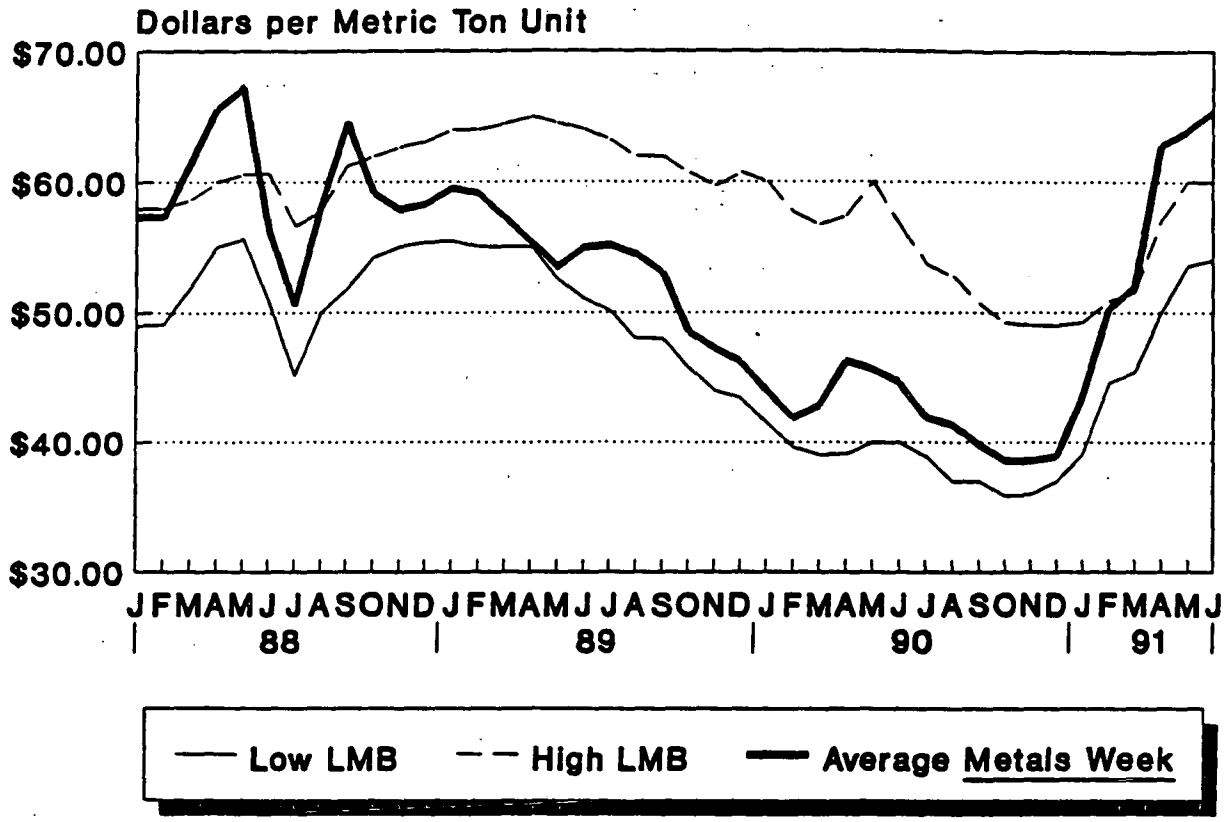
[111] A fourth series, McGraw-Hill Inc.'s Metals Price Report, is a weekly publication from London that contains prices for tungsten ore, ferrotungsten, and other metals. Tungsten ore prices are reported in U.S. dollars per MTU of WO_3, c.i.f. Rotterdam. ***.

[112] Prior to 1984, price quotations were only for wolframite.

[113] The Cemented Carbide Producers Association, in a letter to the Commission dated Sept. 10, 1991, stated that the decrease in demand and prices from 1981 to 1986 was due to two factors: (1) the decline in the economy, and (2) excessive prices of tungsten ore concentrates in 1980-82 and earlier resulted in greater conservation in manufacturing; more emphasis on recycling of tungsten-containing products; improvements in product longevity; substitution of depleted uranium for tungsten heavy metal in armor-piercing projectiles; and the virtual demise of products that had unrecoverable tungsten scrap.

Figure 5
Low and high prices for wolframite concentrates as reported by the London Metal Bulletin and average prices for wolframite and scheelite concentrates as reported by Metals Week, by months, January 1988-June 1991



Source: Based on data presented in the London Metal Bulletin (low and high prices reported for wolframite) and Metals Week (average prices reported for wolframite and scheelite).

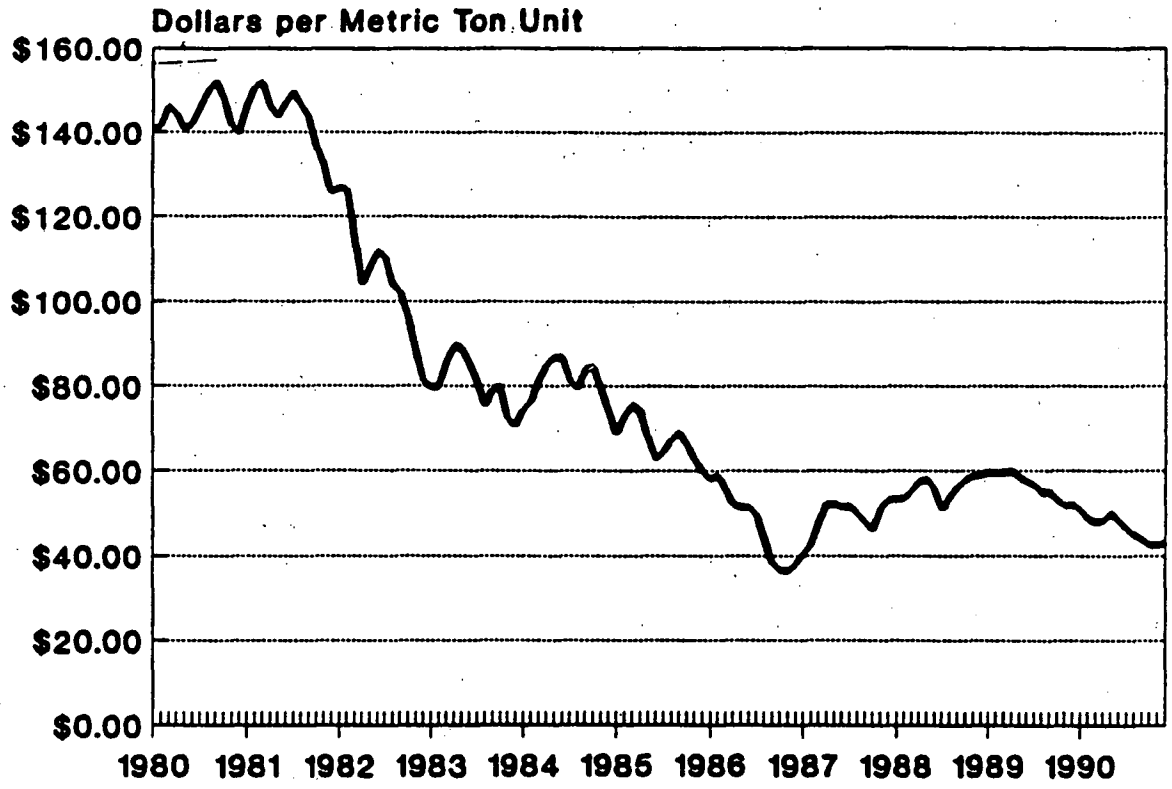
Table 23
Tungsten ore concentrates: Low and high prices for wolframite concentrates as reported by the London Metal Bulletin and average prices for wolframite and scheelite concentrates as reported by Metals Week, by months, January 1988-June 1991

(Per MTU)

Period	London Metal Bulletin Low price	London Metal Bulletin High price	Metals Week Average price
1988:			
January	$49.00	$58.00	$57.32
February	49.11	58.00	57.32
March	51.89	58.67	61.51
April	55.00	60.00	65.59
May	55.63	60.63	67.24
June	50.89	60.67	56.22
July	45.13	56.63	50.57
August	50.00	57.75	58.15
September	51.75	61.25	64.59
October	54.21	62.00	59.11
November	55.00	62.71	57.87
December	55.38	63.13	58.31
1989:			
January	55.43	64.00	59.52
February	55.00	64.00	59.11
March	55.00	64.50	57.21
April	55.00	65.00	55.39
May	52.50	64.50	53.46
June	51.00	64.00	55.00
July	50.11	63.22	55.12
August	48.00	62.00	54.43
September	48.00	62.00	53.02
October	45.78	60.67	48.50
November	44.00	59.67	47.26
December	43.43	60.71	46.19
1990:			
January	41.50	60.00	43.95
February	39.63	57.63	41.89
March	39.00	56.67	42.88
April	39.13	57.38	46.30
May	40.00	60.00	45.61
June	40.00	56.75	44.64
July	38.89	53.67	41.89
August	37.00	52.75	41.34
September	37.00	45.63	39.79
October	35.89	49.22	38.58
November	36.00	49.00	38.58
December	37.00	49.00	38.91
1991:			
January	39.06	49.25	43.54
February	44.63	50.88	50.29
March	45.44	51.50	51.92
April	50.00	57.00	62.83
May	53.50	60.00	63.93
June	54.00	60.00	65.45

Source: Metals Week and the London Metal Bulletin.

Figure 6
Average London Metal Bulletin prices for tungsten ore concentrates, by months, January 1980-December 1990



Source: Based on data presented in the London Metal Bulletin.

report, the price series is not consistent.[114] *** of the responding companies reported relying on the ITI as a basis for price quotations.

Purchases occur on both the spot market and by contract. In general, contract and spot transactions are based on published prices, as well as on competitive market forces. Traders/brokers reported that the price for tungsten ore concentrates as quoted to U.S. customers is based on their purchase price plus factors for freight, financing, and profit. Quotes do not necessarily name ore concentrates from a specific source, but rather indicate the required WO_3 content, delivery requirements, and basis for price (e.g., LMB). The average duration of contracts tends to be less than one year. Frequently, the duration of the contract is the lead time for shipment of the imported ore concentrates.

Some respondents have argued that traders/brokers are able to influence the price of tungsten ore concentrates to the extent that they are able to stockpile concentrates for future sale. For example, traders may purchase concentrates at a low price with the anticipation that prices will increase in the future, thus allowing them to sell within the U.S. market at more attractive margins.[115] Nevertheless, some users of imported tungsten ore concentrates depend on traders/brokers for a reliable and readily available supply of concentrates.

Tungsten scrap is considered to be the only substitute for tungsten ore concentrates in the production of intermediate tungsten products. Typically, tungsten scrap results from tungsten end products that can no longer be used as intended. However, not all scrap is directly substitutable at the tungsten ore concentrate stage.[116] In addition, the availability of scrap is limited and not all companies are equipped to use it as an input in the production of APT or other intermediate products. ***. ***. Tungsten scrap may contain elements in addition to tungsten, such as cobalt and tantalum, that can be used in the processing of other products, thus adding greater value to the scrap. For this reason, tungsten scrap may at times be priced higher on an MTU basis than tungsten ore concentrates.

Approximately 90 percent of domestic consumption of tungsten ore concentrates is for the production of APT. Until the mid-1980s, tungsten ore concentrate and APT prices were tied directly, with producers of APT basing price quotes on the LMB midpoint average for tungsten ore concentrates.[117]

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[114] T.F. Anstett, Tungsten Availability--Market Economy Countries, U.S. Department of the Interior, 1985.

[115] However, purchase prices for imported high-grade tungsten ore concentrates as reported in importer/purchaser questionnaires (table 24) were generally higher for concentrates imported for resale than for those imported for a firm's own use.

[116] According to ***, the bulk of scrap is tungsten carbide scrap, from which the tungsten carbide is reclaimed and enters the production process at the stage at which the carbides are initially added, i.e., after the tungsten ore concentrate and APT stage.

[117] Questionnaire respondents indicated that the general formula used is the LMB midpoint average for tungsten ore concentrates divided by a yield loss factor of 96 percent, plus a conversion fee.

This relationship between concentrate and APT prices is widely reported to have broken down about 1984, and respondents in this investigation argue that there is currently no fixed pricing relationship between the products.[118]

The petitioner reported that ***. It added that currently, Chinese wolframite, as represented by the LMB low price quote, has tended to become the determinant for APT pricing.[119] The petitioner argues that tungsten ore concentrate is the primary cost incurred in processing APT, and thus determines its price.[120] GTE argues that while there is a relationship between the prices, several factors may disrupt, and at times sever, the relationship, causing APT producers to choose between producing and purchasing APT. According to GTE, only when the cost of tungsten intermediate products falls below both fixed costs (plant and equipment) and variable costs (cost of concentrates plus conversion to APT) do producers consider purchasing rather than producing APT. GTE added that APT prices in the United States are driven by imports of APT and substitute products such as tungsten oxide, sodium tungstate, and tungstic acid.[121]

Data show that a close association between prices for APT and tungsten ore concentrates continues (figure 7). Tungsten ore concentrate prices, as quoted in Metals Week, increased by 50 percent during January-June 1991, and APT prices increased by 23 percent. Questionnaire responses suggested that the margin between concentrate and APT prices decreased during the 1980s, from about $35 per MTU to under $20 per MTU.

Questionnaire price data.--Questionnaires were sent to all known U.S. producers and importers of tungsten ore concentrates. Separate prices were requested for the largest quarterly sale or company transfer between January 1988 and June 1991 for high-grade ore concentrates, low-grade ore concentrates, slime, and tungsten scrap. Purchasers were requested to provide this same information for their purchases of tungsten ore concentrates and scrap. Prices were also requested on all contracts for the sale or purchase of tungsten ore concentrates.

Both domestic producers and six importers reported price information. The petitioner accounted for *** percent of domestic production of tungsten ore concentrates in 1990; Curtis Tungsten accounted for the remainder of U.S.

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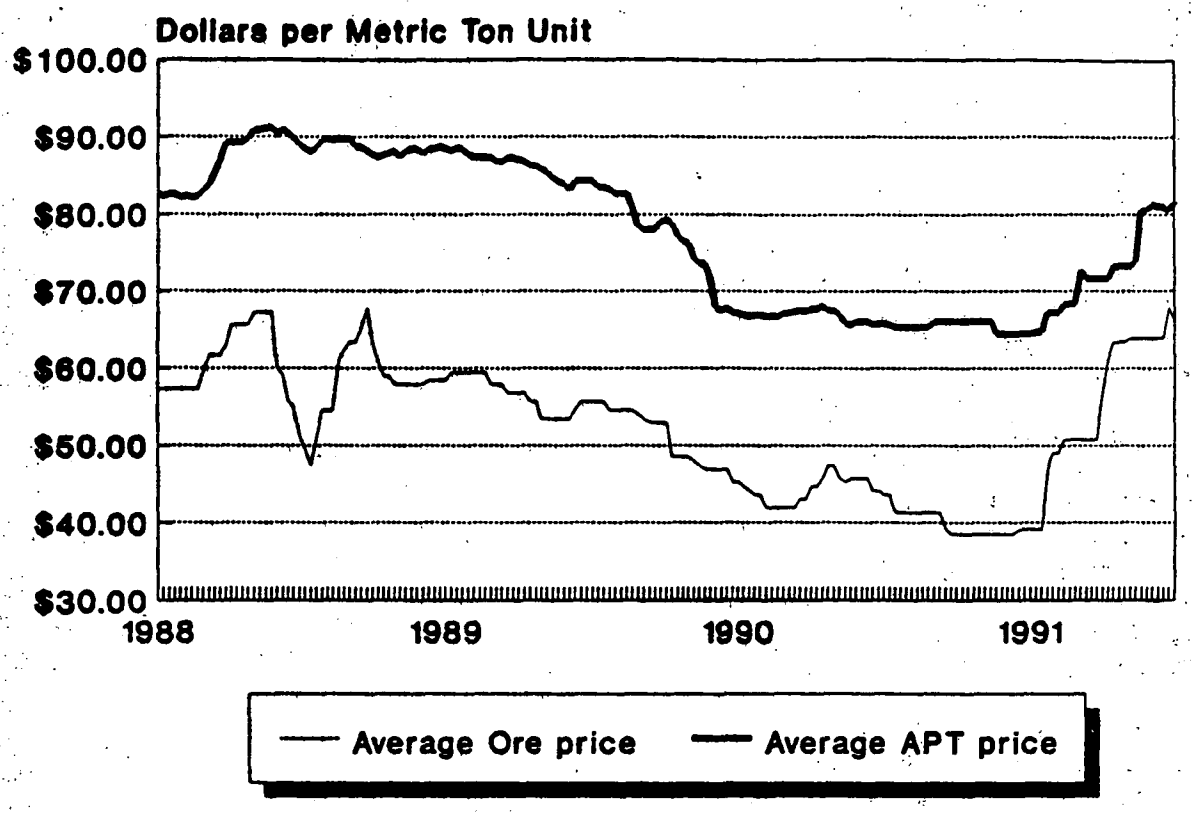
[118] In a publication by Roskill Information Services, Ltd., The Economics of Tungsten 1990, it was stated that "Prices for tungsten products...tend to follow the price of tungsten concentrates over the medium term...Previously the APT producers were reported to fix their prices by means of a formula related to the Metal Bulletin price for concentrates plus a premium of $30 per short ton unit, either at monthly intervals or more-or-less continuously. The price of concentrates is a major variable in the cost of production of other tungsten products...More recently, however, this structured arrangement has broken down as the result of the advent on to the market of tungsten intermediates from China at prices which do not fully reflect the cost of conversion from concentrates."

[119] Posthearing brief by counsel on behalf of petitioner, exhibit 6.

[120] Posthearing brief by counsel on behalf of petitioner, p. 12.

[121] Prehearing brief by counsel on behalf of GTE, p. 46, and posthearing brief by counsel on behalf of GTE, exhibit 2.

Figure 7
Average prices of tungsten ore concentrates and APT, by weeks, January 1988-June 1991



Source: Based on data presented in Metals Week.

production. The internal shipments reported by petitioner accounted for *** percent of total reported U.S. producers' shipments in 1990.[122] The responding importers accounted for *** of total imports of tungsten ore concentrates from China during the period of investigation. Table 24 shows domestic transfer prices for the petitioner's tungsten ore concentrates, spot prices for domestic scrap, and spot prices for Chinese-produced tungsten ore concentrates and scrap.[123]

Table 24
Tungsten ore concentrates: U.S. producer's transfer prices, domestic scrap spot prices, and spot prices for imports from China, by quarters, January 1988-June 1991

(Per MTU)

	United States		Imported from China for resale[1]			Imported from China for own use[1]		
Period	Slime[2]	Scrap	High-grade ore concentrate	Slime	Scrap	High-grade ore concentrate	Slime	Scrap
	*	*	*	*	*	*	*	

[1] Prices for tungsten ore concentrates imported for resale were reported based on a firm's largest quarterly sale to an unrelated U.S. customer. Prices for tungsten ore concentrates imported for a firm's own use were reported based on the largest quarterly purchase (importation).

[2] Transfer prices were derived by the petitioner by ***. It is not clear that transfer prices and the reported prices for imported Chinese slime can be compared or used as a measure for determining margins of underselling or overselling. A transfer price is not a market price, rather it is a valuation set by a company.

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

U.S. Tungsten Corp. provided transfer prices for slime, the only product it produces, derived by ***. ***.[124] Transfer prices for petitioner's slime generally declined from January 1988 through December 1990, falling nearly *** percent from $*** in January-March 1988 to $*** in October-December 1990. Prices increased in 1991, rising to $*** in April-June 1991, an increase of almost *** percent. The movement in the petitioner's transfer prices, which directly correspond to the LMB, also followed a trend similar to the Metal Weeks average price series, which fell by nearly 34 percent from $58.71 in January-March 1988 to $38.69 in October-December 1990, before increasing by 66 percent, to $64.08, in April-June 1991.[125]

[122] ***. ***.

[123] ***.

[124] ***. ***. ***. ***. Prehearing brief by ***.

[125] The quarterly average Metals Week price is based on a simple average of monthly data, as shown in table 23.

Weighted-average prices for domestic tungsten scrap ***. ***. As noted earlier, tungsten scrap prices can be influenced by the mineral and chemical composition of the scrap, which may account for some of the quarterly variation in price.

During ***, *** to supply low-grade tungsten ore concentrates at $*** per MTU;[126] ***. ***.[127] ***. ***.

Spot prices for high-grade Chinese tungsten ore concentrates imported for resale increased from $*** per MTU in January-March 1988 to $*** per MTU in October-December 1989, fell to $*** per MTU in October-December 1990, and then increased ***, to $*** in April-June 1991. Prices of Chinese high-grade tungsten ore concentrates imported for a firm's own use fell by *** percent from $*** per MTU in January-March 1988 to $*** per MTU in April-June 1991. ***. Prices for Chinese slime imported for a firm's own use fell by nearly *** percent from $*** per MTU in July-September 1988 to $*** per MTU in October-December 1990, before increasing slightly to $*** per MTU in January-March 1991. Prices for Chinese scrap imported for resale and for a firm's own use fluctuated with no apparent trend throughout the investigation period.

The petitioner reported *** annual contracts for the purchase of Chinese slime during the period of investigation. The volume was *** MTUs valued at $*** per MTU during 1988, *** MTUs valued at $*** per MTU during 1989, and *** MTUs valued at $*** per MTU during 1990. ***. Petitioner also reported *** annual contracts for the purchase of Chinese low-grade ore concentrates during the period of investigation. The volume was *** MTUs of tungsten ore concentrates valued at $*** per MTU during 1988, *** MTUs valued at $*** per MTU during 1989, *** MTUs valued at $*** per MTU during 1990, and *** MTUs valued at $*** per MTU during the first half of 1991.[128]

It is not clear that transfer prices and the reported prices for imported Chinese slime can be compared or used as a measure for determining margins of underselling or overselling. The reported domestic transfer prices were *** than the Chinese prices in *** instances where domestic and Chinese slime prices were both available. *** accounted for *** imports of Chinese slime during the investigation period. The petitioner's tungsten ore concentrates contained *** percent by weight of WO_3, while the product imported from China contained *** percent by weight of WO_3.

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[126] ***. ***.

[127] ***.

[128] One trader/broker, ***, reported that it made *** annual contracts for the sale of high-grade ore concentrates during the period of investigation. However, ***. The volume was *** tons of contained tungsten valued at an average $*** per MTU in 1988, *** tons valued at an average $*** per MTU in 1989, *** tons valued at an average $*** per MTU in 1990, and *** tons valued at an average $*** per MTU in 1991. *** reported that prices for some contracts were based on the LMB, while others were quoted at a specified, fixed price.

Exchange rates

Usable market exchange-rate data for the Chinese renminbi are not available. The Chinese Government pegs the renminbi to the value of the U.S. dollar and controls the convertibility with other currencies.

Lost sales and lost revenues

Because all domestic production of tungsten ore concentrates during the investigation period was captively consumed, no lost sales or lost revenues were reported in the questionnaire responses. The petitioner alleged in its posthearing brief, however, that purchases of lower-priced Chinese imports resulted in its Pine Creek mine losing sales to its Pine Creek APT plant.[129] Also, ***.

[129] Posthearing brief by counsel on behalf of petitioner, p. 6.

APPENDIX A

THE COMMISSION'S FEDERAL REGISTER NOTICE

[Investigation No. 731-TA-497 (Final)]

Tungsten Ore Concentrates From the People's Republic of China

AGENCY: International Trade Commission.

ACTION: Institution and scheduling of a final antidumping investigation.

SUMMARY: The Commission hereby gives notice of the institution of final antidumping investigation No. 731-TA-497 (Final) under section 735(b) of the Tariff Act of 1930 (19 U.S.C. 1673d(b)) (the act) to determine whether 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 the People's Republic of China of tungsten ore concentrates, provided for in subheading 2611.00.00 of the Harmonized Tariff Schedule of the United States.

For further information concerning the conduct of this investigation, hearing procedures, and rules of general application, consult the Commission's Rules of Practice and Procedure, part 201, subparts A through E (19 CFR part 201, as amended by 56 FR 11918, Mar. 21, 1991), and part 207, subparts A and C (19 CFR part 207, as amended by 56 FR 11918, Mar. 21, 1991).

EFFECTIVE DATE: July 9, 1991.

FOR FURTHER INFORMATION CONTACT: Mary Trimble (202-205-3193), Office of Investigations, U.S. International Trade Commission, 500 E Street SW., Washington, DC 20436. Hearing-impaired persons can obtain information on this matter by conducting the Commission's TDD terminal on 202-205-1810. Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202-205-2000.

SUPPLEMENTARY INFORMATION:

Background.—This investigation is being instituted as a result of an affirmative preliminary determination by the Department of Commerce that imports of tungsten ore concentrates from the People's Republic of China are being sold in the United States at less than fair value within the meaning of section 733 of the act (19 U.S.C. 1673b). The investigation was requested in a petition filed on January 23, 1991, by U.S. Tungsten Corp., Danbury, CT.

Participation in the investigation and public service list.—Persons wishing to participate in the investigation as parties must file an entry of appearance with the Secretary to the Commission, as provided in § 201.11 of the Commission's rules, not later than twenty-one (21) days after publication of this notice in the **Federal Register**. The Secretary will prepare a public service list containing the names and addresses of all persons, or their representatives, who are parties to this investigation upon the expiration of the period for filing entries of appearance.

Limited disclosure of business proprietary information (BPI) under an administrative protective order (APO) and BPI service list.—Pursuant to § 207.7(a) of the Commission's rules, the Secretary will make BPI gathered in this final investigation available to authorized applicants under the APO issued in the investigation, provided that the application is made not later than twenty-one (21) days after the publication of this notice in the **Federal Register**. A separate service list will be maintained by the Secretary for those parties authorized to receive BPI under the APO.

Staff report.—The prehearing staff report in this investigation will be placed in the nonpublic record on September 13, 1991, and a public version will be issued thereafter, pursuant to § 207.21 of the Commission's rules.

Hearing.—The Commission will hold a hearing in connection with this investigation beginning at 9:30 a.m. on September 26, 1991, at the U.S. International Trade Commission Building. Requests to appear at the hearing should be filed in writing with the Secretary to the Commission on or before September 23, 1991. A nonparty who has testimony that may aid the Commission's deliberations may request permission to present a short statement at the hearing. All parties and nonparties desiring to appear at the hearing and make oral presentations should attend a prehearing conference to be held at 9:30 a.m. on September 24, 1991, at the U.S. International Trade Commission Building. Oral testimony and written materials to be submitted at the public hearing are governed by §§ 201.6(b)(2), 201.13(f), and 207.23(b) of the Commission's rules.

Written submissions.—Each party is encouraged to submit a prehearing brief to the Commission. Prehearing briefs must conform with the provisions of § 207.22 of the Commission's rules; the deadline for filing is September 23, 1991. Parties may also file written testimony in connection with their presentation at the hearing, as provided in § 207.23(b) of the Commission's rules, and posthearing briefs, which must conform with the provisions of § 207.24 of the Commission's rules. The deadline for filing posthearing briefs is October 1, 1991; witness testimony must be filed no later than three (3) days before the hearing. In addition, any person who has not entered an appearance as a party to the investigation may submit a written statement of information pertinent to the subject of the investigation on or before October 1, 1991. All written submissions must conform with the provisions of § 201.8 of the Commission's rules; any submissions that contain BPI must also conform with the requirements of §§ 201.6, 207.3, and 207.7 of the Commission's rules.

In accordance with §§ 201.16(c) and 207.3 of the rules, each document filed by a party to the investigation must be served on all other parties to the investigation (as identified by either the public or BPI service list), and a certificate of service must be timely filed. The Secretary will not accept a document for filing without a certificate of service.

Authority: This investigation is being conducted under authority of the Tariff Act of 1930, title VII. This notice is published pursuant to § 207.20 of the Commission's rules.

Issued: July 18, 1991.

By order of the Commission.

Kenneth R. Mason,

Secretary.

[FR Doc. 91-18119 Filed 7-30-91; 8:45 am]

BILLING CODE 7020-02-M

APPENDIX B

LIST OF PARTICIPANTS IN THE HEARING

CALENDAR OF PUBLIC HEARING

Those listed below appeared as witnesses at the U.S. International Trade Commission's hearing:

Subject : TUNGSTEN ORE CONCENTRATES FROM THE PEOPLE'S REPUBLIC OF CHINA

Inv. No. : 731-TA-497 (Final)

Date and time: September 26, 1991 - 9:30 a.m.

Sessions were held in connection with the investigation in the Main Hearing Room of the U.S. International Trade Commission, 500 E St. SW., Washington, DC

In support of the imposition of antidumping duties

Pillsbury Madison & Sutro
Washington, DC
On behalf of--

U.S. Tungsten Corp.

William G. Beattie, President

Robert M. Bunting, Vice President and Product Director

J. Kevin Horgan)
Damon E. Xenopoulos) --OF COUNSEL

Curtis Tungsten, Inc.

Ronald L. Curtis, President and CEO

Philip T. Stafford, Vice President--Industrial and Government Relations Director

--Continued--

In opposition to the imposition of antidumping duties

Sidley & Austin
Washington, DC
On behalf of--

GTE Products Corp.

General Electric Lighting

John J. Fedorchak, Products Marketing Manager, Precision Materials Group, GTE Products Corp.

Kenneth James, Counsel, General Electric Co.

Judith H. Bello)
Patricia A. Zinski) --OF COUNSEL

Akin, Gump, Hauer & Feld
Washington, DC
On behalf of--

China National Metals and Minerals Import and Export Corp.

China National Nonferrous Metals Import and Export Corp.

Spencer S. Griffith)
Neal J. Reynolds) --OF COUNSEL

Cooter & Gell
Washington, DC
On behalf of--

Kulite Tungsten Corp.

Ronald Kurtz, President

John Gurley--OF COUNSEL

Cemented Carbide Producers Association
Cleveland, Ohio

Herbert S. Kalish, Consultant

APPENDIX C

COMMERCE'S FEDERAL REGISTER NOTICE

[A-570-811]

Final Determination of Sales at Less Than Fair Value: Tungsten Ore Concentrates From the People's Republic of China

AGENCY: International Trade Administration, Import Administration, Department of Commerce.

EFFECTIVE DATE: September 20, 1991.

FOR FURTHER INFORMATION CONTACT: Tracey Oakes, Office of Countervailing Investigations, Import Administration, International Trade Administration, U.S. Department of Commerce, Washington, DC 20230; telephone (202) 377-3174.

Final Determination

The Department of Commerce (the Department) determines that imports of tungsten ore concentrates from the People's Republic of China (PRC) are being, or are likely to be, sold in the United States at less than fair value, as provided in section 735(a) of the Tariff Act of 1930, as amended (the Act). The estimated weighted-average margin is shown in the "Suspension of Liquidation" section of this notice.

Case History

We published an affirmative preliminary determination on July 10, 1991 (56 FR 31387). Our preliminary determination was based on the best information available (BIA) because respondents, China National Metals and Minerals Import and Export Corporation (CNIEC) and China National Nonferrous Metals Import and Export Corporation (MinMetals), provided materially deficient responses. Since the preliminary determination, no new factual information has been added to the case record. We received respondent's case brief on August 28, 1991 and petitioner's (U.S. Tungsten Corporation's (USTC)) rebuttal brief on September 4, 1991.

Standing

During the investigation, GTE Products Corporation (GTE), which produces tungsten intermediate products, and respondents contested petitioner's standing to file a petition on behalf of the U.S. tungsten industry. Those parties in opposition to the petition argued that the like product should include tungsten intermediate products and that the petitioner does not account for a majority of the domestic production of tungsten concentrates and tungsten intermediate products.

As we stated in the notice of initiation and the preliminary determination, we find that tungsten intermediate products are not like the imported product, tungsten ore concentrates. At the initiation, we requested the parties opposing the petition to provide further information on this issue. No party submitted any new factual information or argumentation disputing petitioner's standing. Consequently, nothing on the record of this investigation contradicts our preliminary decision on this issue. Therefore, the Department will not dismiss the petition for lack of standing. (See Department response to Comment 3.)

Scope of Investigation

The merchandise covered by this investigation is tungsten ore concentrates. This includes any concentrated or upgraded form of raw tungsten ore, whether high- or low-grade. High-grade tungsten ore concentrates are defined as a concentrated form of tungsten ore containing 65 percent or more by weight of tungsten trioxide. Low-grade tungsten ore concentrates are defined as a concentrated form of tungsten ore containing less than 65 percent by weight of tungsten trioxide. Low-grade tungsten ore concentrates include tungsten slime, which has a concentration of less than 35 percent by weight of tungsten trioxide. Tungsten ore concentrates are used in the production of intermediate tungsten products such as APT, tungstic oxide, and tungstic acid. These intermediate products have end uses in the metalworking, mining, construction, transportation, and oil- and gas-drilling industries. Tungsten ore concentrates are currently classifiable under item 2611.00.00.00 of the Harmonized Tariff Schedule (HTS). Although the HTS subheading is provided for convenience and customs purposes, our written description of the scope of this proceeding is dispositive.

Period of Investigation

The period of investigation is July 1, 1990 through January 31, 1991.

Best Information Available

We have determined, in accordance with section 776(c) of the Act, that the use of BIA is appropriate in this investigation. In deciding whether to use BIA, section 776(c) provides that the Department may take into account whether the respondent provided the information requested in a timely manner and in the form required.

As we stated at the preliminary determination, while respondents submitted certain information as to U.S. price, they completely failed to report information in the factors of production section of the antidumping questionnaire such as the types, quantity, and characteristics of (1) material inputs, (2) labor inputs, and (3) overhead inputs. The absence of the information necessary to establish FMV rendered the responses materially deficient. Therefore, we were unable to analyze the responses in a meaningful manner. Moreover, lacking usable responses, we determined that verification was inappropriate. Therefore, we have used the information submitted in the petition as the best information available for the final determination.

Fair Value Comparisons

To determine whether sales of tungsten ore concentrates from the PRC to the United States were made at less than fair value, we compared the United States price (USP) to the foreign market value (FMV), as specified in the "United States Price" and "Foreign Market Value" sections of this notice.

United States Price

Petitioner's estimate of USP is based on U.S. Bureau of Census data on imports of high- and low-grade tungsten ore from the PRC. Petitioner's calculation is adjusted for foreign inland freight.

Foreign Market Value

Petitioner alleges that the PRC is a nonmarket economy country within the meaning of section 773(c) of the Act. Accordingly, petitioner based FMV on factors of production valued in the market economy countries of India and Peru. Petitioner also added the statutory minimums of ten percent for selling, general and administrative expenses (SG&A) and eight percent for profit, in accordance with section 773(e)(1)(B) of the Act.

Interested Party Comments

Comment 1

Respondents contend that the Department erred in using as BIA the antidumping duty rates contained in the petition. Rather, respondents argue that the Department should use the prices of imports of tungsten ore concentrate from Peru as the foreign market value and the U.S. sales information submitted by respondents to calculate the final dumping margins.

Respondents contend that the Department's choice of best information available is severely circumscribed in nonmarket economy cases because the antidumping law requires the Department to use pricing data from third countries in the absence of adequate factors of production data. Specifically, respondents state that 19 U.S.C. 1677b(c) (section 773(c) of the Act) requires the Department to calculate FMV for nonmarket economy cases on the basis of the factors of production used to produce the merchandise. Furthermore, respondents interpret section 773(c)(2) as directing the Department to base FMV for nonmarket economy cases on pricing data of a surrogate country at the same level of economic development as the nonmarket economy if factors of production data is unavailable to the Department.

Respondents insist that the directive of 773(c)(2) applies to the circumstances in this case. First, respondents state that the Department's preliminary determination described the respondents' data as inadequate for the purpose of determining the FMV of the subject merchandise. Second, respondents argue the Department should use Peruvian import statistics as the FMV for tungsten ore concentrates. Last, respondents maintain that their July 1, 1991 submission cured all outstanding deficiencies in their U.S. price data. Therefore, respondents content that the Department must use Peruvian price statistics and the U.S. price data they submitted to calculate the final antidumping margin.

Petitioner disagrees with respondents' assertion that the Department's discretion in selecting the appropriate BIA is circumscribed in nonmarket economy cases and cites the Department's application of BIA in previous nonmarket economy cases which contradicts respondents' argument. Furthermore, petitioner points out that in past cases the PRC has repeatedly refused to furnish information to enable the Department to calculate margins based on the respondents' information.

In addition, petitioner asserts that the exception provided for in section 773(c)(2) does not apply in this case because the petition contained adequate factors of production information to calculate FMV. Therefore, respondents' claim that no adequate FMV information exists on the record is incorrect because it wholly ignores the FMV information submitted in the petition.

Petitioner also asserts that respondents' proposal to use third country prices would produce an absurd outcome and contravene the fundamental purpose of the antidumping law. Petitioner contends that world prices are already suppressed by illegal dumping activities. Petitioner argues that use of those "dumped" prices to calculate FMV would serve only to reduce the actual dumping margins and allow further suppression of world prices for tungsten ore concentrates.

Department Position

Respondents in this investigation failed to provide factors of production data, such as the types and quantities of raw materials employed, the skill level and number of hours of labor required, and types and amounts of energy consumed. This type of data is necessary for the Department to calculate FMV using the factors of production methodology, which is preferred under the statute. The alternative contained in section 773(c)(2), third country prices, is to be used only when available information is inadequate to use the factors methodology.

We do not agree with respondents that the third country price alternative is appropriate in this case. If we were to accept their interpretation, we would effectively be allowing respondents to choose the method for calculating FMV simply by their decision of whether or not to submit a factors response. We do not believe that this is the purpose of the alternative provide by section 773(c)(2).

While there is no legislative history on this point, we believe that generally third country prices should be used only when the Department lacks information to value the nonmarket economy producer's factors of production in a comparable market economy which is a significant producer of comparable merchandise. In other words, we would only turn to the third country price alternative if we were unable to develop market economy values to assign to the nonmarket economy producers' factors of production. Thus, in our view, the alternative FMV methodology provided by section 773(c)(2) is there for the Department to use when we are unable to obtain valuation information, not factors information which is solely within the power of respondents to provide.

In addition, because of the materially deficient nature of the questionnaire responses, we did not conduct a verification of the information submitted by respondents. Therefore, we are unable to guarantee with certainty the completeness and accuracy of the respondent's U.S. sales listing. The lack of verification is particularly disconcerting in this case because petitioner has continually averred that respondents have not reported all U.S. sales of the subject merchandise during the POI. (See Petitioner's June 14, 1991 submission with supporting documentation.) Therefore, for the foregoing reasons, as best information available we have used the information contained in the petition to determine the final antidumping duty margins.

Comment 2

Respondents contend that, if the Department does not use third country prices to calculate FMV, then it should apply a simple average of the highest margins alleged in the petition for each such or similar category as best information available. Respondents claim that such approach is reasonable and warranted because only three of respondents' sales during the POI are of low-grade concentrate with an estimated margin of 151%, while the remainder of sales are of high-grade concentrate with an estimated margin of 122%.

To support the Department's use of the highest rate contained in the petition, petitioner relies on the rationale set forth in *Rhone Poulenc, Inc.* v. *United States*, 899 F.2d 1185, 1190 (Fed. Cir. 1990). In *Rhone Poulenc*, the Court of Appeals for the Federal Circuit agreed that a reasonable inference that the withheld data is less favorable to the respondent that the data on the record is justified upon a respondents's refusal to submit information requested by the Department. Petitioner contends that based on this reasoning, the Department should continue to use the highest margin alleged in the petition as the best information available.

Department Position

Section 353.37 of the Department's regulations permits the Department to take into account the extent of the respondents' failure to cooperate to determine the appropriate BIA rate. In this case, respondents refused to provide the Department with factors of production information despite our grant of a seven-week time extension.

Furthermore, we did not make a distinction between the categories of merchandise in determining the BIA rate because we did not have occasion to consider development of such or similar categories in that this was a nonmarket-economy case where such or similar categories are not defined. Moreover, even if separate such or similar categories were justified in this case for BIA purposes, respondents have not submitted any information to support a finding that low-grade and high-grade

concentrates comprise separate such or similar categories.

Therefore, because of respondents' complete failure to provide information on the factors of production and the lack of information on such or similar categories, we have applied the highest rate alleged in the petition as BIA.

Comment 3

Respondents contend that the Department must dismiss the petition because the petitioner lacks standing to file the petition in that it does not represent the domestic tungsten industry. Respondents argue that the like product in this investigation is not limited to tungsten ore concentrates but includes intermediate tungsten ore products as well. The basis for respondents' argument is contained in a February 1, 1991 letter submitted on behalf of GTE. In short, GTE opposes the petition and argues that in other mining cases filed under section 406 and section 201 investigations of the Tariff Act of 1974, the Commission has treated mining material produced from mining through refineries as a single like product. In addition, GTE asserts that under the ITC's like product analysis, the like product includes tungsten intermediate products. Therefore, because the like product includes tungsten ore concentrates and tungsten intermediate products; petitioner accounts for only 5.1% of the production of the like product; and a majority of the domestic tungsten industry, including intermediate tungsten product producers, opposes the petition; the petitioner has not brought this petition on behalf of the U.S. tungsten industry.

Petitioner argues that respondents' argument has already been rejected in the preliminary determinations of the ITC and the Department. Furthermore, petitioner points out that respondents offer no new information that would cause either agency to reverse their preliminary decision.

Department Position

For the reasons stated in the notice of initiation and the preliminary determination, we continue to find that tungsten intermediate products are not like the imported product tungsten ore concentrates. The only new evidence offered since the initiation is the ITC preliminary determination itself. Based on our analysis of the ITC determination we see no reason for reaching a conclusion different from that of the ITC.

The ITC found that intermediate tungsten products are not like the imported product, tungsten ore concentrates. Specifically, the ITC stated that concentrates and intermediates are physically different, are not interchangeable, have different chemical compositions, do not share common manufacturing facilities, and are received by customers as discrete products. Moreover, the ITC noted that their practice is to broaden the like product definition horizontally to include other similar products rather than to include downstream products which are further processed. In addition, the ITC characterized GTE's reliance on sections 406 and 201 of the Tariff Act of 1974 as "misplaced." The ITC noted that not only were sections 201 and 406 "part of a different statute with different purposes and different legislative histories", but also that the section 201 and 406 investigations relied on by GTE only allowed for the expansion of the definition of domestic industry to upstream products. Because tungsten intermediate products are considered downstream products, section 201 and 406 practices would not support GTE's argument. We have already rejected respondents' argument opposing petitioner's standing and nothing on the current record of this investigation indicates that we should reverse our decision. Therefore, the Department will not dismiss the petition for lack of standing.

Continuation of Suspension of Liquidation

In accordance with section 735(d)(1) of the Act, we are directing the U.S. Customs Service to continue to suspend liquidation of all entries of tungsten ore concentrates from the PRC, as defined in the "Scope of Investigation" section of this notice, that are entered, or withdrawn from warehouse, for consumption on or after the date of publication of this notice in the **Federal Register**. The U.S. Customs Service shall continue to require a cash deposit or posting of a bond equal to 151.00 percent on all entries of tungsten ore concentrates from the PRC.

The suspension of liquidation will remain in effect until further notice.

ITC Notification

In accordance with section 735(d) of the Act, we have notified the ITC of our determination. If the ITC determines that material injury, or threat of material injury does not exist with respect to tungsten ore concentrates, the proceeding will be terminated and all securities posted as a result of the suspension will be refunded or cancelled. However, if the ITC determines that such injury does exist, the Department will issue an antidumping duty order directing Customs officials to assess antidumping duties on all tungsten ore concentrates from the PRC, on or after the effective date of the suspension of liquidation, equal to the amount by which the FMV exceeds the USP.

This determination is published pursuant to section 735(d) of the Act (19 U.S.C. 1673d(d)) and 19 CFR 353.20.

Dated: September 17, 1991.

Eric I. Garfinkel,

Assistant Secretary for Import Administration.

[FR Doc. 91-22740 Filed 9-19-91; 8:45 am]

BILLING CODE 3510-DS-M

APPENDIX D

INFORMATION ON THE ORDERLY MARKETING AGREEMENT ON AMMONIUM PARATUNGSTATE AND TUNGSTIC ACID FROM THE PEOPLE'S REPUBLIC OF CHINA

A 4-year orderly marketing agreement (OMA) limiting China's exports of APT and tungstic acid to the United States was signed by the two countries on September 28, 1987. The agreement was negotiated at the request of the President after the Commission determined that market disruption existed by reason of imports of these products from China.[1] Under the terms of this agreement, limits were imposed on China's exports to the United States of APT and tungstic acid as presented in the following tabulation:

Period	OMA limit (MTW)
Oct.-Dec. 1987	193
1988	821
1989	880
1990	930
Jan.-Sept. 1991	680

The agreement provided that the annual limits could be exceeded by specified amounts, but that equivalent amounts would be deducted from the limits in subsequent periods. In fact, for the period October-December 1987, OMA import levels were exceeded by 862 MTW. Accordingly, 50 percent of the amount by which the OMA was exceeded in the last quarter of 1987 was deducted from the 1988 level. In 1989 and 1990, the amount of the deduction was placed at 30 percent and 20 percent.

Imports of APT and tungstic acid from China, which, since 1987, have apparently not met the limits imposed by the OMA, have generally fallen since the OMA went into effect. According to the U.S. Bureau of Mines, the reduction in imports of APT and tungstic acid from China may have caused a relative shift toward imports of other tungsten materials, as well as tungsten ore concentrates. Tungsten products other than APT and tungstic acid continue to represent a significantly greater post-OMA share of tungsten materials imported from China. In 1990, tungsten materials other than APT and tungstic acid constituted about 90 percent of all imports from China, whereas in 1987, they made up only about one-half of such imports.[2] Official import statistics on APT and tungstic acid, as well as the revised limits on the imported products, are presented in the following tabulation (in MTW):

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[1] U.S. International Trade Commission, Ammonium Paratungstate and Tungstic Acid From the People's Republic of China (investigation No. TA-406-11), USITC publication 1982, June 1987.

[2] Tungsten Minerals Yearbook, 1990, U.S. Bureau of Mines.

Period	Imports of APT and tungstic acid	Revised OMA limit
Oct.-Dec. 1987....	1,055	1,055
1988.....	357	391
1989.....	378	622
1990.....	413	758
Jan.-June 1991....	310	680

Since no action was taken to prevent the expiration of the 4-year OMA, it automatically expired on September 30, 1991.

APPENDIX E

AVAILABLE INFORMATION CONCERNING INTERMEDIATE TUNGSTEN PRODUCTS

Description and uses of intermediate tungsten products

Most tungsten concentrate is converted into tungsten chemicals (e.g., APT, tungstic acid, sodium tungstate, ammonium metatungstate, tungstic oxide), tungsten metal powder, tungsten carbide powder, or ferrotungsten before being fabricated into end-use products. Tungsten chemicals, produced as coproducts or primary products at tungsten processing plants, are generally reduced to tungsten metal powder and then may be processed into tungsten carbide powder or ferrotungsten.

Approximately 90 percent of tungsten ore concentrate is converted into APT, the most common intermediate product. The remaining 10 percent is used primarily in the production of ferrotungsten. Most of the APT is then reduced to tungsten metal powder and processed into tungsten carbide powder.[1] Mill products made from tungsten carbide powder are used to impart hardness to certain machinery and equipment that require this quality. Mill products made from tungsten metal powder are used primarily by the electronic and electrical industries. When tungsten ore concentrates are not further processed into metal powder, they generally are used in the chemical and ceramics industries.

Manufacturing process of intermediate tungsten products

The manufacturing of tungsten ore concentrates into various intermediate tungsten products normally follows a chemical sequence.[2] See figure E-1 for an illustration of the processing sequence of intermediate tungsten products.

Following the pretreatment of concentrates through leaching or roasting, the pretreated concentrate is digested to form a caustic sodium tungsten solution or tungstic acid. It is then separated by filtration and purified to remove certain impurities. This purified sodium tungstate solution can then be converted into tungstic acid by the addition of acid or, more typically, the sodium tungstate is converted into ammonium tungstate by the use of an ion solvent exchange. APT crystals are formed by evaporating the purified ammonium tungstate solution. At this point APT may be reduced directly to the metal powder; however, in most production processes, the APT is first converted into a tungstic oxide through heating,[3] and is then reduced to metal powder. Metal powder is produced by exposing the APT or tungstic oxide to hydrogen contained in heated tubes. The tungsten metal powder may then be reacted with carbon black to produce carbide powders or may be compressed, sintered, heated, swaged, and drawn or rolled into final product form.

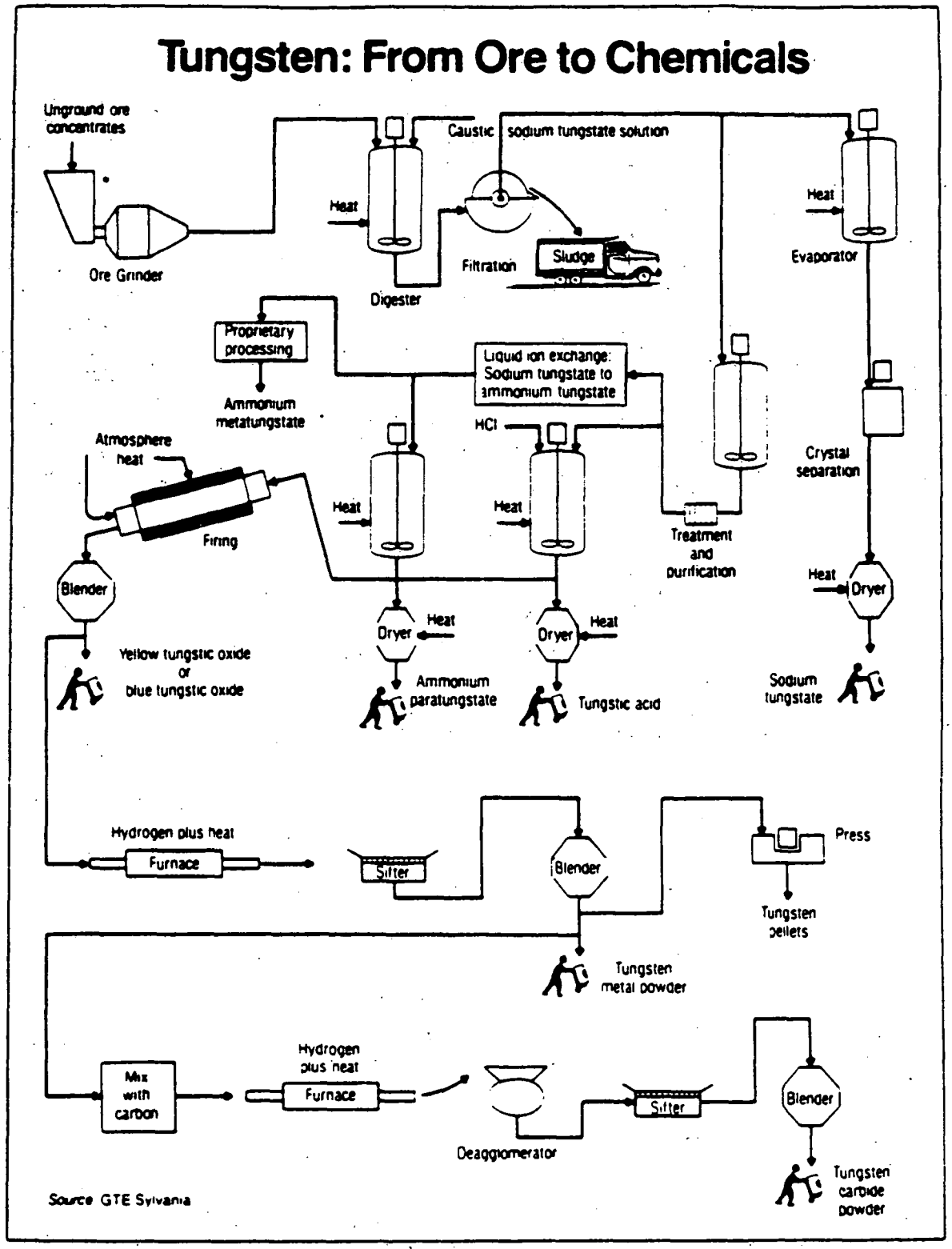
---

[1] Gerald Smith, U.S. Bureau of Mines, conversation with USITC staff, Feb. 22, 1991.

[2] Kennametal claims to bypass the production of APT in the production of tungsten carbide powder.

[3] Yellow oxide is produced when APT is heated above 250 degrees centigrade in an open-air system; blue oxide is produced when the APT is heated in a slightly reducing atmosphere system.

Figure E-1


Tungsten: From Ore to Chemicals
Unground ore concentrates
Ore Grinder
Heat
Digester
Caustic sodium tungstate solution
Filtration
Sludge
Heat
Evaporator
Proprietary processing
Ammonium metatungstate
Liquid ion exchange: Sodium tungstate to ammonium tungstate
HCl
Crystal separation
Atmosphere heat
Firing
Heat
Heat
Treatment and purification
Blender
Heat
Dryer
Yellow tungstic oxide or blue tungstic oxide
Dryer
Heat
Ammonium paratungstate
Dryer
Heat
Tungstic acid
Heat
Dryer
Sodium tungstate
Hydrogen plus heat
Furnace
Sifter
Blender
Press
Tungsten pellets
Tungsten metal powder
Mix with carbon
Hydrogen plus heat
Furnace
Deagglomerator
Sifter
Blender
Tungsten carbide powder
Source GTE Sylvania

The estimated cost of producing APT is approximately equal to the cost of producing tungsten ore concentrate plus 30 to 40 percent.[4]

Substitute products

Ceramics, ceramic-metallic composites, and other materials continue to be developed and utilized as substitutes for downstream tungsten products to meet the changing needs of the world market, although cemented tungsten carbide remains as a primary cutting-tool insert material because of its versatility in meeting the technical requirements in many turning and milling operations. Other substitutes for downstream tungsten products, such as polycrystalline diamond, cubic boron nitride, silicon nitride, tantalum carbide, molybdenum carbide, titanium carbide, silicon carbide whiskers in a ceramic matrix, and titanium carbide whiskers in a metal matrix, have exhibited technical and/or economic advantages over the traditional tungsten carbides in fulfilling the special needs of the market. In addition, depleted uranium has continued to be a principal substitute for tungsten heavy metal alloys in counterweights and as armor-piercing penetrators for military applications; however, there are indications that there may be a move back toward tungsten in military applications.[5] Tungsten remains the preferred and essentially unsubstitutable material for filaments, electrodes, and contacts in lamp and lighting applications.

U.S. Government stockpiles

Tungsten materials held in stockpiles include tungsten ore concentrates, ferrotungsten, tungsten metal powder, and tungsten carbide powder. The amounts of inventory, as reported by the Bureau of Mines, held as of December 31, 1990, are shown below (in MTW):

Material	Stockpile- and nonstockpile-grade inventory
Tungsten ore concentrates	34,636
Ferrotungsten	918
Tungsten metal powder	861
Tungsten carbide powder	922

Although there have been dispositions of tungsten ore concentrates under the Ferroalloy Upgrading Program in 1988 and 1989, there have been no dispositions of other tungsten stockpile inventories since 1986.[6]

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[4] Postconference brief on behalf of U.S. Tungsten Corp.

[5] The shift away from depleted uranium is due to uncertainty of the product's level of radioactive emissions and long-term stability. Gerald Smith, U.S. Bureau of Mines, conversation with USITC staff, Feb. 22, 1991, and Philip Stafford, Curtis Tungsten, conversation with USITC staff, Feb. 20, 1991.

[6] Gerald Smith, conversation with USITC staff.

U.S. imports of intermediate products

Official U.S. import statistics for certain intermediate tungsten products from China are presented in table E-1.

Table E-1
Intermediate tungsten products: U.S. imports from China, by products, 1980-90, January-June 1990, and January-June 1991

(In MTW)

Period	Tungstic acid	Sodium tungstate	APT	Tungstic oxide	Tungsten powder	Tungsten carbide	Ferro-tungsten	Scrap
1980.....	0	0	11	0	1	[1]	0	0
1981.....	0	[1]	337	28[2]	[1]	30	0	[1]
1982.....	0	7	427	266[2]	[1]	28	0	8
1983.....	0	[1]	179	58[2]	3	3	0	0
1984.....	197	0	721	0	0	5	9[2]	18
1985.....	158	131	1,126	20	5	50	23	21
1986.....	162	129	959	[1]	0	31	75	15
1987.....	276	0	1,300	15	0	4	220	148
1988.....	90	207	267	738	0	28	468	563
1989[3]....	68	328	310	323	0	44	359	192
1990.....	0	122	413	341	5	26	455	99
Jan.-June--								
1990...	0	102	48	138	5	16	259	55
1991...	37	9	273	183	29	22	317	83

[1] Less than 0.5 MTW.
[2] Estimated from reported gross weight.
[3] The HTS No. specifically for tungstic acid became effective on July 1, 1989. It was included under HTS No. 2825.90.60.00, other metal oxides and hydroxides, during the period Jan. 1, 1989, to June 30, 1989.

Note.--There were no U.S. imports of calcium tungstate for the periods presented.

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

APPENDIX F

TUNGSTEN MINES, 1980-90

Table F-1
Tungsten mines and status, by market-economy countries, as of July 18, 1990

Item	Status
Argentina:[1]	
Los Conderes	Care and maintenance 1985
Los Avestruces	Operating--most highly mechanized
Las Asperezes	New opening 1986
La Josefa	New opening 1987
San Virgilio	Intermittent operation
Australia:	
Torrington	Care and maintenance (operated 1978-80)
Kara	Operating
King Island--	
Dolphin mine	Closed in 1990
Bold Head mine	Care and maintenance (Dec. 1983)
Mount Carbine	Closed 1986
Mount Mulgine	Exploration
Aberfoyle/Storeys Creek	Closed 1986--reserves depleted
Austria:	
Mittersill	Operating
Bolivia:[2]	
Comibol--	
Bolsa Negra	Closed Dec. 1985--private operation 1986
Kami	Closed Dec. 1985--private operation 1986
Viloco	Closed Dec. 1985--private operation 1986
Tasna	Closed Dec. 1985
Medium Miners--	
Chambillaya	Closed April 1986
Enramada	Closed April 1986
Chojlla	Operating
Chicote Grande	Pilot plant 1982-83
Mines of Empressa Minera San Jose de Berque--	
Esmoraca	Operating
Espanola	Operating
La Argentina	Operating
Pueblo Viejo	Operating
Brazil:	
Barre Verde	Operating
Brejui	Operating
Boca de Lage	Closed in 1990
Zangaralhas	Operating, small production
Cafuca	Closed 1982
Bonito	Closed 1982
Bonfim	Closed 1982
Malhada dos Angicos	Closed 1982
Saco dos Veados	Closed 1982
Burma:	
Mawchi	Operating, problems with company instability, nationalization, shipping, smuggling, and generally unstable political conditions
Hermiyingi	Producing concentrate
Meinda	Producing small quantity of concentrate
Canada:	
Mount Pleasant	Closed July 1985
Cantung	Closed May 1986--care and maintenance
Mactung	Exploration
Logtung	Exploration
France:	
Salau	Closed Dec. 1986
Montredon-Lebessonnie	Closed mid-1960s

Continued on the following page.

Table F-1--Continued
Tungsten mines and status, by market-economy countries, as of July 18, 1990

Item	Status
Guatemala:	
Annabella	Closed 1980, briefly reopened 1985
Los Lirios	Closed 1980, briefly reopened 1985
Republic of Korea:	
Sangdong	Operating
Japan:	
Kaneuchi	Closed Sept. 1982
Otani	Closed Sept. 1983
Ikino	Closed 1986
Shinyakuki	Closed 1986
Fugigatani	Closed 1986
Kiwaden	Operating
Kuga	Operating
Mexico:	
Baviacora	Operating
San Alberto	Operating
Los Verdes	Operating
Naica	Operating
Namibia:	
Krantzberg	Closed 1983
Brandenberg	Closed 1983
Peru:[3]	
Pasto Bueno	Closed 1987
Palca XI (Regina)	Operating
Portugal:	
Borralha	Closed 1983
Panasquiera	Operating
Rwanda:	
SOMIRWA mines	Ten mines closed in 1987, some resumption of mining in 1989 under new government-controlled company
Spain:	
Sultana	Closed 1981
Barruecopardo	Closed 1982, some resumption in recent years of small amount
Santa Comba	Closed Apr. 1985
La Parilla	Closed Apr. 1987
Sweden:	
Yxsjoberg	Closed mid-1989
Wigstram	Closed 1981
Thailand:	
Khao Soon	Closed 1982
Doi Mok	Operating
Doi Ngoem	Operating
Turkey:	
Uludag	Operating
Uganda:	
Nyamolilo (Bjordal)	Intermittent operation, small output
United Kingdom:	
Hemerdon	Exploration
Carrock Fell	Closed 1981
United States:	
Climax	Closed 1986
Emerson	Closed Dec. 1985
Strawberry	Closed Dec. 1986
Springer (Sutton)	Opened and closed 1982
Pine Creek	Closed 1986, reopened late 1987 on a reduced scale, ***
Andrew	Closed 1985, reopened 1989, closed mid-1990, reopened ***

[1] The following were major producing mines in the late 1970s: Del Valle, Victoria, Florentina 1 and 2, San Rafael, Le Prodencia, and Hermana Blanca.
[2] Bolivia reportedly had 29 producers in 1977.
[3] No information was available on three mines, namely Puquiococha, San Cristobel, and Morococha.

Source: Gerald Smith, U.S. Bureau of Mines.

APPENDIX G

APPARENT U.S. CONSUMPTION AND MARKET PENETRATION DATA ADJUSTED TO INCLUDE CONSUMPTION OF TOLLED CONCENTRATES

Table G-1
Tungsten ore concentrates: Adjusted apparent U.S. consumption, 1988-90, January-June 1990, and January-June 1991[1]

Item	1988	1989	1990	January-June-- 1990	1991
*	*	*	*	*	*	*

[1] Consumption data were reported by five U.S. consumers of tungsten ore concentrates and are believed to represent all known U.S. consumption of purchased and produced tungsten ore concentrates. Data as presented above are actual U.S. consumption of purchased and produced tungsten ore concentrates, as reported. The data do not include Government stockpile dispositions of 524 MTW and 466 MTW in 1988 and 1989. No stockpile dispositions were made in 1990 and values are not available for 1988 and 1989 because the dispositions were made under the Ferroalloy Upgrading Program. For a more comprehensive discussion see the section of this report entitled "U.S. Government stockpiles."

[2] Tolled product shown is metric tons of contained tungsten in the APT returned rather than in the tungsten ore concentrate provided.

Note.--Because of rounding, shares may not add to the totals shown.

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

APPENDIX H

"MAKE VS. BUY"

Response of U.S. producers to the following questions

"The following questions concern the criteria that your firm uses to determine whether it will produce or purchase tungsten ore concentrates. What are the primary factors involved in the "produce or purchase" decision? How often is the "produce or purchase" decision made, e.g., monthly, quarterly, or as needed? In the space below, please give a detailed assessment of all the factors associated with your "produce or purchase" decisions, including an explanation of the cost of production and of the price at which you are likely to purchase rather than produce. Specify all the instances that such decisions were made during January 1988 to June 1991, and why they were made. Provide documentation on how those decisions were made in each instance, especially regarding the cost effectiveness of purchasing rather than producing and vice-versa. Also, in instances when your mine is not operational and you make a decision to resume production, how long does it take to commence actual mining operations?"

Curtis Tungsten, Inc.

* * * * * * *

U.S. Tungsten Corp.[1]

"MAKE/BUY

* * * * * * *

In determining how much to produce versus purchase, U.S. Tungsten Corporation develops an Annual Business Budget in the last few months of each year for the following calendar business year. This budget forecasts sales of APT and pricing of concentrates on world markets (the LMB) and APT pricing. An analysis is then conducted to determine the best financial and strategic mix of ore and/or concentrate production.

U.S. Tungsten Corporation sells APT. ***.

* * * * * * *[2]

The cost of converting concentrates to APT has remained fairly stable.

* * * * * * *

Taking the planning process for the year 1990:

* * * * * * *."

---

[1] The answer quoted herein is from U.S. Tungsten Corp.'s posthearing brief, exhibit 6, which is a more detailed answer than the one provided in response to the Commission's questionnaire. On Oct. 7, 1991, U.S. Tungsten Corp. also provided its Annual Business Budget for 1988 and 1989 and its Operating Plan for 1990, in response to a request by the Commission staff.

[2] Prior to the mid 1980's, the LMB Mid was considered to be a good yardstick for the APT price. However, during the latter half of the 1980's, with increased Chinese sales of ore concentrates and APT, the LMB Low has been dragged down and today the LMB Low is a better yardstick for the APT price. In recent years, Chinese Wolframite (represented by the LMB Low) has tended to become the determinant for APT pricing.

APPENDIX I

U.S. TUNGSTEN'S INCOME-AND-LOSS EXPERIENCE ON APT

Table I-1
Income-and-loss experience of U.S. Tungsten Corp. on its APT operations, fiscal years 1988-90, January-June 1990, and January-June 1991

Item	1988	1989	1990	January-June-- 1990	1991
	*	*	*	*	*

[1] Metric tons of tungsten content.

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

APPENDIX J

IMPACT OF IMPORTS ON U.S. PRODUCERS' GROWTH, INVESTMENT, ABILITY TO RAISE CAPITAL, AND EXISTING DEVELOPMENT AND PRODUCTION EFFORTS

Response of U.S. producers to the following questions

1. "Since January 1, 1988, has your firm experienced any actual negative effects on its growth, investment, ability to raise capital, or existing development and production efforts, including efforts to develop a derivative or more advanced product, as a result of imports of tungsten ore concentrates from the People's Republic of China?"

   U.S. Tungsten Corp.--***.

   * * * * * * *

   Curtis Tungsten.--***.

   * * * * * * *

2. Does your firm anticipate any negative impact of imports of tungsten ore concentrates from the People's Republic of China?

   U.S. Tungsten Corp.--***.

   * * * * * * *

   Curtis Tungsten.--***.

   * * * * * * *

3. "Has the scale of capital investments undertaken been influenced by the presence of imports of tungsten ore concentrates from the People's Republic of China?"

   U.S. Tungsten Corp.--***.

   Curtis Tungsten.--***.

   * * * * * * *

APPENDIX K

APT PRICES

Table K-1
Average Metals Week tungsten ore concentrate and APT prices, by months, January 1988-June 1991

(Per MTU)

Period	Ore concentrate	APT
1988:		
January	$57.32	$82.60
February	57.32	82.26
March	61.51	85.76
April	65.59	89.42
May	67.24	91.08
June	56.22	90.11
July	50.57	88.67
August	58.15	89.77
September	64.59	88.62
October	59.11	87.77
November	57.87	88.08
December	58.31	88.35
1989:		
January	59.52	88.22
February	59.11	87.36
March	57.21	87.05
April	55.39	86.25
May	53.46	84.53
June	55.00	84.08
July	55.12	83.22
August	54.43	81.16
September	53.02	78.54
October	48.50	77.16
November	47.26	73.23
December	46.19	67.46
1990:		
January	43.95	66.88
February	41.89	66.83
March	42.88	67.52
April	46.30	67.72
May	45.61	66.14
June	44.64	65.92
July	41.89	65.38
August	41.34	65.31
September	39.79	66.14
October	38.58	66.14
November	38.58	65.31
December	38.91	64.48
1991:		
January	43.54	66.00
February	50.29	68.07
March	51.92	71.87
April	62.83	72.89
May	63.93	77.88
June	65.45	81.02

Source: Metals Week.