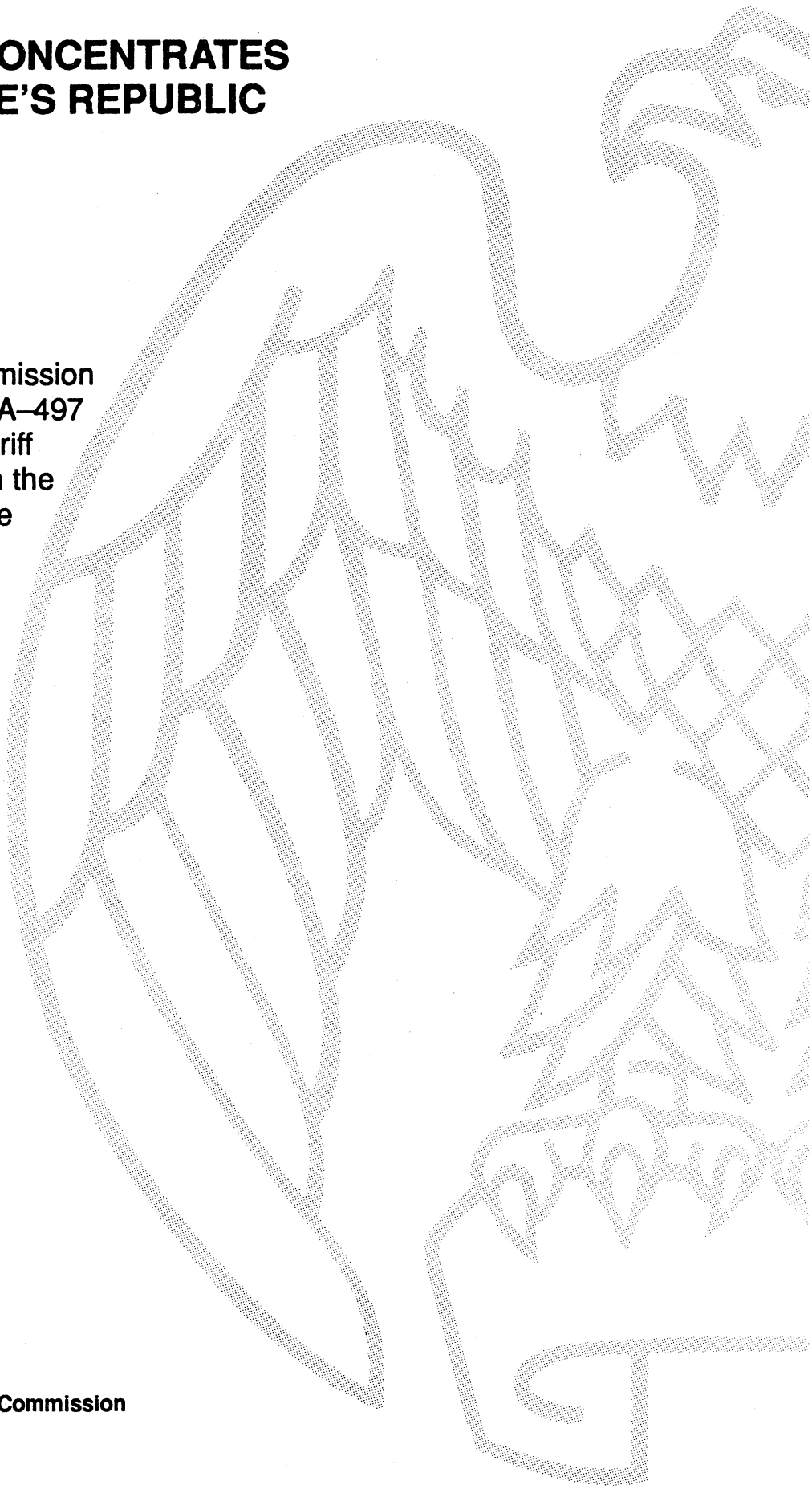
TUNGSTEN ORE CONCENTRATES FROM THE PEOPLE'S REPUBLIC OF CHINA

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



USITC PUBLICATION 2367

MARCH 1991

United States International Trade Commission
Washington, DC 20436

UNITED STATES INTERNATIONAL TRADE COMMISSION

COMMISSIONERS

Anne E. Brunsdale, Acting Chairman

Seeley G. Lodwick

David B. Rohr

Don E. Newquist

Charles Ervin,
Director of Operations

Staff assigned:

Mary Trimble, Investigator
Jeffrey Anspacher, Economist
Vincent DeSapio, Industry Analyst
Marshall Wade, Accountant/Financial Analyst
Craig McKee, Attorney

George Deyman, Supervisory Investigator

Address all communications to
Kenneth R. Mason, Secretary to the Commission
United States International Trade Commission
Washington, DC 20436

CONTENTS

CONTENTS

Figures

Tables

CONTENTS

Tables--Continued

CONTENTS

Tables--Continued

Note.--Information that would reveal confidential operations of individual concerns may not be published and therefore has been deleted from this report.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

UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation No. 731-TA-497 (Preliminary)

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 unanimously determines, pursuant to section 733(a) of the Tariff Act of 1930 (19 U.S.C. § 1673b(a)), that there is a reasonable indication that an industry in the United States is materially injured 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, that are alleged to be sold in the United States at less than fair value (LTFV).

Background

On January 23, 1991, a petition was filed with the Commission and the Department of Commerce by counsel for U.S. Tungsten Corp., Danbury, CT, alleging that an industry in the United States is materially injured or threatened with material injury by reason of LTFV imports of tungsten ore concentrates from the People's Republic of China. Accordingly, effective January 23, 1991, the Commission instituted preliminary antidumping investigation No. 731-TA-497 (Preliminary).

---

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

Notice of the institution of the Commission's investigation and of a public conference to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the Federal Register of January 30, 1991 (56 F.R. 3485). The conference was held in Washington, DC, on February 14, 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 preliminary investigation, we unanimously determine that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of tungsten ore concentrates from the People's Republic of China that are allegedly sold at less than fair value (LTFV) in the United States.

The standard for preliminary determinations

The legal standard in a preliminary antidumping investigation requires the Commission to determine whether, based upon the best information available at the time of the preliminary determination, there is a reasonable indication of material injury or threat thereof to a domestic industry by reason of the imports under investigation. [1] The definition of "material injury" is the same in both preliminary and final investigations, but in preliminary investigations an affirmative determination is based upon a "reasonable indication" of material injury or threat, as opposed to the actual finding of material injury or threat of material injury as is required in a final determination. [2]

In American Lamb Co. v. United States, 785 F.2d 994 (CIT 1988), the Federal Circuit stated that the purpose of preliminary determinations is to avoid the cost and disruption to trade caused by unnecessary investigations. The court also noted that the "reasonable indication" standard requires more

---

[1] See 19 U.S.C. § 1673b(a). Cf. 19 C.F.R. § 207.17 (Determination by Commission of reasonable indication of injury). See also Maverick Tube Corp. v. United States, 687 F. Supp. 1659, 1673 (CIT 1988).

[2] Compare 19 U.S.C. § 1673b(a) with 19 U.S.C. § 1673d(b)(1).

than the possibility of material injury. Finally, the court held that the Commission may weigh the evidence before it to determine whether "(1) the record as a whole contains clear and convincing evidence that there is no material injury or threat of material injury; and (2) no likelihood exists that any contrary evidence will arise in a final investigation." Id. at 1001-04.

Like Product

To determine whether there is a reasonable indication that an industry is materially injured or is threatened with material injury by reason of the articles subject to investigation, we first define the appropriate "like product." Like product is defined as "[a] product that is like, or in the absence of like, most similar in characteristics and uses with the articles subject to investigation." [3]

We generally have examined several factors in defining the like product, including: (1) physical characteristics, (2) uses, (3) interchangeability of products, (4) channels of distribution, (5) production processes, (6) customer or producer perceptions, (7) common manufacturing facilities and production employees, and (8) price. [4] No single factor is necessarily dispositive, and we consider other factors which we deem relevant based upon the facts of a given investigation. [5] We have found minor product variations to be an insufficient basis for a separate like product analysis, and instead, have

---

[3] 19 U.S.C. § 1677(10)

[4] See e.g., Certain Laser Light-Scattering Instruments and Parts Thereof, Inv. No. 731-TA-455 (Final), USITC Pub. 2328 (November 1990).

[5] Asociacion Colombiana de Exportadores (ASOCOLFLORES), 693 F. Supp. 1165, 1169 (CIT 1988) (like product issue essentially one to be based on the unique facts of each case).

looked for clear dividing lines among products. [6]

Here, the merchandise subject to investigation is tungsten ore concentrates ("TOC") from the People's Republic of China. In its initiation notice, the Department of Commerce defined the scope of investigation as follows:

> [Tungsten Ore Concentrate] 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...

56 Fed. Reg. 6835 (February 20, 1991).

Tungsten ore concentrate is produced by mining tungsten ore and concentrating the tungsten. Tungsten ore is concentrated by crushing and grinding the ore, followed by a process separating the tungsten mineral from the rock. The principal separation methods are flotation, gravity and magnetic separation. [7] The cost of concentration is a function of the grade of ore being concentrated and the degree of concentration being performed. [8] Higher grade concentrates contain lower levels of impurities and are more costly to produce. [9] Tungsten ore concentrates, whether wolframite or scheelite, most often are processed to produce ammonium paratungstate ("APT"). APT is, in turn, most often processed to make tungsten powder and tungsten

---

[6] See, e.g., Operators for Jalousie and Awning Windows from El Salvador, Invs. Nos. 701-TA-272 and 731-TA-319 (Final), USITC Pub. 1934 (January 1987) at 4, n.4; Sony Corporation of America v. United States, 712 F. Supp. 978 (CIT 1989).

[7] Petition at 10.

[8] Petition at 11.

[9] Petition at 9.

carbide powder.

Petitioner United States Tungsten Corporation ("U.S.T.C.") argued that the appropriate like product in this investigation is domestically produced tungsten ore concentrates. [10] Respondents GTE Products Corporation (GTE), and the China National Metal and Minerals Import and Export Corporation (MINMETALS) and the China National Nonferrous Metals Import and Export Corporation (CNIEC) (hereinafter collectively referred to as "MINMETALS"), argue that the product like imported TOC includes domestically produced TOC and, at a minimum, intermediate tungsten products from TOC, such as ammonium paratungstate. [11]

We find that domestically produced TOC is the product like the article subject to investigation, TOC from the PRC. The factors normally considered by the Commission here support a like product definition coextensive with the articles subject to investigation. TOC and APT have different physical characteristics and TOC is not interchangeable with APT at the same stage of processing TOC into finished tungsten products, as TOC is used to produce APT and other intermediate tungsten products. While both TOC and APT ultimately are used to produce finished tungsten products, each represents a distinctive stage of that process. In particular, TOC has a different chemical composition than APT with a significantly higher level of impurities. It is used to produce APT -- a use which APT cannot share. We note that TOC and APT need not be manufactured using common manufacturing facilities and production employees as demonstrated by the fact that, other than petitioner, the major producers of APT in the United States do not use their facilities to produce

---

[10] U.S.T.C. postconference brief at 8.
[11] MINMETALS postconference brief at 2, 4-12; GTE postconference brief at 1, 4-16.

TOC. [12] Indeed, concentration of tungsten ore into TOC is a physical or mechanical process, while the production of APT from TOC is a chemical process, and the facilities required to produce TOC are very dissimilar from those required to produce APT from TOC. [13] TOC is also perceived by customers as a discrete product apart from APT, as reflected by consumers willingness to pay at least 30 percent more for APT.

Furthermore, on those occasions when we have broadened like product beyond the articles subject to investigation, which would be required to include APT in the same like product as TOC, the expansion most often has been horizontal, to other similar products, and not to products "downstream" from the articles under investigation. [14] We also have expanded the like product "upstream," as we did in the Generic Cephalexin investigation. Bulk cephalexin was a product produced upstream from the generic cephalexin capsules subject to investigation, unlike the downstream relationship of APT to TOC. [15] Broadening like product to include products downstream from the articles subject to investigation, as respondents urge us to do here, would not only be contrary to the factors normally considered in defining the like

---

[12] See Tr. at 55.
[13] See Tr. at 55; Transcript of Commission briefing and vote.
[14] See e.g., Chrome-Plated Lug Nuts from the People's Republic of China and Taiwan, 731-TA-474-475 (Preliminary), USITC Pub. 2342 (December 1990) (like product broadened to include stainless steel capped lug nuts); Generic Cephalexin in Capsules from Canada, 731-TA-423 (Final), USITC Pub. 2211 (August 1989) (like product broadened to include branded capsules); Shock Absorbers and Parts, Components, and Subassemblies Thereof from Brazil, Inv. No. 731-TA-421 (Preliminary), USITC Pub. 2128 (September 1988) (like product broadened to include MacPherson struts); Natural Bristle Paint Brushes from the People's Republic of China, 731-TA-244 (Final), USITC Pub. 1805 (like product broadened to include brushes with synthetic fibers); 64K Dynamic Random Access Memory Components from Japan, 731-TA-270 (Final), USITC Pub. 1862 (like product broadened to include all DRAMS).
[15] Cf. Generic Cephalexin in Capsules from Canada, 731-TA-423 (Final), USITC Pub. 2211 (August 1989) at 8-9.

product, but would also be a significant departure from our practice to date.

Respondents have also urged that we apply here the criteria used to determine whether "semifinished" or "component" articles are "like" the finished product. [16] Specifically, respondents argue that TOC is a semifinished product which is further processed to make APT and other intermediate tungsten products, so that under the Commission's semifinished or component products criteria, the like product should include APT and or intermediate tungsten products. [17]

We apply the semifinished or component product criteria in instances in which the finished, or further processed product, is included within the articles subject to investigation. In this investigation, however, APT, the putative "finished" or further processed product, is not within the articles subject to investigation. Thus, inclusion of APT within the definition of the domestic products like TOC from the PRC is not supported by our practice under its "semifinished" product analysis. [18] We decline to change our practice to

---

[16] In such an analysis, the Commission has reviewed: (1) the necessity for, and costs of, further processing; (2) the degree of interchangeability of the article at different stages of production; (3) whether the article at an earlier stage of production is dedicated to use in the finished article; (4) whether there are significant independent uses or markets for the finished and unfinished articles; and (5) whether the article at the earlier stage of production embodies or imparts to the finished article an essential characteristic or function. See e.g., Certain Laser Light-Scattering Instruments and Parts Thereof, Inv. No. 731-TA-455 (Final), USITC Pub. 2328 (November 1990) at 11 n.36; Grey Portland Cement and Cement Clinker from Mexico, 731-TA-451 (Preliminary), USITC Pub. 2235 (November 1989); 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, (Preliminary), USITC Pub. 2083 (May 1988) at 20-22.

[17] See e.g., GTE postconference brief at 6.

[18] The "semifinished" or "component" criteria, moreover, are most often employed in investigations involving components, viz. a finished product and one or more of its components. See e.g., Certain Residential Door Locks and Parts Thereof from Taiwan, Inv. No. 731-TA-433 (Final), USITC Pub. 2253

(continued...)

include the further processed tungsten intermediates as part of the like product.

There are compelling legal and policy reasons for not broadening like product to include downstream products. The focus of an antidumping investigation is upon a class or kind of foreign merchandise, defined by the scope of the investigation, which allegedly is being dumped and thereby causing injury to a domestic industry. [19] Broadening the definition of like product, and hence the definition of the domestic industry, to include products which result from further processing of the articles subject to investigation, has the effect of including within the definition of the domestic "industry" producers of a downstream product whose interest, as consumers, in the investigation is contrary to the domestic producers of those articles (in this investigation TOC) corresponding directly to the articles subject to investigation. [20]

---

[18](...continued)
(January 1990) at 8-10; Certain Telephone Systems and Subassemblies Thereof from Japan and Taiwan, Inv. Nos. 731-TA-426 and 428 (Final), USITC Pub. 2237 (November 1989) at 6-7. In situations in which an identifiable article goes through multiple processing stages, in which it is "semifinished," the point at which the article has attained the essential characteristics of the finished product and can be interchanged with it has been important. Certain Granite from Italy and Spain, 731-TA-381-382 (Final), USITC Pub. 2110 (August 1988) at 8; Certain Laser Light-Scattering Instruments and Parts Thereof, Inv. No. 731-TA-455 (Final), USITC Pub. 2328 (November 1990) at 13; Certain Welded Carbon Steel Pipes and Tubes from the Republic of Korea and Taiwan, Inv. Nos. 731-TA-131, 132, and 138 (Final), USITC Pub. 1519 (April 1984) at 5-6.

Thus, even if APT were a "finished" product subject to investigation, we would not include it within the same like product as TOC. TOC and intermediates, primarily APT, are not interchangeable at a given stage of production, and TOC does not impart the essential physical and functional characteristics that distinguish APT from other intermediate products that use APT or, distinguish these intermediate products from each other.

[19] See 19 U.S.C. § 1673.

[20] Cf. S. Rep. No. 249, 96th Cong., 1st Sess. 91 (1979) (Like product should not be "interpreted in such a fashion as to prevent consideration of an industry adversely affected by the imports under investigation"). By way of (continued...)

Moreover, to the extent that the effect of the dumping is to depress or suppress prices for the articles subject to investigation, and thus lower the cost of production of the downstream product, the financial condition of the downstream consumers' operations may be enhanced, thereby masking any injury suffered by U.S. producers of the article subject to investigation, if consumers of the article subject to investigation were included in the definition of the like product. [21]

The CIT has stated, "ITA's administration of the antidumping law is not to be concerned with effects on U.S. purchasers, but to investigate and impose duties where illegal dumping occurs." [22] Congress decided that consumers or users of the articles subject to investigation are not even "interested parties."[23] Indeed, the only reference to the public interest which requires consultation with potentially affected consumers of the article subject to investigation occurs in the provision governing termination of an investigation pursuant to a quantitative restriction agreement. [24] The Congress chose not to locate the consumer interest elsewhere in the

---

[20](...continued)
contrast, in the case in which the article subject to investigation is the "finished" product, allowing for inclusion of the semifinished article within the like product, and hence expanding the definition of the domestic industry, does not group producers with competing interests, other things being equal, in the outcome of the investigation. To the extent that duties are imposed upon the "finished" article subject to investigation, domestic producers of the "semifinished" article are likely to be benefitted by the cessation of dumping of the finished imported article subject to investigation, through either increased demand for or increased price of the semifinished article. Cf. Tr. at 63, 70-76 ("Basically, this case is then an effort by USTC for their own unique benefit, and to the detriment of my company, GTE and other U.S. producers of tungsten materials. This clearly is an effort to restrict competition, primarily among American APT producers here at home.").

[21] See S. Rep. No. 249, 96th Cong., 1st Sess. 91 (1979).

[22] Mitsubishi Electric Corp. v. United States, 700 F. Supp. 538, 559 (CIT 1988), aff'd 898 F.2d 1577 (Fed. Cir. 1990).

[23] See 19 U.S.C. § 1677(9).

[24] See 19 U.S.C. § 1673c(a)(2)(C).

administration of the antidumping laws, and to insinuate it under the rubric of like product, in our view, is inappropriate.

Finally, respondents' reliance [25] upon the Commission's determinations in investigations under sections 201 [26] and 406 [27] of the 1974 Trade Act as the basis for broadening like product in this investigation under Title VII of the Tariff Act of 1974 is misplaced. [28] Sections 201 and 406 are part of a different statute, with different purposes and legislative histories. They address action to facilitate positive adjustment to import competition and market disruption, respectively. These statutory provisions analyze the effects of imports on "the domestic industry producing an article like or directly competitive with the imported article." [29] In stark contrast, under Title VII "[t]he term 'industry,' means the domestic producers as a whole of a

---

[25] See e.g., Tr. at 60 ("We believe that, based on the criteria used by the Commission in its like product analysis, as well as in prior case precedence, that the like product should be defined to include all productive resources employed in mining tungsten ore, processing it into concentrates, and producing at least intermediate products such as sodium tungstate, tungstic acid, APT and tungstic oxide.")

[26] See 19 U.S.C. § 2251 et. seq.

[27] See 19 U.S.C. § 2436 et. seq.

[28] GTE also argues that the agricultural product provision has application, by analogy, to the like product issue they present. GTE postconference brief at 5, n. 10. In our view, the "processed agricultural" industry statutory provision, invoked by respondents as a guide to Congressional intent, does not support expansion of the like product in this investigation to include APT. See 19 U.S.C. § 1677(4)(E). First, the provision provides for expansion of the definition of the industry, not the like product. Second, it applies only to agricultural products. Third, in an investigation involving a processed agricultural product, the provision authorizes us to consider producers or growers of the raw agricultural product to be part of the industry producing the processed agricultural product. The provision does not authorize us, in an hypothetical investigation of the raw agricultural product, to consider the processors of the raw agricultural product to be part of the industry growing the raw agricultural product.

[29] 19 U.S.C. § 2251; see also 19 U.S.C. § 2436(e)(2)(A) ("Market disruption exists within a domestic industry whenever imports of an article, like or directly competitive with an article produced by such domestic industry, are increasing rapidly, either absolutely or relatively, so as to be a significant cause of material injury, or threat thereof, to such domestic industry.")

like product, or those producers whose collective output of the like product constitutes a major proportion of the total domestic production of the product." [30]

The legislative history to Section 201 reveals an approach to defining the domestic industry that differs significantly from that in Title VII investigations. [31] In the section 201 and 406 investigations cited by GTE, the Commission first found an article like or directly competitive with the

---

[30] 19 U.S.C. § 1677(4)(A). In addition, under Title VII, the Commission finds a domestic "product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation under this subtitle." 19 U.S.C. § 1677(10) (emphasis added). See also 19 U.S.C. § 1677(4)(D).

[31] One passage of legislative history that has guided Commission interpretation of the domestic industry in Section 201 and Section 406 investigations is as follows:

> In determining the domestic industry producing an article like or directly competitive with an imported article . . . [w]here a corporate entity has several independent operating divisions, and only some of those produce the domestic article in question, the divisions in which the domestic article is not produced may be excluded from the determination of what constituted the "industry" for purposes of the investigation and finding. It is the intent of the committee that unless there are compelling reasons, including economic adjustment possibilities, for not excluding such operations they should not be included. The concern of the Tariff Commission would be with the question of serious injury to the production resources (e.g. employees, physical facilities, and capital) employed in the divisions or plants in which the article in question is produced. H.R. Rep. 571, 93d Cong., 1st Sess. 45-46 (1973).

In Unwrought Copper, Inv. No. TA-201-52, USITC Pub. 1549 (July 1984), citing to this passage, the Commission stated, "[i]n previous cases, the Commission has implicitly described an industry as being like a pyramid and as including all of the productive resources employed in the production of a given article," citing Unalloyed, Unwrought Zinc, inv. No. TA-201-31, USITC Pub 894 (1978) at 5 and "Copper," note 4, at 4." Unwrought Cooper, Inv. No. TA-201-52, USITC Pub. 1549 (July 1984) at 7-8 (Views of Commissioner Eckes, Lodwick, and Rohr).

imported article, and then described the domestic industry as including all of the productive resources employed in the production of the article like or directly competitive with the imported article. For example, in the APT investigation, the articles subject to investigation were APT and tungstic acid. The Commission found "that one domestic industry exists producing articles like or directly competitive with the imported articles, which consists of the domestic facilities producing APT and tungstic acid." [32]

It is important to note that the methodology employed in Section 201 and Section 406 investigations cited by GTE is one that begins with the domestic article like or directly competitive with the imported article and extends the definition of domestic industry to productive resources upstream of the article subject to investigation. [33] Thus, even if the 201/406 analogy were valid, the rule in those investigations would not support respondents' argument.

Definition of the Domestic Industry

The statute defines the term "industry" as meaning "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

---

[32] Ammonium Paratungstate and Tungstic Acid from the People's Republic of China, Inv. No. TA-406-11, USITC Pub. 1983 (June 1987) at 8, 10 n.30.

[33] Thus, the rule in the cited Section 201 and Section 406 cases would rebut GTE's and MINMETALS's argument that the Commission should rely on these opinions to extend the definition of like product in this investigation downstream from TOC to include intermediate tungsten products. The rule of these cases would counsel extension of the domestic industry, here, upstream to include mining facilities.

Most importantly, however, domestic industry determinations under Sections 201 and 406 provide no guidance in this investigation because these statutory provisions concerning domestic industry are significantly different from Title VII and the legislative history, see H.R. Rep. 571, 93d Cong., 1st Sess. (1973), shaping the Commission's application of Sections 201 and 406 is inapposite to Title VII.

domestic production of that product." [34] On February 11, 1991, Umetco Minerals Corporation (Umetco) filed a letter in support of the petition. Umetco owns a tungsten mine and mill in Nevada, but has not mined tungsten ore, or produced TOC, since 1985.

The Commission has wide discretion to choose the period it will investigate to ascertain the present condition of the domestic industry. [35] Once having defined the period of investigation in a case involving material injury or threat thereof, absent extraordinary circumstances, we confine membership in the domestic industry to those who have produced the like product at some point during the period of investigation. Because we are operating under our normal three year period of investigation here, we find that the domestic industry does not include Umetco, but only United States Tungsten Corporation and Curtis Tungsten, Inc. [36]

Related Parties

The related parties provision enables the Commission to exclude a domestic producer from the definition of the domestic industry in appropriate

---

[34] E.g., 19 U.S.C. §1677(4)(A).

[35] Wieland Werke, AG v. United States, 718 F. Supp. 50, 55 (CIT 1989); Hercules, Inc. v. U.S., 673 F. Supp. 454, 479 (CIT 1987); see also American Spring Wire Corp. v. United States, 590 F. Supp. 1273, 1279 (CIT 1984) ("[T]he ITC is not required by statute to use any particular time frame for its analysis, although it generally focuses on annual time periods."); British Steel Corp. v. United States, 593 F. Supp. 405, 411 (CIT 1984); 12-Volt Motorcycle Batteries from Taiwan, Inv. No. 731-TA-238, USITC Pub. 2213 (August 1989) at 10; Industrial Belts from Israel, Italy, Japan, Singapore, South Korea, Taiwan, the United Kingdom, and West Germany, Inv. Nos. 701-TA-293 and 731-TA-412-419 (Final), USITC Pub. 2194 (May 1989) at 11.

[36] See Report at A-9. While we assess the condition of the domestic industry "as a whole," see Sandvik AB v United States, 721 F. Supp. 1322, 1330 (CIT 1989), we note that U.S.T.C. has produced the vast majority of TOC over the period of investigation. Thus, as a practical matter, our focus is on U.S.T.C. when we discuss reasonable indication of material injury below.

circumstances. [37] The purpose of the provision is to enable the Commission to exclude from the definition of the domestic industry any U.S. producer if the producer is "related to a foreign exporter and the foreign exporter directs his exports to the United States so as to not compete with his related U.S. producer." [38]

To determine whether appropriate circumstances exist to exclude a related party from the industry definition, the Commission has examined several factors, [39] paying particular attention to whether the related party imported the product subject to investigation principally to benefit from the unfair trade practice, or in order to enable the domestic producer to compete

---

[37] **(B) Related parties.**--When some producers are related to the exporters or importers, or are themselves importers of the allegedly subsidized or dumped merchandise, the term "industry" may be applied in appropriate circumstances by excluding such producers from those included in that industry. 19 U.S.C. § 1677(4)(B).

[38] S. Rep. No. 249, 96th Cong., 1st Sess. 83 (1979). See also Empire Plow Co., Inc. v. United States, 675 F. Supp. 1348, 1353 (CIT 1987): Butt-Weld Pipe Fittings from Brazil and Taiwan, Inv. Nos. 731-TA-308 and 310 (Final) at 9-10.

[39] Those factors were described by the Commission in Certain All-Terrain Vehicles from Japan, Inv. No. 731-TA-388 (Final), USITC Pub. 2163 at 17-18 (March 1989). as follows:

> (1) the position of the related producers vis-a-vis the rest of the domestic industry;
>
> (2) the reasons why the domestic producers have chosen to import the product under investigation--to benefit from the unfair trade practice, or to enable them to continue production and compete in the domestic market; and
>
> (3) the percentage of domestic production attributable to the related producers.
>
> We have also considered whether each company's records are maintained separately from its "relations" and whether the primary interests of the related producers lie in domestic production or in importation.

at 13, n. 44, citing Rock Salt from Canada, Inv. No. 731-TA-239 (Final), USITC Pub. 1798 (January 1986).

in the domestic market. [40] This approach has been affirmed by the Court of International Trade. [41] Thus, the related parties provision enables the Commission to avoid any distortion in the aggregate domestic industry data that might result from including within the domestic industry related parties whose operations are shielded from the effect of the imports. [42]

U.S.T.C. imports TOC from the PRC, and as such is a related party. U.S.T.C., however, also largely constitutes the domestic industry. We do not find that U.S.T.C.'s tungsten operations are shielded from the effects of imports from the PRC. On the contrary, as is discussed below, we view U.S.T.C.'s decision to import TOC to be a symptom of the deleterious effects that the Chinese imports are having on the domestic industry. U.S.T.C. believes that to remain competitive in APT production, upon which the survival of its TOC operation at present depends, it has had to import a portion of its TOC for processing into APT. We, therefore, have determined that it is not appropriate to exclude U.S.T.C. as a related party from the definition of the domestic industry.

---

[40] See Empire Plow, 675 F. Supp. at 1353, infra.
[41] Empire Plow, 675 F. Supp. at 1353, affirming Agricultural Tillage Tools from Brazil, Inv. No. 701-TA-223 (Final), USITC Pub. 1761 (October 1985).
[42] See e.g. Granular Polytetrafluorethylene Resin from Italy and Japan, Inv. Nos. 731-TA-385 and 386 (Preliminary), USITC Pub. 2043 (December 1987) at 9.

Condition of the Domestic Industry [43]

In assessing the condition of the domestic industry, we considered, among other factors, U.S. production, shipments, capacity, capacity utilization, employment, wages, financial performance, capital investment, and research and development expenditures. [44] No single factor is dispositive, and in each investigation we consider the particular nature of the industry involved and the relevant economic factors which have a bearing on the state of the industry. [45]

Because much of the information describing the condition of the domestic industry is business proprietary information, we are able to discuss this information in very general terms only.

We note that virtually every indicia of industry performance reasonably indicates material injury. [46] Production and employment levels are low, and profits, return on investments, utilization of capacity, and the cash flow of the domestic industry also all support the conclusion that there is a reasonable indication of material injury. [47] [48] On the basis of the

---

[43] Acting Chairman Brunsdale joins in this discussion of the condition of the domestic industry. However, she does not reach a separate legal conclusion regarding the presence or absence of material injury based on this information. While she does not believe an independent determination is either required by the statute or useful to the determination of whether a domestic industry is materially injured by reason of dumped imports, she finds the discussion of the condition of the domestic industry helpful in determining whether any injury resulting from the dumped imports is material. 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).

[44] 19 U.S.C. § 1677(7)(C)(iii).

[45] See e.g., Mechanical Transfer Presses from Japan, Inv. No. 731-TA-429 (Final), USITC Pub. 2257 (February 1990) at 16.

[46] See 19 U.S.C. §1677(7)(C)(iii).

[47] See Report at A-16, Table 5; Report at A-18, Table 8.

[48] Acting Chairman Brunsdale and Commissioner Rohr note that, in this investigation, they do not believe that the financial performance of the

(continued...)

information gathered in this preliminary determination we find that there is a reasonable indication of material injury to the industry in the United States producing TOC.

Reasonable Indication of Material Injury by Reason of Allegedly LTFV Imports[49]

We must determine whether there is a reasonable indication that an industry in the United States is materially injured or is threatened with

---

[48](...continued)
industry can be adequately addressed based on an evaluation of TOC operations themselves. Net sales, from which all other financial indicators depend, are based exclusively on a transfer price basis, which appears to be set as an arbitrary percentage of world market prices. See Transcript of the Commission briefing and vote. They believe it reasonable to apply section 771(4)(D) of the statute to look at overall operations of the domestic industry. Commissioner Rohr notes that this information also supports the conclusion that there is a reasonable indication of material injury for purposes of this preliminary investigation.

[49] In its petition, U.S.T.C. also contended that the imports from the PRC are materially retarding the establishment of a TOC industry in the United States. Petition at 38. In prior material retardation investigations, the Commission has determined first whether a domestic industry is already "established," and second, if the industry is not "established," determined whether the performance of the unestablished U.S. industry has been materially retarded by the dumped imports. Certain Dried Salted Codfish from Canada, Inv. No. 731-TA-199 (final), USITC Pub. 1711 (July 1985), aff'd, BMT Commodity Corp. v. United States, 667 F. Supp. 880 (1987), aff'd, 852 F.2d 1285 (Fed. Cir. 1988), cert. denied, 109 S.Ct. 1120 (1989). If, however, the industry is "established," then material retardation is not applicable, and the Commission proceeds to focus on the standards of material injury and threat of material injury. Certain Copier Toner from Japan, Inv. No. 731-TA-373 (Preliminary), USITC Pub. 1960 (Mar. 1987) at 10 n.26; Pressure Sensitive PCV Battery Covers from West Germany, Inv. No. 731-TA-452 (Preliminary), USITC Pub. 2265 (Mar. 1990) at 11 n.22; Fresh Chilled Atlantic Salmon From Norway, Inv. Nos. 701-TA-302, 731-TA-454 (Preliminary), USITC Pub. 2272 (Apr. 1990) at 15, n.39.

We determine that the domestic industry has been producing TOC continuously over a long period of time, and that it operations have long since stabilized, compare Benzyl Paraben from Japan, 731-TA-462 (Final), USITC Pub. 2355 (Feb. 1991) at 9; Atlantic Salmon, at 15-16, and therefore the TOC industry is "established." Indeed, when asked for its position on whether the industry is established, petitioner stated that it is established. See Tr. at 34. Because the industry is "established," material retardation is not applicable, and we will determine whether there is a reasonable indication of material injury or a reasonable indication of threat of material injury apply.

material injury by reason of the subject imports. [50] In making our determination, we take into account any information demonstrating possible alternative causes of injury to the domestic industry. [51] If the condition of an industry is poor due to factors other than the dumped imports, we do not attribute the condition of the industry to the dumped imports. The legislative history of the Trade Agreements of 1979 lists several factors, including a decline in demand, as potential causes of injury other than dumped imports. [52]

We, however, may not weigh causes. [53] The imports need only be a cause of material injury. [54] [55] In this regard, we have considered whether factors

---

[50] 19 U.S.C. § 1673(b)(a)

[51] See S. Rep. No. 249, 96th Cong., 1st Sess. 75 (1979); 19 C.F.R. § 207.17.

[52] S. Rep. No. 249, 96th Cong. 1st Sess. 57-58, 74 (1979); H.R. Rep. No. 317, 96th Cong., 1st Sess. 46-47 (1979); see also Certain All-Terrain Vehicles from Japan, Inv. No. 731-TA-388 (Final), USITC Pub. 2163 (March 1989) at 32-33 n.113 ("We reject the petitioner's contention that we should determine whether the imports are to blame for the decline in demand due to public concerns over safety . . . and then use the decline in demand ("caused" by the imports) as a basis for an affirmative determination.") See also, e.g., Wells Manufacturing v. United States, 11 CIT 911, 921, 677 F. Supp. 1239, 1247 (1987), (CIT affirmed the Commission's preliminary negative determination that considered restrictive trade practices by the domestic industry as evidence of a lack of causal connection between the imports and the injury); Yuasa-General Battery Corp. v. United States, 11 CIT 382, 386-87, 661 F. Supp. 1214, 1217-18 (1987) (CIT affirmed the Commission's material injury determination that the difficulties faced by one producer were due to factors other than imports while remanding the Commission's threat determination).

[53] See e.g., Citrosuco Paulista S.A. v. United States, 704 F. Supp. 1075, 1101 (CIT 1988); S. Rep. No. 249, 96th Cong., 1st Sess. 57-58, 74-75 (1979); H.R. Rep. No. 317, 96th Cong., 1st Sess. 47 (1979).

[54] See LMI-La Metalli Industriale, S.p.A v. United States, 13 CIT __, 712 F. Supp. 959, 971 (1989) citing British Steel Corp. v. United States, 8 CIT 86, 593 F. Supp. 405, 413 (1984); Citrosuco, 704 F. Supp. at 1101; Hercules, Inc. v. United States, 673 F. Supp. 454, 479 (CIT 1987); see also Maine Potato Council v. United States, 9 CIT 293, 299, 613 F. Supp. 1237, 1244 (1985) (The Commission must reach an affirmative determination if it finds that imports are more than a "de minimis" cause of injury). Thus, the Commission need not determine whether imports are the principal or a substantial cause of material injury. "Any such requirement has the undesirable result of making relief more difficult to obtain for industries facing difficulties from a variety of (continued...)

other than the dumped imports have made the industry more vulnerable to the effect of the dumped imports. [56]

We evaluate the impact of imports on the domestic industry within the context of the business cycle and conditions of competition that are distinctive to the affected industry. [57] "The condition of an industry [is] considered in the context of the dynamics of that particular industry sector, not in relation to other industries or manufacturers as a whole." [58]

Petitioner U.S.T.C. does not sell any tungsten ore concentrate on the commercial market in the United States. [59] There is a commercial market for

---

[54](...continued)
sources; industries that are often the most vulnerable to less-than-fair value imports." S. Rep. No. 249, 96th Cong., 1st Sess. 74-75 (1979).

[55] Acting Chairman Brunsdale notes that while the Commission is not to weigh causes, it must nonetheless determine that the injury "by reason of" the subject imports is material in order to reach an affirmative determination. While the a-cause-of-material-injury formulation used in the text has received some favorable commentary in judicial dicta, it finds no support in the language of the statute or in the legislative history. For a full treatment of this issue, see Certain Telephone Systems and Subassemblies Thereof from Japan and Taiwan, Inv. Nos. 731-TA-426 and 428 (Final), USITC Pub. 2237 (November 1989) at 147-248 and particularly 228-248 (Dissenting Views of Vice Chairman Ronald A. Cass).

[56] See, e.g., Iwatsu Electric Co., Ltd. v. United States, Slip Op. 91-10 (CIT Feb. 15, 1991) at 30 ("The Court has no doubt that the state of the domestic industry was attributable largely to its own multiple cost layering, but this does not mean that LTFV imports did not cause material injury. To borrow a principle from tort law, importers take the domestic industry as they find it."); Citrosuco Paulista, 704 F. Supp. at 1101-02 (affirmance of Commissioner Rohr's material injury determination finding that freezes had left the orange juice industry in a more precarious and vulnerable position); Rhone Poulenc, S.A. v. United States, 8 CIT 47, 62, 592 F. Supp. 1318, 1332 (1984) (ASM industry vulnerable to imports because of decrease in demand, overcapacity, price sensitivity, and product fungibility); Certain Telephone Systems and Subassemblies Thereof from Japan and Taiwan, Inv. Nos. 731-TA-426 and 428 (Final), USITC Pub. 2237 (Nov. 1989) at 61 ("to the extent that there may be structural problems in the domestic industry, these problems are exacerbated by the LTFV imports").

[57] See 19 U.S.C. §1677(7)(C)(iii).

[58] S. Rep. No. 71, 100th Cong., 1st Sess. 117 (1987).

[59] See e.g., Petition at 39. While our discussion is limited due to business proprietary information, our focus on U.S.T.C. in this public opinion is warranted by the facts of record in this investigation.

TOC in the United States, but effectively, only imports from the PRC and other countries are sold there. [60] U.S.T.C. has made no offers to sell its TOC on the commercial market, nor does it anticipate that it will sell its TOC to the commercial market in the foreseeable future. [61]

Thus, U.S.T.C.'s TOC production is wholly captively "consumed in the production of APT which is then sold to U.S. consumers of APT." [62] Unlike other captive/open-market cases with which we have dealt, here the captive market, and not the open-market, is the only market in which the domestic industry participates. [63] In effect, the only sales for which the TOC from China [64] and the domestic like product directly compete are U.S.T.C.'s own purchases of TOC for the purpose of manufacturing APT. Accordingly, this case presents us with issues we have never before reached, and it makes the understanding of the conditions of competition in the TOC industry especially important to the causation inquiry.

Indeed, the industrial organization of the APT market drives petitioner's causation argument:

> It should be noted that unfairly traded imports may not affect open-market (available market) producers and integrated (captive market) producers in the same way. While a domestic firm that produces tungsten ore concentrate may be harmed by unfairly traded ore concentrates, a domestic firm that produces APT, or

---

[60] Id.
[61] See Tr. at 35-37, 42-43, 55-57.
[62] Petition at 39.
[63] Cf. Titanium Sponge from Japan and the United Kingdom, 731-TA-161-162 (Final), USITC Pub. 1600 (1984) at 4, aff'd Philipp Brothers, Inc. v. United States, 640 F. Supp. 1340, 1343 (CIT 1986); Thermostatically Controlled Appliance Plugs and Internal Probe Thermostats Therefor from Canada, Japan, Malaysia, and Taiwan, Inv. No. 701 -TA-292 and 731-TA-400, 402-404 (Final), USITC Pub. 2152 (January 1989); Electrolytic Manganese Dioxide from Greece and Japan, Inv. No. 731-TA-406 and 408 (Final), USITC Pub. 2177 (April 1989).
[64] We note that the majority of TOC imported from China is greater than 60 percent tungsten trioxide.

> other downstream products, but not ore concentrate, may benefit from unfairly traded ore concentrate. [65]

The producers to which petitioner refers are producers of APT, not TOC. Thus, U.S.T.C. argues that as an integrated producer of APT, the downstream product, it is adversely affected by the alleged dumping of TOC, the upstream product and article subject to investigation, whereas open-market producers of APT may be benefitted by the alleged dumping of TOC.

For petitioner, causation in this investigation appears to depend upon the proposition that petitioner's demand for captively produced TOC depends upon its ability to profitably sell the downstream product APT, [66] and that petitioner's financial condition, as an integrated producer of TOC and APT, is a function of the availability of the dumped TOC to its APT competitors:

> The tungsten ore concentrate that U.S.T.C. captively consumes is affected by open market forces. If the price of tungsten ore concentrate drops in the open market, and other downstream product producers can purchase tungsten concentrates at a price lower than U.S.T.C.'s cost, U.S.T.C. must incur losses or reduced revenue from the production and consumption of its own tungsten concentrates. [67]

This type of argument has arisen previously, often referred to as the "downstream injury" causation argument, but we have never based a determination upon it. [68]

---

[65] Petition at 40.

[66] See Petition at 40. ("Since U.S.T.C. does not sell any tungsten ore concentrate, its financial condition is primarily dependent upon its sales of the downstream product, primarily APT.")

[67] Petition at 40-41.

[68] In Titanium Sponge from Japan and the United Kingdom, the bulk of U.S. production of titanium sponge, an intermediate product, was produced and consumed captively to produce ingots or "mill products," the downstream product. Titanium Sponge from Japan and the United Kingdom, 731-TA-161-162 (Final), USITC Pub. 1600 (1984) at 4, aff'd Philipp Brothers, Inc. v. United States, 640 F. Supp. 1340, 1343 (CIT 1986). Only a small percentage of titanium sponge, approximately 5 to 10 percent, was sold commercially to

(continued...)

There is, moreover, a second facet to petitioner's causation argument, which we label as the "make or buy" aspect. As stated by petitioner, because it is imperative that petitioner remain competitive in the APT market, its APT operation will use the lowest cost TOC, whether captive or imported:

> The cost of tungsten concentrates on the open market have, as a result of low priced Chinese selling, fallen so much that U.S.T.C., in order to remain competitive in APT production, has had to purchase more Chinese tungsten ore concentrates than it

---

[68](...continued)
independent melters. Titanium Sponge at 4; Philipp Brothers at 1343. There were four ingot producers, who did not produce titanium sponge, and who purchased their titanium sponge from importers and from the lone nonintegrated U.S. titanium sponge producer. Philipp Brothers, 640 F. Supp. at 1343.

The domestic titanium sponge producers maintained that they were injured, inter alia, because the availability of dumped titanium sponge allowed nonintegrated mill product producers to obtain a raw material cost advantage that allowed them to suppress and depress mill product prices. This led to lost sales, lost revenue and diminished profitability of the mill product business. The effect of the injury to mill production was, according to the domestic titanium sponge producers, to decrease the value of the integrated producer's titanium sponge production facilities. See GC-H-302 at 7-8.

The Commission majority did not discuss the "downstream injury" argument, and determined that the domestic titanium sponge industry was not injured. Chairwomen Stern, alone, addressed the "downstream injury" analysis, finding that it did not "conform to the facts." Titanium Sponge (Views of Chairwomen Stern) at 23. Specifically, she determined that the low price of scrap titanium sponge, and not the imported titanium sponge, provided the nonintegrated downstream U.S. mills with their cost advantage. Id.

In Color Picture Tubes from Canada, Japan, the Republic of Korea, and Singapore, Inv. Nos. 731-TA-367-370 (Final), USITC 2046 (1987), the "downstream injury" causation issue again surfaced. The producers of color picture tubes (CPTs), an intermediate product, sold some of their CPTs in the open market and consumed the rest captively in the production of television sets. The Commission majority did not discuss the effects, if any, that the imported CPTs had on domestically produced CPTs which were consumed captively. The Commission determined that the U.S. industry producing CPTs was materially injury based upon significant import volume, high import penetration, lost domestic market share, and declining price trends. Id. at 13.

Vice Chairman Brunsdale, however, did comment upon the "downstream injury" analysis in her concurring views. Id. at 33 (Views of Vice Chairman Brunsdale). While she did not specifically rely on the downstream injury analysis in her causation discussion, see Color Picture Tubes at 45-54, Vice Chairman Brunsdale observed that in her view, "the law allows the analysis of downstream/upstream causation of injury[.]" Id. at 39-40 (footnote omitted).

> otherwise would have, and U.S.T.C. has had to produce and consume less of its own tungsten ore concentrate.[69]

Thus, the argument proceeds that when petitioner is forced by the conditions of competition in the APT market to purchase imports from the PRC, it displaces its own production of TOC, constituting injury to the domestic industry. [70]

We conclude that there is a reasonable indication that the domestic TOC industry is being materially injured by the imports of the allegedly LTFV tungsten ore concentrate from the PRC.

In cases dealing with captive markets, we have included all domestic production of the like product, whether consumed captively or in the open market, within the domestic industry, [71] We do so in this investigation, as well.

We begin by examining the statutory factors prescribed by Congress for making determinations under 19 U.S.C. §1673(b)(a). [72] We note that U.S. imports of TOC from China were significant throughout the period of investigation and, as reported in questionnaire responses, increased by 15.0

---

[69] Petition at 40-41.

[70] Compare Electrolytic Manganese Dioxide from Greece and Japan, Inv. Nos. 731-TA-406 and 408 (Final), USITC Pub. 2177 (April 1989) at 20. (The Commission found that the availability of low-priced dumped imports may have affected a vertically integrated producer's decision to invest in its captive production of like product as a factor supporting an affirmative material injury determination) with Thermostatically Appliance Plugs and Internal Probe Thermostats Therefor From Canada, Japan, Malaysia, and Taiwan, 701-TA-202, 731-TA-400 & 402-404 (Final), USITC Pub. 2152 (January 1989) at 23-24 ("Under the circumstances presented in this case, we cannot conclude that domestic producers who choose to purchase the imported articles are injured by those imports") (emphasis added).

[71] See e.g., Electrolytic Manganese Dioxide from Greece and Japan, Inv. Nos. 731-TA-406 and 408 (Final), USITC Pub. 2177 (April 1989) at 9.

[72] See 19 U.S.C. § 1677(7)(B).

percent from 1988 to 1989, and by 18.9 percent in 1990. [73] [74] Imports of TOC from the PRC increased their share of the U.S. market, both as a percentage of volume and value, from 1988 to 1989, but that market penetration fell in 1990, although it remained at a level higher than that in 1988. [75]

The statistics describing the high volume of imports and market share, however, are perhaps most relevant in this investigation for what they reveal about the price effects that the Chinese imports exert over both captive and commercial markets for TOC in the United States. Even though the domestic industry does not compete in the U.S. commercial market for sales of TOC, we cannot conclude in this preliminary investigation that the domestic industry's operations are not affected by commercial market transactions, which are largely influenced by the significant volume of Chinese imports.

The prices for all grades of TOC in the United States declined throughout the period of investigation. [76] Moreover, this price decline, as revealed by the Metals Week price series that tracks U.S. spot-purchase prices

---

[73] Report at A-30.

[74] Acting Chairman Brunsdale's determination that there is a reasonable indication of material injury by reason of the allegedly dumped imports is based primarily on the high levels of subject imports as a share of domestic consumption of tungsten concentrates and on the levels of the alleged dumping margins contained in the petition. (See Staff Report at A-5.) While the alleged margins are no more than petitioner's claims, they are the best information currently available concerning the level of the dumping and suggest that the price of imported tungsten concentrates may be significantly below "fair" levels.

In her view, the issue of causation in this case is directly comparable to the analysis she provided in the Color Picture Tubes case. (See Color Picture Tubes from Canada, Japan, the Republic of Korea, and Singapore, Inv. Nos. 731-TA-367 through 370 (Final), USITC Pub. 2046 (December 1987) at 38-44 (Views of Vice Chairman Anne E. Brunsdale).) She notes that approximately 90 percent of tungsten ore concentrates are converted into APT (Staff Report at B-12) and that the cost of tungsten concentrates makes up more than one-half of the total cost of APT. Id. at A-35, n.56, and B-12.)

[75] Report at A-33.

[76] See Report at A-35 to A-44.

of TOC containing more than 65 percent tungsten trioxide, paralleled the fall in prices for all Chinese imports of TOC. [77] While the statute directs us to examine the effect of the subject imports on prices in the United States for the like product, we also note that China's share of the world's capacity and tungsten reserves -- it typically supplies between 30 and 50 percent of the world's tungsten concentrate -- confers with it the ability to influence price levels for TOC throughout the world. [78]

As the price of Chinese TOC has significantly, and generally, fallen in the United States over the period of investigation, so too has the price of APT fallen. [79] Given the importance of TOC as the major input into the production of APT, a high statistical correlation between APT and TOC prices is therefore, both expected, and confirmed by the evidence obtained. [80] [81] While respondents argued that the price of APT suppressed the price of TOC, we conclude, for purposes of this preliminary investigation, that it was the imports of TOC from the PRC that depressed the price of APT. [82]

---

[77] See Report at A-39, 43.

[78] Presumably as a result of China's decision, effective January 1, 1991, to suspend writing new export sales contracts for TOC, the London Metals Bulletin ("LMB") low and high price quotes increased 22 and 4 percent, respectively, from January 7, 1991 and February 11, 1991. See Report at A-26, A-37 n.60.

[79] See Report at B-33.

[80] See Report at A-35.

[81] Commissioner Rohr notes that historically APT prices were explicitly set as a mark up over TOC prices and that as a result there was a significant price correlation between the two products. While the express connection between the two prices does not appear to continue at the present time, the high correlation has continued unbroken. Further, he notes that the existence of the OMA on APT sales from China further supports the conclusion that TOC prices are affecting APT prices. He also notes that contract purchases of tungsten ore from major intermediate tungsten product processors account for a significant amount of the commercial market. If this investigation returns to the Commission for a final determination, further investigation of these contract sales will be necessary.

[82] See Report at B-10. We note the presence of an OMA limiting imports of APT from the PRC. One would expect, other things being equal, the OMA to

(continued...)

Furthermore, we note that U.S.T.C. purchased imported TOC from the PRC during the period of investigation, thereby foregoing its internal production of TOC, [83] while at the same time, Chinese prices for TOC, including slime which is primarily used by U.S.T.C. to produce APT, have fallen from July-September 1988 to October-December 1990. [84]

Thus, we are convinced that there is a sufficient causal nexus between the allegedly LTFV imports of TOC from the PRC and the condition of the domestic industry to constitute a reasonable indication of material injury to the TOC industry by reason of the imports of TOC from the PRC.

Having found a reasonable indication of material injury by reason of the allegedly dumped imports from the PRC, we nevertheless wish to make a few observations due to the complex causation issues this investigation presents, in order to assist in framing the issues in any final investigation.

Recognizing that "downstream injury" causation analysis focuses on an assessment of the price effects between upstream and downstream markets because there is no common commercial market in which the dumped imports and like domestic product compete directly for contracts, the question is whether the subject imports have a price suppressing or depressing effect on the like product's prices through downstream product markets, and whether such an

---

[82](...continued)
insulate the APT market from significant price depression due to imports of APT from the PRC. If the OMA on APT were binding, then presumably there would be no incentive to cut APT prices to gain market share. Alternately, if the OMA on APT were not binding, then one would expect that the price effects of the imported APT would be limited by the OMA's restriction on market share, if the level of the OMA were properly set to allow the domestic APT industry to adjust to market disruption. Thus, a more reasonable conclusion, in this preliminary investigation, is that the decline in TOC prices has depressed the price of APT in the United States.

[83] In effect, this could be considered a "lost sale." We wish to further examine this issue in any final investigation, however.

[84] See Report at A-43.

effect satisfies the statutorily required causal nexus. This inquiry is complicated by the fact that prices in a captive market are often less reliable than in an open-market context due to the difficulties inherent in establishing the validity of transfer prices. We note, however, that "[d]ifficulties with, or even impossibility of, direct price comparison do not mandate a negative determination." [85] [86]

Simply put, because the chain of reasoning from cause to effect is more extended in the "downstream" analysis, and therefore causation may be more attenuated, in any final investigation we intend to develop and closely examine additional evidence relating to each of the putative causal links in any causation analysis.

Accordingly, we would expect to seek additional information [87] on, and verification of, the domestic industry's cost allocation and transfer pricing, including evidence of the methodology or decision criteria underlying petitioner's pattern of purchases of the imports from the PRC. We will also seek information from purchasers in both the TOC and APT markets, including additional information on contractual purchases and terms. Other relevant information we may seek includes: additional information on tolling arrangements, additional information on tungsten scrap, additional information on the activities of U.S. traders and brokers of TOC, additional information on the U.S. Government TOC stockpile, and additional information on volumes,

---

[85] Iwatsu Electric Co., Ltd. v. United States, Slip. Op. 91-10 (CIT February 15, 1991) at 22.

[86] Commissioner Rohr notes that in the past he has expressed reservations about using prices in a title VII investigation that may reflect the effects of domestic competition as well as competition involving the imports under investigation. If this investigation returns to the Commission for a final determination, the setting of prices in the APT market will be examined closely.

[87] Cf. American Lamb, 785 F.2d 994.

prices, and the capacity of exporters of TOC and APT from countries not subject to investigation. [88]

CONCLUSION

For all the reasons set forth above, we unanimously determine that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of tungsten ore concentrates from the People's Republic of China that are allegedly sold at less than fair value (LTFV) in the United States.

---

[88] Acting Chairman Brunsdale notes that, in any final investigation, information on the availability of excess capacity to produce APT in countries not subject to investigation would be crucial to her evaluation of the argument that the elimination of dumping in the U.S. market would simply lead third countries to purchase tungsten ore concentrates from China, convert the concentrates into APT, and sell the APT in the U.S. market.

INFORMATION OBTAINED IN THE INVESTIGATION

Introduction

On January 23, 1991, a petition was filed with the U.S. International Trade Commission (Commission) and the U.S. Department of Commerce (Commerce) by counsel for U.S. Tungsten Corp., Danbury, CT, alleging that an industry in the United States is being materially injured and is threatened with further material injury by reason of imports from the People's Republic of China (China) of tungsten ore concentrates[1] that are allegedly sold in the United States at less than fair value (LTFV).[2] Accordingly, effective January 23, 1991, the Commission instituted antidumping investigation No. 731-TA-497 (Preliminary) under section 733(a) of the Tariff Act of 1930 to determine whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports of such merchandise into the United States.

Notice of the institution of this investigation was posted in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and published in the Federal Register of January 30, 1991 (56 F.R. 3485). Commerce published its notice of initiation in the Federal Register of February 20, 1991 (56 F.R. 6835). Copies of the Commission's and Commerce's Federal Register notices are presented in appendix A.

The Commission held a public conference in Washington, DC, on February 14, 1991, at which time all interested parties were allowed to present information and data for consideration by the Commission. A list of the participants in the conference is presented in appendix B. The Commission voted on this investigation on March 7, 1991. The statute directs the Commission to make its preliminary determination within 45 days after receipt of the petition, or in this investigation by March 11, 1991.

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. Information regarding the orderly marketing agreement (OMA) resulting from the section 406 investigation is presented in appendix C. Note

---

[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 slime, which has 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)).

[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.

that the information presented in the body of this report consists primarily of information concerning tungsten ore concentrates; information obtained on intermediate tungsten products is presented in appendix D.

The Product

Description and uses

Tungsten is a silver-gray metal, which 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."

Most of the economically-recoverable tungsten in the world is found in the minerals scheelite and wolframite. Tungsten is found and produced on nearly all continents and occurs as WO_3 in the minerals scheelite ($CaWO_4$) and wolframite ($(Fe,Mn)WO_4$).[3] Tungsten may also occur in association with molybdenum, copper, tin, bismuth, or antimony minerals. Tungsten ore is mined primarily by underground methods and 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.

The subject of this investigation is tungsten ore concentrates, which may take one of two forms, depending on the proximity of the concentrate consumer to the concentrate producer. In the case of the petitioner, with few or no transportation concerns,[4] the concentrate takes 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.

The form in which tungsten ore concentrate is 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.[5] 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.[6] For the purposes of this report, pricing will be presented in terms of dollars per MTU.

---

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

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

[5] 1 MTW = 2,204.62 lbsW = 1,261 $kgWO_3$.

[6] 1 MTU = 1.1023 STU. 1 MTW = 139 STU = 126.1 MTU.

Most tungsten concentrate is first converted into one or more intermediate products before final fabrication into end-use products.[7] End uses for tungsten in 1989 were metalworking, mining, and construction machinery and equipment, 68 percent; lamps and lighting, 12 percent; electrical machinery and equipment, 7 percent; transportation, 6 percent; and other, principally chemicals and ceramics, 7 percent.

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.

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.[8] 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. A high-grade concentrate (65 percent and above) will contain a proportionately lower content of other minerals than a low-grade concentrate (less than 65 percent) and is generally less costly to use in downstream production processes,

---

[7] 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. See app. D for information obtained in this investigation on intermediate tungsten products.

[8] For the purposes of the investigation, low-grade concentrates include tungsten slimes, which have a concentration of less than 35 percent 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 created by the accidental over-grinding of the ore in the concentration process. According to * * * company officials, this powdery substance is of little or no use because the particles have been ground too fine for successful separation of the tungsten-bearing mineral from the other minerals present.

whereas a higher-quality concentrate contains fewer impurities in the host rock.[9] Separation may be accomplished through a variety of methods--principally, flotation, gravity, or magnetic separation.[10] Flotation, the method used by the petitioner to separate the materials, 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 may be considered a substitute for tungsten ore concentrates by the consumers of this product.[11] For a discussion on pricing of tungsten scrap, see the section of this report entitled "Market characteristics and prices," and for a discussion on the substitute products for intermediate and downstream tungsten products, see appendix D.

U.S. tariff treatment

Imports of tungsten ore concentrates are classified in HTS heading 2611.00.00, along with the ore itself. The current 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 7.8-percent ad valorem equivalent in 1990. 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,

---

[9] According to * * *, host minerals such as molybdenum are considered an impurity for their purposes. Others consider calcium as an impurity.

[10] * * *, while it is believed that the process in China is somewhat more labor-intensive. In particular, the process in China may be partially accomplished through the hand sorting of the tungsten-bearing mineral. Conversation with * * *.

[11] In a presentation to the International Tungsten Industry Association (ITIA) Symposium in October 1990, Robert Bunting (Vice President and Product Director, U.S. Tungsten Corp.) asserted that there has been an increase in the consumption of tungsten from physical reclamation of scrap. He estimates that consumption of physically reclaimed scrap is currently 8 to 10 percent.

* * *, of the Bureau of Mines, indicated that, for the period of investigation, approximately 25 percent of total consumption of tungsten scrap and tungsten ore concentrates is represented by tungsten scrap; however, a portion of the physically reclaimed scrap reenters the tungsten process at a point antecedent to the intermediate tungsten production stage and may not be considered a direct substitute for tungsten ore concentrates.

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 Alleged Sales at LTFV

In comparing U.S. price (USP) with foreign market value (FMV), the petitioner's calculations resulted in a margin of 122 percent for the high-grade concentrates and 151 percent for the low-grade concentrates. USP for both the high- and low-grade concentrates was calculated by the petitioner based on U.S. Bureau of the Census import statistics. Prices derived from import statistics were adjusted for inland freight in China.

Petitioner explains that China's tungsten mining sector is subject to state control and that, for the purposes of the petition, China is a nonmarket economy. Accordingly, the petitioner calculated FMV for China based on a constructed value using certain factors of production experienced by the petitioner in its own operations and other factors of production experienced in Peru. Valuations were based on the choice of India as the appropriate market economy for determining the FMV of tungsten ore concentrates from China and used costs in India as a surrogate to value the factors of production in China. In instances where these costs were unavailable, Peruvian costs were used.

The World Market

The rated capacity[12] for mines and mills in China, the United States, and all other countries combined, as of December 31, 1989, is presented in the following tabulation, based on information obtained from the Tungsten Minerals Yearbook--1989, U.S. Bureau of Mines.

Item	Rated capacity (MTW)	Percent of total rated capacity
China	21,000	39.1
United States	3,700	6.9
All other countries	28,940	54.0
Total	53,640	100.0

[12] 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 is utilized particularly for the centrally planned economy countries where capacity information is either incomplete or unavailable. Tungsten Minerals Yearbook--1989, U.S. Bureau of Mines.

As of December 31, 1989, almost 40 percent of the world's capacity to mine and mill tungsten ore concentrates was located in China, while the United States possessed less than 7 percent of the world's capacity. In addition, it is estimated that the Chinese currently possess about 47 percent of the world's tungsten reserves;[13] the United States possesses about 6 percent.[14]

Data on world tungsten ore concentrate production are presented in table 1. Estimates for 1990 indicate that world production of tungsten ore concentrate declined slightly, while another slight decline for 1991 is projected.[15] These data generally show a worldwide decline in production from 1985 to 1987 and an increase from 1987 to 1989.

Table 1
Tungsten ore concentrates: World production, 1985-89

(In MTW)

Item	1985	1986	1987	1988	1989
China	15,000	15,000	21,000	21,000	21,000
United States	996	780	34	408	492
All other countries	30,583	27,564	21,143	21,604	22,280
Total	46,579	43,344	42,177	43,012	43,772

Source: Tungsten Minerals Yearbook--1989, U.S. Bureau of Mines and compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

The world concentrate market continues to be significantly affected by the production, distribution, and pricing strategies of the Chinese, who currently account for approximately 48 percent of the world's production.[16] As a result, most tungsten mines in the United States and in other market economy countries remained closed or were operated at reduced capacity, and little or no economic incentive has existed to explore or develop other tungsten resources.[17]

A list of world tungsten ore mine closings in the 1980s is presented in appendix E. Worldwide mine closings have been attributed to continued high levels of supply by the Chinese of both tungsten ore concentrates and intermediate tungsten products, coupled with a decline in tungsten prices.[18]

The United Nations Conference on Trade and Development (UNCTAD) Committee on Tungsten convened its 21st session in December 1989. In this session the Secretariat noted strong economic growth in tungsten-consuming countries, as well as increased trade, but continued low prices. It was also noted that tungsten mines in many market economy countries continued to remain closed as a result of these low prices. Such actions as China's licensing

[13] Ibid.
[14] Telephone conversation with * * *, Bureau of Mines, on Mar. 1, 1991.
[15] Ibid.
[16] Calculation based on data provided by the U.S. Bureau of Mines.
[17] Conversation with * * *, Bureau of Mines, on Feb. 22, 1991.
[18] Ibid.

system to control tungsten exports, the OMA signed between China and the United States, and efforts by individual producer nations to achieve higher prices reportedly had little or no effect on the tungsten market. In contrast to remarks made by the Secretariat, remarks by the Chinese delegation suggested that a weak world tungsten market condition was due to a general economic slowdown, a stronger U.S. dollar, and a psychological pressure from the overhang of material in the U.S. Government stockpile.[19]

In a statement, prepared in July 1990 and delivered in December 1990 at the 22nd session of the UNCTAD Committee on Tungsten, the Secretariat noted an increased weakness in economic growth in tungsten-consuming countries, with relatively low demand, an oversupply of material, and continued low prices.[20]

The U.S. Market

Apparent U.S. consumption

According to estimates calculated by the 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 MTW):

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

For the purposes of this report, the data on apparent U.S. consumption are composed of the sum of the tungsten ore concentrate consumption by the five known U.S. processors of tungsten ore concentrates, as reported in response to the Commission's questionnaires (table 2).[21] One of these processors is the petitioner, U.S. Tungsten Corp., which produces and imports tungsten ore concentrates for captive consumption in the production of other tungsten products.[22] The other four U.S. processors are importers/purchasers of tungsten ore concentrates that do not produce tungsten ore concentrate, but consume the product in the production of other tungsten products.[23] These five firms account for all known U.S. consumption of tungsten ore concentrates.

Total reported U.S. consumption, by quantity, decreased by 12.6 percent from 1988 to 1989, and by 6.0 percent in 1990. In terms of value, total

---

[19] Tungsten Minerals Yearbook--1989, U.S. Bureau of Mines.

[20] Telephone conversation with * * *, Bureau of Mines, March 1, 1991.

[21] The Commission's data on apparent U.S. consumption, as reported in response to the Commission's questionnaires, are at levels somewhat lower than those published by the Bureau of Mines, as reported in response to voluntary surveys.

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

[23] These firms are Canada Tungsten Mining Corp. (Canada Tungsten), General Electric Products Corp. (GE), GTE Products Corp. (GTE), and Kennametal Inc. (Kennametal). * * *.

Table 2
Tungsten ore concentrates: U.S. producer's company transfers, U.S. purchasers' company transfers, and total apparent U.S. consumption, 1988-90[1]

Item	1988	1989	1990
	Quantity (MTW)		
Company transfers of--			
U.S.-produced product by--			
U.S. producer	***	***	***
U.S. importers	***	***	***
Total	***	***	***
Chinese-produced product by--			
U.S. producer/importer	***	***	***
U.S. importers	***	***	***
Total	***	***	***
Product produced by any other country by--			
U.S. producer/importer	***	***	***
U.S. importers	***	***	***
Total	***	***	***
Total apparent U.S. consumption[2]	7,522	6,574	6,180
	Value (1,000 dollars)[3]		
Company transfers of--			
U.S.-produced product by--			
U.S. producer	***	***	***
U.S. importers	***	***	***
Total	***	***	***
Chinese-produced product by--			
U.S. producer/importer	***	***	***
U.S. importers	***	***	***
Total	***	***	***
Product produced by any other country by--			
U.S. producer/importer	***	***	***
U.S. importers	***	***	***
Total	***	***	***
Total apparent U.S. consumption[2]	51,049	45,517	35,877

[1] One U.S. producer (the petitioner) and four U.S. importers/purchasers reported U.S. consumption of tungsten ore concentrates in the production of other intermediate or downstream tungsten products. The data reported by these five firms are estimated to account for all known U.S. consumption of tungsten ore concentrates.

[2] Total quantities of apparent U.S. consumption are understated by the amount of Government stockpile dispositions. There were 524 MTW dispositions in 1988, 466 MTW in 1989, and none in 1990. No values are available 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."

[3] * * *.

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

reported U.S. consumption fell by 10.8 percent from 1988 to 1989, and by 21.2 percent in 1990.

Demand for tungsten ore concentrates in the United States is keyed to several significant end-use sectors; including construction and mining machinery and equipment, metalworking machinery, and lamps and lighting. A negative influence on U.S. tungsten consumption is associated with declining demand for products in these end-use sectors.

It is interesting to note that apparent U.S. consumption is fairly highly correlated with the rate of nominal GNP growth (figure 1).[24] The link is apparently formed by the relationship of the tungsten metal to manufacturing sectors of the U.S. economy. U.S. tungsten consumption has historically reacted to significant economic and technical changes. In particular, the Oil Embargo of 1973 and conditions of the oil drilling industry, as well as the replacement of tungsten by depleted uranium in certain U.S. military applications, have influenced demand for tungsten ore concentrates. It is also believed that the further upstream the tungsten product is positioned, the greater the impact of changes in GNP growth.[25]

The outlook for tungsten demand depends on the demand in the product's end-use sectors. An element of uncertainty for tungsten's future has been most recently added with the current Persian Gulf Crisis and its potential for economic disruption, along with the sensitivity of tungsten consumption to oil drilling activity and armament production.

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.[26] Presented in table 3 are the producers, their share of 1990 production, position on the petition, and the locations of their production facilities.

Curtis Tungsten, Inc.--Curtis Tungsten[27] 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 to begin

---

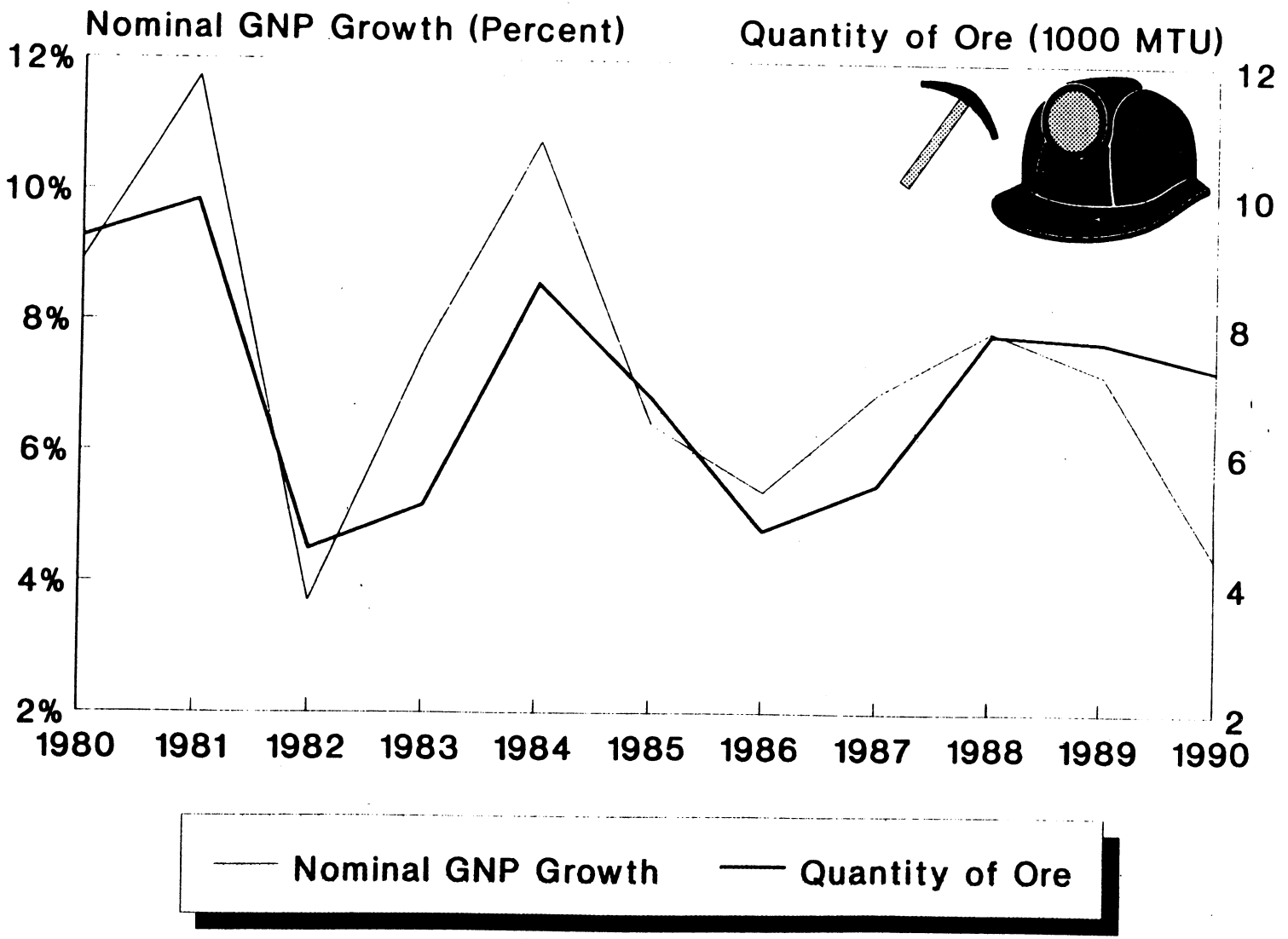
[24] The correlation test performed by the Commission staff resulted in a correlation coefficient of 0.77.

[25] Review presented by Robert Bunting at the ITIA Symposium in October 1990.

[26] The Commission also sent producers' questionnaires to all known importers of tungsten ore concentrates from China in order to gather information on the production of intermediate tungsten products, as well as tungsten ore concentrates. Information gathered in response to this request is presented in app. D.

[27] A letter from Curtis Tungsten offering a possible solution to the disagreements of those in support of and in opposition to the petition is in app. F.

Figure 1.--Nominal U.S. GNP growth vs. U.S. consumption of tungsten ore concentrates, 1980-90



Source: The Economic Report of the President, Feb. 1990, and Mineral Industry Surveys, Bureau of Mines, U.S. Department of the Interior.

Table 3
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, Inc.....	***	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.

at a relatively low level during the last quarter of 1989. This action enabled the company to begin production of scheelite concentrate at its Andrew Mine near Los Angeles, CA. The mine and mill were last operated in 1985. The firm currently claims the ability to produce any grade of tungsten ore concentrates through 70 percent WO_3. Although currently gearing up for operation, 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 had 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.

U.S. Tungsten Corp.--U.S. Tungsten Corp., owned by Strategic Minerals Corp., mines tungsten ore and mills tungsten ore concentrates at its Pine Creek facilities near Bishop, CA. The tungsten ore concentrates produced by U.S. Tungsten Corp. are solely low-grade tungsten ore concentrates of 35 percent or less WO_3 content and serve as a supplement to a * * * imported feedstock * * * for the company's production of APT. All of the firm's production of tungsten ore concentrates is internally consumed in the production of APT. * * *.

U.S. importers

The petitioner identified 17 firms as possible importers of tungsten ore concentrates from China, 10 of which were identified as traders/brokers. The Commission sent importers' questionnaires to 15 firms identified in the petition[28] and to three additional firms identified as having imported material classified under subheading 2611.00.00 of the HTS according to information provided to the Commission by the U.S. Customs Service.

[28] A questionnaire was not sent to * * * because the firm could not be located, and one questionnaire was sent for a consolidated response to two related firms identified by the petitioner, namely, Minmetals, Inc. and Chi Mei Metals Corp.

Importers' questionnaires were also sent to one additional U.S. producer of tungsten ore concentrates and to two additional U.S. producers of intermediate tungsten products.

Imports of tungsten ore concentrates were reported by five firms that consume the concentrates in the production of other tungsten products and by nine traders/brokers. Three firms responded that they did not import tungsten ore concentrates during the period under investigation, and four firms did not respond to the Commission's request for information.

U.S. traders/brokers.--Nine firms have been identified as U.S. traders/brokers serving as the official importers of record for tungsten ore concentrates from China. These firms import and offer the subject product for sale to consumers. A small amount of the imported product may be held in inventory before being sold to consumers. * * * additional firms have been identified as possible U.S. trading companies and official importers of record for the subject product from China, but have not submitted a response to the Commission's request for data.

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.[29] 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 4 are the U.S. consumers of imported tungsten ore concentrates, their share of 1990 consumption of Chinese-produced tungsten ore concentrates, position on the petition, and their locations.

Table 4
Tungsten ore concentrates: U.S. consumers of imported tungsten ore concentrates, 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 (Percent)	Position	Location
Canada Tungsten	***	***	Ft. Madison, IA
GE	***	Opposes	Cleveland, OH
GTE	***	Opposes	Towanda, PA
Kennametal	***	Opposes	Fallon, NV Latrobe, PA Henderson, NC
U.S. Tungsten Corp	***	Petitioner	Bishop, CA

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

[29] * * *.

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.[30] Because for many years the U.S. tungsten stockpile inventory has been above the stockpile goal, the United States has not been a purchaser of tungsten concentrate for the stockpile, but instead was a net seller of tungsten concentrate through the mid-1980s. Prior to December 1986, tungsten concentrate 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. Two firms, * * *, are the only known participants in this program. Disposals were made on this barter-type arrangement under the Ferroalloy Upgrading Program to these * * * firms in 1988, but were made on a cash conversion agreement in 1989.

In recent years, the DLA has not disposed of significant amounts of stockpiled tungsten in order to not further depress already weakened tungsten prices. Physical disposals of tungsten from the National Defense Stockpile totaled 524 MTW during 1988, 466 MTW during 1989, and no disposals were made in 1990. These dispositions of tungsten ore concentrates from the National Defense Stockpile represented 6.5 percent of the consumption of tungsten ore concentrates in 1988 and 6.6 percent in 1989. As of December 31, 1990, the total inventory of stockpile-grade tungsten ore and concentrate held by the Government was 24,575 MTW, whereas the inventory of nonstockpile-grade ore and concentrate held was 10,060 MTW.[31]

Toll production

According to questionnaire responses, * * * of the current U.S. consumers of tungsten ore concentrates have been involved in a tolling arrangement concerning tungsten products. * * * current U.S. consumers, * * *,[32] have processed tungsten ore concentrates (or tungsten scrap) into APT for another firm under a toll agreement.

Channels of distribution

Channels of distribution for tungsten ore concentrate differ for U.S. producers and importers. The principal U.S. producer, U.S. Tungsten Corp., produces tungsten ore concentrate only for captive consumption primarily for the production of APT. U.S. Tungsten Corp. does not distribute its ore concentrate to any processors of intermediate or downstream tungsten products.

---

[30] 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.

[31] Telephone conversations with * * * at DLA on Feb. 5, 1991 and Feb. 20, 1991.

[32] * * *.

Curtis Tungsten, the other domestic producer, has * * * during the period of investigation,[33] but has * * *.

Tungsten ore concentrate produced in China is either imported directly by U.S. consumers of tungsten ore concentrate for their own internal consumption or imported by trader/brokers for resale. U.S. consumers of tungsten ore concentrate, i.e. Canada Tungsten, GE, GTE, Kennametal, and U.S. Tungsten Corp., accounted for * * * percent of imports and traders/brokers accounted for the other * * * percent during 1990.[34]

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 of investigation, provided responses to the Commission's request for data.

U.S. production, capacity,[35] and capacity utilization

Production of tungsten ore concentrates in the United States during the period of investigation occurred at two mines located 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. In fact, * * *. According to company officials, * * *. Other U.S. mine closures in the 1980s and the corresponding dates are listed in the following tabulation:

Firm	Date
Union Carbide Emerson Mine	Closed Dec. 1981
GE Springer (Sutton) Mine	Opened and closed 1982
Curtis Tungsten Andrew Mine	Closed 1985, reopened 1989, closed mid-1990, reopened Feb. 1991
U.S. Tungsten Corp. Pine Creek Mine	Closed 1986, reopened late 1987 on a reduced scale, * * *.
Gartung Industries Strawberry Mine	Closed Dec. 1986
AMAX Climax Mine	Closed 1986 (concentrate byproduct of molybdenum production)

[33] * * *.

[34] * * *.

[35] 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.

U.S. production of tungsten ore concentrates was once substantially higher than present levels. Based on 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 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.[36]

Curtis Tungsten reported capacity on the basis of a * * *-hour work week, operating * * * weeks per year and U.S. Tungsten Corp. reported capacity on the basis of a * * *-hour work week, operating * * * weeks per year.

Total reported U.S. producers' end-of-period capacity * * * throughout each period covered in the investigation, owing to * * * (table 5). Total reported U.S. production data show a * * *-percent * * * from 1988 to 1989, and a * * *-percent * * * from 1989 to 1990. Curtis Tungsten reported * * *. By the end of April 1991, Curtis Tungsten reportedly expects to reach full production, at approximately 1,360 MTW per year.[37] For the period of investigation, both Curtis Tungsten and U.S. Tungsten Corp. reported * * *; * * *, Curtis Tungsten claims that it possesses the capacity to produce any grade concentrate. U.S. Tungsten Corp. also possesses the capability to produce higher grade tungsten ore concentrates. Total reported U.S. capacity utilization * * * from * * * percent in 1988 to * * * percent in 1989, * * * to * * * percent in 1990. The total reported U.S. capacity utilization levels are * * * that reported by U.S. Tungsten Corp. due to * * *.

---

[36] The dominance of the Chinese in the world tungsten market was the primary reason given by the Bureau of Mines for the closures. Counsel for respondents submitted affidavits by Donald L. Bernens, Vice-President of Teledyne Firth Sterling of La Vergne, TN, and by Kenneth James, counsel for GE Lighting Division, stating that the reasons for their U.S. mine closures were based on depletion of ore reserves at the Strawberry Mine and on low APT prices at the Springer Mine, not imports of tungsten ore concentrates from China. Counsel for respondents also submitted an affidavit by Richard C. Hendricks, Vice President and General Manager of Kennametal, stating that the firm's operation of a Nevada mine and concentration facility was closed in the 1960s and sold to NRD Mining Ltd., Vancouver B.C. in 1979 for reasons wholly unrelated to imports of tungsten ore concentrates from China.

In a letter of support of the petition written by Curtis Tungsten, dated Oct. 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 of the product from China; however, in another letter written by Curtis Tungsten, subsequently presented by respondents, the firm identified the cause to be the "extreme drought conditions in southern California."

In addition, in a letter submitted to the Commission, Umetco Minerals Corp., a wholly-owned subsidiary of Union Carbide Corp., supports the petition. The firm's Emerson Mine and Mill in Tempiute, NV, were closed in 1985, according to Umetco, 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.

[37] "Curtis Reopens Andrew Tungsten Mine in Calif.," American Metal Market, Jan. 30, 1991.

Table 5
Tungsten ore concentrates: U.S. end-of-period capacity, production, and capacity utilization, 1988-90[1]

Item	1988	1989	1990
	Capacity (MTW)		
Curtis Tungsten	***	***	***
U.S. Tungsten Corp	***	***	***
Total	***	***	***
	Production (MTW)		
Curtis Tungsten	***	***	***
U.S. Tungsten Corp	***	***	***
Total	***	***	***
	Capacity utilization (percent)		
Curtis Tungsten	***	***	***
U.S. Tungsten Corp	***	***	***
Average	***	***	***

[1] Data presented are from 2 firms, accounting for all known current U.S. production of tungsten ore concentrates.
[2] Not applicable.

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

Curtis Tungsten reported that tungsten ore concentrates were * * *. U.S. Tungsten Corp., however, reported * * *. U.S. Tungsten Corp. produces APT at the same production site as tungsten ore concentrates; however, the firm asserts that in the production of APT, * * *.

The primary factor used by U.S. Tungsten Corp. in determining whether to produce or purchase tungsten ore concentrates is * * *. Before making a commitment to produce * * *, U.S. Tungsten Corp. looks for * * *. Currently, U.S. Tungsten Corp. would look for * * *. Prices have increased from about $35 per MTU in December 1990 to about $45 per MTU as of February 26, 1991. Should this trend continue, U.S. Tungsten Corp. expects * * *. Once the decision is made to * * *. To be economically feasible, mining operations should be * * *. Since prices vary by grade and one mine can produce different grades of ore, * * *.[38] Additionally, the break-even point for Curtis Tungsten was reportedly $48 per MTU.[39]

[38] Telephone conversation with * * *.
[39] "Chinese Tungsten Gouges Indicator," American Metal Market, July 12, 1991.

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 6.

Table 6
Tungsten ore concentrates: U.S. producers' U.S. shipments (commercial and captive) and total shipments, 1988-90[1]

Item	1988		1989		1990	
*	*	*	*	*	*	*

[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.

Commercial U.S. shipments.--There were * * * reported U.S. commercial shipments of tungsten ore concentrates in 1988 and 1989. Curtis Tungsten reported * * *.[40]

Captive U.S. shipments.--For * * * period of investigation, * * * 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 and * * * by * * * percent from 1989 to 1990. In terms of value, the trend was * * *, with a * * *-percent * * * from 1988 to 1989, and a * * *-percent * * * in 1990. Unit values followed the trends of quantity and value for calendar years 1988 to 1990, with a * * *-percent * * * in unit values from 1988 to 1989, and a * * *-percent * * * in 1990.

U.S. producers' inventories

Of the two U.S. producers of tungsten ore concentrates, inventories were kept * * *. U.S. Tungsten Corp. captively consumed all production of tungsten ore concentrates * * *. End-of-period inventories held by Curtis Tungsten of tungsten ore concentrates * * * from * * * to * * * over the period of investigation (table 7). An * * * trend was reported for inventories as a percent of U.S. shipments, although this level remained at * * * than * * * percent during * * * periods of the investigation.

[40] * * *.

Table 7
Tungsten ore concentrates: U.S. producers' end-of-period inventories and inventories as a ratio to U.S. shipments, 1988-90[1]

Item	1988		1989		1990	
*	*	*	*	*	*	*

[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.

U.S. employment, wages, and productivity

U.S. Tungsten Corp. supplied full employment information (table 8). Curtis Tungsten reported * * *. The firm reported that the number of production and related workers for * * * ranged from * * * to * * *. Both Curtis Tungsten and U.S. Tungsten Corp. reported * * *. * * *. 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.

Table 8
Tungsten ore concentrates: Average number of production and related workers, hours worked, wages paid, hourly wages, total compensation paid, productivity, and unit labor costs, 1988-90[1]

Item	1988		1989		1990	
*	*	*	*	*	*	*

[1] Data presented are reported by U.S. Tungsten Corp., whose U.S. production accounted for * * * 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.

The number of production and related workers * * *. The average number of workers reported for 1990 was * * *. * * *.[41]

Average hourly wages paid * * *, while hours worked, wages paid, total compensation, and unit labor costs * * * from 1988 to 1989, * * * in 1990. Productivity * * * from 1988 to 1989, * * * in 1990.

[41] Telephone conversation with * * *.

Financial experience of U.S. producers

Financial information was provided for operations on tungsten ore concentrates and on overall establishment operations by U.S. Tungsten Corp., a wholly-owned subsidiary of Strategic Minerals Corp. These data, representing * * * percent of 1990 U.S. production of tungsten ore concentrates, are presented in this section. A * * * producer, Curtis Tungsten, indicated * * * during the period of investigation.

Selected income-and-loss data on the downstream products, APT and tungstic oxide (blue and yellow), as provided by U.S. Tungsten Corp. and GTE, are presented in appendix G. Financial information on sodium tungstate and tungstic acid was not provided by any U.S. producers. GE and Kennametal indicated * * *.

Overall establishment operations.--Income-and-loss data on U.S. Tungsten Corp.'s overall establishment operations are presented in table 9. The company indicated that its principal product is APT, which accounted for * * * percent of its 1990 net sales, with the remainder being principally * * *. During 1988-90, 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.

U.S. Tungsten Corp. was formed by its parent to purchase the domestic tungsten business of Umetco Minerals Corp., a wholly-owned subsidiary of Union Carbide Corp., in 1986, and has * * *. * * *.

Table 9
Income-and-loss experience of U.S. Tungsten Corp. on its overall establishment operations within which tungsten ore concentrates are produced, accounting years 1988-90

Item	1988		1989		1990	
*	*	*	*	*	*	*

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

Tungsten ore concentrates.--Income-and-loss data for U.S. Tungsten Corp.'s tungsten ore concentrates operations are presented in table 10. Since all of U.S. Tungsten Corp.'s production of tungsten ore concentrates was consumed internally in the production of APT, * * *. According to * * *, the "net sales" value reported in the questionnaire response * * *. Implied in such methodology is the presumption that * * *. U.S. Tungsten Corp. had gross margin * * *, operating * * *, and net-income-before-taxes * * * in * * * periods for tungsten ore concentrates. A discussion of U.S. Tungsten Corp.'s transfer pricing is covered in the section entitled "Market characteristics and prices."

Table 10
Income-and-loss experience of U.S. Tungsten Corp. on its tungsten ore concentrates operations, accounting years 1988-90

Item	1988	1989	1990
* * *	* * *	* * *	* * *

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

It was noted during the review of U.S. Tungsten Corp.'s questionnaire response that tungsten ore concentrates are allocated * * *. * * *. Based on available data, staff believes a more appropriate allocation * * *. 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
Questionnaire basis:[1]			
SG&A	***	***	***
Operating (loss)	***	***	***
SG&A as a percent of total corporate SG&A	***	***	***
Alternative basis:[2]			
SG&A	***	***	***
Operating (loss)	***	***	***
Operating (loss) reduced by	***	***	***
SG&A as a percent of total corporate SG&A	***	***	***

[1] SG&A allocated to tungsten ore concentrates on the basis of the proportion of tungsten ore concentrates costs to total APT costs on a per-unit basis.
[2] SG&A allocated to tungsten ore concentrates on the basis of tungsten ore concentrates cost of sales to corporate (APT) cost of sales.

Regardless of the allocation methodology used, it is apparent that U.S. Tungsten Corp. would have * * * for the product in * * * periods because of * * *.

Investment in productive facilities.--The value of property, plant, and equipment and total assets (* * *) for U.S. Tungsten Corp. is presented in table 11. The return on total assets for this producer is presented in table 12.

Table 11
Value of property, plant, and equipment of U.S. Tungsten Corp. as of the end of accounting years 1988-90

(In thousands of dollars)

Item	As of the end of accounting year-- 1988	1989	1990
	*	*	*

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

Table 12
U.S. Tungsten Corp.'s return on total assets, accounting years 1988-90

(In percent)

Item	1988	1989	1990
	*	*	*

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

Capital expenditures.--The capital expenditures reported by U.S. Tungsten Corp. are presented in table 13.

Table 13
Capital expenditures of U.S. Tungsten Corp., accounting years 1988-90

(In thousands of dollars)

Item	1988	1989	1990
	*	*	*

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

Research and development expenses.--U.S. Tungsten Corp. indicated that it has * * * research and development expenditures for its overall establishment and tungsten ore concentrates 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 existing development and production efforts, growth, investment, and ability to raise capital. U.S. Tungsten Corp.'s responses are shown in appendix H.

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[42]--
>
> (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,

---

[42] 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.[43]

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 U.S. consumers are presented in table 14. These inventories, on the basis of quantity, * * * from 1988 to 1989, * * * in 1990. The ratio of U.S. consumers' end-of-period inventories to U.S. consumers' U.S. shipments * * *

---

[43] 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 14
Tungsten ore concentrates: End-of-period inventories held by U.S. consumers of imported products, by sources, 1988-90[1]

Source	1988		1989		1990	
*	*	*	*	*	*	*

[1] Data presented are end-of-period inventories of the imported product (both imports and domestic purchases of imports) as reported by the five U.S. consumers of tungsten ore concentrates. It is believed that the five U.S. consumers of tungsten ore concentrates account for all known consumption of tungsten ore concentrates during the period of investigation. The data presented may not reconcile with imports and shipments because of minor reporting errors in questionnaire responses.

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

from 1988 to 1989 and * * * in 1990. The end-of-period inventories of imports from all other sources followed the * * * trends.

End-of-period inventories of Chinese-produced tungsten ore concentrates held by the U.S. importers of record are presented in table 15.

Table 15
Tungsten ore concentrates: End-of-period inventories held by U.S. brokers/traders and U.S. consumers, as official importers of record for the imported products, by sources, 1988-90[1]

Source	1988		1989		1990	
*	*	*	*	*	*	*

[1] Data presented are inventories reported by importers of record. Data do not include inventories of domestic purchases of imports by U.S. consumers. Five U.S. consumers of tungsten ore concentrates reported imports of the subject product and are estimated to account for all known consumption of tungsten ore concentrates during the period of investigation. Nine U.S. brokers/traders reported imports of tungsten ore concentrates. Data presented are by firms whose imports are estimated to account for nearly all of tungsten ore concentrate imports from China in 1990.

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

The inventories held by U.S. brokers/traders of imports * * * in every period for both the Chinese-produced product and tungsten ore concentrates produced in all other countries, whereas the inventories of imports held by U.S. consumers who were the importer of record * * * from 1988 to 1989, and

* * * in 1990. Overall, total inventories and their ratio to U.S. shipments of the imported product increased from 1988 to 1989 and fell in 1990.

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. The tungsten ore concentrates mined and milled in China are primarily of the wolframite type. About 47 percent of the world's estimated tungsten reserves are located in China,[44] and China currently produces approximately one-half of the total world production of tungsten ore concentrates.[45]

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, which 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, China National Metals and Minerals Import and Export Corp. (MINMETALS) and China National Nonferrous Metals Import and Export Corp. (CNIEC).[46] 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 16.

These data are estimated to represent * * * percent of total Chinese exports of tungsten ore concentrates to the United States in 1988, * * * percent in 1989, and * * * percent in 1990, based on Chinese custom statistics. 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, and * * * percent in 1990.

Reported capacity * * * in each year of the period under investigation, while levels of production * * * by * * * percent in 1989 and * * * by * * * percent in 1990. Likewise, capacity utilization * * * from * * * percent in 1988 to * * * percent in 1989, and * * * to * * * percent in 1990. End-of-period inventories * * * by * * * percent in 1989 and * * * over * * * in 1990. The ratio of end-of-period inventories to total shipments * * * from * * * percent in 1988 to * * * percent in 1989, and * * * to * * * percent in 1990. Shipments to the United States, which accounted for approximately * * * percent of total shipments during the period covered by the investigation,

---

[44] 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.

[45] Tungsten Minerals Yearbook--1989, U.S. Bureau of Mines.

[46] MINMETALS and CNIEC state * * *.

Table 16
Tungsten ore concentrates: Chinese capacity, 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[1]

Item	1988		1989		1990	
*	*	*	*	*	*	*

[1] 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, and * * * percent in 1990.

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

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

* * * in 1989 but * * * in 1990, as did home-market shipments and total shipments; however, export shipments to markets other than the United States, as well as total export shipments, * * * throughout the entire period of investigation.

The Chinese Government's Ministry of Foreign Economic Relations and Trade (Ministry) confirmed that it has temporarily suspended writing new export sales contracts for tungsten concentrates. The move, effective January 1, 1991, is apparently set for an indefinite time period. The ban, according to the Chinese, is only on ores and concentrates and does not include any upgraded tungsten products. The ban imposed, according to the Ministry's statement, covers only new sales of tungsten ore and concentrates. Contracts signed prior to the effective date will be honored, resulting in continued exports to the United States in 1991 for these existing contracts.[47] The move, according to the Chinese, was to protect their domestic tungsten resources[48] and help stabilize market prices.[49] As to the impact on U.S.

[47] When respondents were questioned regarding reports of some long-time buyers of Chinese material attempting to renegotiate existing pacts, they replied that they had no knowledge of such reports. Transcript of the conference, p. 92.

[48] 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.

[49] Apparently, the move immediately pushed wolframite tungsten prices higher--from $37/MTU on Jan. 7, 1991 to $45/MTU on Feb. 11, 1991 for the LMB

(continued...)

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."[50]

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,[51] toward downstream tungsten products not covered by the OMA or the EC price guarantees. However, the Chinese report * * *. * * *.[52]

MINMETALS and CNIEC also reported * * *.

In response to any inquiry regarding the producer's plans to add, expand, curtail, or shut-down production capability and/or production of tungsten ore concentrates in China, the respondents replied * * *.[53]

Projections reported by MINMETALS and CNIEC for 1991 indicate * * *. No 1991 projections were reported for export shipments of tungsten ore concentrates due to * * *. The tabulation below presents the reported projections:

Item	1991
Capacity (MTW)	***
Production (MTW)	***
Capacity utilization (percent)	***
Home market shipments (MTW)	***

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.

---

[49] (...continued)
low quote, and from $49/MTU to $51/MTU for the LMB high quote. Scheelite tungsten ore concentrate prices have remained stable since the announcement by the Chinese.

[50] "Ante Raised in Tungsten 'War'," American Metal Market, June 28, 1990.

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

[52] Telephone conversation with * * *.

[53] Questionnaire response provided by * * *.

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 concentrate, 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 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 in order 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.

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

U.S. imports

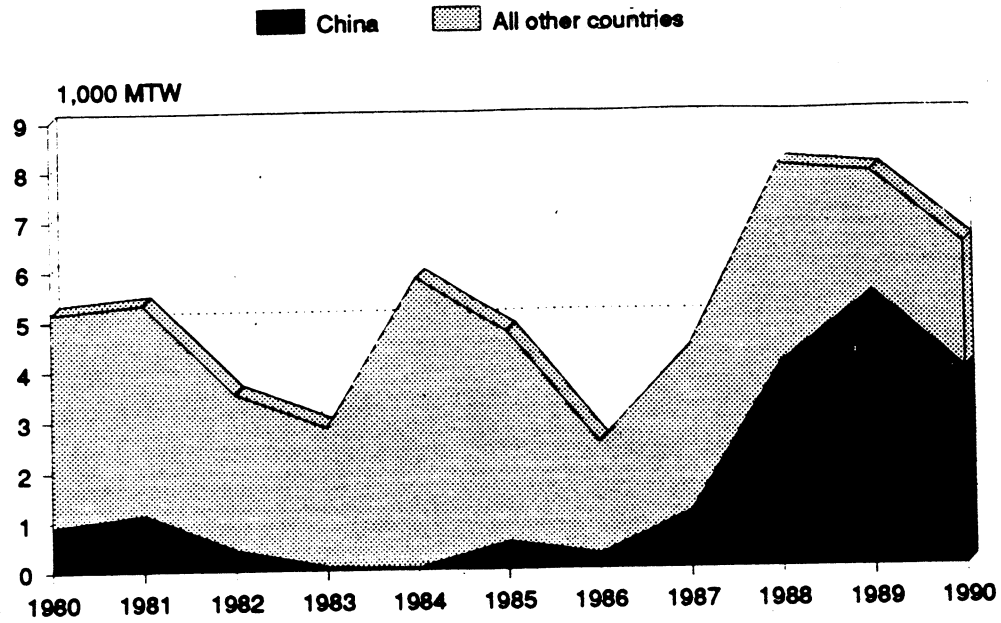
Official import statistics of the U.S. Department of Commerce for tungsten ore concentrates are presented in the following tabulation and in figures 2 and 3, by quantity and value, for 1980 through 1990:

Year	China	All other countries	China	All other countries
	Quantity (MTW)		Value (million dollars)	
1980.....	919	4,240	17.0	72.8
1981.....	1,149	4,182	21.5	72.1
1982.....	425	3,103	7.7	40.5
1983.....	62	2,799	0.7	26.0
1984.....	31	5,777	0.2	53.4
1985.....	558	4,189	3.9	34.8
1986.....	292	2,234	2.0	12.8
1987.....	1,139	3,296	6.5	19.2
1988.....	4,082	3,972	26.2	25.5
1989.....	5,484	2,411	31.3	16.2
1990.....	3,921	2,499	19.6	13.3

From 1980 to 1984, U.S. imports from China of tungsten ore concentrates,[54] relative to total U.S. imports of the product, fell overall, by quantity, from 17.8 percent to less than one percent. However, this ratio increased to 69 percent of the total in 1989 with a slight decline to 61 percent in 1990.

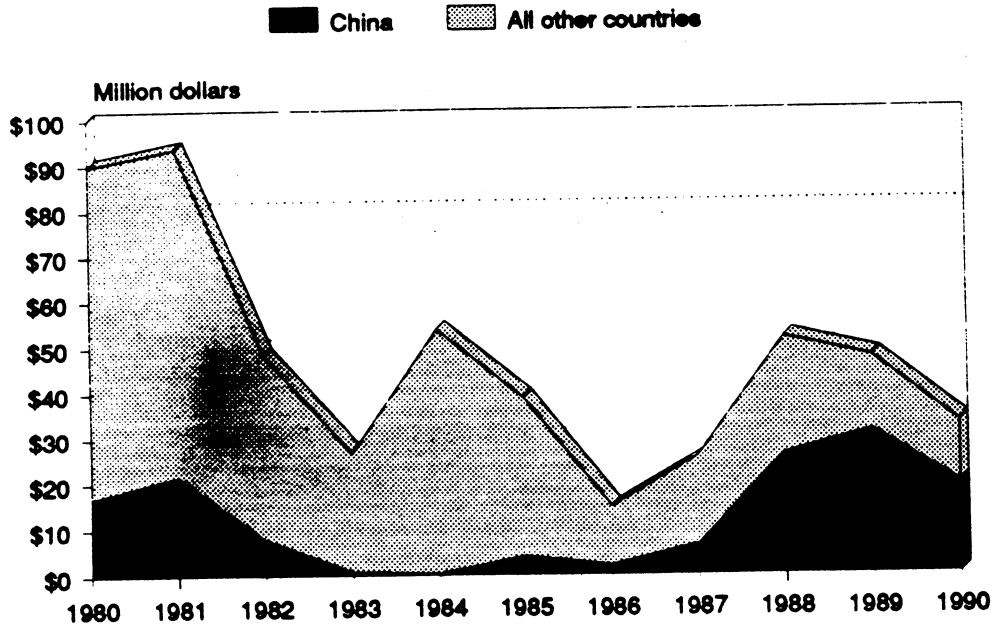
[54] Imports from China may be slightly understated as reported in official import statistics because of a small amount of possible transshipments through Hong Kong.

Figure 2
Tungsten ore concentrates: Quantity of U.S. imports, 1980-90



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

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



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

Official import statistics for tungsten ore concentrates for 1988 to 1990 are presented in table 17. U.S. trade statistics indicate that China provided 51 percent of all U.S. tungsten ore concentrate imports by quantity in 1988, 69 percent in 1989, and 61 percent in 1990. By value, China provided 51 percent in 1988, 66 percent in 1989, and 60 percent in 1990. Unit values fell from 1988 to 1990 and were lower in 1989 and 1990 than those of imports from all other countries combined.

Table 17
Tungsten ore concentrates: U.S. imports, 1988-90

Source	1988	1989	1990
	Quantity (MTW)		
China	4,082	5,484	3,921
All other sources	3,972	2,411	2,499
Total	8,054	7,895	6,420
	Value (million dollars)[1]		
China	26.2	31.3	19.6
All other sources	25.5	16.2	13.3
Total	51.7	47.5	32.9
	Unit value (dollars per MTW)[2]		
China	6,425	5,706	4,998
All other sources	6,412	6,724	5,306
Average	6,419	6,017	5,118

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

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

Questionnaires were sent to 15 firms identified by the petitioner as importers of tungsten ore concentrates from China. The Commission sent questionnaires to an additional three firms that were identified by the Customs Service as large importers of the subject product entered under heading 2611.00.00 of the HTS. Questionnaires were also sent to one additional U.S. producer of tungsten ore concentrates and to two additional U.S. producers of intermediate tungsten products. Data received in response to these questionnaires account for all of the imports by U.S. consumers and nearly all of the Chinese imports by U.S. brokers/traders and U.S. consumers combined in 1990.

U.S. imports of tungsten ore concentrates from China, as reported in questionnaire responses in terms of quantity, increased by 15.0 percent from 1988 to 1989, and by 18.9 percent in 1990 (table 18). In terms of value, tungsten ore concentrates from China increased by 24.8 percent from 1988 to

Table 18
Tungsten ore concentrates: U.S. imports, by types of importers, 1988-90[1]

Item	1988	1989	1990
	Quantity (MTW)		
From China by--			
U.S. consumers[2]	***	***	***
U.S. traders/brokers	***	***	***
Subtotal[2]	3,206	3,686	4,382
From all other sources by--			
U.S. consumers	***	***	***
U.S. traders/brokers	***	***	***
Subtotal[2]	4,090	3,190	4,025
Total[2]	7,296	6,876	8,407
	Value (1,000 dollars)[3]		
From China by--			
U.S. consumers[2]	***	***	***
U.S. traders/brokers	***	***	***
Subtotal[2]	19,457	24,278	20,703
From all other sources by--			
U.S. consumers[2]	***	***	***
U.S. traders/brokers	***	***	***
Subtotal[2]	27,560	22,136	22,176
Total[2]	47,017	46,414	42,879
	Unit value (per MTW)[4]		
From China by--			
U.S. consumers[5]	$***	$***	$***
U.S. traders/brokers	***	***	***
Average[5]	6,069	6,587	4,725
From all other sources by--			
U.S. consumers[5]	***	***	***
U.S. traders/brokers	***	***	***
Average[5]	6,738	6,939	5,510
Average, all imports[5]	6,444	6,750	5,100

[1] Data presented were reported by five U.S. consumers of tungsten ore concentrates that account for all known U.S. consumption of tungsten ore concentrates, and by nine U.S. traders/brokers. These data by U.S. consumers and U.S. traders/brokers, as importers of record, are believed to account for nearly all of the total subject imports from China in 1990.

[2] * * * included domestic purchases of imported products; therefore, data are somewhat overstated.

[3] Landed, duty-paid value.

[4] Unit values may be affected by product mix.

[5] * * *.

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

1989, but fell by 14.7 percent from 1989 to 1990. Average unit values increased from $6,069 per MTW in 1988 to $6,587 in 1989, but fell to $4,725 in 1990.

Imports of tungsten ore concentrates from all other countries, in terms of quantity, fell by 22.0 percent from 1988 to 1989, but rose 26.2 percent in 1990. In terms of value, tungsten ore concentrates imported from all other countries fell overall. Average unit values increased from 1988 to 1989, but fell in 1990.

Increases in imports of tungsten ore concentrates from China since 1987 may be partially explained by the Orderly Marketing Agreement (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.

* * * U.S. consumers of Chinese tungsten ore concentrates reported imports of the product from China scheduled for delivery after December 31, 1990.

Presented in table 19 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.

Table 19
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 in 1990, by firms

Firm	Quantity (MTW)	Share of total (Percent)
Canada Tungsten	***	***
GE	***	***
GTE	***	***
Kennametal	***	***
U.S. Tungsten Corp.	***	***
Total	3,171	100.0

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

U.S. producers' imports

U.S. Tungsten Corp. is * * * U.S. producer of tungsten ore concentrates that imported the subject product during the period covered by the investigation. The firm's imports and domestic purchases of imports are presented in table 20.

Table 20
Tungsten ore concentrates: U.S. Tungsten Corp.'s imports and domestic purchases of imports, by sources, 1988-90[1]

Item	1988		1989		1990	
*	*	*	*	*	*	*

[1] Data presented are from U.S. Tungsten Corp., * * *.

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

U.S. Tungsten Corp.'s imports and domestic purchases of Chinese tungsten ore concentrates * * *, by quantity and value, from 1988 to 1989, but * * * in 1990; however, its imports and domestic purchases of tungsten ore concentrates produced in all other countries * * *. Unit values for U.S. Tungsten Corp.'s tungsten ore concentrates from China and from all other countries * * *, although the unit values of the Chinese tungsten ore concentrates were * * * than the average of those of all other countries.

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 21).

In terms of volume and value, U.S. market penetration by subject imports from China increased from 1988 to 1989, but fell in 1990 to a level higher than that in 1988. The small drop in the Chinese share of U.S. consumption in 1990 compared to 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.[55]

[55] Review presented by Robert Bunting at the ITIA Symposium in October 1990.

Table 21
Tungsten ore concentrates: Apparent U.S. consumption of U.S.-produced product, Chinese-produced product, and product produced by all other sources, 1988-90[1]

Item	1988	1989	1990
	Quantity (MTW)		
Apparent consumption of--			
U.S.-produced product	***	***	***
Chinese-produced product	***	***	***
Product produced by all other sources	***	***	***
Total[2]	7,522	6,574	6,180
	Value (1,000 dollars)[3]		
Apparent consumption of--			
U.S.-produced product	***	***	***
Chinese-produced product	***	***	***
Product produced by all other sources	***	***	***
Total[2]	51,049	45,517	35,877
	Share (in percent) of the quantity of total apparent U.S. consumption		
Apparent consumption of--			
U.S.-produced product	***	***	***
Chinese-produced product	***	***	***
Product produced by all other sources	***	***	***
Total	100.0	100.0	100.0
	Share (in percent) of the value of total apparent U.S. consumption		
Apparent consumption of--			
U.S.-produced product	***	***	***
Chinese-produced product	***	***	***
Product produced by all other sources	***	***	***
Total	100.0	100.0	100.0

[1] One U.S. producer (the petitioner) and four U.S. importers/purchasers reported U.S. consumption of tungsten ore concentrates in the production of intermediate or downstream tungsten products. The data reported by these five firms are estimated to account for all known U.S. consumption of tungsten ore concentrates.

[2] Total quantities of apparent U.S. consumption are understated by the amount of Government stockpile dispositions. There were 524 MTW dispositions in 1988, 466 MTW in 1989, and none in 1990. No values are available 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."

[3] * * *.

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.

Market characteristics and prices

Demand for tungsten ore concentrates depends on demand for intermediate tungsten products, which include APT, sodium tungstate, tungsten acid, and tungstic oxide. The importance of tungsten ore concentrates as the major material input to these products results in a close relationship between the ore concentrate sales price and the sales price of the intermediate products.[56] For example, there is a strong statistical correlation between APT and tungsten ore concentrate prices (figure 4 and appendix I).[57]

Demand for intermediate tungsten products is keyed primarily to major end uses that depend on cutting, wear-resisting, and hard-facing materials.[58] Examples of important end products include metalworking machinery, construction and mining machinery and equipment, transportation equipment, lamps and lighting, electrical machinery, certain chemicals, and defense applications.

Tungsten scrap is the only substitute for tungsten ore concentrates in the production of the intermediate tungsten products; however, the availability of scrap is limited.[59] Since the fourth quarter of 1988, average tungsten scrap prices have been consistently higher than those of tungsten ore concentrates.

U.S. Tungsten Corp., the petitioner, is one of only two domestic producers of tungsten ore concentrate that has been in operation during the period of investigation. U.S. Tungsten Corp. produces all of its tungsten ore concentrate for captive consumption in the production of APT. U.S. Tungsten Corp. is also an importer of Chinese tungsten ore concentrate. * * *.

---

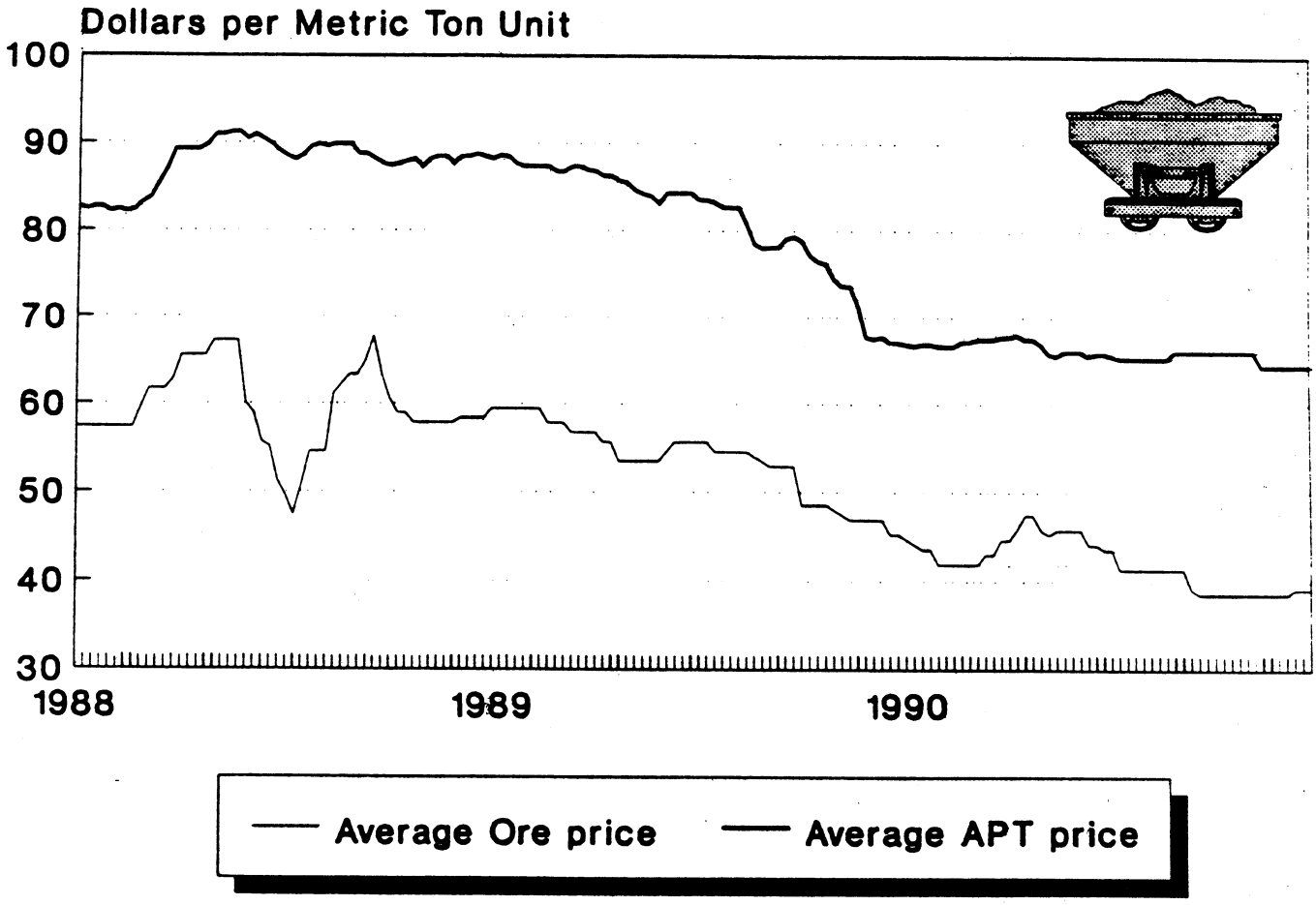
[56] For example, tungsten ore concentrate's average cost share in APT was nearly * * * percent during the period of investigation. This figure would be higher if * * * was not considered.

[57] The correlation test performed by the Commission staff between the average APT and tungsten ore concentrate price series, as reported in Metals Week, resulted in a correlation coefficient of 0.92 for the period January 1988 through December 1990. Petitioner stated that only the low price quotes from Metals Week of tungsten ore concentrate would be highly correlated with the average APT price; this correlation coefficient was calculated to also be 0.92. * * *, a trader/broker in tungsten ore concentrate, stated that during the * * *. However, * * * provided no data to substantiate this statement.

[58] "Tungsten," Mineral Facts and Problems, U.S. Bureau of Mines, 1985. According to this article, one of tungsten's most outstanding physical properties is its high melting point of 3,410° C, the highest of all metals. Tungsten also has good corrosion resistance, good thermal and electrical conductivity, and a low coefficient of expansion. At temperatures above 1,650° C, tungsten has the highest tensile strength of all metals.

[59] According to * * *, U.S. Bureau of Mines, some types of tungsten scrap, primarily tungsten-carbide, do not compete with tungsten ore concentrate. Tungsten-carbide is the most widely available type of tungsten scrap.

Figure 4
Average world market prices of tungsten ore concentrates and APT, by weeks, 1988-90



Source: Based on data presented in Metals Week.

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 price levels throughout the world.[60] 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 39 percent of world capacity. China typically supplies between 30 and 50 percent of the world's tungsten concentrate.[61] According to both petitioner and respondents, China is able to wield its market power to influence the level of supply and price in the marketplace.[62]

Prices of tungsten ore concentrates vary by grade, quality, and by the quantity and types of impurities in the concentrate. Within each grade of tungsten ore concentrate, quality varies. These variations in quality are reflected in the low and high price quotes that occur for this commodity. Grades are generally divided into three categories based upon the percent of tungsten in the ore concentrate: high-grade, which consists of tungsten ore concentrates containing 65 percent or more by weight of WO_3; low-grade, which consists of tungsten ore concentrates containing less than 65 percent by weight of WO_3; and slime, which is actually a low-grade tungsten ore concentrate or other low-grade tungsten product containing 35 percent or less WO_3. High-grade tungsten ore concentrate is more expensive than the lower grades. U.S. Tungsten Corp. produces only slime, which is transported on a conveyor belt directly into APT production. Imports from China cover all three grades of tungsten ore concentrates.

The decision to purchase a particular grade 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 in low-grade ore concentrate, the cost of converting it into an intermediate tungsten product is greater than the cost for converting high-grade ore concentrate.[63] In addition, although the cost of transporting a ton of low-grade ore is the same as that of high-grade ore, the transportation cost per unit of contained tungsten for low-grade ore is greater.

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

---

[60] Since China's decision to stop shipping tungsten ore concentrates, prices have increased. For example between Jan. 7, 1991 and Feb. 11, 1991, LMB low and high price quotes increased 22 and 4 percent, respectively. Typically, Chinese prices are reflected in the LMB low price quote. For a further discussion see footnote 49.

[61] Tungsten Minerals Yearbook--1989, U.S. Bureau of Mines.

[62] Conference transcript, pp. 50-51 and 99-100. 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--1989, U.S. Bureau of Mines. * * *, of the U.S. Bureau of Mines, believes that the closure of most of the mines in the western world is because of competition for sales of tungsten products from China.

[63] * * *.

iron, manganese, or a combination of the two metals. The highest quality wolframite is ferberite, or $FeWO_4$. The wolframite grouping takes its name from the next highest quality ore concentrate, wolframite, or $(Fe, Mn)WO_4$. The lowest quality of wolframite is heubnerite, or $MnWO_4$. Scheelite ($CAWO_4$) is tungsten that is combined with calcium. Scheelite is similar in quality to ferberite.[64] The tungsten ore concentrate produced in the United States is scheelite and that imported from China is heubnerite.[65]

Impurities in tungsten ore concentrates affect prices because they are difficult 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.[66] Elements that are considered impurities, such as molybdenum, tin, bismuth, copper, and arsenic, differ in the ease of removal. Molybdenum is the most difficult of these elements to remove. Manufacturing facilities vary in their ability to remove the impurities. Some manufacturers specify very pure ore, typically from mines in Portugal or Bolivia, because the impurities affect the physical properties of the products produced at their facilities. One company, Kennametal, * * * in a patented process that skips the production of intermediate products such as APT.[67] The tungsten ore concentrates produced both at U.S. Tungsten Corp.'s mining and manufacturing facility and in China contain molybdenum and other impurities.

Tungsten concentrate is sold in units of tungsten trioxide (WO_3) in either metric ton units or short ton units. A metric or short ton unit is equivalent to one percent of a metric or short ton. Prices are either in dollars per metric ton unit or per short ton unit. 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. Price quotations vary, and most importers quote on more than one basis (CIF was listed most often in the questionnaire responses, followed by U.S.-port). Lead times range from 1 to 4 months. * * * reported that shipments of Chinese tungsten ore concentrates are often late. Transportation cost typically ranges 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 brokers.

There are three 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. The LMB quotations are for both wolframite and scheelite[68] and are 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

---

[64] Conversation with * * *.

[65] Both U.S. Tungsten Corp.'s and Chinese tungsten ore concentrates have impurities that affect both the overall quality and the prices of the concentrates.

[66] * * *.

[67] Conversation with * * *.

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

wolframite concentrates graded at 65 percent WO_3 or higher and for scheelite at 70 percent WO_3 or higher.

The Metals Week quotations are published as a high-low range of spot-purchase prices in the United States by consumers of tungsten concentrates containing more than 65 percent WO_3. The quotations combine both wolframite and scheelite concentrates. Although the Metals Week quotations are based upon far fewer transactions than the LMB quotations, a statistical correlation test indicates that these price series are highly correlated.[69] Figure 5 and table 22 show that both the Metals Week and the LMB prices generally declined throughout the period of investigation; however, as shown in figure 6, prices have not fallen nearly as much as they did from 1980 to 1987.

The ITI quotes take into account 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 report, the price series is not consistent.[70]

Questionnaire price data.--Questionnaires were sent to all known producers and importers of tungsten ore concentrates. Separate prices were requested for the largest quarterly sale or company transfer between January 1988 and December 1990 for high-grade ore concentrates, low-grade ore concentrates, slime, and tungsten scrap. The petitioner reported transfer prices with an explanation on how the transfer price is determined. Prices were also requested on all contracts for sale or purchase of tungsten ore concentrates. Both domestic producers and eight importers reported price data. The petitioner accounted for * * * percent of domestic production of tungsten ore concentrates in 1990. The internal shipments reported by petitioner accounted for * * * percent of total reported U.S. producers' shipments in 1990. The responding importers accounted for nearly * * * percent of total imports of tungsten ore concentrates from China.

U.S. Tungsten Corp. provided transfer prices for slime, the only product it produces. It derives the transfer price by * * *.[71] A direct comparison of petitioner's prices with the low Metals Week price series show an average price difference of over * * * percent. Petitioner also provided contract purchases of Chinese tungsten ore concentrate for 1988-90. During * * *, * * * was given a contract to supply low-grade tungsten ore concentrates at * * * per MTU; however * * *.

Table 23 and figure 7 show domestic prices of U.S.-produced and Chinese-produced tungsten ore concentrates.[72] Transfer prices for petitioner's slime generally fell during the period of investigation, falling nearly * * * percent from * * * in January-March 1988 to * * * in October-December 1990.

---

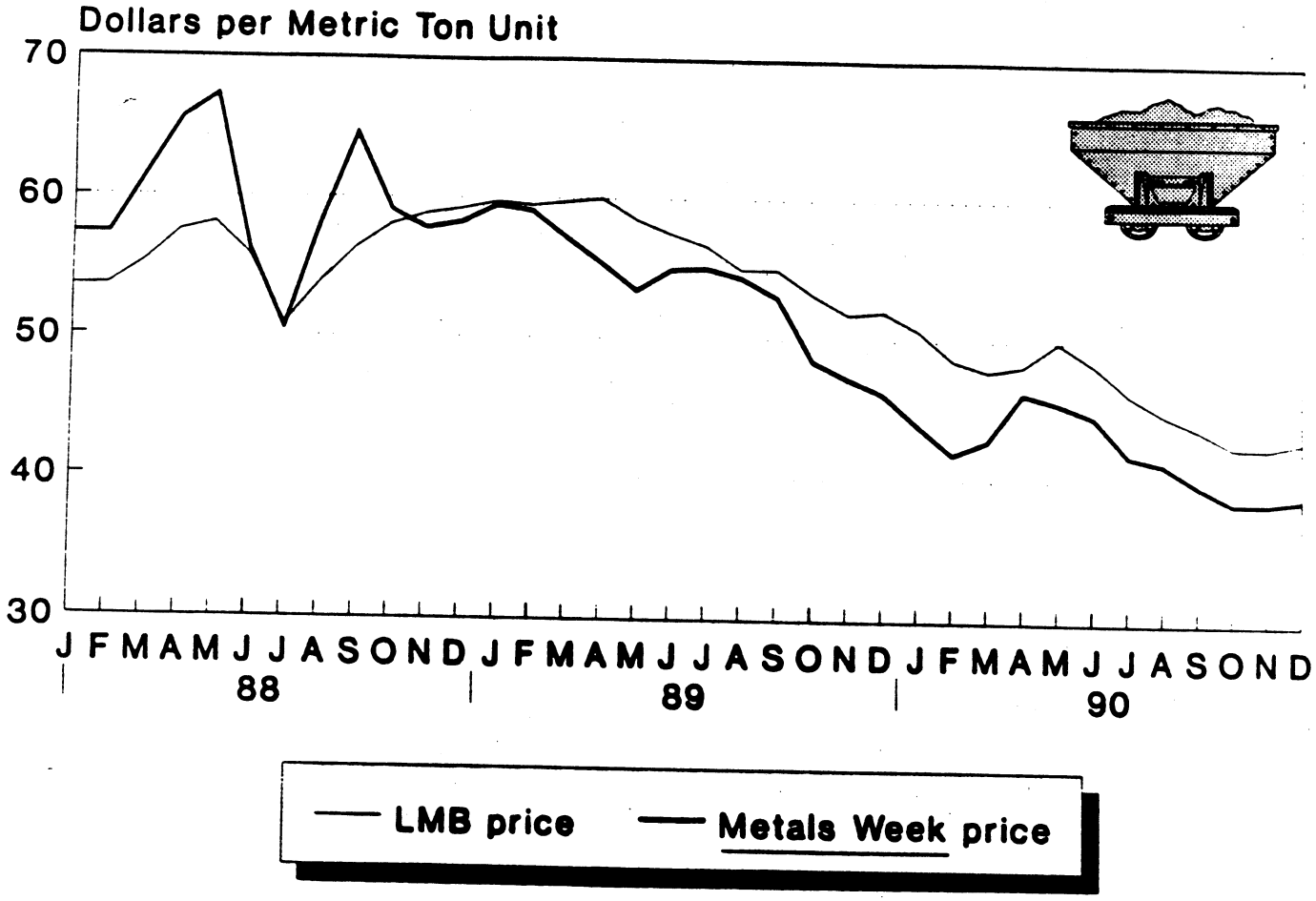
[69] The correlation test between the average LMB and Metals Week price series resulted in a correlation coefficient of 0.89 for the period January 1988 through December 1990.

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

[71] * * *.

[72] * * *.

Figure 5
Average London Metal Bulletin and Metals Week prices of tungsten ore concentrates, by months, January 1988-December 1990



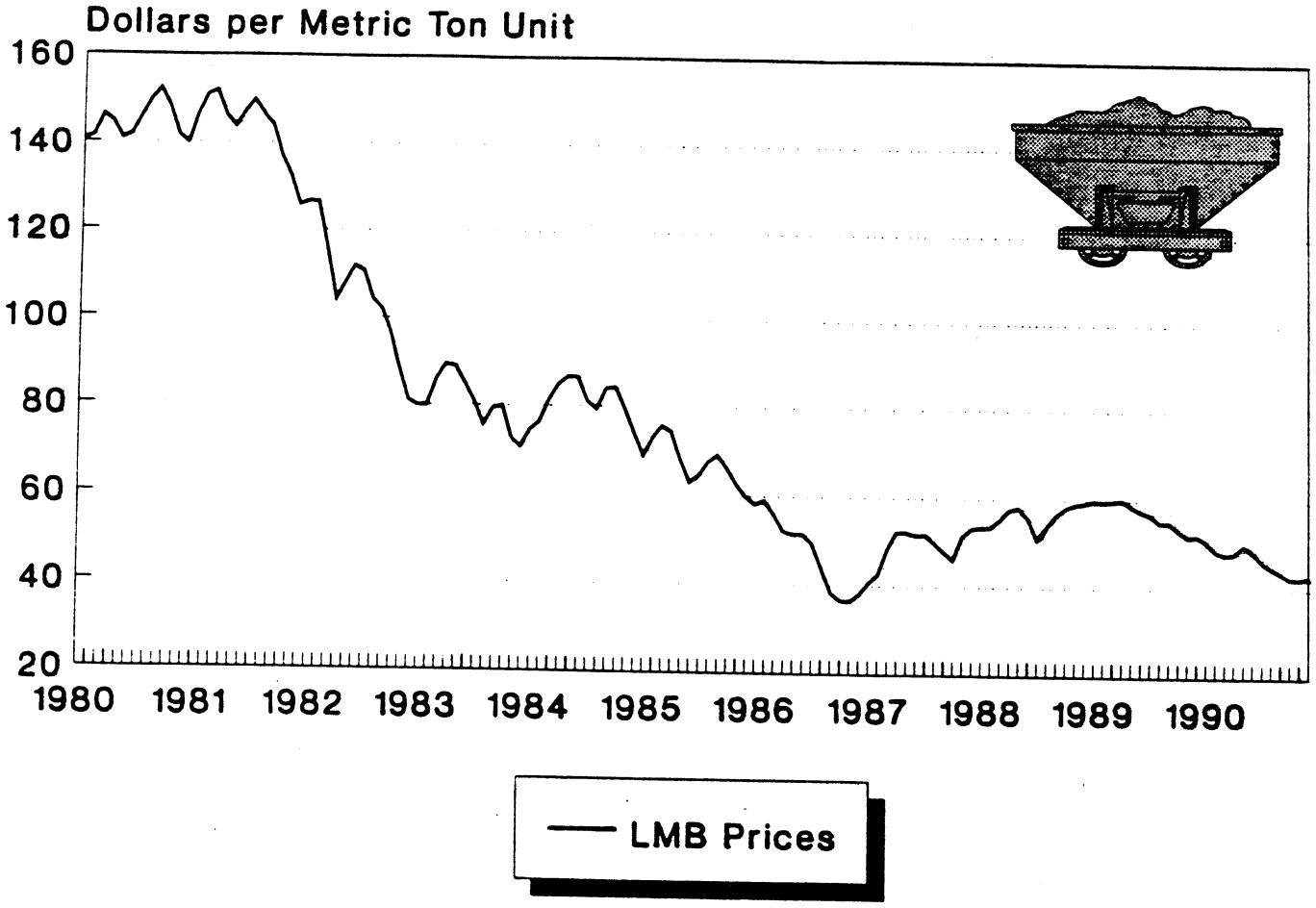
Source: Based on data presented in the London Metal Bulletin and Metals Week.

Table 22
Tungsten ore concentrates: Average Metals Week and London Metal Bulletin prices, by months, January 1988-December 1990

Period	Metals Week Low ore concentrate	Metals Week High ore concentrate	Metals Week Average ore concentrate	Average London Metal Bulletin
	$ per MTU			
1988:				
January	$52.91	$61.73	$57.32	$48.54
February	52.91	61.73	57.32	48.59
March	57.10	65.92	61.51	50.15
April	60.63	70.55	65.59	52.17
May	63.93	70.55	67.24	52.73
June	52.25	60.19	56.22	50.61
July	45.75	55.39	50.57	46.15
August	54.01	62.28	58.15	48.88
September	60.41	68.78	64.59	51.15
October	55.94	62.28	59.11	52.70
November	55.12	60.63	57.87	53.41
December	56.00	60.63	58.31	53.75
1989:				
January	57.32	61.73	59.52	54.21
February	56.49	61.73	59.11	53.98
March	53.35	61.07	57.21	54.21
April	52.36	58.42	55.39	54.44
May	50.71	56.22	53.46	53.08
June	52.47	57.54	55.00	52.17
July	51.81	58.42	55.12	51.41
August	50.43	58.42	54.43	49.90
September	47.62	58.42	53.02	49.90
October	44.09	52.91	48.50	48.29
November	44.09	50.43	47.26	47.03
December	43.21	49.16	46.19	47.24
1990:				
January	39.41	48.50	43.95	46.04
February	37.48	46.30	41.89	44.11
March	39.02	46.74	42.88	43.40
April	42.71	49.88	46.30	43.77
May	41.61	49.60	45.61	45.36
June	40.34	48.94	44.64	43.89
July	36.93	46.85	41.89	41.99
August	36.38	46.30	41.34	40.71
September	35.05	44.53	39.79	39.74
October	34.17	42.99	38.58	38.60
November	34.17	42.99	38.58	38.55
December	34.83	42.99	38.91	39.00

Source: Metals Week and the London Metal Bulletin.

Figure 6
Average London Metal Bulletin prices of tungsten ore concentrates, by weeks, 1980-90



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

Table 23
Tungsten ore concentrates: Weighted-average prices for domestic and Chinese products, and imported scrap, by quarters, January 1988-December 1990

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

[1] * * *.

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

Figure 7
Tungsten ore concentrates: Average Metals Week prices, domestic transfer prices, prices of imports from China, and imports of scrap, by quarters, January 1988-December 1990

* * * * * * *

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission, and data presented in Metals Week.

This fall in these transfer prices parallels that of the Metal Weeks price series, which fell nearly 36 percent from $60.44 in January-March 1988 to $38.97 in October-December 1990. The correlation between these two price series was 0.97.

Petitioner reported that it made * * * annual contracts for the purchase of Chinese slime during the period of investigation. The volume was * * * metric tons of contained tungsten valued at * * * per MTU during 1988, * * * tons of contained tungsten valued at * * * per MTU during 1989, and * * * tons of contained tungsten valued at * * * per MTU during 1990. Petitioner also reported that it made * * * annual contracts for the purchase of low-grade ore concentrates during the period of investigation. The volume was * * * tons of contained tungsten valued at * * * per MTU during 1988, * * * tons of contained tungsten valued at * * * per MTU during 1989, and * * * tons of contained tungsten valued at * * * per MTU during 1990.

Prices for all the Chinese tungsten ore concentrates fell in a trend similar to that of the domestic slime transfer price series and the Metals Week price series. Prices of Chinese high-grade ore concentrates imported for resale fell * * * percent from * * * per MTU in January-March 1988 to * * * per MTU in October-December 1990, whereas prices of Chinese high-grade ore concentrates imported for a firm's own consumption fell * * * percent from * * * per MTU in January-March 1988 to * * * per MTU in October-December 1990. Chinese prices for slime fell nearly * * * percent from * * * per MTU in July-September 1988 to * * * per MTU in October-December 1990.

Although any comparisons between transfer prices and arm's-length transaction prices should be viewed with caution, the domestic transfer prices were * * * than the Chinese prices in * * * instances where domestic and Chinese slime prices were both available.

One trader/broker, * * *, reported that it made * * * annual contracts for the sale of high-grade ore concentrates during the period of investigation. The volume was * * * tons of contained tungsten valued at * * * per MTU during 1988, * * * tons of contained tungsten valued at * * * per MTU during 1989, and * * * tons of contained tungsten valued at * * * per MTU during 1990.

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 is captively consumed, no lost sales or lost revenues were reported.

APPENDIX A

FEDERAL REGISTER NOTICES

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

Tungsten Ore Concentrates From the People's Republic of China

AGENCY: United States International Trade Commission.

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

SUMMARY: The Commission hereby gives notice of the institution of preliminary antidumping investigation No. 731-TA-497 (Preliminary) under section 733(a) of the Tariff Act of 1930 (19 U.S.C. 1673b(a)) to determine whether there is a reasonable indication that an industry in the United States is materially injured, or is threatened with material injury, or the establishment of an industry in the United States is materially retarded by reason of imports from 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, that are alleged to be sold in the United States at less than fair value. As provided in section 733(a), the Commission must complete preliminary antidumping investigations in 45 days, or in this case by March 11, 1991.

For further information concerning the conduct of this investigation and rules of general application, consult the Commission's Rules of Practice and Procedure, part 207, subparts A and B (19 CFR part 207), and part 201, subparts A through E (19 CFR part 201).

EFFECTIVE DATE: January 23, 1991.

FOR FURTHER INFORMATION CONTACT: Mary Trimble (202-252-1183), Office of Investigations, U.S. International Trade Commission, 500 E Street SW., Washington, DC 20436. Hearing-impaired individuals are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-252-1810. Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202-252-1000.

SUPPLEMENTARY INFORMATION:

Background

This investigation is being instituted in response to a petition filed on January 23, 1991, by U.S. Tungsten Corp., Danbury, CT.

Participation in the Investigation

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

Public Service List

Pursuant to § 201.11(d) of the Commission's rules (19 CFR 201.11(d)), 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. In accordance with §§ 201.16(c) and 207.3 of the rules (19 CFR 201.16(c) and 207.3), each public document filed by a party to the investigation must be served on all other parties to the investigation (as identified by the public service list), and a certificate of service must accompany the document. The Secretary will not accept a document for filing without a certificate of service.

Limited Disclosure of Business Proprietary Information Under a Protective Order and Business Proprietary Information Service List

Pursuant to § 207.7(a) of the Commission's rules (19 CFR 207.7(a)), the Secretary will make available business proprietary information gathered in this preliminary investigation to authorized applicants under a protective order, provided that the application be made not later than seven (7) days after publication of this notice in the Federal Register. A separate service list will be maintained by the Secretary for those parties authorized to receive business proprietary information under a protective order. The Secretary will not accept any submission by parties containing business proprietary information without a certificate of service indicating that it has been served on all the parties that are authorized to receive such information under a protective order.

Conference

The Director of Operations of the Commission has scheduled a conference in connection with this investigation for 9:30 a.m. on February 14, 1991, at the U.S. International Trade Commission Building, 500 E Street SW., Washington, DC. Parties wishing to participate in the conference should contact Mary Trimble (202-252-1193) not later than February 12, 1991 to arrange for their appearance. Parties in support of the imposition of antidumping duties in this investigation and parties in opposition to the imposition of such duties will each be collectively allocated one hour within which to make an oral presentation at the conference.

Written submissions

Any person may submit to the Commission on or before February 19, 1991, a written brief containing information and arguments pertinent to the subject matter of the investigation, as provided in section 207.15 of the Commission's rules (19 CFR 207.15). If briefs contain business proprietary information, a nonbusiness proprietary version is due February 20, 1991. A signed original and fourteen (14) copies of each submission must be filed with the Secretary to the Commission in accordance with section 201.8 of the rules (19 CFR 201.8). All written submissions except for business proprietary data will be available for public inspection during regular business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary to the Commission.

Any information for which business proprietary treatment is desired must be submitted separately. The envelope and all pages of such submissions must be clearly labeled "Business Proprietary Information." Business proprietary submissions and requests for business proprietary treatment must conform with the requirements of §§ 201.6 and 207.7 of the Commission's rules (19 CFR 201.6 and 207.7).

Parties which obtain disclosure of business proprietary information pursuant to § 207.7(a) of the Commission's rules (19 CFR 207.7(a)) may comment on such information in their written brief, and may also file additional written comments on such information no later than February 22, 1991. Such additional comments must be limited to comments on business proprietary information received in or after the written briefs. A nonbusiness proprietary version of such additional comments is due February 25, 1991.

Authority: This investigation is being conducted under authority of the Tariff Act of 1930, title VII. This notice is published pursuant to § 207.12 of the Commission's rules (19 CFR 207.12).

Issued: January 25, 1991.

By order of the Commission.

Kenneth R. Mason,

Secretary.

[FR Doc. 91-2271 Filed 1-29-91; 8:45 am]

BILLING CODE 7020-02-M

Federal Register / Vol. 56, No. 34 / Wednesday, February 20, 1991 / Notices 6835

International Trade Administration

[A-570-811]

Initiation of Antidumping Duty Investigation; Tungsten Ore Concentrates From the People's Republic of China

AGENCY: Import Administration, International Trade Administration, Commerce.

ACTION: Notice.

SUMMARY: On the basis of a petition filed in proper form with the U.S. Department of Commerce (the Department), we are initiating an antidumping duty investigation to determine whether 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. We are notifying the U.S. International Trade Commission (ITC) of this action so that it may determine whether imports of tungsten ore concentrates from the PRC are materially injuring, or threaten material injury to, a U.S. industry. If this investigation proceeds normally, the ITC will make its preliminary determination on or before March 11, 1991. If that determination is affirmative, we will make our preliminary determination on or before July 2, 1991.

EFFECTIVE DATE: February 20, 1991.

FOR FURTHER INFORMATION CONTACT: Roy A. Malmrose, Office of Countervailing Investigations, Import Administration, International Trade

Administration, U.S. Department of Commerce, 14th Street and Constitution Avenue, NW., Washington, DC 20230; telephone (202) 377-5414.

SUPPLEMENTARY INFORMATION:

The Petition

On January 23, 1991, we received a petition filed in proper form by U.S. Tungsten Corporation (USTC) on behalf of the U.S. industry producing tungsten ore concentrates. The petition was supplemented on January 24, February 6, and February 11, 1991. In compliance with the filing requirements of section 353.12 of the Department's regulations (19 CFR 353.12 (1990)), petitioner alleges that imports of tungsten ore concentrates from the PRC are being, or are likely to be, sold in the United States at less than fair value within the meaning of section 731 of the Tariff Act of 1930, as amended (the Act), and that these imports are materially injuring, or threaten material injury to, a U.S. industry.

Petitioner has stated that it has standing to file the petition because it is an interested party, as defined under section 771(9)(C) of the Act, and because it filed the petition on behalf of the U.S. industry producing the product that is subject to this investigation.

On February 1, 1991, the Department received a submission filed by GTE Products Corporation (GTE) in opposition to the petition. This submission included letters from General Electric Company and Kennametal Inc. which stated their opposition to the petition. GTE argues that the "like product" should be defined to include intermediate tungsten products such as ammonium paratungstate (APT) and tungsten powders. If the domestic industry is defined as including the producers of tungsten ore concentrates and intermediate products, GTE contends that its submission demonstrates that a majority of the domestic industry opposes the petition. On February 8, 1991, USTC made a submission arguing that the Department was precluded from considering GTE's arguments under *United States* v *Roses, Inc.*, 706 F.2d 1563 (1983) and otherwise refuting GTE's claims on the appropriate definition of like product and the relevant industry.

Based on these submissions we determine for purposes of deciding standing in this initiation that tungsten intermediates are not like the imported product, tungsten ore concentrates. As a result, GTE, GE, and Kennametal are not part of the industry on whose behalf this petition was brought. We intend, however, to continue examining this issue in the course of the investigation. If any interested party, as described under paragraphs (C), (D), (E), or (F) of section 771(9) of the Act, wishes to register support for, or opposition to, this petition, please file written notification with the Assistant Secretary for Import Administration.

United States Price and Foreign Market Value

Petitioner's estimate of United States price (USP) for both the high- and low-grade concentrates is based on U.S. Bureau of the Census import statistics. Prices derived from import statistics were adjusted for inland freight in the PRC.

Petitioner alleges that the PRC is a nonmarket economy country within the meaning of section 773(c) of the Act. Accordingly, petitioner based foreign market value (FMV) on constructed value (CV). CV was calculated using factors of production developed for the PRC. Petitioner used factors of production experienced in its own business with respect to labor, electricity, and diesel. The remaining factors were those experienced by a producer of tungsten ore concentrates in Peru.

Petitioner's factors were primarily valued based on a country at a stage of economic development comparable to the PRC and which is a significant producer of comparable merchandise (i.e., India). Where efforts to obtain Indian values were unsuccessful, petitioner valued factors based on Peruvian prices on the basis that (1) Peru is a significant producer of comparable merchandise, (2) information from Peru was reasonably available, (3) Peru possesses a middle-income economy, while other producers of tungsten ore concentrates possess upper-middle or high-income economies, and (4) Peruvian ore possesses characteristics similar to those of Chinese ore.

To calculate an estimated CV for the subject merchandise, petitioner included electricity, labor, diesel, and material and maintenance costs for mining, crushing, grinding and concentrating the ore. Packing, exploration and capital costs were excluded. Petitioner added the statutory minimums of ten percent for SG&A and eight percent for profit, in accordance with section 773(e)(1)(B) of the Act.

Petitioner's calculations resulted in a margin of 122 percent for the high-grade concentrates and 151 percent for the low-grade concentrates.

Initiation of Investigation

Under section 732(c) of the Act, the Department must determine, within 20 days after the petition is filed, whether the petition sets forth the allegations necessary for the initiation of an antidumping duty investigation, and whether the petition contains information reasonably available to the petitioner supporting the allegations.

We have examined the petition on tungsten ore concentrates from the PRC and found that the petition meets the requirements of section 732(b) of the Act. Therefore, in accordance with section 732 of the Act, we are initiating an antidumping duty investigation to determine whether imports of tungsten ore concentrates from the PRC are being, or are likely to be, sold in the United States at less than fair value. If our investigation proceeds normally, we will make our preliminary determination by July 2, 1991.

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 as 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). The HTS item number is provided for convenience and customs purposes. The written description remains dispositive.

ITC Notification

Section 732(d) of the Act requires us to notify the ITC of this action and to provide it with the information we used to arrive at this determination. We will notify the ITC and make available to it all non-privileged and non-proprietary information. We will allow the ITC access to all privileged and business proprietary information in the

Department's files, provided the ITC confirms in writing that it will not disclose such information, either publicly or under administrative protective order, without the written consent of the Director, Office of Antidumping Investigations, Import Administration.

Preliminary Determination by ITC

The ITC will determine by March 11, 1991, whether there is a reasonable indication that imports of tungsten ore concentrates from the PRC are materially injuring, or threaten material injury to, a U.S. industry. If its determination is negative, the investigation will be terminated; otherwise, the investigation will proceed according to statutory and regulatory time limits.

This notice is published pursuant to section 732(c)(2) of the Act.

Dated: February 12, 1991.

Eric I. Garfinkel,

Assistant Secretary for Import Administration.

[FR Doc. 91-3981 Filed 2-19-91; 8:45 am]

BILLING CODE 3510-DS-M

APPENDIX B

LIST OF WITNESSES

LIST OF PARTICIPANTS IN THE PUBLIC CONFERENCE

Investigation No. 731-TA-497 (Preliminary)

TUNGSTEN ORE CONCENTRATES
FROM THE PEOPLE'S REPUBLIC OF CHINA

Those listed below appeared at the United States International Trade Commission's conference held in connection with the subject investigation on February 14, 1991, in Hearing Room 101 of the USITC Building, 500 E Street, SW, Washington, DC.

In support of the imposition of antidumping duties

Pillsbury Madison & Sutro--Counsel
Washington, DC
on behalf of--

U.S. Tungsten Corp.

William G. Beattie, President
Robert M. Bunting, Vice President and Product Director
Tim Scott, General Manager

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

In opposition to the imposition of antidumping duties

Akin, Gump, Strauss, Hauer & Feld--Counsel
Washington, DC
on behalf of--

China National Metals and Minerals Import and Export Corp. and
China National Nonferrous Metals Import and Export Corp.

Spencer S. Griffith--OF COUNSEL

Sidley & Austin--Counsel
Washington, DC
on behalf of--

GTE Products Corp.

John Fedorchak, Products Marketing Manager, Chemical/Metallurgical Division
James A. Gass, General Counsel, Precision Materials Group

Judith H. Bello)
Alan F. Holmer) --OF COUNSEL

APPENDIX C

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. Under the terms of this agreement, limits were imposed on China's exports to the United States of APT and tungstic acid to a combined total of 425,000 pounds tungsten content during October through December 1987, followed by annual limits of 1.81 million pounds during 1988, 1.94 million pounds during 1989, and 2.05 million pounds during 1990. The limit during January through September 1991 is 1.5 million pounds. The agreement provided that the annual limits can be exceeded by specified amounts, but that equivalent amounts would be deducted from the limits in subsequent periods.

Imports of APT and tungstic acid from China through June 1990 reflected only 6 percent of the total permitted for 1990 under the OMA.[1] The reduction in imports of APT and tungstic acid from China may have caused a relative shift toward the importing of other tungsten materials, including ore concentrates, sodium tungstate, ferrotungsten, and tungsten oxide.

---

[1] Although total imports of APT and tungstic acid from China in 1989 were reportedly less than the OMA quota, the combined imports of APT, tungstic acid, and tungstic oxides reportedly exceeded the quota.

APPENDIX D

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, and ferrotungsten before being fabricated into end-use products. Most tungsten chemicals are produced as co-products or primary products at tungsten processing plants and are generally reduced to tungsten metal powder, which may then 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 which 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 process of tungsten ore concentrates into various intermediate tungsten products normally follows a chemical sequence.[2] See figure D-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] which is then reduced to metal powder. It is reduced to metal powder 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.

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

---

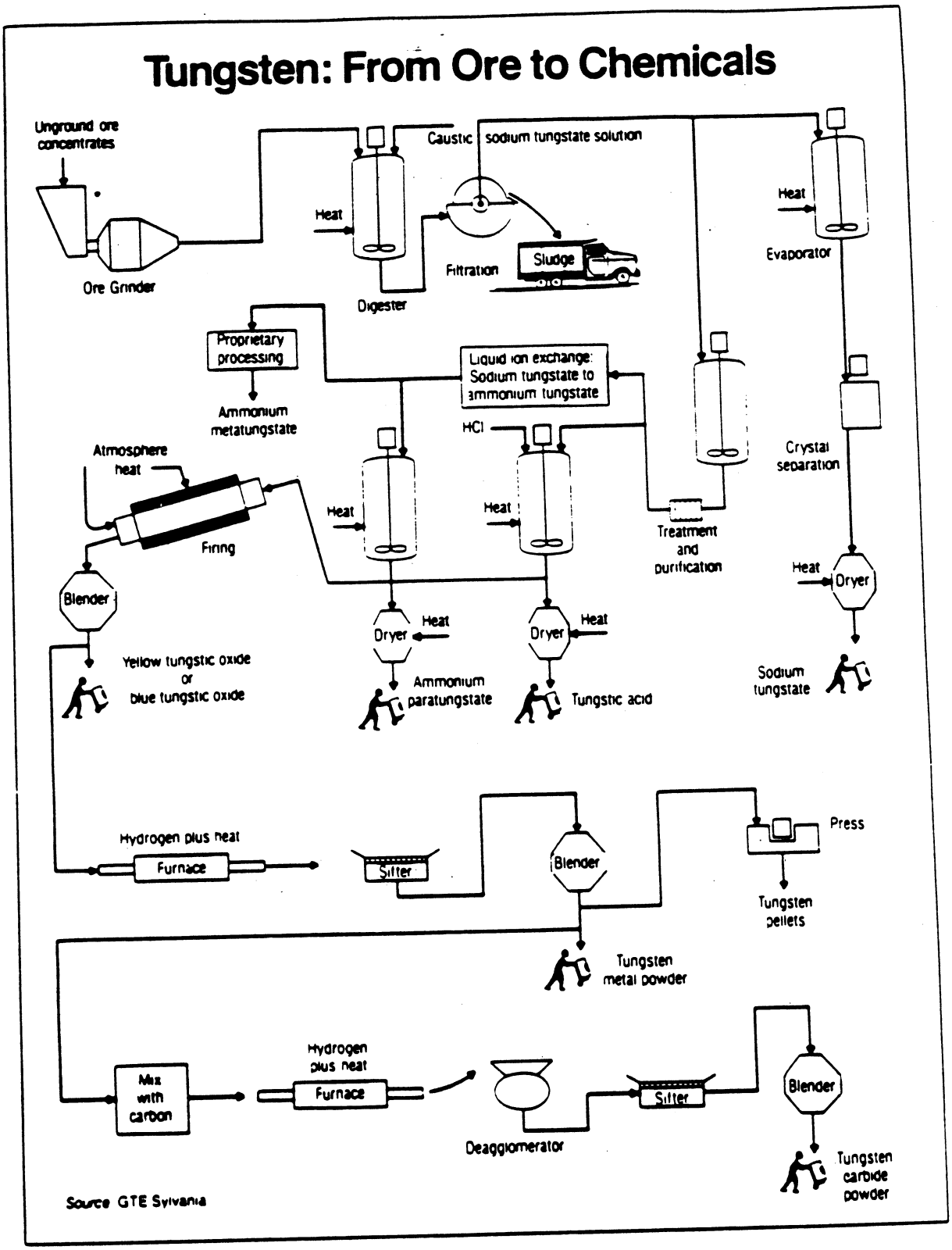
[1] Conversation with * * *, U.S. Bureau of Mines, Feb. 22, 1991.

[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, while blue oxide is produced when APT is heated in a slightly reducing atmosphere system.

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

Figure D-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
Heat
Dryer
Blender
Yellow tungstic oxide or blue tungstic oxide
Dryer
Heat
Ammonium paratungstate
Dryer
Heat
Tungstic acid
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

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 September 30, 1990, are shown below (in MTW):

Material	Total inventory[1]
Tungsten ore concentrates	34,635
Ferrotungsten	918
Tungsten metal powder	861
Tungsten carbide powder	922

[1] Includes both stockpile-grade product and nonstockpile-grade product.

Although there were 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]

[5] The shift away from depleted uranium is due to uncertainty of the product's level of radioactive emissions and long-term stability. Conversation with * * *, U.S. Bureau of Mines, on Feb. 22, 1991, and * * *, on Feb. 20, 1991.

[6] Conversation with * * *, U.S. Bureau of Mines, Feb. 22, 1991.

U.S. production of intermediate tungsten products

According to the Bureau of Mines, there are seven processors of tungsten. Information provided in response to the Commission's request for data on intermediate products was from four firms reporting for APT and two for tungstic oxide. No information was received regarding tungstic acid or sodium tungstate. This may be partially due to the fact that all U.S. producers of sodium tungstate use the product internally to produce further processed tungsten products. The amount of sodium tungstate each produces is determined by the amount of its production of those further processed tungsten products. It is also believed that * * *. Evidently, producing further-processed tungsten products through the extra tungstic acid step in production is uneconomical for all purposes other than the production of tungsten wire.[7] Presented in the following tabulation are the processors that responded to the Commission's request, their share of reported APT production in 1990, their production locations, and the products they produce:

Firm	Share of production (percent)	Location	Product(s)
GE	***	Euclid, OH	Metal and carbide powders
GTE	***	Towanda, PA	Metal, carbide, and grade powders, wire, rod, cemented carbide, and fabricated bodies
Teledyne	***	Huntsville, AL	Metal, carbide, and grade powders, and fabricated bodies
U.S. Tungsten Corp.	***	Bishop, CA	APT
	100.0		

Other U.S. processors, their locations, and products produced are presented in the following tabulation:

Firm	Location	Product(s)
Buffalo Tungsten, Inc.	Depew, NY	Grade powders
Canada Tungsten	Ft. Madison, IA	Tungsten chemicals
Kennametal	Latrobe, PA Fallon, NV Henderson, NC	Metal, carbide, and grade powders, and fabricated bodies

[7] Affidavit of John J. Fedorchak, Products Marketing Manager, GTE Products Corp.

Salient statistics provided by U.S. producers in response to the Commission's questionnaire on their operations producing intermediate products are discussed below. The Commission requested separate information on APT, tungstic oxide, tungstic acid, and sodium tungstate from U.S. producers; however, responses were submitted only on APT and tungstic oxide. These data are presented in table D-1 for APT and table D-2 for tungstic oxide. Selected income-and-loss data on APT and tungstic oxide are presented in appendix G.

Toll production

* * * firms reported tolling arrangements involving the conversion of intermediate tungsten products. * * * has reportedly produced tungsten powder and tungsten carbide powder from APT for other firms for a conversion fee, while * * * has contracted another firm to produce APT from ore concentrates or scrap for a conversion fee. In addition, * * *, has produced tungsten carbide powder from APT for other firms under a toll agreement.

U.S. imports of intermediate products

Official U.S. import statistics for certain intermediate tungsten products from China are presented in tables D-3 and D-4. These data are presented in separate tables because of changes in import categories brought about by the implementation of the HTS in 1989.

Table D-1
Ammonium paratungstate: Salient industry indicators, 1988-90[1]

Item	1988	1989	1990
Capacity (MTW)[2]	***	***	***
Production (MTW)	8,067	6,938	6,986
Capacity utilization (percent)	***	***	***
End-of-period inventories (MTW)	***	***	***
Inventories as a share of total shipments (percent)	***	***	***
Company transfers:			
Quantity (MTW)	***	***	***
Value (1,000 dollars)	***	***	***
Domestic shipments:			
Quantity (MTW)	***	***	***
Value (1,000 dollars)	***	***	***
Export shipments:			
Quantity (MTW)	***	***	***
Value (1,000 dollars)	***	***	***
Total shipments:			
Quantity (MTW)	7,118	7,205	6,224
Value (1,000 dollars)	***	***	***
Production and related workers[2]	***	***	***
Hours worked by production and related workers (1,000 hours)[2]	***	***	***
Wages paid to production and related workers (1,000 dollars)[2]	***	***	***
Total compensation paid to production and related workers (1,000 dollars)[2]	***	***	***
Productivity (MTW/1,000 hours)	***	***	***
Unit labor costs (per MTW)	***	***	***

[1] * * * U.S. producers of APT, namely * * *, provided data in response to the Commission's request.
[2] Data were not reported by * * *.

Note: Ratios are calculated only in instances where both numerator and denominator are provided.

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

Table D-2
Tungstic oxide: Salient industry indicators, 1988-90[1]

Item	1988		1989		1990	
*	*	*	*	*	*	*

[1] Unless otherwise noted, * * * U.S. producers of tungstic oxide, namely * * *, provided data in response to the Commission's request.

Note: Ratios are calculated only in instances where both numerator and denominator are provided.

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

Table D-3
Intermediate tungsten products: U.S. imports from China, by products, 1980-88

(In MTW)

Year	Tungstic acid	Ammonium tungstate	Sodium tungstate	Tungsten carbide	Tungsten scrap
1980.....	0	10.5	0	0.5	0
1981.....	0	337.2	(1)	29.9	0.5
1982.....	0	426.9	6.9	28.3	7.8
1983.....	0	179.3	0.3	3.4	0
1984.....	196.7	720.5	0	4.5	18.4
1985.....	157.9	1,126.1	131.1	50.1	21.0
1986.....	161.5	959.0	129.1	30.7	14.7
1987.....	275.9	1,299.6	0	3.6	148.2
1988.....	89.6	266.9	207.3	28.4	562.6

[1] Less than 0.05 MTW.

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

Table D-4
Intermediate tungsten products: U.S. imports from China, by products, 1989-90

(In MTW)

Year	Tungstic oxide	Tungstates	Tungsten carbide	Tungsten powders	Tungsten scrap
1989.....	322.7	638.5	44.2	0	192.1
1990.....	341.2	535.2	26.3	4.7	99.2

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

APPENDIX E

TUNGSTEN MINES
1980-90

Presented in table E-1 is a listing of tungsten mines, by market-economy countries, and the status of each mine.

Table E-1
Tungsten mines and status, in 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	Operating
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	Operating
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 E-1--Continued
Tungsten mines and status, in 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 April 1985
La Parilla	Closed April 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. 1981
Strawberry	Closed Dec. 1986
Springer (Sutton)	Opened and closed 1982
Pine Creek	Closed 1986, reopened late 1987 on a reduced scale, closed mid-1990, scheduled to reopen late-1991
Andrew	Closed 1985, reopened 1989

[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: U.S. Bureau of Mines.

APPENDIX F

LETTER FROM CURTIS TUNGSTEN, INC.

PHILIP T. STAFFORD • Vice President–Industrial and Government Relations Director

P.O. BOX 182 • STERLING, VA • 22170 • [illegible] (703) 450-4837

February 21, 1991

U.S. International Trade Commission
500 E Street SW
Washington, DC 20277-2840

Attention: Mary Trimble, Room 615

Subject: Tungsten Ore Concentrates from the People's Republic of China (PRC), Investigation No. 731-TA-497

I am offering a possible solution to disagreements of those in support of and in opposition to the antidumping petition of U.S. Tungsten Corporation. You probably have already considered the suggestions which I am proposing.

First, you may need to know where I am coming from and why my suggestions would be of any value. I have been in the hard-rock and fuels mineral field for 41 years as a geologist and minerals specialist: Initially 8 years in the U.S. Geological Survey, 9 years with Standard Oil of New Jersey (now Exxon) in Libya and Australia, 4 years in own business ventures, 8 years with the Virginia Division of Mineral Resources, 8 years as the tungsten commodity specialist with the U.S.Bureau of Mines, and the last 4 years as a minerals consultant, primarily as a director and officer of Curtis Tungsten, Inc.

Curtis Tungsten, Inc. does support the U.S. Tungsten Corporation petition. However, we believe a thorough and unbiased study of the U.S. tungsten industry by an inter-governmental group involving yourselves, International Trade Administration (ITA), U.S.Bureau of Mines (USBM), U.S. Trade Representative office (USTR), and Defense Logistics Agency (DLA) should be made. Information from other agencies will undoubtedly be needed, such as Defense research and development.

Most likely such a study would result in the recommendation to extend the Orderly Marketing Agreement with the PRC to include all tungsten ore concentrates and intermediate products (ammonium paratungstate, ferrotungsten, tungstic acid, tungsten oxides, tungsten chemicals such as sodium tungstate, tungsten metal powder, tungsten carbide powder, and others). End-use products would not be included.

A viable U.S. tungsten mining industry should be allowed to grow so that the United States is not so import dependent on the PRC and other unstable countries for its military and essential industrial tungsten needs. For example, without tungsten our industrial capacity would decrease because of the unique heat- and wear-resistant capabilities of the element.

Among the many things that would have to be considered are the Defense Department's future needs and the extent to which depleted uranium is to be replaced by tungsten alloy (more or less 94% tungsten content) armor-piercing ammunition. Radiation-shielding, armor plating, and other military and defense needs should be obtained. The Defense Logistics Agency, which administers the National Defense Stockpile, regularly studies and evaluates the U.S. military and essential defense and civilian industrial needs.

The ITA, USTR, and yourselves with data from many sources could make an adequate evaluation. We need a viable tungsten mining and processing industry without bickering over our imports of various tungsten products. It is time for the U.S. industry to pull together with government help that the Chinese do not eventually rule us at least in this one relatively small industry.

Respectfully yours,

Philip J. Stafford

APPENDIX G

SELECTED INCOME-AND-LOSS DATA ON AMMONIUM PARATUNGSTATE (APT) AND TUNGSTIC OXIDE

Table G-1
Income-and-loss experience of U.S. producers[1] on their ammonium paratungstate and tungstic oxide operations, accounting years 1988-90

Item	1988		1989		1990	
*	*	*	*	*	*	*

[1] * * *.

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

Table G-2
Income-and-loss experience of U.S. producers on their ammonium paratungstate operations, by firms, accounting years 1988-90

Item	1988		1989		1990	
*	*	*	*	*	*	*

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

Table G-3
Income-and-loss experience on a per-MTW basis of U.S. producers on their APT operations, by firms, accounting years 1988-90

(Per MTW)

Item	1988		1989		1990	
*	*	*	*	*	*	*

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

Table G-4
Income-and-loss experience of * * * on its tungstic oxide operations, accounting years 1988-90

Item	1988		1989		1990	
*	*	*	*	*	*	*

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

APPENDIX H

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 as a result of imports of tungsten ore concentrates from the People's Republic of China?

* * * * * * *

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

* * * * * * *

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

* * * * * * *

APPENDIX I

APT PRICES

During the period of investigation, APT prices were on average approximately 53 percent higher than tungsten ore concentrate prices (table I-1). Until the mid-1980s, APT price quotes were based on the world market price for tungsten ore concentrates, generally the LMB midpoint average,[1] divided by a yield loss factor of 96 percent, plus conversion fees.[2] The LMB midpoint average is generally the average of LMB quotes in the month prior to the month of the quote. APT can be bought either on long-term contracts, on the spot market, or through short-term contracts. Conversion fees include the costs associated with processing tungsten ore concentrates into APT or other intermediate tungsten products and the seller's markup.[3]

The OMA on APT could constrain supply and therefore increase price. However, China has not supplied APT to the limits of the OMA.

---

[1] The LMB midpoint average is the weighted average midpoint price determined from the low and high price quotation range published biweekly in the London Metal Bulletin.

[2] A typical price formula would be: APT price in dollars per metric ton unit WO_3 = LMB/(0.96) + conversion fee.

[3] USITC, Ammonium Paratungstate and Tungstic Acid from the People's Republic of China, June 1987.

Table I-1
Average Metals Week tungsten ore concentrate and APT prices, by months, January 1988-December 1990

Period	Average ore concentrate	Average APT
	$ per MTU	
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

Source: Metals Week.