Beryllium Metal and High-Beryllium Alloys from Kazakhstan

Investigation No. 731-TA-746 (Preliminary)

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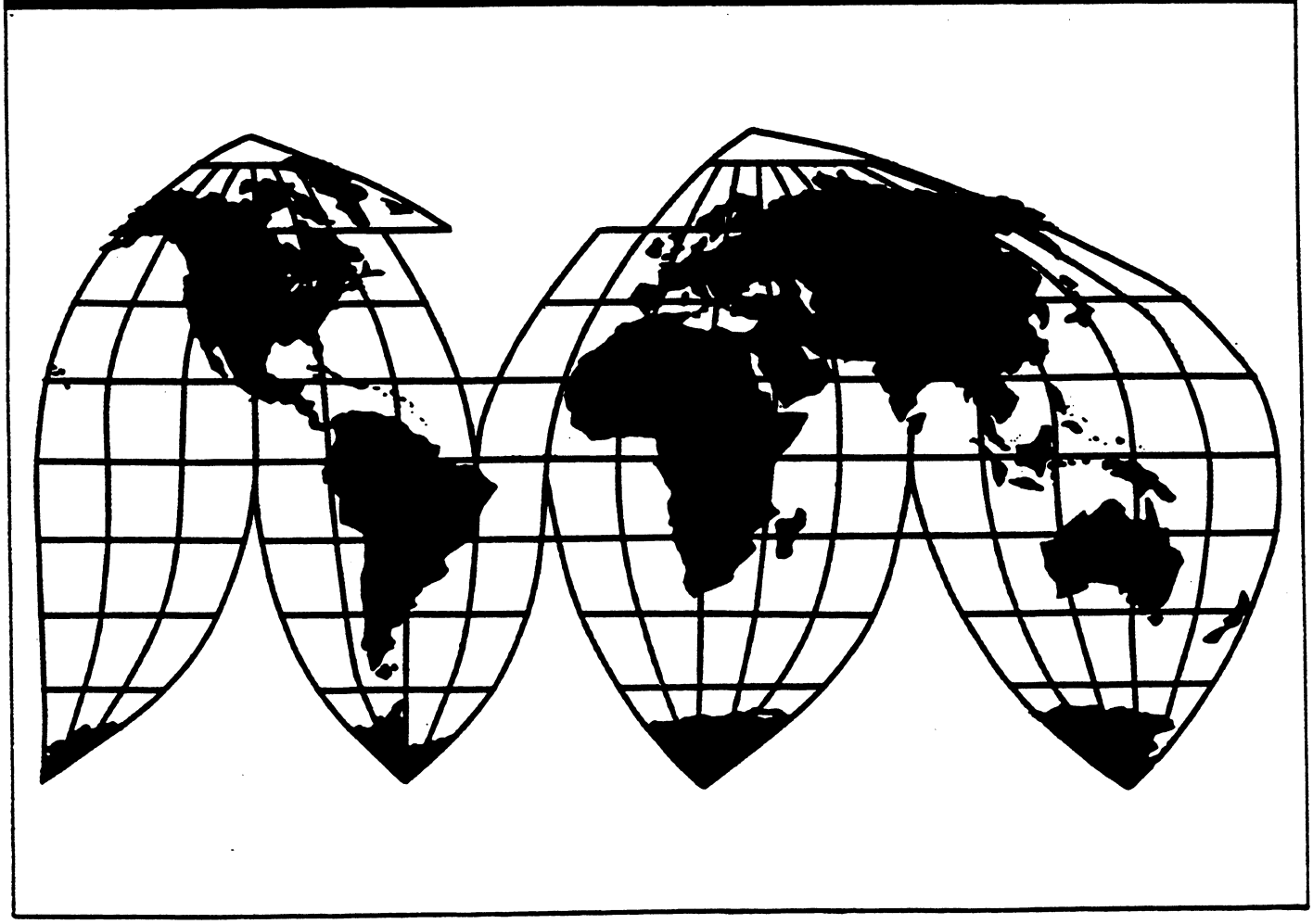
U.S. International Trade Commission



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Note.--Information that would reveal confidential operations of individual concerns may not be published and therefore has been deleted from this report.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-746 (Preliminary)

BERYLLIUM METAL AND HIGH-BERYLLIUM ALLOYS FROM KAZAKHSTAN

Determination

On the basis of the record[1] developed in the subject investigation, the Commission determines, pursuant to section 733(a) of the Tariff Act of 1930 (19 U.S.C. § 1673b(a)), that there is a reasonable indication that an industry in the United States is materially injured by reason of imports from Kazakhstan of beryllium metal and high-beryllium alloys,[2] that are alleged to be sold in the United States at less than fair value (LTFV).[3]

Background

On March 14, 1996, a petition was filed with the Commission and the Department of Commerce by Brush Wellman, Cleveland, OH, alleging that an industry in the United States is materially injured or threatened with material injury by reason of LTFV imports of beryllium metal and high-beryllium alloys from Kazakhstan. Accordingly, effective March 14, 1996, the Commission instituted antidumping investigation No. 731-TA-746 (Preliminary).

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 March 26, 1996 (61 FR 13213). The conference was held in Washington, DC, on April 3, 1996, and all persons who requested the opportunity were permitted to appear in person or by counsel.

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

[2] The subject products are beryllium metal and high-beryllium alloys with a beryllium content equal to or greater than 30 percent by weight, whether in ingot, billet, powder, block, lump, chunk, blank, or other semifinished form. These are intermediate or semifinished products that require further machining, casting and/or fabricating into sheet, extrusions, forgings or other shapes in order to meet the specifications of the end user. Beryllium metal and high-beryllium alloys within the scope of this investigation are classifiable under subheadings 8112.11.60, 8112.11.30, 7601.20.90, and elsewhere in the Harmonized Tariff Schedule of the United States (HTS). Although the HTS subheadings are provided for convenience and Customs purposes, the written description of the scope of this investigation is dispositive; e.g., subject cut-to-size blocks and drilled tubular blanks of beryllium metal may be provided for as wrought products in HTS subheading 8112.19.00.

[3] Commissioner Lynn M. Bragg finds that there is a reasonable indication that an industry in the United States is threatened with material injury by reason of imports from Kazakhstan of beryllium metal and high-beryllium alloys that are alleged to be sold in the United States at LTFV.

VIEWS OF THE COMMISSION

Based on the record in this preliminary investigation, we find that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of beryllium metal and high-beryllium alloys from Kazakhstan that are alleged to be sold in the United States at less than fair value ("LTFV").[1] [2]

I. THE LEGAL STANDARD FOR PRELIMINARY DETERMINATIONS

The Commission must determine, based upon the information available at the time of the preliminary determination, whether there is a reasonable indication that a domestic industry is materially injured, or threatened with material injury, by reason of the allegedly LTFV imports.[3] In applying this standard, the Commission weighs the evidence before it and determines whether "(1) the record as a whole contains clear and convincing evidence that there is no material injury or threat of such injury; and (2) no likelihood exists that contrary evidence will arise in a final investigation."[4]

II. DOMESTIC LIKE PRODUCT AND INDUSTRY

A. *Background and Product Description*

To determine whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of the subject imports, the Commission first defines the "domestic like product" and the "industry."[5] Section 771(4)(A) of the Act defines the relevant industry as the "producers as a [w]hole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[6] In turn, the Act defines "domestic like product" as "a product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation. . . ."[7]

Our decision regarding the appropriate domestic like product(s) in an investigation is a factual determination, and we apply the statutory standard of "like" or "most similar in characteristics and uses" on a case-by-case basis.[8] No single factor is dispositive, and the Commission may consider other factors it deems

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[1] 19 U.S.C. § 1671 *et seq.*, as amended. Whether there is a reasonable indication that the establishment of an industry in the United States is materially retarded is not an issue in these investigations.

[2] Commissioner Bragg finds that there is a reasonable indication that an industry in the United States is threatened with material injury by reason of subject imports. *See* Commissioner Bragg's Additional Views, *infra*.

[3] 19 U.S.C. § 1673b(a); *see also American Lamb Co. v. United States*, 785 F.2d 994 (Fed. Cir. 1986); *Calabrian Corp. v. United States*, 794 F. Supp. 377, 381 (Ct. Int'l Trade 1992).

[4] *American Lamb*, 785 F.2d at 1001; *see also Texas Crushed Stone Co. v. United States*, 35 F.3d 1535, 1543 (Fed. Cir. 1994).

[5] 19 U.S.C. § 1677(4)(A).

[6] 19 U.S.C. § 1677(4)(A).

[7] 19 U.S.C. § 1677(10).

[8] *See, e.g., Nippon Steel Corp. v. United States*, 19 CIT __, Slip Op. 95-57 at 11 (Apr. 3. 1995). In analyzing domestic like product issues, the Commission generally considers a number of factors including: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) customer and producer perceptions of

(continued...)

relevant based on the facts of a particular investigation.[9] The Commission looks for clear dividing lines among possible like products, and disregards minor variations.[10]

In its notice of initiation, the Department of Commerce has defined the imported article subject to this investigation as:

> beryllium metal and high beryllium alloys with a beryllium content equal to or greater than 30 percent by weight, whether in ingot, billet, powder, block, lump, chunk, blank, or other semifinished form. These are intermediate or semifinished products that require further machining, casting and/or fabricating into sheet, extrusions, forgings or other shapes in order to meet the specifications of the end user.[11]

In defining what domestic product is "like" the imported article, we first consider the scope of imports subject to investigation as defined by Commerce.[12] Both beryllium metal and high-beryllium alloys are produced domestically and come in all of the forms identified in the scope.

Petitioner, Brush Wellman, argues that the like product should comprise the family of high-beryllium products (30 percent by weight and above), which includes beryllium metal and high-beryllium alloys (which are commonly made with aluminum and can include beryllium/beryllium oxide composite, *i.e.*, "E-material").[13]

Respondents, the Kazakh State Atomic Energy & Industrial Corp. ("Kazakh AEIC") and Ulba Metallurgical Kombinat ("Ulba"), argue that beryllium metal and high-beryllium alloys should be separate

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(...continued)
the products; (5) common manufacturing facilities, production processes and production employees; and, where appropriate, (6) price. *See Timken Co. v. United States*, 20 CIT __, Slip Op. 96-8 at 9 (Jan. 3, 1996).

[9] *See, e.g.*, S. Rep. No. 249, 96th Cong., 1st Sess. 90-91 (1979).

[10] *Torrington Co. v. United States*, 747 F. Supp. 744, 748-749 (Ct. Int'l Trade 1990), aff'd, 938 F.2d 1278 (Fed. Cir. 1991).

[11] 61 Fed. Reg. 15770, 15771 (Apr. 9, 1996). Beryllium and high beryllium alloys within the scope of the investigation are classified under HTSUS 8112.11.6000, 8112.11.3000, 7601.20.9075, and 7601.20.9090. *See id.*

[12] In the production of beryllium metal and high-beryllium alloys, as well as in the machining and fabricating of downstream products containing beryllium, scrap is generated. Petitioner, Brush Wellman, recaptures the scrap it creates and often purchases scrap from its customers to add as an input in the production of beryllium and high-beryllium products. Tr. at 29, 30, 49, 60-63, 69-71. Nuclear Metals, Inc. (NMI), a purchaser of imports that produces downstream, high-beryllium alloy precision or investment cast products, also uses scrap in its production. *See* CR at I-8, I-13-I-14, PR at I-5, I-8; Conference Transcript ("Tr.") at 29, 30, 49, 50-51, 60-63, 69-71, 128-132, 143, 161-162.

No party has advocated inclusion of scrap as a potential like product and petitioner indicated that scrap should not be considered part of the like product. *See* Petitioner's Postconference Brief at 11-12; Respondents' Postconference Brief at 4-5; Tr. at 50-51, 104, 105, 176. We do not include scrap within the like product. In comparison to beryllium metal and high-beryllium alloy, scrap (1) has different physical characteristics in that it is in shaved, chipped, or other irregular form because it is a waste product in the manufacture of beryllium products; (2) has different end uses and is not interchangeable in that it is used as an input or remelt to producing beryllium metal or high-beryllium alloys; (3) is created by different employees, facilities, and processes when it is a byproduct generated in machine shops and fabricators; (4) is perceived by customers and producers as different, and (5) is substantially lower in price. CR at I-10, I-13-I-14, PR at I-6, I-8; Tr. at 30, 49, 70-71, 104, 105, 130-132, and 176.

[13] *See* Petitioner's Postconference Brief at 2-12, Exh. 3

domestic like products.[14] Nuclear Metals, Inc. (NMI), which opposes the petition, argues that it should be part of the domestic high-beryllium alloy industry.[15] NMI produces beryllium-aluminum alloy "precision casts" (also called "investment casts") and, at one stage in the process of producing these products, NMI creates a beryllium-aluminum alloy in molten form. NMI, thus, could be considered part of the domestic industry only if we define the domestic like product definition to include high-beryllium alloy precision casts or beryllium-aluminum alloy in a (*i.e.*, molten) form different from those listed. Respondents, the Kazakh AEIC, Ulba, and NMI, assert, in the alternative, that if we define the like product to include high-beryllium alloys, we should do so without regard to the alloys' shape or form or whether it requires further processing, and, thus, we should consider NMI a U.S. producer.[16]

B. *Application of the Like Product Analysis*

1. Traditional Six-Factor Like Product Analysis

Beryllium metal and high-beryllium alloys, which include high-beryllium-aluminum alloys and beryllium/beryllium oxide composites, have similar physical characteristics. Both come in the same forms (*i.e.*, ingot, lump, billet, etc.), are extremely lightweight, have a high strength-to-weight ratio, a high resistance to deformity (*i.e.*, stiffness), a high heat-absorbing capacity, excellent heat conduction, and the ability to maintain desirable properties at high operating temperatures.[17] We note that high beryllium-alloys have these properties to a lesser degree and, unlike beryllium metal, cannot be used in nuclear applications and are not transparent to X-rays.[18] For purposes of this preliminary determination, however, we find the similarities in physical characteristics outweigh the differences.[19]

While the evidence concerning the interchangeability of the products and customer and producer perceptions of the products is inconclusive,[20] other evidence shows that both products share a generally similar end use in defense and aerospace applications, and share the same end use in at least two specific

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[14] *See* Respondents' the Kazakh State AEIC & Ulba Postconference Brief at 4-6, Exh. 1 at 1-6 (hereinafter "Respondents' Postconference Brief").

[15] *See* NMI's Postconference Submission at 1-3; Tr. at 87-88, 94-95, 145.

[16] *See* Respondents' Postconference Submission Exh.1 at 5-6.

[17] CR at I-3-I-6, I-11-I-12, PR at I-3-I-5, I-7-I-8.

[18] CR at I-3-I-4, PR at I-3.

[19] Moreover, the physical composition of the products are similar in terms of beryllium content, low proportion of beryllium oxide, and trace impurities, although the exact proportions of these materials will differ slightly, depending on the amount of the alloying material combined with beryllium in the high-beryllium alloy. CR at I-3-I-6, PR at I-3-I-5.

[20] CR at I-11-I-12, I-15-I-16, PR at I-7-I-8, I-9-I-10. Petitioner reported that there is an overlap in certain structural and thermal (*e.g.*, electronic packaging) applications where the products are interchangeable. CR at I-11, PR at I-8. Petitioner indicates that beryllium metal and high-beryllium alloys, including beryllium/beryllium oxide composites (E-materials), can all be used as a heat sink (where it is necessary for a metal product to dissipate heat without changing form), and that both high-beryllium alloys and pure beryllium metal can be used in structural applications and electronic packaging, as sheet, as mirrors, and in applications where the metal is extruded or cast/co-melted to form a down-stream product. *See* Petitioner's Postconference Brief at 4,6, & Exh. 3. On the other hand, one purchaser reported that beryllium metal and high-beryllium alloys are not interchangeable because beryllium metal has substantial performance advantages in guidance components, optics, and nuclear weapons applications. CR at I-11, PR at I-7. Other purchasers reported that the two products may be used interchangeably in specific applications, that the products are interchangeable for making low-beryllium alloys, or that they are actively evaluating beryllium-aluminum alloys to use in applications that had used beryllium metal in the past. *Id.*

applications, in bicycle parts and golf clubs, though in small quantities.[21] Petitioner also reports that the products have overlapping uses in heat sinks, structural applications, and electronic packaging.[22]

The channels of distribution (*i.e.*, processors and fabricators) are currently the same for beryllium metal and high-beryllium alloys.[23] The early stages of production are identical but there are differences in the later stages.[24] The later stages of production that are not shared use similar processing techniques. Additionally, the facilities, equipment, and employees used to produce both products are the same.[25] Although the price of beryllium metal is much higher than that of high-beryllium alloys, both have a much higher price than other competing metals and alloys. Thus, their applications are limited to those where competing metals or alloys cannot be used.[26]

Based on the traditional six-factor like product analysis, for purposes of this preliminary investigation, we find one like product: all beryllium metal and high-beryllium alloys containing over 30 percent beryllium by weight (including beryllium-beryllium oxide composites) whether in ingot, billet, powder, block, lump, chunk, blank, or other semifinished form.[27] Excluded from this are more advanced forms such as castings. We base this definition on the similarities in physical characteristics and forms of beryllium metal and high-beryllium alloys, an apparent overlap in general end uses and limited overlap in specific end uses, as well as the similarity in production processes, facilities, employees, and channels of distribution.

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[21] CR at I-3-I-6, I-11-I-12, I-15-I-16, PR at I-3-I-5, I-7-I-8, I-9-I-10. The above facts tend to distinguish this investigation from *Magnesium from China, Russia, and Ukraine*, Inv. Nos. 731-TA-696-698 (Final), USITC Pub. 2885 at 10-12 (May 1995).

[22] CR at I-4-I-5, I-7-I-10, I-11, PR at I-3-I-5, I-7; Petitioner's Postconference Brief at 4, 6, Exh. 3.

[23] CR at I-14-I-15, PR at I-9.

[24] CR at I-7-I-10, PR at I-5-I-6.

[25] Petitioner's Postconference Brief at 10; Tr. at 28-31. This might not be true should we, in any final investigation, decide that the forms in which a semifinished high-beryllium alloy is produced is not decisive in defining whether it is a like product.

[26] CR at I-3, I-16, PR at I-3, I-10; Tr. at 95, 97, 99, 115, 119, 136, 158.

[27] Chairman Watson and Commissioner Crawford note that the Commission does not include in the like product the molten form of the beryllium-aluminum alloy that is created during NMI's processes in producing precision or investment castings. No party has argued that the molten form be included in the like product as a form of high-beryllium alloy. Although there are obvious differences between beryllium-aluminum alloy in molten form and beryllium-aluminum alloy in ingot, billet, blank, or other solid form (CR at I-3-I-10, PR at I-3-I-6; Tr. at 87, 89, 90, 95-96, 118), it appears that NMI could produce the like product simply by pouring this beryllium-aluminum alloy into an ingot, billet, blank, or other solid form. Moreover, we are simultaneously deciding *Polyvinyl Alcohol from China, Japan, and Taiwan*, Inv. Nos. 731-TA-726, 727, and 729 (Final), in which we have decided to include upstream "swollen" PVA (an intermediate form of product) which is used to produce PVB (a downstream product outside the scope of that investigation). We welcome the parties' arguments on whether to apply the approach taken in *Polyvinyl Alcohol* and whether to include in the like product the molten form of the product.

2. Semifinished/Finished Like Product Analysis[28]

Beryllium metal in ingot/lump and powder form[29] is used for further processing into high-beryllium alloys, although this is not its primary end use.[30] The physical characteristics and functions of the upstream beryllium metal ingots/lump and powder and downstream high-beryllium alloys are similar in that they display the unique metallurgical qualities imparted by beryllium, as discussed above. They differ in the amount of contained beryllium oxide, impurities, alloying metal in high-beryllium alloys, and in the further processing needed to produce the high-beryllium alloys.[31] Although there are differences in the extent and cost of processing and in the value of the upstream and downstream articles, it is difficult to quantify such differences due to the way in which Brush Wellman has reported its financial data.[32] We note that Brush Wellman describes the process of transforming beryllium metal ingot/lump and powder to high-beryllium alloys as a continuum with no step in the process involving greater input or difficulty than any other and, in some cases, involving similar processing techniques.[33] Based on this information, we find that a semifinished/finished like product analysis supports finding beryllium metal and high-beryllium alloys to comprise one like product.

Beryllium-aluminum alloy precision casts (also called "investment casts") are a further processed form of beryllium product that is ready for end use and produced by NMI by co-melting beryllium and aluminum.[34] Brush Wellman also produces similar further-processed, downstream investment cast

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[28] Although no party in this preliminary investigation used the Commission's semifinished/finished product analytic framework when addressing the issue of like product, that method is appropriate if one views the initial product from which high-beryllium alloys are formed as "beryllium metal" ingots/lumps and powder, and, thus, considers high-beryllium alloys as downstream products of an early form of a beryllium metal in a continuum production process. *Accord Stainless Steel Bar from Brazil, India, Japan, and Spain*, Inv. Nos. 731-TA-678, 679, 681, & 682 (Final), USITC Pub. 2856 I-6-I-8 (Feb. 1995). Moreover, in addressing whether high-beryllium alloy precision castings should be included in the like product definition the semifinished/finished approach is appropriate because precision castings are downstream products produced from input beryllium metal and from the casting of high-beryllium alloys. We have considered both the traditional six-factor and semifinished/finished approach, and our like product definition is the same under both approaches. In any final investigation, we will seek the parties' comments on the applicability of the semifinished/finished analytic framework.

[29] A question arises whether beryllium metal in residual block form is also used in the production of high-beryllium alloys and whether it should be included as an upstream product in the semifinished/finished like product analysis. *See* Figure 1, CR at I-8, PR at I-5, Table III-1, n.3, CR at III-3, PR at III-2, Table III-2, CR at III-5, PR at III-2. We will explore this issue more fully in any final investigation.

[30] CR at I-7-I-10, Figure I-1, PR at I-5-I-6, Figure I-1. Ingot/lump and powder is dedicated in greater amounts either to further processing into another semifinished form of beryllium metal and sold on the open market, or to being sold on the open market in its ingot/lump and powder form to processors and fabricators. In either case, many of these purchasers also appear to be the purchasers of the further processed high-beryllium alloys. CR at I-7-I-10, I-14-I-15, PR at I-5-I-6, I-9, I-10 & Table E-1, CR at E-3, PR at E-3; Tr. at 19, 34-35, 60; Petitioner's Postconference Brief at 4-7; Petition at 5-8. Indeed, respondents testified that there may be only one purchaser of high-beryllium alloys in ingot, billet, or blank form. Tr. at 146-147.

[31] CR at I-3-I-10, PR at I-3-I-6.

[32] CR at VI-5, PR at VI-2, Tables C-1-C-3, CR at C-3-C-8, PR at C-3 (providing petitioner's costs separately for beryllium metal and high-beryllium alloys but including data on ***).

[33] Tr. at 20, 26, 28-33, 57-58, 67-69; Petitioner's Postconference Brief at 4-7; Petition at 5-8, 32.

[34] NMI has patented the beryllium-aluminum alloys which form its cast products one of which is called "Beralcast." Tr. at 85-96, 156-157.

products.[35] Such precision casts are not included in the scope of subject imports defined by Commerce. NMI's and Brush Wellman's investment cast operations, thus, could be considered part of the domestic industry only if we find these advanced cast forms of the beryllium and alloy products to be "like" imported beryllium metals and alloys in semifinished form.

The Commission generally does not include downstream articles in the domestic like product or use a semifinished/finished analysis or vertical product line analysis when the downstream imported product (*i.e.*, semifinished beryllium metal or high-beryllium alloys) corresponding to the downstream domestic product is not within the scope of investigation.[36] We see no reason to depart from this practice in this preliminary investigation to broaden our definition of the domestic like product to include finished precision cast high-beryllium alloys.[37]

Based on the foregoing, we find one domestic like product as proposed by petitioner: all beryllium metal and high-beryllium alloys containing over 30 percent beryllium by weight (including beryllium-beryllium oxide composites) whether in ingot, billet, powder, block, lump, chunk, blank, or other semifinished form. Excluded from this are more advanced forms such as castings.

C. *Domestic Industry*

In making its determination, the Commission is directed to consider the effect of the imports on the industry, defined as "the producers as a [w]hole of a domestic like product..."[38] Based on our definition of the domestic like product, the domestic industry in this investigation consists of Brush Wellman, the sole domestic producer of beryllium metal and high-beryllium alloys as defined above.[39]

III. CONDITION OF THE DOMESTIC INDUSTRY

In assessing whether there is a reasonable indication that the domestic industry is materially injured or threatened with material injury by reason of allegedly LTFV imports, we consider all relevant economic

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[35] Tr. at 14, 54-55.

[36] *See Fresh Cut Roses from Colombia and Ecuador*, Inv. Nos. 731-TA-684 and 685 (Final), USITC Pub. 2862 at I-7, n.22 (March 1995); *Manganese Metal from the People's Republic of China*, Inv. No. 731-TA-724 (Preliminary), USITC Pub. 2844 at 9 (December 1994); *Fresh Garlic from the People's Republic of China*, Inv. No. 731-TA-683 (Final), USITC Pub. 2825 at I-14 and n.65 (Nov. 1994); *Tungsten Ore Concentrates from the People's Republic of China*, Inv. No. 731-TA-497 (Preliminary), USITC Pub. 2367 at 9 (March 1991).

The rationale for not applying a vertical like product analysis to downstream products beyond ones "like" those subject to investigation is to avoid including within the definition of the domestic industry producers of a downstream product whose interest, as consumers, are contrary to the interests of the domestic producers of the subject merchandise. Including their data could skew the domestic industry data. *Tungsten Ore Concentrates*, USITC Pub. 2367 at 9-10.

[37] In any final investigation, however, we will seek the parties' input on whether or not to include downstream precision castings, or the form NMI's beryllium takes immediately before it is cast, in the like product.

[38] 19 U.S.C. § 1677(4)(A). In doing so, the Commission generally includes all domestic production, including tolling operations and captively consumed product, within the domestic industry. See United States Steel Group, et al. v. United States, 873 F. Supp. at (673) at 16 (Ct. Int'l Trade 1994), appeal docketed, No. 95-1245 (Fed. Cir. March 21, 1995).

[39] Chairman Watson notes that, if high-beryllium alloy were to be considered a separate like product, Commission precedent might well dictate exclusion of NMI as a related party. He urges the parties in any final investigation to address this issue.

factors that bear on the state of the industry in the United States.[40] These factors include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, profits, cash flow, return on investment, ability to raise capital, and research and development. No single factor is dispositive and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[41]

There are several conditions of competition pertinent to our analysis of the domestic beryllium metal and high-beryllium alloys industry. First, Brush Wellman is the sole domestic producer of the like product. Its ability to supply the open market is limited by the fact that during 1993-1995, it internally transferred *** percent of its production of beryllium metal and high-beryllium alloys for the production of downstream articles, which in this case include further finished high-beryllium products.[42]

Second, sales of beryllium metal and high-beryllium alloys in 1995 were at relatively low levels in the United States. According to petitioner, demand, even on a global basis, will not support a large number of suppliers, presumably because of the capital intensive nature of the industry and the production, mining/extraction processes, and accompanying costs which are required.[43]

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[40] 19 U.S.C. § 1677(7)(C)(iii).

[41] 19 U.S.C. § 1677(7)(C)(iii).

[42] Table E-1, CR at E-3, PR at E-3; Tr. at 12. We considered the captive production provision of the statute, but determine that its requirements are not satisfied.

19 U.S.C. § 1677(7)(C)(iv) sets forth the conditions under which the Commission shall "focus primarily on the merchant market for the domestic like product" in examining market share and the domestic industry's financial condition. As a threshold matter, the domestic producer must "internally transfer significant production of the domestic like product for the production of a downstream article and sell significant production of the domestic like product in the merchant market." Additionally, the Commission must find that:

> (I) the domestic like product produced that is internally transferred for processing into that downstream article does not enter the merchant market for the domestic like product,
>
> (II) the domestic like product is the predominant material input in the production of that downstream article, and
>
> (III) the production of the domestic like product sold in the merchant market is not generally used in the production of that downstream article . . . .

19 U.S.C. § 1677(7)(C)(iv).

A significant portion of the domestic like product, whether captively consumed or sold in the merchant market, is used in the manufacture of the same downstream products. Tables E-1 and E-2, CR at E-3-E-10, PR at E-3. Thus, factor (III) of the statute is not met and thus the provision is not applicable. However, nothing in the statute or the legislative history of the URAA precludes the Commission from considering as a condition of competition that a significant portion of domestic production is captively consumed, and that this may affect our assessment of whether the industry is materially injured by subject imports.

[43] CR at III-1-III-2, PR at III-1; Tr. at 12, 13, 170. In any final investigation, we will explore more fully the uses for which the subject imports may be sold in the United States. In addition, with respect to the likelihood of substantially increased imports of the subject merchandise into the United States, we will explore more fully the world-wide consumption and production of beryllium, the world-wide level of inventories of Kazakh material, and the potential for the Kazakh manufacturer to restart production or begin production of high-beryllium alloys.

Third, since the end of the Cold War, U.S. demand for, and sales of, the like product for defense-industry applications have declined significantly.[44] [45] In 1994, the U.S. Department of Defense ceased purchasing beryllium metal for the National Defense Stockpile. Demand for, and sales of, beryllium metal and high-beryllium alloys in various other defense-related applications also declined significantly.[46]

Fourth, while the domestic industry produces and sells both beryllium metal and high-beryllium alloys, all subject imports are of beryllium metal.

Finally, the domestically-produced products have "pedigree," which refers to the accompanying documentation of a product attesting to its quality. The documentation includes a complete record of the material, consolidation pressure, and temperature, and any other information that affects the metal's properties.[47] The domestically-produced products also have been "qualified" for use by most defense/aerospace end users for their applications. Many defense/aerospace users will not purchase products containing beryllium unless the beryllium used and the vendor providing the product are pre-qualified.[48] It appears that the subject imports lack "pedigree" and often are not "qualified."[49] Most of the product supplied by the domestic industry is made to order according to a defense/aerospace customer's specifications. By contrast, subject imports, when they were produced in Kazakhstan, were intended for multiple end users. As such, when purchased in the United States, these imports were often considered "scrap" acquired from stockpiles in Kazakhstan.[50] Thus, there are limited end uses to which both domestic products and subject imports may be sold, particularly for defense-related applications where end users require "pedigree," "qualification," or their own specifications.[51]

The domestic industry consists of a single producer and therefore much of the data are confidential. Thus, our discussion in the public version of this opinion is necessarily general. The quantity and value of apparent U.S. consumption of beryllium metal and high-beryllium alloys (including internal transfers) decreased substantially from 1993 to 1994, reflecting the cessation of purchases for the National Defense Stockpile (NDS) and declines in defense industry demand. Apparent U.S. consumption increased in 1995,

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[44] CR at II-1, PR at II-1.

[45] Commissioner Crawford notes that technological advancements in the production processes of downstream products that use beryllium metal likely have contributed significantly to a decline in the demand for petitioner's pedigreed product. In particular, she notes that NMI has developed a patented process for making downstream products that does not require pedigreed beryllium metal. In the event of any final investigation, she requests the parties to address the significance of such technological advancements on the demand for the domestic product and the determination of material injury by reason of subject imports.

[46] CR at I-14-I-15, II-1, PR at I-9, II-1; Tr. at 13.

[47] CR at I-11--*12*, I-15, PR at I-7, I-9; *see also* Petitioner's Postconference Brief at 7-9, 12; Tr. at 65-66, 85, 105, 106, 139, 149, 153-154.

[48] CR at I-11-I-12, I-15, II-3 n.3, PR at I-7, I-9-I-10, II-2 n.3.

[49] Id.

[50] See CR at I-11-I-12, IV-1 & n.7, PR at I-7, IV-1 & n.1 (Spindrift's imports of "scrap" and the issue of pedigree).

[51] CR at I-11-I-12, I-15, PR at I-7, I-9-I-10.

but remained below the 1993 level.[52] The U.S. producer's share of consumption, by quantity and value, declined over the period of investigation with the sharper declines occurring from 1994 to 1995.[53]

The domestic industry's capacity to produce beryllium metal and high-beryllium alloys remained constant over the period of investigation.[54] The industry's production volume declined from 1993 to 1994, reflecting the decline in U.S. consumption. The industry's production volume further declined in 1995, but not by the same amount as the 1993-1994 decline.[55] Capacity utilization in the domestic industry was low and fell continuously over the period of investigation.[56]

The domestic industry's total U.S. shipments (including internal transfers) of beryllium metal and high-beryllium alloys decreased substantially from 1993 to 1994, again reflecting the cessation of NDS and defense industry purchases. Total U.S. shipments increased in 1995, but not to their 1993 level. Between 1993 and 1995, total U.S. shipments declined at a greater rate than domestic consumption.[57] The total value of the domestic industry's U.S. shipments decreased throughout the period of investigation, with most of the decline occurring during 1993-1994.[58] The domestic industry's share of the total market for beryllium metal and high-beryllium alloys by value also declined during the period, but by less than the decline in market share by quantity.[59] Because Brush Wellman primarily produces the like product to specific customer specifications, end-of-period inventories were low, fluctuating over the period of investigation.[60] Inventories as a percentage of total shipments also were low and fluctuated over the period of investigation.[61]

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[52] Apparent U.S. consumption (including internal transfers) by quantity decreased *** percent from 1993 to 1994, falling from *** pounds to *** pounds. In 1995, apparent U.S. consumption increased *** percent or to *** pounds. Table D-2, CR at D-4, PR at D-3. The value of apparent U.S. consumption (including internal transfers) decreased *** percent from 1993 to 1994, or from *** to ***, then increased ***, or to ***, in 1995. *Id.*

[53] Table D-2, CR at D-4, PR at D-3. The U.S. producer's market share by quantity decreased from *** percent in 1993 to *** percent in 1994, then fell to *** percent in 1995. The U.S. producer's market share by value decreased from *** percent in 1993 to *** percent in 1994, then fell to *** percent in 1995. *Id.*

[54] Table III-1, CR at III-3, PR at III-2. Brush Wellman's capacity to produce remained at *** pounds each year during the period of investigation.

[55] Table III-1, CR at III-3, PR at III-2. Production of beryllium metal was *** pounds in 1993, *** pounds in 1994, and *** pounds in 1995. Production of high-beryllium alloys was *** pounds in 1993, *** pounds in 1994, and *** pounds in 1995.

[56] Table III-1, CR at III-3, PR at III-2. Capacity utilization for beryllium metal was *** percent in 1993, *** percent in 1994, and *** percent in 1995. Capacity utilization for high-beryllium alloys was *** percent in 1993, *** percent in 1994, and *** percent in 1995.

[57] Tables III-2, D-2, CR at III-5, D-4, PR at III-2, D-3. Domestic producer's total U.S. shipments by quantity decreased from *** pounds in 1993 to *** pounds in 1994, then increased to *** pounds in 1995.

[58] Tables III-2, CR at III-5, PR at III-2. The value of the domestic producer's total U.S. shipments decreased from roughly *** in 1993 to almost *** in 1994, and decreased further to *** in 1995.

[59] Tables D-2, CR at D-4, PR at D-3. The domestic industry's share of total apparent consumption by value was *** percent in 1993, *** percent in 1994, and *** percent in 1995. *Id.*

[60] CR at III-4, PR at III-2. Inventories were *** pounds in 1993, *** pounds in 1994, and *** pounds in 1995. Table III-3, CR at III-7, PR at III-2. Brush Wellman, however, does maintain ***. CR at III-4, PR at III-2. *** were *** pounds in 1993, *** pounds in 1994, and *** pounds in 1995. Table III-3, CR at III-7, PR at III-2. We intend to explore in any final investigation whether these ***.

[61] Table III-3, CR at III-7, PR at III-2. Inventories as a percentage of total shipments were *** percent in 1993, *** percent in 1994, and *** percent in 1995. *** as a percentage of total shipments were *** percent in 1993, *** percent in 1994, and *** percent in 1995. *Id.*

The average number of production and related workers in the domestic industry fell from 1993 to 1994 and by a lesser amount from 1994 to 1995. Hours worked and wages paid followed a similar pattern, falling from 1993 to 1994, and by a lesser amount from 1994 to 1995. While total wages paid to production and related workers fell over the period of investigation, hourly wages rose slightly. Productivity fell from 1993 to 1994 and from 1994 to 1995. Over the period of investigation, unit labor costs for the beryllium metal consistently rose, whereas they consistently declined for high-beryllium alloys.[62]

Given the declines in shipments, net sales value[63] declined from 1993 to 1994, and again in 1995 but by a smaller amount.[64] The domestic industry's gross profits *** over the period of investigation, as costs of goods sold (COGs) *** than the value of net sales. Unit COGs *** as did COGs as a percentage of net sales.[65] Operating income also *** as selling, general, and administrative expenses (SG&A) ***, both in absolute terms and as a ratio to net sales.[66]

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[62] Table III-4, CR at III-9, PR at III-2. The number of production and related workers (PRWs) producing the domestic like product fell from *** in 1993 to *** in 1994 and to *** in 1995. The hours worked by PRWs fell from *** hours in 1993 to *** hours in 1994 and to *** hours in 1995. While total wages paid to PRWs fell from *** in 1993 to roughly *** in 1994 and 1995, hourly wages rose from *** in 1993 to *** in 1994 and to *** in 1995. Productivity of beryllium metal operations fell from *** in 1993 to *** in 1994 and to *** in 1995. Productivity of high-beryllium alloys rose from *** in 1993 to *** in 1994 and *** in 1995. Unit labor costs for beryllium metal rose from *** in 1993 to *** in 1994 and to *** in 1995, whereas unit labor costs for high-beryllium alloys fell from *** in 1993 to *** in 1994 and to *** in 1995.

[63] The domestic industry reported financial data for both beryllium metal and high-beryllium alloys that include ***. We have considered only data reported by the industry separately for beryllium metal as being more representative of operations producing the domestic like product. *E.g.*, Table VI-3, CR at VI-6, PR at VI-2; *compare General Motors Corp. v. United States*, 827 F. Supp. 774, 780 (Ct. Int'l Trade 1993). In any final investigation, we will seek from the domestic industry financial data that provide segregated data for the production of beryllium metal and high-beryllium alloys, including net sales quantity and value, which do not include ***.

[64] Table VI-1, CR at VI-2, PR at VI-1. Net sales quantity fell *** percent from their level of *** pounds in 1993 to *** pounds in 1994, and then increased *** percent, or to *** pounds, in 1995. The value of net sales declined *** percent from their level of almost *** in 1993 to about *** in 1994, and then declined another *** percent, or to ***, in 1995. *Id.*

[65] Table VI-1, CR at VI-2, PR at VI-1. Unit COGs *** in 1993 to *** in 1994, then *** in 1995. COGs as a percentage of net sales, *** percent in 1993 to *** percent in 1994 and to *** percent in 1995.

[66] Table VI-1, CR at VI-2, PR at VI-1. COGs *** in 1993 to *** in 1994 and to *** in 1995. However, because ***, gross profits *** in 1993 to *** in 1994 and to *** in 1995. Because SG&A expenses *** in 1993 to *** in 1994 and 1995, the operating income of *** in 1993 *** in 1994 and almost *** in 1995. SG&A expenses as a percentage of net sales *** percent in 1993 to *** percent in 1994 and to *** percent in 1995. As a result of these changes in gross profits as a percentage of net sales, the operating income margin *** percent in 1993 to *** percent in 1994 and *** percent in 1995.

The domestic industry's capital expenditures *** from 1993 to 1994, then *** in 1995 to levels below the 1993 level.[67] The industry's research and development expenses also *** from 1993 to 1994, then *** in 1995 to levels below their 1993 amount.[68] [69] [70]

IV. REASONABLE INDICATION OF MATERIAL INJURY BY REASON OF ALLEGEDLY LTFV IMPORTS

In preliminary antidumping investigations, the Commission determines whether there is a reasonable indication that an industry in the United States is materially injured by reason of the imports under investigation.[71] In making this determination, the Commission must consider the volume of imports, their effect on prices for the domestic like product, and their impact on domestic producers of the domestic like product, but only in the context of U.S. production operations.[72] Although the Commission may consider causes of injury to the industry other than the allegedly LTFV and subsidized imports,[73] it is not to weigh causes.[74] [75] [76] [77]

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[67] Table VI-4, CR at VI-7, PR at VI-2. Capital expenditures of the industry's operations producing the like product *** in 1993 to *** in 1994 and *** in 1995.

[68] Table VI-4, CR at VI-7, PR at VI-2. R&D expenses *** in 1993 to *** in 1994 and then *** in 1995.

[69] Based upon examination of the relevant statutory factors, Commissioner Rohr and Commissioner Newquist conclude that there is a reasonable indication that the domestic industry producing beryllium metal and high-beryllium is presently experiencing material injury.

[70] Commissioner Bragg does not join the remainder of these views, see her additional views *infra*.

[71] 19 U.S.C. § 1673b(a). The statute defines "material injury" as "harm which is not inconsequential, immaterial, or unimportant." 19 U.S.C. § 1677(7)(A).

[72] 19 U.S.C. § 1677(7)(B)(I). The Commission "may consider such other economic factors as are relevant to the determination," but shall "identify each [such] factor . . . and explain in full its relevance to the determination." 19 U.S.C. § 1677(7)(B).

[73] Alternative causes may include the following:

> [T]he volume and prices of imports sold at fair value, contraction in demand or changes in patterns of consumption, trade, restrictive practices of and competition between the foreign and domestic producers, developments in technology, and the export performance and productivity of the domestic industry.

S. Rep. No. 249, 96th Cong., 1st Sess. 74 (1979). Similar language is contained in the House Report. H.R. Rep. No. 317, 96th Cong., 1st Sess. 46-47 (1979).

[74] *See, e.g., Citrosuco Paulista, S.A. v. United States*, 704 F. Supp. 1075, 1101 (Ct. Int'l Trade 1988).

[75] For Chairman Watson's interpretation of the statutory requirement regarding causation, see *Certain Calcium Aluminate Cement and Cement Clinker from France*, Inv. No. 731-TA-645 (Final), USITC Pub. 2772 at I-14 n.68 (May 1994).

[76] Commissioner Rohr and Commissioner Newquist further note that the Commission need not determine that imports are "the principal, a substantial, or a significant cause of material injury." S. Rep. No. 249, at 57, 74. Rather, a finding that imports are a cause of material injury is sufficient. *See, e.g., Metallverken Nederland B.V. v. United States*, 728 F. Supp. 730, 741 (Ct. Int'l Trade 1989); *Citrosuco Paulista*, 704 F. Supp. at 1101.

[77] Commissioner Crawford notes that the statute requires that the Commission determine whether a domestic industry is "materially injured by reason of" the allegedly LTFV imports. She finds that the clear meaning of the statute is to require a determination of whether the domestic industry is materially injured *by reason of allegedly LTFV imports*, (continued...)

For the reasons discussed below, we find that there is a reasonable indication that the domestic industry producing beryllium metal and high-beryllium alloys is materially injured by reason of allegedly LTFV imports from Kazakhstan. Because the following discussion involves only one domestic producer, one foreign producer, and one major importer, much of the data are confidential. Thus, as noted above, our discussion in the public version of this opinion is necessarily general.

A. *Volume of the Subject Imports*

The quantity and value of subject imports increased each year during the period of investigation, with the most rapid increase in 1995. *** of the increased imports in 1995 were sold to Nuclear Metals Inc. (NMI), a domestic producer of high-beryllium alloy investment or precision castings.[78] The share of total U.S. consumption captured by subject imports also increased over the period, with the most significant and rapid increase in market share occurring in 1995.[79] In comparison, over the period of investigation, apparent consumption and the domestic industry's shipments and market share declined.[80] Given the rapid increases in

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(...continued)
not by reason of the allegedly LTFV imports *among other things*. Many, if not most, domestic industries are subject to injury from more than one economic factor. Of these factors, there may be more than one that independently are causing material injury to the domestic industry. It is assumed in the legislative history that the "ITC will consider information which indicates that harm is caused by factors other than less-than-fair-value imports." S. Rep. No. 249, 96th Cong., 1st Sess. 75 (1979). However, the legislative history makes it clear that the Commission is not to weigh or prioritize the factors that are independently causing material injury. *Id.* at 74; H.R. Rep. No. 317, 96th Cong., 1st Sess. 46-47 (1979). The Commission is not to determine if the allegedly LTFV imports are "the principal, a substantial or a significant cause of material injury." S. Rep. No. 96-249 at 74 (1979). Rather, it is to determine whether any injury "by reason of" the allegedly LTFV imports is material. That is, the Commission must determine if *the subject imports* are causing material injury to the domestic industry. "When determining the effect of imports on the domestic industry, the Commission must consider all relevant factors that can demonstrate if *unfairly traded imports are materially injuring the domestic industry*." S. Rep. No. 71, 100th Cong., 1st Sess. 116 (1987) (emphasis added).

[78] Table D-2, CR at D-4, PR at D-3. In this preliminary investigation, we considered import data presented in Table D-2 as that which closely reflects the volume of imports we believe to be subject to this investigation as defined by Commerce. Commerce staff has confirmed that what some importers and purchasers are referring to as "scrap" actually may be subject merchandise because it contains at least 30 percent beryllium and is in ingot, billet, block, lump, or other such semifinished form and included in the scope. Telephone conversation with Ellen Grebasch, Office of Antidumping Investigations, Import Administration, International Trade Administration, U.S. Department of Commerce, Apr. 23 & 24, 1996. We have included such imports in the data we considered. The parties agree that certain imports of scrap fall outside the scope of investigation when not in the specified form. *See* CR at IV-1 n.7, PR at IV-1 n.1; Petition at 8, 13-14; Tr. at 104, 105, 168, 176; Petitioner's Postconference Brief at 16; Respondents' Postconference Brief at 4-5. In any final investigation we expect that Commerce will have provided more guidance on which imports of "scrap" are subject to investigation.

All subject imports were of beryllium metal that lacked "pedigree," thereby accounting for the smaller increases in value than volume. Table D-2, CR at D-4, PR at D-3. The quantity of U.S. shipments of subject imports increased from *** pounds in 1993 to *** pounds in 1994 and shot up to *** pounds in 1995. These imports represented values of *** in 1993 and 1994 and *** in 1995. *Id.*

[79] The share of the quantity of total U.S. consumption of beryllium metal and high-beryllium alloys held by subject imports increased from *** percent in 1993 to *** percent in 1994 and rose to *** percent in 1995. Table D-2, CR at D-4, PR at D-3: The share of the value of total U.S. consumption held by subject imports increased from *** percent in 1993 to *** percent in 1994, and to *** percent in 1995.

[80] Table D-2, CR at D-4, PR at D-3. At the same time the volume and market share of subject imports were
(continued...)

volume and market share by the subject imports, we find that the volume of subject imports is significant both in absolute terms and relative to production and consumption in the United States.[81]

B. *Price Effects of the Subject Imports*[82]

As discussed above, whereas the domestic product is supplied as beryllium metal and high-beryllium alloys in various semifinished forms and corresponding shapes,[83] the subject imports are of only beryllium metal. Therefore, some domestic products and subject imports differ in chemistry and physical properties,[84] and the subject imports of beryllium metal are used almost exclusively as an input to make beryllium alloys.[85] Moreover, domestic specifications differ from Kazakhstan specifications inasmuch as the Kazakh material at the time it was produced was initially intended for a range of end users while the United States product is produced to specification for each purchaser.[86] Finally, unlike the domestic product, imports do not have "pedigree" and often are not "qualified" by defense/aerospace users.[87] The record indicates that because some subject imports lack the desired physical properties, specifications, pedigree, and qualification required of the defense and aerospace industry end users, they cannot be used in many defense/aerospace applications and, thus, do not compete with the domestic product in these applications.[88] [89]

(...continued)
increasing over the period of investigation, total apparent consumption declined *** percent from its level of *** pounds in 1993 to *** pounds in 1995 and the domestic industry's market share declined from *** percent in 1993 to *** percent in 1995. *Id.*

[81] In any final investigation, we intend to explore more fully the issue of the form in which the Kazakh articles are imported in comparison to the products produced and sold by the domestic industry, including the issue of how to treat imports of so-called "scrap" and imports transhipped through other countries.

[82] Commissioner Rohr recognizes that domestically-produced beryllium metal and high-beryllium alloys and the subject imports compete directly only for a portion of total sales of the like product. *See* CR at I-11-I-12, II-1-II-3, V-3, PR at I-8-I-9, II-1-II-2, V-2. Thus, pricing data collected for this preliminary investigation are necessarily limited. He also notes that where the domestic and imported products compete, competition is driven largely by price. *Id.*; *see also* CR at V-5-V-7, PR at V-2; Tr. at 12, 40, 41, 168. He finds, then, that the subject imports undersold the domestic product by significant amounts in each instance in which prices between subject imports and domestic products could be compared. Table V-1, CR at V-4, PR at V-2. Moreover, information collected reveal that these lower priced imports competed directly with the domestic product for sales in applications using high-beryllium alloys, an expanding area of what has been, during the period of investigation, an overall declining U.S. market. CR at I-11-I-12, II-1-II-3, IV-1-IV-6, PR at I-8-I-9, II-1-II-2, IV-1-IV-2; Tr. at 14-19, 20-24, 33, 34, 36-37, 170. Based on the available data, Commissioner Rohr finds a reasonable indication that domestic prices have been suppressed to a significant degree and does not join the foregoing price effects section.

[83] Ingots are cylindrically-shaped, 2-3 feet in diameter and several feet long. Powders are fine particles that are plate-like, blocky, or spherical shaped. Blocks and billets are consolidated forms, usually in the shape of cubes, cylinders, or other simple shapes. Other semifinished shapes are cut from blocks and billets, and can be in the shape of bars, tubes, or any shape desired by the customer. CR at I-3-I-6, PR at I-3-I-5.

[84] CR at I-3-I-6, I-11-I-12, I-15, II-3, PR at I-3-I-5, I-7-I-8, I-9, II-2.

[85] CR at I-12, II-1, V-5-V-7, PR at I-7-I-8, II-1, V-2; Tr. at 111-112.

[86] CR at I-11-I-12, V-3, PR at I-7-I-8, V-2.

[87] CR at I-11-I-12, I-15, II-3 & n.3, V-3, PR at I-7-I-8, I-11, II-2 & n.3, V-2.

[88] CR at I-11-I-12, I-15, V-3, PR at I-7-I-8, I-9-I-10, V-2.

[89] Commissioner Newquist notes that, in his view, questions concerning substitutability based on characteristics and (continued...)

NMI is one end user that has the capability to use either pedigree (domestic) or non-pedigree (imported) beryllium metal in its production of patented downstream investment or precision castings made of high-beryllium alloys. It is also *** of subject imports in 1995.[90] NMI indicated that it does not purchase from Brush Wellman because it does not require the pedigree form of the input beryllium metal offered by Brush Wellman and is not willing to pay the higher price for the domestic product merely because it has the added value that pedigree provides.[91] Other purchasers of imports similarly report that they purchase the subject imports for their level of contained beryllium and not out of considerations relating to pedigree, specifications, or form of product (*e.g.*, lump or chunk).[92]

NMI indicates that its reasons for not purchasing from Brush Wellman during the period of investigation have nothing to do with price. Rather, NMI indicates that because it views Brush Wellman as a competitor for its sales of these downstream products, it understandably will not purchase from Brush Wellman.[93] In addition, NMI reported that it was dissatisfied with the material it has purchased from Brush Wellman because of its poor quality and delivery problems.[94]

Despite these differences, where an end user can use either pedigree or non-pedigree beryllium metal (for example, as a feed for high-beryllium-aluminum alloys or low-beryllium alloys) or where the subject imports have been prequalified for use, either domestic products or subject imports generally can be used.[95] In such situations, competition appears to be driven largely by price.[96] [97]

(...continued)
uses are appropriately addressed in the like product determination. Accordingly, further assessment of substitutability for purposes of a causation analysis is generally not warranted.

[90] *See* Tables D-2, F-1-F-2, CR at D-4, F-3-F-4, PR at D-3, F-3; ***. NMI accounted for *** percent of U.S. shipments of subject imports in 1995 and *** subject imports in 1994.

NMI reports that its patented high-beryllium alloy products can be produced without regard to the pedigree or form of the input beryllium metal it uses. Indeed, it reports that it uses considerable quantities of scrap beryllium and that theoretically it could use entirely scrap to produce its downstream products. CR at I-13-I-14, PR at I-8; Tr. at 128-129, 130-132, 143, 161-162.

[91] CR at I-11-I-12, PR at I-7-I-8; Tr. at 90, 118; NMI's Postconference Submission at 1-2.

[92] CR at I-11-I-14, I-16, II-3, V-5-V-7, PR at I-7-I-8, I-10, II-2, V-2.

[93] CR at I-11-I-12, I-15, V-6, PR at I-7-I-8, I-9, V-2; Tr. at 88-89, 91-94,103, 141-143, 155-156, 175; NMI's Postconference Submission at 1.

[94] CR at V-6, PR at V-2; Tr. at 89, 91-94, 141, 175.

[95] CR at I-12, II-3, PR at I-7-I-8, II-2.

[96] CR at I-11-I-15, II-1-II-4, V-3, PR at I-7-I-8, I-10, II-1-II-2, V-2.

[97] Based on the above discussion, Commissioner Crawford finds that subject imports and the domestic product are not very good substitutes for each other, in particular because subject imports consist entirely of beryllium metal that does not have a pedigree, while the domestic product consists largely of pedigreed beryllium metal, as well as high-beryllium alloys.

Only limited pricing data were obtained.[98] The small amount of usable pricing data in this preliminary investigation demonstrates significant levels of underselling by the subject imports.[99] [100] The data also show that the domestic industry's prices *** throughout the period of investigation.[101] Although there appears to be limited substitutability between domestic beryllium and subject imports where purchasers require pedigree beryllium, there is a higher degree of substitutability where pedigree is not a requirement. In these latter instances, there has been underselling by the subject imports. Consequently, we cannot say there is clear and convincing evidence that the price effects of subject imports are not significant.[102] [103] [104]

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[98] Even though we sought pricing data on product categories identified by petitioner as significant, petitioner indicated that it was unable to report useable pricing data for three of the product categories sold domestically and did not sell another product for which we sought pricing data. In any final investigation, we will expect the parties to assist us in selecting products for which more probative pricing data may be gathered.

[99] CR at V-2-V-3, Table V-1, CR at V-4, PR at V-1-V-2.

[100] Commissioner Crawford rarely gives much weight to underselling since, as noted above, it usually reflects some combination of differences in quality, other nonprice factors (*e.g.* pedigree versus no pedigree), or fluctuations in the market during the period in which price comparisons were sought, and thus she does not join the remainder of this discussion. In this market, Commissioner Crawford finds that subject imports are having significant effects on domestic prices for beryllium metal and high-beryllium alloys. To evaluate the effects of the alleged dumping on domestic prices, Commissioner Crawford compares domestic prices that existed when the imports were allegedly dumped with what domestic prices would have been if the imports had been fairly traded. In most cases, if the subject imports had not been traded unfairly, their prices in the U.S. market would have increased. In this investigation, the estimated dumping margin is 22.83 percent. Thus, prices for the subject imports likely would have risen by a significant amount if they had been priced fairly, and they would have become more expensive relative to the domestic product and other alternative sources for the product (*e.g.*, nonsubject imports). In such a case, demand would have shifted away from subject imports and towards the relatively less-expensive products. There are no nonsubject imports in the domestic market, and petitioner is the sole domestic supplier. Consequently, even though subject imports and the domestic product are not very good substitutes for each other, petitioner is the only alternative source of the product, and thus the demand for subject imports would have shifted to the domestic product had subject imports been priced fairly. Since subject imports held a market share of *** percent by quantity in 1995, the shift in demand away from subject imports would have been substantial, and petitioner would have been the only source available to meet the shift in demand. As demand for the domestic product would have increased, the domestic industry would have been able to increase its prices, unless price discipline exists in the market. In this investigation, the domestic industry has *** available capacity with which to supply the demand satisfied by subject imports. These market conditions normally would impose price discipline on domestic prices. This industry, however, is composed of a single producer, petitioner, that faces competition only from subject imports. Therefore, the U.S. market is not competitive, but rather dominated by petitioner. Thus, petitioner has no competition that would have imposed discipline on domestic prices. Because of its market dominance, petitioner would have had monopoly market power to increase prices or increase production, or some combination of each, as determined by petitioner's individual economic benefit. Thus, if subject imports had been fairly traded, the domestic industry would have been able to increase its prices significantly. Consequently, Commissioner Crawford finds that subject imports are having significant effects on domestic prices for beryllium metal and high-beryllium alloys.

[101] CR at V-2-V-3, Table V-1, CR at V-4, PR at V-1-V-2. This variance in price is due in large part to the fact that the domestic industry makes the product to order. CR at V-2-V-3, PR at V-2.

[102] Chairman Watson notes that it would ordinarily be unusual to find significant price effects in an industry that is operating at such low capacity. However, petitioner is the only firm in the industry and so one can not be sure whether its response to a cessation of low-priced imports would be to increase volume or price, or some combination of both.

[103] As part of its consideration of the impact of imports, the statute as amended by the URAA specifies that the Commission is to consider "the magnitude of the margin of dumping." 19 U.S.C. § 1677(7)(C)(iii)(V). The SAA indicates that the amendment "does not alter the requirement in current law that none of the factors which the

(continued...)

C. *Impact of the Subject Imports on the Domestic Industry*

From 1993 to 1995, many of the indicators of the domestic industry's condition worsened.[105] Production, capacity utilization, employment, and shipments declined significantly.[106] [107] The financial

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(...continued)
Commission considers is necessarily dispositive in the Commission's material injury analysis." SAA at 850. New section 771(35)(C), 19 U.S.C. § 1677(35)(C) defines the "margin of dumping" to be used by the Commission in a preliminary determination as the margin or margins published by Commerce in its notice of initiation. Petitioner alleges dumping margins ranging from 61.8 to 446.2 percent. CR at I-1 n.3, PR at I-1 n.3. The dumping margin identified by the Commerce Department in its notice initiating this investigation was 22.83 percent. 61 Fed. Reg. 15770, 15771 (Apr. 9, 1996).

In a supplemental letter, Commerce indicated that, at the request of the petitioner, it reviewed its calculation and noted two arithmetic errors which would increase the recalculated initiation margin somewhat, but did not provide a recalculated margin. Commerce indicated that it had disregarded a number of elements alleged by the petitioner because of insufficient support. It noted that, thus, its initiation margin, while an indicator of dumping, may well understate the magnitude of the margins. *See* Letter from Barbara R. Stafford to Honorable Peter Watson (A-834-805), dated Apr. 9, 1996.

[104] Commissioner Newquist agrees that pricing data are somewhat limited. Nonetheless, the available data demonstrate that the subject imports undersold the domestic product by significant amounts in each instance in which prices between subject imports and domestic products could be compared. Moreover, these lower priced imports competed directly with the domestic product for sales in applications using high-beryllium alloys, an expanding area of the U.S. market. Based on these data, he finds a reasonable indication of price suppression to a significant degree.

[105] We note that the domestic industry's lost sales and revenues allegations either involved sales of downstream products that are outside the definition of the like product and scope of investigation defined by Commerce, and were made by firms whose production operations are not part of the domestic industry, or were not necessarily confirmed in the Commission follow up to the allegations. CR at V-5-V-7, PR at V-2. In any final investigation, we intend to explore whether there were any confirmed lost sales or revenues involving competition between the domestic like product and subject imports and involving operations of producers within the domestic industry.

[106] Tables III-1, III-2, III-4, CR at III-3-III-9, PR at III-1-III-2.

[107] Vice Chairman Nuzum notes that the alleged dumping margin calculated by Commerce in its notice of initiation of the investigation is 22.83 percent. This margin is considerably lower than the margins alleged by petitioner, which ranged from 61.8 to 446.2 percent. Commerce has advised the Commission that there were some arithmetic errors in its calculations and that the notice of initiation "may well understate the magnitude of the margins." The CR at I-1, n. 3; PR at I-1 n.3.

The dumping margin in Commerce's initiation notice is generally much smaller than the margins of underselling by the subject imports, although the record on pricing for subject imports is limited. Nevertheless, there is evidence that, for purchasers who can use either the pedigree domestic beryllium or the non-pedigree subject imports, competition is largely driven by price. Further, the domestic industry net sales as measured by value declined even though they increased by volume from 1994 to 1995 (the same time that subject import volumes increased substantially). Thus, it appears that the magnitude of dumping alleged here likely contributed to the decline in the industry's net sales.

condition of the industry worsened as sales *** costs, and profitability ***. Moreover, as expenses ***.[108] [109] On balance, the evidence in this preliminary investigation indicates that the rapidly increasing volume of subject imports sold at low prices adversely impacted the domestic industry.[110]

CONCLUSION

For the foregoing reasons, we determine that there is a reasonable indication that the domestic industry producing beryllium metal and high-beryllium alloys is materially injured by reason of allegedly LTFV imports from Kazakhstan.

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[108] Table VI-1, CR at VI-2, PR at VI-1.

The financial data on beryllium metal and high-beryllium alloys operations at Brush Wellman substantially distort the domestic industry financial condition because they include data on the operations of Brush Wellman's ***. Therefore, we consider Brush Wellman's beryllium metal operations only, which is the broadest category of data that include the domestic like product ***.

[109] Commissioner Crawford's analysis does not rely on the trends in the statutory impact factors, and thus she does not join in that analysis. However, Commissioner Crawford concurs that subject imports likely are having a significant impact on the domestic industry. In her analysis of material injury by reason of allegedly dumped imports, Commissioner Crawford evaluates the impact on the domestic industry by comparing the state of the industry when the imports were allegedly dumped with what the state of the industry would have been had the imports been fairly traded. In assessing the impact of the subject imports on the domestic industry, she considers, among other relevant factors, output, sales, inventories, capacity utilization, market share, employment, wages, productivity, profits, cash flow, return on investment, ability to raise capital, research and development and other relevant factors as required by 19 U.S.C. § 1677(7)(C)(iii). These factors together either encompass or reflect the volume and price effects of the dumped imports, and so she gauges the impact of the dumping through those effects. In this regard, the impact on the domestic industry's prices, sales and overall revenues is critical, because the impact on the other industry indicators (*e.g.*, employment, wages, etc.) is derived from this impact. As noted earlier, had subject imports been priced fairly, the demand for subject imports would have shifted to the domestic product, because petitioner is the only available alternative source for the product. The increase in demand for the domestic product would have increased the domestic industry's output and sales significantly. In addition, the increase in demand for the domestic product would have permitted petitioner to increase its prices because of its market power. The combination of price increases and sales increases would have resulted in a significant increase in petitioner's revenues, had the subject imports been fairly traded. Consequently, the domestic industry would have been materially better off if the subject imports had been priced fairly. Therefore, Commissioner Crawford determines that there is a reasonable indication that the domestic industry is materially injured by reason of allegedly LTFV imports of beryllium metal and high-beryllium alloys from Kazakhstan.

[110] CR at V-3, Table V-1, CR at V-4, PR at V-2.

ADDITIONAL VIEWS OF COMMISSIONER LYNN M. BRAGG

I. NO REASONABLE INDICATION OF MATERIAL INJURY BY REASON OF ALLEGEDLY LTFV IMPORTS OF BERYLLIUM METAL AND HIGH BERYLLIUM ALLOYS

In preliminary antidumping investigations, the Commission determines whether there is a reasonable indication that an industry in the United States is materially injured by reason of the imports under investigation.[1] In making this determination, the Commission must consider the volume of imports, their effect on prices for the domestic like product, and their impact on domestic producers of the domestic like product, but only in the context of U.S. production operations.[2] Although the Commission may consider causes of injury to the industry other than the allegedly LTFV and subsidized imports,[3] it is not to weigh causes.[4] [5]

I join my colleagues in the sections of this opinion involving the domestic like product and industry, and the condition of the domestic industry except as note below. However, for the reasons discussed below, I find that there is not a reasonable indication that the domestic industry producing beryllium metal and high-beryllium alloys is experiencing material injury as a result of the allegedly LTFV imports from Kazakhstan.

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[1] 19 U.S.C. § 1671b(a). The statute defines "material injury" as "harm which is not inconsequential, immaterial, or unimportant." 19 U.S.C. § 1677(7)(A).

[2] 19 U.S.C. § 1677(7)(B)(i). The Commission "may consider such other economic factors as are relevant to the determination," but shall "identify each [such] factor . . . and explain in full its relevance to the determination." 19 U.S.C. § 1677(7)(B).

[3] Alternative causes may include the following:

> [T]he volume and prices of imports sold at fair value, contraction in demand or changes in patterns of consumption, trade, restrictive practices of and competition between the foreign and domestic producers, developments in technology, and the export performance and productivity of the domestic industry.

S. Rep. No. 249, 96th Cong., 1st Sess. 74 (1979). Similar language is contained in the House Report. H.R. Rep. No. 317, 96th Cong., 1st Sess. 46-47 (1979).

[4] See, e.g., Citrosuco Paulista, S.A. v. United States, 704 F. Supp. 1075, 1101 (Ct. Int'l Trade 1988).

[5] As part of its consideration of the impact of imports, the statute as amended by the URAA specifies that the Commission is to consider "the magnitude of the margin of dumping." 19 U.S.C. § 1677(7)(C)(iii)(V). The SAA indicates that the amendment "does not alter the requirement in current law that none of the factors which the Commission considers is necessarily dispositive in the Commission's material injury analysis." SAA at 850. New section 771(35)(C), 19 U.S.C. § 1677(35)(C) defines the "margin of dumping" to be used by the Commission in a preliminary determination as the margin or margins published by Commerce in its notice of initiation. Petitioner alleges dumping margins ranging from 61.8 to 446.2 percent. CR at 1-1 n.3, PR at 1-1 n.3. The dumping margin identified by the Commerce Department in its notice initiating this investigation was 22.83 percent. 61 Fed. Reg. 15770, 15770 (Apr. 9, 1996).

In a supplemental letter, Commerce indicated that, at the request of the petitioner, it reviewed its calculation and noted two arithmetic errors which would increase the recalculated initiation margin somewhat, but did not provide a recalculated margin. Commerce indicated that it had disregarded a number of elements alleged by the petitioner because of insufficient support. It noted that, thus, its initiation margin, while an indicator of dumping, may well understate the magnitude of the margins. *See* Letter from Barbara R. Stafford to Honorable Peter Watson (A-834-805), dated Apr. 9, 1996.

Volume:

The volume of subject beryllium metal imports remained stable at very low levels in 1993 and 1994, and then increased by a significant margin in 1995.[6] Measured by quantity, subject imports increased slightly from *** pounds of contained beryllium in 1993 to *** pounds in 1994, and then showed a *** pounds in 1995. The value of these imports increased from *** in 1993 to *** in 1994, and then to *** in 1995.[7] The market penetration of subject imports also increased from 1993 to 1995. Measured by quantity, market penetration increased from *** percent in 1993 to *** percent in 1994 and to *** percent in 1995. Measured by value, market penetration increased from *** percent in 1993 to *** percent in 1994 and to *** percent in 1995.[8] This rate of increase in subject imports was, indeed, rapid between 1994 and 1995. However, the increase is based on very low levels in 1994 and 1995, and especially in terms of market share by value, the subject import penetration levels are still relatively low in 1995.

The limited substitutability between the domestic and subject imported products further minimizes the possibility for any adverse volume effects.[9] The domestic product usually contains a pedigree and was sold primarily to end users in the defense industry over the period of investigation, while the Kazakh material generally does not contain a pedigree, is often not "qualified"[10] by end users in the United States, and is most often sold as an input into the production of high-beryllium alloy cast parts.

As a consequence, I do not find that the volume of the subject imports, or the increase in those volumes either in absolute terms or relative to production or consumption in the United States rose to a significant level over the period of investigation. I do note, however, that ***,[11] ***. Moreover, other potential purchasers are exploring purchases of subject imports. Efforts are reportedly underway to qualify the subject imports where they currently are not used, and to design into production systems the use of subject imports.[12]

Price:

Based on the record evidence in this preliminary investigation, I am not able to conclude that there was significant underselling or significant price suppression or price depression over the period of investigation. As noted in the staff report, price comparisons between domestic and imported beryllium metal were not directly comparable because of differences in chemistry, physical properties, and product

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[6] For purposes of my analysis in this preliminary investigation, I have used information pertaining to domestic shipments of beryllium metal plus high-beryllium alloys to measure subject import penetration, and to beryllium metal only for the domestic industry's financial performance, and for import levels. The domestic industry's financial data on high-beryllium alloys contain acknowledged inconsistencies (CR at VI-5, PR at VI-2). Moreover, the data on *** contain products that may or may not be within the scope of Commerce's investigation, and the imports from ***. (CR at IV-1, PR at IV-1) I will seek clarification on these issues in the event of any final investigation.

[7] Table IV-1, CR at IV-3, PR at IV-2.

[8] Table IV-3, CR at IV-6, PR at IV-2. The remainder of the market went to the domestic industry. The domestic industry market share and total consumption numbers that I use differ slightly from those used in the majority opinion.

[9] CR at II-3, PR at II-2.

[10] Defense and aerospace end users often require their vendors and materials used to be qualified. CR at II-3, n.3, PR at II-2, n.3.

[11] CR at IV-2, PR at IV-1.

[12] CR at I-11 and n. 29, PR at I-7. TR at 23, 33, 36-37, 65-66, 171-172.

specifications.[13] The available pricing data show a total of four quarters--two in 1994 and two in 1995--in which both the domestic products and the subject imports were available for sale in the U.S. market. While the product from Kazakhstan was priced significantly below the domestic product, I do not find a clear indication that these products suppressed or depressed prices for the domestic product to a significant degree.

Domestic prices *** between 1994 and 1995 with no apparent correlation to prices for the subject imports. For example the highest two quarterly prices for the domestic product in 1995 were recorded in the two quarters for which the subject imports were present in the market, and the two lowest quarterly prices for the domestic product in 1995 were recorded when the subject imports were not present. Similarly, a low price quotation for the subject imported product in the second quarter of 1994 appears to have had very little effect on the price of the domestic product in that quarter when compared with the price for the previous and subsequent quarter.

This absence of any measurable price effects is not surprising given the relatively low degree of substitutability between the domestic and subject imported products, especially for beryllium metal.[14] As previously discussed, the domestic product is most often sold with a pedigree and is qualified by end users in the United States, whereas the imported material is usually sold without a pedigree. As noted in the staff report, both petitioners and respondents agreed that if a particular product does not contain a pedigree, its potential usage is limited.[15] The absence of any directly confirmed lost sales or lost revenue allegations is a further indication of the lack of any significant adverse price effects due to the subject imports. I do, however, note that the volumes associated with the reported prices for the subject imports have generally increased during 1994 and 1995. If these trends continue, the subject imports may have a significant adverse price effect in the future.

Impact:

Based on the lack of any significant adverse volume or price effect, I cannot conclude that the subject imports had an adverse impact on the domestic beryllium metal industry over the period of investigation. Despite the relatively rapid increase in the quantity of imports between 1994 and 1995, the domestic producer's ***. Conversely, every one of these indicators became significantly worse between 1993 and 1994 when the subject import volume and market share increased by only a very small amount. As a consequence, I do not find material adverse impact on the domestic beryllium metal industry that can be attributed to the subject imports, and I conclude that there is no reasonable indication that the domestic beryllium metal industry is materially injured by reason of allegedly LTFV imports from Kazakhstan.

II. REASONABLE INDICATION OF THREAT OF MATERIAL INJURY BY REASON OF ALLEGEDLY LTFV IMPORTS OF BERYLLIUM METAL

Section 771(7)(F) of the Act directs the Commission to consider whether the U.S. industry is threatened with material injury by reason of the subject imports "on the basis of evidence that the threat of material injury is real and that actual injury is imminent."[16] The Commission may not make such a

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[13] CR at V-3, PR at V-2.

[14] ***. CR at II-3, PR at II-2.

[15] CR at I-11. PR at I-7.

[16] 19 U.S.C. §§ 1673b(a) and 1677(7)(F)(ii).

determination "on the basis of mere conjecture or supposition,"[17] and considers the threat factors "as a whole" in determining "whether further dumped or subsidized imports are imminent and whether material injury by reason of imports would occur unless an order is issued. . . ."[18] In making my determination, I have considered, in addition to other relevant economic factors, all statutory factors that are relevant to this investigation.[19]

For the reasons discussed below, I find a reasonable indication that the domestic industry producing beryllium metal is threatened with material injury by reason of the subject imports from Kazakhstan.

The first factor pertaining to the threat of material injury to the domestic industry from the subject imports involves the very large available inventories of beryllium metal, in the form of beryllium vacuum-cast ingots, held by Ulba, the only subject foreign producer. Reported 1995 subject foreign inventories of *** pounds exceeded U.S. consumption in that year by a factor of more than ***. The company reportedly has in inventory another *** pounds of beryllium scrap.[20] These large foreign inventories, combined with *** serve as a reasonable indication of threat of material injury to the domestic industry producing beryllium metal and high-beryllium alloys.

While I did not find the increase in the volume and market share of subject imports to be significant in the context of a present injury determination, I do find that the rate of increase in subject imports poses a threat of material injury to the domestic industry and if the subject import trend begun in 1995 continues into 1996, this threat could rise to present material injury.

The limited pricing data collected in this preliminary investigation, and the relatively low degree of substitutability between the domestic and subject imported products make direct price comparisons difficult. However, the subject import prices were sufficiently below those for the domestic product over the period of investigation to provide a reasonable indication, based on the limited data available, that the subject merchandise is entering at prices that are likely to have a significant depressing or suppressing effect on domestic prices, and are likely to increase demand for further imports.

Finally, the producer in Kazakhstan *** over the period of investigation. Particularly noteworthy is the fact that exports to the United States as a share of total shipments (***) increased from *** percent in 1993 to *** percent in 1995, while exports to all other countries decreased from *** percent of total shipments in 1993 to *** percent in 1995. This factor makes clear the Kazakh producer's shift in focus away from other export markets toward the U.S. market, and further supports an affirmative threat determination.

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[17] 19 U.S.C. § 1677(7)(F)(ii). An affirmative threat determination must be based upon "positive evidence tending to show an intention to increase the levels of importation." Metallverken Nederland B.V. v. United States, 744 F. Supp. 281, 287 (Ct. Int'l Trade 1990); see also Calabrian, 794 F. Supp. at 387-88 (citing H.R. Rep. No. 1156, 98th Cong., 2d Sess. 174 (1984)).

[18] While the language referring to imports being imminent (instead of "actual injury" being imminent and the threat being "real") is a change from the prior provision, the SAA indicates the "new language is fully consistent with the Commission's practice," the existing statutory language, "and judicial precedent interpreting the statute." SAA at 184.

[19] 19 U.S.C. § 1677(7)(F)(i); see also Suramerica de Aleaciones Laminadas, C.A. v. United States, 44 F.3d 978 (Fed. Cir. 1994). Two statutory threat factors have no relevance to this investigation and need not be discussed. Because there are no subsidy allegations, factor I is not applicable. Factor VII regarding raw and processed agriculture products is also inapplicable to the product at issue. In this preliminary investigation, I find no actual or potential negative effects on the development and production efforts of the domestic industry nor do I find any other demonstrable adverse trends indicating the probability that there is likely to be material injury. Moreover, there is no indication that beryllium metal or high-beryllium alloy from Kazakhstan have been the subject of any other import relief investigations, including antidumping findings or remedies, in the United States or in any other countries. CR at VII-4, PR at VII-3. See 19 U.S.C. § 1677(7)(F)(iii)(I).

[20] Table VII-2, CR at VII-1-2, PR at VII-1.

Based on all of the foregoing, I find a reasonable indication that the industry in the United States producing beryllium metal and high-beryllium alloys is threatened with material injury by reason of imports of the subject merchandise from Kazakhstan.

PART I: INTRODUCTION

BACKGROUND

This investigation results from a petition filed by Brush Wellman Inc., Cleveland, OH, alleging that an industry in the United States is materially injured and threatened with material injury by reason of imports at less than fair value (LTFV) of beryllium metal and high-beryllium alloys[1] from Kazakhstan. Information relating to the background of the investigation is provided below.[2]

Date	*Action*
March 14, 1996	Petition filed with Commerce and the Commission;[3] institution of Commission investigation (61 F.R. 13213, March 26, 1996)
April 3	Commission's conference[4]
April 3	Commerce's notice of initiation (61 F.R. 15770, April 9, 1996)
April 29	Commission's vote
April 29	Commission's determination transmitted to Commerce

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[1] For purposes of this investigation, subject products are beryllium metal and high-beryllium alloys with a beryllium content equal to or greater than 30 percent by weight, whether in ingot, billet, powder, block, lump, chunk, blank, or other semifinished form. These are intermediate or semifinished products that require further machining, casting, and/or fabricating into sheet, extrusions, forgings, or other shapes in order to meet the specifications of the end user. Beryllium metal and high-beryllium alloys in which beryllium predominates over all other metals are provided for in subheading 8112.11.60 of the Harmonized Tariff Schedules of the United States (HTS) with a most-favored-nation (MFN) tariff rate of 8.5 percent *ad valorem*, applicable to imports from Kazakhstan after it lost eligibility for duty-free treatment under the Generalized System of Preferences effective July 1, 1995; certain beryllium metal and high-beryllium alloy semifinished forms were entered under subheading 8112.11.30 of the HTS as waste and scrap which is duty-free. High-beryllium alloys in which beryllium does not predominate are provided for elsewhere in the HTS; e.g., high-beryllium alloys in which aluminum predominates are provided for in HTS subheadings 7601.20.90 and 7601.20.90 with an MFN duty-free tariff rate applicable to imports from Kazakhstan. Although the HTS subheadings are provided for convenience and Customs purposes, the written description of the scope of this investigation is dispositive; e.g., subject cut-to-size blocks and drilled tubular blanks of beryllium metal may be provided for as wrought products in HTS subheading 8112.19.00.

[2] *Federal Register* notices cited in the tabulation are presented in app. A.

[3] In its initiation notice, the Department of Commerce stated that the calculated dumping margin for beryllium from Kazakhstan, after adjustments, was 22.83 percent *ad valorem*. However, in a letter to Chairman Peter Watson dated Apr. 9, 1996, Deputy Assistant Secretary for Investigations Barbara Stafford stated that the Department took a conservative approach in disregarding or revising a number of items alleged by the petitioner, and noted that a review of their calculations at the behest of the petitioner revealed two arithmetic errors that would increase the recalculated initiation margin; therefore, she concluded that the initiation margin, although an indicator of dumping, "may well understate the magnitude of the margins." The petitioner alleged LTFV margins ranging from 61.8 to 446.2 percent *ad valorem*. The petition asserts that inasmuch as Kazakhstan is a nonmarket economy, the normal value of the product should be based on the producer's factors of production, adjusted for known differences in the production processes, valued where possible on publicly available data in Brazil. Petitioner states it chose Brazil as the surrogate market economy to calculate normal value because the GNP of Brazil and Kazakhstan are relatively close and because although Brazil does not produce beryllium, per se, it does produce the beryl ore from which beryllium is produced.

[4] A list of witnesses appearing at the conference is presented in app. B.

SUMMARY DATA

A summary of data collected in the investigation is presented in appendix C. Except as noted, U.S. industry data are based on the questionnaire response of Brush Wellman, the sole U.S. producer of beryllium metal and high-beryllium alloys in the semifinished shapes included in the scope of the investigation during 1993-95. U.S. imports are based on imports by *** and Beryllium Materials International, L.C. (BMI), the only known importers of subject product. Alternative consumption data are presented in appendix tables D-1 and D-2 which include imports of "scrap" by Spindrift Group, Ltd. ***.[5] Appendix tables D-3, D-4, and D-5 present alternative consumption data scenario on all beryllium.[6] Appendix tables D-6, D-7, and D-8 present alternative consumption data with Brush Wellman's internal consumption of subject product in the production of low-beryllium alloys removed. There have been no previous Commission investigations on beryllium.

THE PRODUCT

The imported products subject to this investigation are beryllium metal and high-beryllium alloys with a beryllium content equal to or greater than 30 percent, whether in ingot, billet, powder, block, lump, chunk, blank, or other semifinished form.[7] The petition identified two types of high-beryllium alloys: beryllium-aluminum alloys and a beryllium/beryllium oxide composite material. Excluded are low-beryllium alloys, which are defined by the petitioner as alloys containing less than 30 percent beryllium (the most common are beryllium-copper alloys, which usually contain 2 percent or less beryllium).[8] This section presents information related to the Commission's "domestic like product" determination,[9] as well as information on both imported and domestically produced products.

The petitioner argues that all subject products are a single domestic like product.[10] Respondents argue that high-beryllium alloys should be considered a separate domestic like product because they have

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[5] In its petition and at the public conference, Brush Wellman contended that although much of the imports in 1995 by Spindrift were indeed scrap, some of the products imported were like the semifinished products (e.g., ingot chunks, block, mirror blanks) that Brush makes, and were being offered to and accepted by Brush customers. Additionally, in response to the Commission's questionnaires, staff have identified *** as an importer of beryllium scrap (which included some ***) from *** but believed to have been produced in Kazakhstan.

[6] See apparent consumption section in part IV for discussion regarding use of all beryllium instead of subject products.

[7] Henceforth, all composition percentages refer to weight percentages, unless otherwise indicated.

[8] The HTS classifies alloys according to the weight percent of the predominant metal; therefore, an alloy where beryllium predominates by weight would be a beryllium alloy, and an alloy where aluminum or copper predominates by weight would be an aluminum or copper alloy, respectively. In this investigation, all alloys containing beryllium, regardless of the proportion of beryllium, are referred to as beryllium-aluminum, beryllium-copper, etc., as appropriate.

[9] The Commission's decision regarding the appropriate domestic products that are "like" the subject imported products is based on a number of factors including (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) customer and producer perceptions; (5) common manufacturing facilities and production employees; and, where appropriate, (6) price.

[10] Petition, pp. 27-32.

different physical characteristics, are made with a different manufacturing process, and do not compete with beryllium metal.[11]

Physical Characteristics and Uses

General

Beryllium is an extremely lightweight, nonferrous metal with a density of approximately 70 percent of that of aluminum and 25 percent of that of carbon steel. It has a high strength-to-weight ratio, a high resistance to deformity (also referred to as stiffness), the highest heat-absorbing capacity of any metal, the best heat conduction of any structural metal, and the ability to maintain its desirable properties at high operating temperatures. Beryllium also reflects neutrons and is transparent to X-rays.

Beryllium's principal disadvantage is its cost. Beryllium metal costs hundreds of dollars per pound (compared with, for example, aluminum that costs approximately $0.85 per pound, and carbon steel that costs approximately $0.20 per pound), and worldwide consumption in all of its end uses is no more than 300 metric tons per year.[12] Beryllium applications are confined to a wide range of specialty areas where its properties provide crucial benefits not available in less expensive alternatives. Beryllium is used in a pure or near-pure state or in alloys where even if the beryllium content is low there is a significant improvement in properties as compared with the other metal.[13] U.S. 1995 beryllium consumption in all of its end uses is estimated at 200 metric tons, with 75 percent used in low-beryllium alloys (principally beryllium-copper alloys), 15 percent used in beryllium metal and high-beryllium alloys, and 10 percent used in ceramic materials.[14] The 15 percent accounted for by subject products comprises 1 percent of high-beryllium alloys and the remaining 14 percent of beryllium metal.[15]

Beryllium metal is used primarily in defense and aerospace applications, where it has structural (i.e., load bearing), optical, and electronic uses. This includes satellite frame members, rocket nozzles, gyroscopes and frame members in navigation and weapons control assemblies, electronic packaging (the boxes and racks that house and hold electronic components), and mirrors for data communication systems. Beryllium metal is also used in research fission and fusion nuclear reactors (but not in commercial nuclear reactors) and in nuclear bomb triggers. The main nondefense/nonaerospace use is in X-ray tubes, where the inside of the tube is lined with the metal to focus the beam. There is some usage in consumer products, such as bicycle parts and golf clubs, but this is not yet a significant market.

The principal reason for alloying beryllium metal is to create a less expensive material. However, a trade-off is involved--the properties of the high-beryllium alloys are degraded as compared with the beryllium metal. For some applications, such as optical, nuclear, and X-ray uses, the alloy properties are degraded to such an extent that the alloys cannot be used in place of beryllium metal.

High-beryllium aluminum alloys are heavier, are not as stiff, and have less desirable heat absorption and conduction properties than beryllium metal. However, these alloys are castable and are easier to machine (see the section of this report entitled "Manufacturing Process").

High-beryllium-aluminum alloys are used in structural and electronic applications, in navigation and weapons control assemblies, in satellite frame members, and electronic packaging. There is also some usage

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[11] Postconference brief of Sherman and Sterling, app. 1, p. 4.

[12] Consumption estimate provided by Deborah Kramer, beryllium commodity specialist, U.S. Geological Survey.

[13] A copper alloy with 1 percent beryllium has twice the strength of pure copper.

[14] Preliminary figures from U.S. Geological Survey, 1996 Mineral Commodity Summary.

[15] Estimate provided by Deborah Kramer, U.S. Geological Survey.

in bicycle and golf club markets, but not in significant quantities. The high-beryllium alloy composite material is used as a substrate for electronic applications (a plate on which various electronic components, such as computer chips and resistors, are mounted).

Beryllium has one other disadvantage--beryllium-containing dust can cause berylliosis, a disabling or even fatal lung disease. Any manufacturing or fabrication operation (such as machining) that creates beryllium dust puts workers at risk, and special ventilation and preventative measures are required to protect workers from the disease. There is no danger from finished beryllium-containing products. Both the Environmental Protection Agency and the Occupational Safety and Health Administration have regulations regarding beryllium dust exposure, and significant expense is required to adhere to these regulations. [16]

Subject Products

The subject products are intermediate products between upstream impure and waste/scrap[17] products and downstream finished parts. In the standard manufacturing process, molten beryllium metal or high-beryllium alloys are cast into ingots, which are cut into lumps (chunks is a synonym), processed into powders that are then consolidated into semifinished forms called blocks and billets,[18] which may be cut into other semifinished forms (also called blanks); high-beryllium-aluminum blocks and billets can be made by bypassing the powder-making process (see the section of this report entitled "Manufacturing Process"). The upstream products include virgin materials that are produced from mined minerals, and scrap products generated from downstream fabrication operations and recovered from used equipment.

Beryllium metal ingots are the most pure of the subject products, containing over 99 percent beryllium with trace amounts of beryllium oxide and other impurities. Ingots are cylindrically shaped, 2-3 feet in diameter and several feet long (ingots from Kazakhstan are slightly smaller in diameter). In this form, beryllium is brittle and cannot be used directly for final products. Beryllium metal powders are fine particles that are plate-like, blocky, or spherical shaped, and have a higher beryllium oxide content (varying from 1 to 6 percent) than the ingots, and trace impurities.[19] Blocks and billets are chemically similar to powders, but are consolidated forms, usually in the shape of cubes, cylinders, or other simple shapes. Other semifinished shapes are cut from blocks and billets, and can be in the shape of bars, tubes, or any shape desired by the customer.[20] These products are classified as structural grade or optical/instrument grade.

High-beryllium-aluminum alloy ingots contain 30 to 70 percent beryllium, trace amounts of oxide and impurities, and aluminum as the predominate balance material (other alloying metals may also be added), and are the same shape as beryllium metal ingots. The high-beryllium-aluminum ingots are only useful in the production of powder or for use in the casting of pigs (which are small ingots) or blocks and billets. High-beryllium-aluminum alloy powders are mostly spherical-shaped particles with slightly more oxide content than the ingots; blocks and billets are categorized as structural or optical/instrumental in the same fashion as beryllium metal blocks and billets. High-beryllium-aluminum alloy is castable, unlike beryllium metal, and is

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[16] U.S. Department of the Interior, Bureau of Mines, *Mineral Industry Surveys: Beryllium Annual Review--1994*, Washington DC, May 1995, p. 1.

[17] Henceforth, waste and scrap will be referred to as scrap.

[18] Petitioner did not make a clear distinction between blocks and billets. These terms are used together in this investigation.

[19] The beryllium oxide in beryllium metal and beryllium-aluminum ingots, powder, and semifinished forms is present because some of the beryllium atoms combine with oxygen in the air as a consequence of the production process; it is not an added material as it is in the high-beryllium alloy composite (beryllium/beryllium oxide) product.

[20] The aforementioned shapes are produced by cutting and/or drilling whole blocks or billets, and not by an extrusion or rolling process.

less expensive because of the presence of the cheaper alloy metal. Furthermore, it is easier to machine high-beryllium-aluminum alloy than beryllium metal.

There is a high-beryllium alloy composite material composed of beryllium metal and beryllium oxide powders.[21] There is no ingot form of this material. The powder mixture varies in composition, ranging from 40 to 60 percent by volume of beryllium oxide, and is used to make blocks and billets.

Manufacturing Process

Beryllium is produced from beryllium ore, which is mined and concentrated into beryllium hydroxide. Beryllium ore is mined in several areas of the world: the United States (Utah), Russia, China, Brazil, and Zimbabwe are the most notable examples.[22] However, currently only the United States and China have the facilities for making beryllium hydroxide.[23] Beryllium hydroxide is the feed material used to make three types of beryllium products: beryllium metal and high-beryllium alloys, low-beryllium-copper alloys, and beryllium oxide. These products are typically made using three distinct process paths.[24] Figure I-1 shows the major products (including the subject products) created in each process path, shows which products are marketed, and shows where scrap is introduced in the beryllium metal and high-beryllium alloy path.

Figure I-1
Beryllium product flow

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To produce beryllium metal and high-beryllium alloys, the first step is to dissolve the hydroxide in ammonium bifluoride solution, forming an ammonium beryllium fluoride salt, which is solidified and decomposed in a furnace to anhydrous beryllium fluoride. Magnesium is added, which reacts with the fluoride, creating a molten mixture of magnesium fluoride and beryllium metal. The mixture is cooled to solid form, crushed into pebbles, and added to a solution that causes the beryllium pebbles to float to the surface. These pebbles, which are impure beryllium that contain slag, are skimmed off the surface. The final step in producing beryllium metal is vacuum melting. In this stage, the beryllium pebbles are melted in a furnace and vaporized impurities are pulled from the furnace by the vacuum. The molten beryllium is poured into a mold, which is also under a vacuum, and solidifies into an ingot, which is at least 99 percent beryllium. A fine coat of impurities from the mold that adhere to the ingot is skinned off using a lathe.

The vacuum-cast ingot is next broken into lumps (also referred to as chunks) and then converted to powder, usually by grinding or ball milling.[25] These processes create different shapes and sizes of powders, and a specific block or billet may be made of powders created by one of these processes, or a mixture of

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[21] The petitioner refers to this as "E-material."

[22] The U.S. deposits are primarily bertrandite ore, which contains less beryllium but is easier to process than beryl ore, which is the material found in the other countries.

[23] In its questionnaire response, ***.

[24] Beryllium-copper alloys and beryllium oxide are made directly from beryllium hydroxide, which is unlike the metallurgy of many other metals where alloys and ceramic materials are produced from the metallic form. Producing beryllium-copper alloys and beryllium oxide from beryllium metal is possible, although the petitioner claims it is not as cost efficient as producing these products directly from the hydroxide. However, the petitioner consumes some beryllium metal in its low-beryllium alloy path when it has a surplus of internally-generated material.

[25] An atomization process may also be used to produce powder. Molten beryllium is introduced into a chamber in a rapidly moving stream of an inert gas, which breaks the beryllium into fine drops. These drops solidify as they descend down the chamber.

powders.[26] The powders are converted into blocks or billets by one of three consolidation processes--vacuum hot pressing, hot isostatic pressing, or pressing/sintering.[27] All of these processes involve adding the powder to a mold and applying pressure to the powder with punches or gas, which compacts the powder. Vacuum hot pressing is used to make the simplest of shapes; pressing and sintering to make the most complex of shapes. Hot isostatic pressing makes moderately complex shapes, but it also creates shapes with the most uniform of properties. The requirements of the end use dictate which process will be used.

The blocks and billets undergo further processing, such as machining to clean or square the shapes, and cutting to a shape based on customer requirement. A block or billet may be cut up into smaller pieces, or a cylindrical piece may be drilled out, or a tube-shaped form can be created by drilling out the center of a cylindrical piece. The blocks and billets, whether in whole or as a cut shape, are then processed in downstream operations to create the final beryllium metal part. These processes include machining, in which the beryllium metal is simply ground away by a bit until final dimensions are achieved, or the beryllium may be formed into a wrought shape by extruding, rolling, or drawing.

High-beryllium-aluminum alloys are manufactured by a powder metallurgy process or a conventional process. Powderizing is most often done using the atomization process. Beryllium and aluminum powders are mixed and consolidated into similar shapes as described for beryllium metal. Alternatively, the alloy can be made by charging a vacuum caster with beryllium and aluminum and melting the two metals to form the alloy, which is cast into a pig or a shape for wrought processing, or may be cast directly into a final shape.

The high-beryllium alloy composite material is formed by combing beryllium powders and beryllium oxide powder, which is hot-isostatically pressed and cut into shapes.

Beryllium metal scrap and high-beryllium alloy scrap, because they can be recycled, are an important aspect of the manufacturing process. Scrap is generated at several places in the manufacturing cycle, and varies in quality. The best-quality scrap is generated at the facility that produces the subject products--the composition is well known and this scrap can be recycled back into the production process. Scrap is also generated at downstream operations where the subject products are formed into final shape by machining, casting, or mechanical forming. This is typically referred to as vendor scrap, and if the vendor segregates this scrap, it too can be recycled back into the production process (the producer may have a buy-back arrangement with the downstream customer). Unsegregated scrap and scrap from used equipment[28] are typically the least valuable scrap because the origin of this material is not known.

The definition of scrap is a point of contention in this investigation. Certain beryllium metal ingots, lumps, and semifinished products imported from Kazakhstan by Spindrift in 1995 were classified as scrap ingots, lumps, and semifinished products because this material was made to the specifications of a particular customer, and then not sold to that customer. The petitioner argues that this material should not have been classified as scrap but rather simply as ingot, lumps, and semifinished products. In this investigation, references to this Kazakh material imported by Spindrift will be designated as "scrap" ingots, lumps, and semifinished products.

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[26] Beryllium metal, unlike most other metals, cannot be formed by conventional solidification of molten metal because this results in a material that is too brittle.

[27] The consolidated products are solid, and to casual observation appear no different than metal products made from solidifying molten metal. There are differences in the atomic structure, however.

[28] Certain used equipment, e.g., Poseidon missle parts, have a known chemical composition and can be introduced into the production cycle for beryllium metal and high-beryllium alloys. (Staff conversation with *** of Brush Wellman, Apr. 1, 1996.)

Interchangeability

Beryllium Metal Versus High-Beryllium Alloys

Commission questionnaires asked producers, importers, and purchasers whether beryllium metal and high-beryllium alloys are interchangeable. The petitioner responded that there is an overlap in certain structural and thermal applications where the products are interchangeable. One purchaser stated that the products cannot be directly substituted because beryllium metal has substantial performance advantages in guidance components, optics, and nuclear weapons applications. Another purchaser said the two products may be used interchangeably in specific applications (although it noted it does not make this decision; it is decided by the ultimate user). One purchaser stated that the products are interchangeable for making low-beryllium alloys. Lockheed Martin has been actively evaluating high-beryllium-aluminum alloys to use in applications that had used beryllium metal in the past.[29]

Domestic Beryllium Metal Versus Kazakh Beryllium Metal for Use in Beryllium Metal Finished Parts

According to the petitioner and respondents, documented quality is a crucial consideration in the use of beryllium metal in defense and aerospace applications. The documentation, referred to as a pedigree, is a complete record of the material, including composition, physical properties such as tensile strength, grain size, consolidation method, consolidation pressure and temperature, and any other information that affects the metal's properties. If this pedigree is not available, then the material's potential usage is limited, according to both the petitioner and respondents. Respondents claim that the Kazakh beryllium metal has no pedigree and cannot be interchanged with the petitioner's material.[30] Furthermore, beryllium metal from Kazakhstan is only useful as an alloying metal.[31]

Counsel for the Ulba plant reports that its only beryllium metal form available is vacuum-cast ingot and lump. As previously mentioned, ingots/ingot lumps are only useful for making either alloys or powder. Brush Wellman is the only U.S. firm with the capability to process the Kazakh ingot/lump into intermediate products that can be used for making beryllium metal finished parts.

Domestic Beryllium Metal Versus Kazakh Beryllium Metal for Use in Beryllium Alloys

Imported and petitioner's beryllium metal ingot lump do appear to be interchangeable as a feed for producing high-beryllium-aluminum alloys. Nuclear Metals uses the Kazakh beryllium metal lumps instead of the petitioner's beryllium metal lumps to produce high-beryllium-aluminum alloys. Nuclear Metals is not limited to pedigreed feed material (all of Brush Wellman's beryllium metal lumps have a known pedigree) because it can adjust its metallurgical process to set its own quality standards even when using the Kazakh

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[29] At the public conference, Robert Quinn, President, Nuclear Metals, stated "what has happened over the years is that pure beryllium components are so expensive, customers like Lockheed Martin are not using them. They are being designed out of systems. They are just too expensive." (Conference transcript, p. 95). Richard Diamond, Lockheed Martin, stated that "beryllium-aluminum casting was a break through technology that the Army and the Air Force and our other customers really like, but we will not use it at any cost . . . If the current Brush Wellman prices that you have shown are maintained, the cost will be unaffordable for us to use beryllium (aluminum), and we will find at Lockheed Martin alternative ways to design into our systems without using beryllium-aluminum, just as we had in the past with beryllium." (Ibid., pp. 97 and 99.)

[30] Postconference brief of BMI, pp.1-2.

[31] Conference transcript, pp. 111-112.

lumps or purchased scrap by first producing a master melt which is then chemically analyzed and adjusted as necessary.[32]

Imports of Kazakh beryllium metal lump also appear to be interchanged with petitioner's berylllium metal lump in the production of low-beryllium alloys. BMI has sold ***.[33]

Substitutes

Possible substitutes for beryllium metal and high-beryllium alloys include aluminum-lithium alloys, metal matrix composites (aluminum with silicon carbide), boron carbide composites, graphite epoxy composites, titanium, and steel.[34] For the composite material, alumina (aluminum oxide) is a substitute. The respondents claim that aluminum, aluminum silicon carbide, and magnesium are substitutes for high-beryllium-aluminum alloys.[35] Petitioner noted that beryllium metal or high-beryllium alloys are selected in a product's design phase, and substitution would likely not be possible without redesigning the product. Furthermore, given the high cost of beryllium metal and high-beryllium alloys, these materials are only selected if absolutely necessary, so substitution of other materials is rarely an acceptable option.

Scrap is also potentially a substitute for beryllium metal ingot and lumps; however, the quality of the scrap determines the substitutability. A representative of Nuclear Metals, a producer of high-beryllium-aluminum alloy, stated that high-quality beryllium metal scrap could be interchanged with beryllium metal ingot lumps as feed for making its alloy.[36] One U.S. producer of ***.[37]

In response to a question by a member of the Commission staff raising the possibility of including beryllium-containing scrap as a domestic like product,[38] petitioner argues that it is not appropriate to consider scrap as a domestic like product because of substantial differences in price, physical characteristics, interchangeability, and where the products are produced.[39]

Petitioner counters that some companies that use beryllium metal finished parts are ***.[40] Commission staff found that "scrap" Kazakh beryllium metal blocks/billets imported by Spindrift ***.[41] Two other companies used "scrap" Kazakh beryllium metal blocks to produce sample finished parts or used the material to practice machining techniques.[42]

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[32] Testimony of Robert Quinn, Nuclear Materials, Inc., conference transcript, pp. 90, 95-96, 149, 161-162. Mr. Quinn stated that ***. (Postconference brief of Nuclear Metals, p. 4.)

[33] *** stated that there are different grades of the Kazakh beryllium metal lump. ***. (Staff conversation with ***, Apr. 15, 1996.)

[34] Petition, p. 31.

[35] Conference transcript, p. 90.

[36] Testimony of Robert Quinn, Nuclear Metals, Inc., conference transcript, pp. 161-162.

[37] Staff conversation with ***.

[38] Conference transcript, pp. 50-51.

[39] Petitioner's postconference brief, pp. 11-12.

[40] Notes for Mar. 29, 1996 meeting at Brush Wellman's Elmore, Ohio plant, p. 5.

[41] Conversation with ***.

[42] Conversations with ***.

Channels of Distribution

The channels of distribution for the subject products consist of (1) the U.S. National Defense Stockpile, (2) processors, and (3) fabricators. The National Defense Stockpile is a U.S. Government program to store products with crucial defense-related applications to ensure an adequate supply during national emergencies. Beryllium, because of its important weapons-related uses, is currently stockpiled in the form of ore, beryllium metal in blocks, and beryllium-copper master alloys.[43] The petitioner had a contract to upgrade a portion of the stockpiled ore to metal, and its sales to the stockpile were a significant portion of total beryllium metal sales until this contract expired in 1994. No high-beryllium alloys are in the stockpile, and there are no plans to include these materials in the stockpile.

Processors are firms that have foundry (i.e., melting) operations that use beryllium metal in ingot or lump form as a feed to make alloys. The petitioner has capacity to do this, and Nuclear Metals appears to be the only other domestic firm that produces a high-beryllium alloy. Nuclear Metals produces its high-beryllium-aluminum alloy by melting beryllium metal lumps and aluminum metal but instead of forming the semifinished products subject to this investigation, it creates investment castings, which are near-finished, high precision parts formed directly by pouring the molten alloy into molds.[44] These castings are machined by a separate company and sold to a defense contractor for use in a final product. This channel also includes numerous domestic firms that make low-beryllium alloys, but they typically do not purchase subject products as raw materials. Such firms usually use low-beryllium master alloys, beryllium scrap, or beryllium-alloy scrap.

The third channel is firms that use beryllium metal and high-beryllium alloy semifinished forms to fabricate the final shape of the metal by machining, or by extruding, forging, rolling, drawing, or casting.[45] There are separate firms that make structural and optical/instrument parts, and these firms then sell the parts to companies that incorporate the parts into final goods. In some instances, beryllium metal and high-beryllium alloy semifinished forms are sold directly to the end users, who then make their own arrangements for machining or other shaping.

Customer and Producer Perceptions

The petitioner perceives beryllium and high-beryllium products as specialty products (as opposed to commodity products like aluminum or copper). As compared with commodity products, there is much more attention to quality assurance and testing and maintaining a product pedigree, and they have a large investment in equipment and laboratory services to produce this pedigree. The pedigree satisfies the stringent requirements of defense and aerospace customers, who typically qualify materials used in their products

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[43] As of Sept. 30, 1995, the stockpile consisted of 363 metric tons of beryllium metal, 268 metric tons of low-beryllium-copper alloy, and 545 metric tons of beryl ore (all figures on a contained beryllium basis). In the post-cold war era, the need for strategic stockpiles in the United States has drawn scrutiny. The Defense Logistics Agency (DLA), which administers the stockpile, currently has authority to dispose of the beryllium ore. It regularly offers the ore for sale (not for upgrade), but there have been no purchases to date. According to Peter Roman, Marketing Director of the Stockpile, Congress (which must authorize all stockpile disposals) has considered disposing of the beryllium metal in the past, but the only current bill under consideration does not authorize beryllium metal disposal. (Staff conversation with Peter Roman, Apr. 22, 1996.)

[44] Nuclear Metals states its high-beryllium alloy is protected by patent and its investment casting process is a trade secret. (Staff conversation with *** of Nuclear Metals, Mar. 28, 1996.) The investment castings require minimal machining whereas the semifinished products typically require considerably more fabrication.

[45] Extruded, forged, rolled, drawn, and cast shapes may require some minor machining.

based on a pedigree and often explicitly state in product design which producer should supply a specific material.

Other customers perceive that a pre-existing pedigree is unnecessary. These customers either design their beryllium products to adhere to the standards of a specific industry (such as the bicycle industry) that do not require a pedigree, or establish their own pedigree, such as Nuclear Metals can with its product.[46]

Common Manufacturing Facilities and Production Employees

The subject products are produced using virtually the same equipment in the same facility using the same employees. However, alloy production requires the addition of raw materials not produced in the same facility. Aluminum is required for the beryllium-aluminum alloy, which in the petitioner's case is purchased on the open market. For the composite material, the petitioner uses beryllium oxide produced on separate equipment at the same plant site. The Kazakh beryllium is reportedly made in virtually the same way as the petitioner's, although there is a slight difference in the production of beryllium hydroxide. After this point, the production processes are the same.

Price

Prices for the subject products are generally quoted on the basis of contained pounds of beryllium. For high-beryllium alloys, the per-pound price for contained beryllium will be substantially different from the price per pound of alloy because of the other metal present in the alloy. The price for the alloy will be substantially less in virtually all cases because the alloy metal is much less expensive than beryllium. See the section of this report entitled "Prices" for specific price comparison information.

[46] Testimony of Robert Quinn (conference transcript, p. 149).

PART II: CONDITIONS OF COMPETITION IN THE U. S. MARKET

DEMAND CONSIDERATIONS

The U. S. demand for beryllium metal depends greatly upon defense spending in certain applications such as electro-optical weapon systems and inertial guidance systems where light weight and stiffness are important. It is also used in nuclear weapons because of its unique properties. A smaller commercial business also exists for beryllium metal in X-ray tubes, laser scan mirrors, and satellite structures.

High-beryllium alloys offer properties that are particular to beryllium and other materials such as aluminum and titanium. Finished parts of high-beryllium aluminum alloy can be machined more easily than beryllium metal. Also, unlike beryllium metal they can be investment cast. They are currently being slated for a variety of uses on new flight systems such as on the F-22 fighter and the Comanche helicopter, as well as on electronic upgrades of current aircraft.

Brush Wellman and BMI, the major importer of the subject product from Kazakhstan during 1993-95, both agree that the demand for beryllium metal has fallen significantly since 1993 as a result of the Government discontinuing additions to the national defense stockpile and reduced defense spending, particularly on strategic nuclear weapons. These weapons consume significant quantities of beryllium metal products.

While demand for beryllium metal has declined, demand for beryllium alloys has increased, due primarily to new markets in defense applications for rolled, extruded, and investment cast forms of these materials. These alloys are displacing other materials in defense applications.

The sensitivity of the overall demand for beryllium metal and high-beryllium alloys in the United States to changes in price depends upon the cost of beryllium as an input in final products and the availability of substitute products. The high cost of beryllium metal as an input material and the availability of scrap as a substitute suggest that the demand for beryllium metal is moderately sensitive to changes in price.[1] Since beryllium metal is very expensive, costing hundreds of dollars per pound, an increase in the cost of beryllium could significantly affect the final price of and demand for the products that use it. In some circumstances beryllium scrap can be substituted for pure beryllium. While scrap cannot be substituted for beryllium metal in the form of block, some amounts of scrap can be a substitute for the vacuum-cast beryllium used in manufacturing of block forms or high-beryllium alloy. Thus, it is possible that an increase in the price of beryllium metal could cause some shifting to increased use of scrap.

SUPPLY CONSIDERATIONS

The sensitivity of domestic supply of beryllium metal and high-beryllium alloys to changes in price depends upon such factors as the availability of excess capacity, the levels of inventories in relation to sales, the existence of export markets, and the ease of shifting from the production of beryllium to other products. Brush Wellman had *** excess capacity throughout 1993-95. The capacity utilization rate for beryllium metal was *** percent in 1993, *** percent in 1994, and *** percent in 1995, whereas the capacity utilization rate for high-beryllium alloys was *** percent in 1993, *** percent in 1994, and *** percent in 1995 (tables C-1 and C-2). This suggests that the industry has *** flexibility in expanding output in response to changes in price. In addition , *** (table C-3).

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[1] At the design stage, other materials such as composites, titanium, steel, aluminum-lithium, aluminum-silicon-carbide, or boron fiber reinforced materials may be competitive with beryllium. However, once a specific application is designed to use beryllium, no other material can normally be used in its place (petition, p. 31).

Other factors point to less flexibility in adjusting supply. For example, Brush Wellman's end-of-period inventories of beryllium metal *** during 1993-95. The ratio of inventories to shipments was *** percent in 1993, *** percent in 1994, and *** percent in 1995 (table C-3). In addition, the facilities used to produce beryllium and beryllium alloys are ***.[2] Thus, there is *** to other products in the short run in response to price changes. Despite these factors, it is still likely that the supply is fairly responsive to changes in price because of the ***.

SUBSTITUTABILITY ISSUES INVOLVING U.S.-PRODUCED AND IMPORTED BERYLLIUM

While Brush Wellman and BMI both agree that beryllium metal from Kazakhstan can presently be used as a substitute for the domestic product in alloying applications, they also agree that the domestic and Kazakh products are not interchangeable in all applications. Brush Wellman stated in its questionnaire that the Kazakh material ***. ***.[3] However, they stated that the Kazakh material is ***. BMI said that ***.

Lead times in delivery differ for the domestically produced and imported beryllium products. Brush Wellman reported that its typical lead time is *** days when the product is in inventory and *** days when it has to be produced. BMI reported that the lead time for delivery of vacuum-cast metal available in inventory in Kazakhstan is *** days. However, other beryllium products such as ***.[4]

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[2] ***.

[3] According to Brush Wellman, defense/aerospace users require their vendors to be qualified. In the case of intermediate materials such as high-beryllium alloys , end users are unlikely to get involved. For finished or semi-finished materials (such as beryllium block or shapes), customers are likely to qualify both the materials and the vendor. Properties on several material lots are measured and analyzed statistically to insure that vendor processes are capable of meeting the specification. Sometimes the vendor will be qualified as well via quality system surveys and analysis of financial strength. For some large customers, the cost of qualification could be in excess of $50,000 and take more than 1 year. For pre-produced material (that is stockpiled), qualification is likely to be in the form of 100-percent testing and screening to sort conforming from non-conforming material. Commercial customers infrequently require the firm to be qualified.

[4] Conversation with *** of BMI, Apr. 15, 1996.

PART III: CONDITION OF THE U.S. INDUSTRY

U.S. PRODUCERS

Brush Wellman, the petitioner, is the sole U.S. producer of the subject products, and its total production in 1995 was *** pounds of beryllium metal products and *** pounds (*** contained beryllium pounds) of high-beryllium alloys. It is an independent, fully integrated producer, mining bertrandite ore and concentrating it into beryllium hydroxide in Utah, and producing subject products at a plant site in Elmore, OH. This plant also produces beryllium-copper alloys, beryllium oxide, and small amounts of other low-beryllium alloys, and has research and development facilities. The company was founded in 1931 as the Brush Beryllium Co. to develop commercial application of beryllium metal and ceramic products. In 1971, this company acquired the S.K. Wellman Division of Abex Corp., and changed its name to Brush Wellman.

Brush Wellman has been the only U.S. producer of the subject products for over 15 years. The Cabot Corp., which had acquired the capacity to produce beryllium metal from Kawecki Berylco Industries in 1978, closed its Hazelton, PA, plant and left the business in 1979 because of economic and environmental reasons.

Brush Wellman reported *** of beryllium metal during 1993-95.[1] The company exports subject products; export shipments of beryllium metal and high-beryllium alloys were *** percent of total shipments quantity in 1995; *** accounted for nearly all the exports.

Nuclear Metals, an independent U.S. company located in Concord, MA, is a producer of high-beryllium alloys (beryllium-aluminum), but not in the form of the subject products. Since 1991, this company has produced precision cast parts directly from molten metal, but does not produce this material in the form of an ingot, billet, powder, block, or other semifinished form. However, the company contends that it should be included as a U.S. producer because of its significant investment in developing high-beryllium-aluminum alloy technology.[2] Nuclear Metals does not support the petition and does not purchase beryllium metal or high-beryllium alloys from Brush Wellman[3] for use in its high-beryllium alloy investment casting because it competes with Brush Wellman in the sales of its high-beryllium-aluminum alloy castings and does not want to be dependent on a competitor for its supply of input material.[4]

U.S. PRODUCTION, CAPACITY, AND CAPACITY UTILIZATION

Data for Brush Wellman's U.S. production, capacity, and capacity utilization of the subject products are presented in table III-1. The *** in production and capacity utilization in 1994 are because of the ***. A considerable amount of scrap is generated in the production process, largely from successive sawing of blocks/billets to customers' specifications, but also from ***. Brush Wellman *** the re-use of its own internally generated scrap because it is of known pedigree; it also buys back and reuses scrap generated by its customers of Brush Wellman product (in some machining processes, ***).

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[1] In 1992, Brush Wellman ***. (Staff conversation with *** of Brush Wellman, Apr. 19, 1996.)

[2] Conference transcript, pp. 94-95, 136-137. However, at the conference, Robert Quinn, President, Nuclear Metals, stated that Nuclear Metals is not a producer of the products as defined. (Conference transcript, p. 137.) Nuclear Metals provided the Commission with figures for ***. *** of Nuclear Metals stated that the firms' involvement with high-beryllium-aluminum alloy has ***. (Staff conversation with ***, Nuclear Metals, Apr. 19, 1996.)

[3] However, Nuclear Metals did obtain price quotes from Brush Wellman ***. (Staff conversation with ***, Nuclear Metals, Apr. 19, 1996.)

[4] Conference transcript, p. 103.

Table III-1
Beryllium metal and high-beryllium alloys: Brush Wellman's capacity, production, and capacity utilization, by products, 1993-95

* * * * * * *

U.S. PRODUCERS' SHIPMENTS

Brush Wellman's shipments are presented in table III-2; a breakout of company transfers and domestic shipments showing declines in specified markets is presented in appendix table E-1 and a breakdown of domestic shipments by product form is depicted in appendix table E-2. Shipments paralleled production, with decreases in 1994 reflecting the reduced stockpile sales of beryllium metal and the ***.[5] Structural block *** and instrument/optical grade block were affected by the demise of sales to the Government stockpile.

Table III-2
Beryllium metal and high-beryllium alloys: Shipments by Brush Wellman, by products and by types, 1993-95

* * * * * * *

U.S. PRODUCERS' INVENTORIES

Brush Wellman's inventories are presented in table III-3. The firm does not maintain *** because it primarily produces its subject semifinished products to a specific customer's specifications. However, it does maintain ***.

Table III-3
Beryllium metal and high-beryllium alloys: End-of-period inventories of Brush Wellman, by types and by products, 1993-95

* * * * * * *

U.S. EMPLOYMENT, WAGES, AND PRODUCTIVITY

Brush Wellman's employment data and productivity are presented in table III-4; data on the Ohio plant are presented in appendix table E-3. In its questionnaire response, the firm noted its ***. In the public conference, Mr. Robert J. Kozek stated that the firm had "reduced our in-house service group" and "eliminated" 20 supervisory staff.[6] Decreases of *** and increases of *** in the *** are attributable to the ***.

Table III-4
Average number of U.S. production and related workers producing beryllium metal and high-beryllium alloys, hours worked, wages paid to such employees, and hourly wages, productivity, and unit labor costs, by products, 1993-95

* * * * * * *

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[5] In the public conference, Robert J. Rozek stated ". . . most of the growth in emerging markets pertains to beryllium-copper alloy products and to other low-beryllium alloys outside the scope of this investigation." (Conference transcript, p. 15.)

[6] Conference transcript, p. 17.

PART IV: U.S. IMPORTS, APPARENT CONSUMPTION, AND MARKET PENETRATION

U.S. IMPORTERS

There is one importer, Beryllium Metals International, L.C. (BMI) in Tampa, FL, that imports beryllium metal ingot lump from Kazakhstan. BMI is a joint venture between Loral American Beryllium, Inc., First Concord Materials, Inc., and the Ulba Metallurgical plant located in Ust-Kamenogork, Kazakhstan. In the start-up phases of the joint venture, ***. Most material imported by BMI was sold to ***. Another firm, Spindrift Group, Ltd., Half Moon Bay, CA, was identified in the petition as an importer of beryllium metal scrap, but the petition alleged that some 9,900 pounds of the over 44,000 pounds of beryllium metal product that Spindrift imported from Kazakhstan in January 1995 consisted of subject merchandise that was mistakenly classified as "scrap".[1] Additionally, ***, which imports beryllium scrap (brake drums, gyroscope housings, etc.) from ***, received some *** in 1995.[2]

U.S. IMPORTS

During the reporting period, there were no reported U.S. imports of subject products from sources other than Kazakhstan.[3] U.S. imports of beryllium metal ingot lump imported from Kazakhstan by BMI *** are presented in table IV-1; alternative scenario data involving imports of material classified as "scrap" are presented in appendix table F-1. Imports increased throughout the period, most noticeably in 1995, and mirrored the ***. There were no imports of high-beryllium alloys reported, nor were there any commercial quantities of beryllium metal in forms other than lump.[4]

---

[1] Spindrift contends that its beryllium imports are scrap; there is no pedigree for this merchandise. Without certification, *** of Spindrift states that for most uses the product would be unacceptable. It would require extensive chemical and physical tests to certify the product, and each different piece would have to be tested since what he has is a mixture of what was in the plant at the time they discontinued operations. Counsel for Ulba concurs: ***. (Letter dated Apr. 16, 1996.)

[2] Inasmuch as there was no capability in the former Soviet Union to produce beryllium billets except at the Ulba plant, these products are obviously of Kazakh origin and have not been altered or had further processing done on them. However, these *** were both sold and bought as scrap. Moreover, counsel for the respondents argues that "By agreement among the former members of the Soviet Union, any materials on the territory of a republic at the time of the breakup of the Soviet Union became the property of that republic. The republic where that material was located at the time of the breakup has total ownership, dominion and control over the material. Any such material exported must be considered an export from that republic." (Letter dated Apr. 16, 1996.)

[3] According to information provided by the U.S. Customs Service, ***. There were reported imports of scrap *** from ***. The importer states that the material is from ***; inasmuch as Kazakhstan was the only place in the former Soviet Union where beryllium metal was produced, staff have included these imports (separately annotated) with other scrap from Kazakhstan.

[4] *** from BMI stated that the only high-beryllium alloy from Kazakhstan that he has any knowledge of is *** but he dropped the subject over a year ago when he found out Ulba doesn't have the capability to produce any more. Similarly, BMI *** prior to finding out that Ulba didn't really have much available and wasn't capable of making any more. *** pointed out that when BMI was first established, it really had no idea what exact products were available at Ulba--since at the time, Ulba considered that to be a State secret. (Staff conversation with ***, Apr. 15, 1996.) As a supplement to its pricing section in the Commission's questionnaire, Brush Wellman attached an affidavit by ***, a Brush Wellman employee, stating that in May 1995 he had attended a conference where a paper was presented by David

(continued...)

Table IV-1
Beryllium metal: U.S. imports from Kazakhstan, 1993-95

* * * * * * *

APPARENT U.S. CONSUMPTION

Data on apparent U.S. consumption are presented in table IV-2; alternative scenario data utilizing the Spindrift "scrap" and *** scrap import data are presented in appendix tables D-1 and D-2 and alternative scenario data using beryllium hydroxide as a surrogate for domestic production of all beryllium are presented in appendix tables D-3, D-4, and D-5.[5] Apparent consumption during 1993-94 closely mirrored Brush Wellman's shipments since imports had little impact. In 1995, consumption of beryllium metal and high-beryllium alloys increased by over *** percent, with imports from Kazakhstan accounting for *** percent of the growth and Brush Wellman accounting for *** percent.

Table IV-2
Beryllium metal and high-beryllium alloys: U.S. shipments of domestic product, U.S. shipments of imports from Kazakhstan, and apparent U.S. consumption, by products, 1993-95

* * * * * * *

A representative of Brush Wellman stated at the Commission's conference that the U.S. market accounts for roughly 90 percent of the world market for high-beryllium materials.[6]

U.S. MARKET SHARES

Market shares based on U.S. shipments by Brush Wellman and importers are presented in table IV-3, with alternative scenario data including imports of "scrap" presented in appendix F. Brush Wellman's market share, on the basis of value, declined from over *** percent in 1993 and *** percent in 1994 to *** percent in 1995.

Table IV-3
Beryllium metal and high-beryllium alloys: Apparent U.S. consumption and market shares, by products, 1993-95

* * * * * * *

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[4] (...continued)
Chellman of Lockheed Martin that contained extensive test results of Kazakh aluminum-beryllium alloy that was allegedly supplied to Lockheed Martin by BMI. Mr. David Chellman of Lockheed Martin stated that in May 1995 he presented a paper in Anaheim, CA, at the AeroMat 95 conference. The paper was about work Lockheed Martin had done on high-aluminum-beryllium alloy that Lockheed had acquired from Brush Wellman. Mr. Chellman stated that his paper was followed by a presentation by Dr. Valerie Savchuck of Ulba (accompanied by David Brown of BMI) and there was some confusion regarding that presentation because of the language barrier; Mr. Chellman did request that he be sent a copy of Mr. Savchuck's presentation (none were available at the time) and has subsequently received it. Mr. Chellman further stated that ***. (Staff conversation with Mr. David Chellman, Apr. 22, 1996.)

[5] Counsel for Ulba stated that Brush Wellman dominates the total beryllium market, accounting for more than 70 percent of worldwide production, and that Brush Wellman was highly successful in its total beryllium business. Counsel further stated that the beryllium metal and high-beryllium alloys segment identified by the petitioner was a "highly artificial market. Beryllium metal is not restricted to pure beryllium and high beryllium alloy applications; it can be and is used for the full range of beryllium applications in the marketplace." Counsel provided alternative consumption tables for total beryllium--both excluding and including the Spindrift "scrap." (Postconference brief, pp. 4, 10, 13-15.)

[6] Michael Anderson, Vice President Beryllium Products, Brush Wellman. (Conference transcript, p. 39.)

PART V: PRICING AND RELATED DATA

PRICES

Prices of beryllium metal and high-beryllium alloy are commonly based upon markups from costs. Brush Wellman reported that it estimates its costs and then adds a markup to these costs which is quoted to the customer. However, BMI reported that prices are negotiated on a transaction-by-transaction basis. Brush Wellman and BMI both quote prices on an f.o.b. basis from points of shipment in the United States.

Brush Wellman sells on ***, while BMI sells ***.

U.S.- produced beryllium and high-beryllium alloys are sold *** while BMI's sales are ***. However, BMI reported that ***. Domestically produced beryllium is generally shipped longer distances within the United States than imported beryllium from Kazakhstan. Brush Wellman reported that *** percent of its shipments are for distances of 100 miles to 500 miles and the remainder are for distances ***. In contrast, BMI reported that all of its shipments are for distances of *** miles. Neither the petitioner nor BMI reported any shipments of distances of ***. Brush Wellman reported that its shipping costs average *** percent of the total delivered price of the products, while BMI reported that these costs typically amount to about *** percent.

Questionnaire Price Data

Brush Wellman and the importers were asked to provide quarterly quantity and value data on shipments of 5 commonly used categories of beryllium products for the period January 1993-December 1995 for use in determining average quarterly prices. Since beryllium products are made to order and each sale involves items with unique specifications, the product categories shown below do not represent commodity items.

Product 1--Vacuum-cast beryllium metal in the form of ingots or lumps containing over 99 percent beryllium and less than 0.5 percent oxygen, with the balance being various metallic elements.

Product 2--Beryllium metal powder, whether produced by attrition or atomization, containing over 99.0 percent beryllium and over 0.5 but less than 1.5 percent oxygen, with the balance being various metallic elements.

Product 3--Beryllium metal structural block, whether produced by vacuum hot pressing (VHP) or hot pressing (HIP), or pressed and sintered, containing over 98.5 percent beryllium and over 0.5 but less than 1.5 percent oxygen, with the balance being various metallic elements.

Product 4--Beryllium metal block, intended for use in instrument or optical applications, whether produced by VHP or HIP, containing 94-99 percent beryllium and 0.5 to 4.5 percent oxygen, with the balance being various metallic elements.

Product 5--High-beryllium alloys containing aluminum, in ingot form, containing 30-70 percent beryllium.

The petitioner and BMI were the only firms that provided price data. Brush Wellman provided complete price data for product 1 but could not provide useable price data for products 2, 3, and 4 and did not report prices at all for product 5.[1] Brush Wellman's shipments of *** accounted for *** shipments in 1995. BMI reported price data for product 1 only. BMI's shipments of this product accounted for virtually all of its shipments in 1995.

Trends in Prices

Brush Wellman's quarterly prices for January 1993-December 1995 for product 1, shown in table V-1 in dollars per pound of contained beryllium, *** throughout the period. Since all of the beryllium products are made to order, ***. Similarly, the petitioner's prices for its other products, which are not shown in a table, also *** throughout the period for which data were collected.

Table V-1
Product 1: F.o.b. prices reported for U.S.-produced and imported beryllium from Kazakhstan, by quarters, Jan. 1993-Dec. 1995

* * * * * * *

Price Comparisons

The imported product is not fully comparable with the domestic product as discussed earlier. Since they differ in chemistry and physical properties, and domestic specifications differ from Kazakhstan specifications, precise quarterly comparisons cannot be made.[2] However, the data collected indicate that ***.

EXCHANGE RATES

Exchange rate data for Kazakhstan are not published by the International Monetary Fund and are not known to be available from any other official sources. Therefore, quarterly movements in exchange rates could not be presented.

LOST SALES AND LOST REVENUES

Brush Wellman provided 11 lost sales allegations involving over *** pounds of beryllium valued at more than $*** during the 1993-95 period, and 3 lost revenue allegations involving *** pounds of beryllium valued at more than $***. The Commission staff contacted purchasers and investigated all of the allegations.

* * * * * * *

[1] In the case of products 2, 3 and 4, Brush Wellman was ***. In the case of product 5, Brush Wellman ***.

[2] ***.

PART VI: FINANCIAL CONDITION OF THE U.S. INDUSTRY

INTRODUCTION

Brush Wellman is the only U.S. producer of the products as defined in the Commission questionnaire. Nuclear Metals does not produce beryllium metal, but purchases beryllium metal for the production of a wide variety of specialty metal products. A brief description of the financial condition of Nuclear Metals is presented in appendix G.

OVERALL OPERATIONS OF BRUSH WELLMAN

Brush Wellman is a supplier of high-performance engineered materials operating in a single business segment with product lines comprised of beryllium-containing materials and other specialty materials. The company's specific product lines described in its annual financial statements do not specifically correspond to the products under investigation. Its stock is traded on the New York Stock Exchange. The financial highlights for the firm as indicated in its 1995 Annual Report are as follows :

	1991	1992	1993	1994	1995
Net sales (*million dollars*) ...	267.5	265.0	295.5	345.9	369.6
Net income (*million dollars*) ..	3.1	10.5	6.5	18.6	20.7
Net income per share	$0.19	$0.65	$0.40	$1.14	$1.26
Return on equity	1.9%	6.2%	3.8%	9.9%	10.3%

OPERATIONS ON BERYLLIUM METAL

Brush Wellman's income-and-loss data for operations producing beryllium metal for trade sales are presented in table VI-1 and figure VI-1 . The data represent ***. This presentation is consistent with the company's ***.

Table VI-1
Income-and-loss experience of Brush Wellman's operations producing beryllium metal, fiscal years 1993-95

* * * * * * *

Figure VI-1
Beryllium metal: Income and loss

* * * * * * *

The quantities of material sold ***. The net sales value ***. Sales values were ***. Operating income results ***, as the net ratio to sales of aggregate costs and expenses ***.

The following tabulation contains cost of goods sold detail for beryllium metal (*per pound*):

* * * * * * *

The price, cost, and volume trends indicated above are reflected in the variance analysis in table VI-2. The product mix for the beryllium metal during the three years, and the ***, may have a material

Table VI-2
Variance analysis of the results of Brush Wellman on its operations producing beryllium metal, fiscal years 1993-95

* * * * * * *

impact on the variance analysis; however, the analysis is useful in understanding the comparative changes in revenue, costs, and profit. The variance analysis clearly indicates that ***.

OPERATIONS ON HIGH-BERYLLIUM ALLOYS

Income-and-loss data for Brush Wellman's high-beryllium alloys operations are presented in table VI-3. The data on the high-beryllium alloys ***. The data are consistent with the company's ***. Brush Wellman's 1994 Annual Report indicated that increasing beryllium alloy sales in 1993 were accounted for partially by AlBeMet® sales of a computer disk drive component. In 1994, sales dropped due to the end of the use of the AlBeMet® application at the computer disk drive manufacturer. The low gross margin in 1993 was caused partially by manufacturing problems associated with the AlBeMet® disk drive component.[1]

Table VI-3
Income-and-loss experience of Brush Wellman on its operations producing high-beryllium alloys, fiscal years 1993-95

* * * * * * *

OPERATIONS ON BERYLLIUM METAL AND HIGH-BERYLLIUM ALLOYS

Brush Wellman's income-and-loss data for combined operations producing beryllium metal and high-beryllium alloys are summarized in appendix C, table C-3. ***.

INVESTMENT IN FIXED ASSETS, CAPITAL EXPENDITURES, AND RESEARCH AND DEVELOPMENT EXPENSES

Brush Wellman's value of fixed assets, capital expenditures, and research and development expenses are presented in table VI-4. The research and development expenses ***.

Brush Wellman's capital expenditures ***. The depreciation on these capital additions totaled about $***.

Table VI-4
Capital expenditures, research and development expenses, and fiscal yearend value of assets of Brush Wellman on its operations producing beryllium metal and high-beryllium alloys, fiscal years 1993-95

* * * * * * *

[1] Brush Wellman 1994 Annual Report, Management's Discussion and Analysis, pp. 19-20.

CAPITAL AND INVESTMENT

Brush Wellman's responses to questions regarding capital and investment are as follows:

1. Since January 1, 1993, has your firm experienced any actual negative effects on its growth, investment, ability to raise capital, or existing development and production efforts (including efforts to develop a derivative or more advanced version of the product), or the scale of capital investments as a result of imports of beryllium metal or high-beryllium alloys from Kazakhstan?

Brush Wellman's response--

* * * * * * *

2. Does your firm anticipate any negative impact of imports of beryllium metal or high-beryllium alloys from Kazakhstan?

Brush Wellman's response--

* * * * * * *

PART VII: THREAT CONSIDERATIONS

The Commission analyzes a number of factors in making threat determinations (see 19 U.S.C. § 1677(7)(F)(i)). Information on the volume and pricing of imports of the subject merchandise is presented in parts IV and V and information on the effects of imports of the subject merchandise on U.S. producers' existing development and production efforts is presented in part VI. Information on inventories of the subject merchandise; foreign producers' operations, including the potential for "product-shifting;" any other threat indicators, if applicable; and any dumping in third-country markets, follows.

THE INDUSTRY IN KAZAKHSTAN

The petitioner cited the Ulba Metallurgical Complex (Ulba) as the only known producer of beryllium and high-beryllium ingots, billets, powder, and block in Kazakhstan. Ulba is under the jurisdiction of the Kazakh State Atomic Energy and Industrial Corporation. A Commission questionnaire was sent to Ulba, and additional information was made available by Ulba's counsel. Data received on inventories and shipments are presented in table VII-1.

Table VII-1
Beryllium metal: Kazakh capacity, production, inventories, capacity utilization, and shipments, 1993-95 and projected 1996

* * * * * * *

The Ulba plant is in the northeastern section of Kazakhstan in the city of Ust-Kamenogorsk. The plant has not produced beryllium metal since April 1993, has not produced high-beryllium alloys for many years, and does not plan to restart production. To restart production, Ulba estimates it would take an investment of ***.[1] The company does not have operational commercial-scale capacity to produce high-beryllium alloys, although the equipment for making these alloys is on-site.[2] In 1994, Ulba began *** because of the absence of a market for beryllium materials.[3] Ulba representatives expect ***.[4]

The Ulba plant has a large inventory of beryllium products; approximately *** pounds (contained beryllium) of material was stockpiled as of the end of 1995. All this material is in the form of beryllium vacuum-cast ingots. Another *** pounds of beryllium scrap is still at the plant. Since 1993, Ulba has exported *** pounds of beryllium metal ingot lump to the United States, and *** pounds to other countries ***; it plans to export *** pounds in 1996 to countries other than the United States. In addition, Ulba exported *** pounds of beryllium scrap to the United States in 1995. This scrap went to the Spindrift Co., and some of it was in the form of lumps and semifinished products (i.e., rods, bars, disks, and other forms), but was considered "scrap" because of deficient chemistry and mechanical properties and, in some cases, surface and internal defects that rendered it unacceptable to the original customer.[5]

---

[1] If this investment were made, Ulba estimates that the plant's capacity would be approximately *** pounds of beryllium vacuum-cast ingots per year. (Letter from Sherman & Sterling, Apr. 16, 1996.)

[2] It purchased this equipment in 1992, but installation is only ***. (Conversation with ***, BMI, Apr. 9, 1996.)

[3] Foreign producers questionnaire, p. 2.

[4] Letter from Sherman & Sterling, Apr. 16, 1996.

[5] Ibid.

The Government of Kazakhstan and Scanburg, A.B., a Swedish company, have an agreement involving the use of the Kazakh beryllium metal ingot inventories. Under this agreement, all of the inventory will be transferred to Sweden. Ulba's counsel reports that approximately *** pounds of the inventory has been exported to Sweden.[6] A letter from a Scanburg representative reports that approximately *** pounds of the inventory is in Sweden.[7] The primary purpose of placing the inventory in Sweden is ***.[8] *** allows Scanburg to market the beryllium.[9]

The Ulba plant, when it was producing, used beryl ore, most of which came from mines in Russia.[10] In 1990, the mine production of beryl ore in Russia was about 168,000 pounds of contained beryllium; however, production was probably considerably higher in past years before the breakup of the Soviet Union.[11] About 80 percent of mine production was used for the production of beryllium metal, and most was used by the military. Beryllium fabricators are in Russia, near defense industry sites. Currently, there are no exports of beryllium metal or high-beryllium alloys to Russia, although some low-beryllium alloy material is exported to Russia.[12]

A fire damaged part of the Ulba plant in 1990. Reportedly, the accident occurred in the beryllium powder-making section of the plant. A delegation from the United States visited the Ulba plant in 1992 and described most of the equipment as old and antiquated, and the plant as lacking in environmental controls. However, the beryllium products were considered high quality. The plant also has downstream processing capacity, including machining and forging equipment.

The Ulba Metallurgical Complex is a large producer of other metal products, including uranium and rare earth metals. The entire complex employs over 5,000 people.[13]

The Ulba plant will receive compensation from the United States because of cooperation in the removal from Kazakhstan of 600 kilograms of highly enriched uranium.[14] This material was purchased under a U.S. program designed to prevent the proliferation of nuclear weapons. To compensate the Kazakhstanis for their cooperation, funds have been given to the country, and $*** in additional funding will be provided in the near future, which will be used for beryllium materials research and equipment purchases.[15]

Commission questionnaires asked importers if they had imported or arranged for the importation of subject products from Kazakhstan for delivery after Dec. 31, 1995. ***. One firm that reported ***.[16]

There is no indication that beryllium metal or high-beryllium alloy from Kazakhstan have been the subject of any other import relief investigations, including antidumping findings or remedies, in the United States or in any other countries.

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[6] Ibid.

[7] Letter from ***.

[8] Ibid.

[9] ***.

[10] Judith Chegwidden, "Beryllium," *Metals & Minerals: Annual Review 1994* (London: The Mining Journal Ltd., 1995), p. 71. At the Commission's conference, Robert Rozek, senior VP, Brush Wellman, stated the stockpile of ore at the plant site could supply the world market for all beryllium for 30 years. (Conference transcript, p. 22.)

[11] U.S. Department of Commerce, *National Security Assessment of the U.S. Beryllium Sector*, May 1993.

[12] Conversation with ***, Apr. 9, 1996.

[13] National Security Assessment report.

[14] Notes from State Dept. meeting, Mar. 22, 1996.

[15] ***. (Notes from State Dept. meeting, Mar. 22, 1996.)

[16] ***.

U.S. IMPORTERS' INVENTORIES

BMI reported that it has had ***. Data on U.S. inventories of Kazakh product including the controversial "scrap" are presented in appendix table E-7.

APPENDIX A

FEDERAL REGISTER NOTICES

INTERNATIONAL TRADE COMMISSION

[Investigation No. 731-TA-746 (Preliminary)]

Beryllium Metal and High-Beryllium Alloys From Kazakhstan

AGENCY: United States International Trade Commission.

ACTION: Institution and scheduling of a preliminary antidumping investigation.

SUMMARY: The Commission hereby gives notice of the institution of preliminary antidumping Investigation No. 731-TA-746 (Preliminary) under section 733(a) of the Tariff Act of 1930 (19 U.S.C. § 1673b(a)) (the Act) 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 from Kazakhstan of beryllium metal and high-beryllium alloys [1] that are alleged to be sold in the United States at less than fair value. Unless the Department of Commerce extends the time for initiation pursuant to section 732(c)(1)(B) of the Act (19 U.S.C. 1673a(c)(1)(B)), the Commission must complete preliminary antidumping investigations in 45 days, or in this case by April 29, 1996. The Commission's views are due at the Department of Commerce within five business days thereafter, or by May 6, 1996.

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

EFFECTIVE DATE: March 14, 1996.

FOR FURTHER INFORMATION CONTACT: Bonnie Noreen (202-205-3167), Office of Investigations, U.S. International Trade Commission, 500 E Street SW., Washington, DC 20436. Hearing-impaired persons can obtain information on this matter by contacting the Commission's TDD terminal on 202-205-1810. Persons with mobility impairments who will need special assistance in gaining access to the

[1] The imported products covered by this investigation consist of beryllium metal and high-beryllium alloys with a beryllium content equal to or greater than 30 percent by volume, all the foregoing whether in ingot, billet, powder or block form. Beryllium metal and alloys in which beryllium predominates by weight are provided for in subheading 8112.11.60 of the Harmonized Tariff Schedule of the United States (HTS). Other alloys containing beryllium are provided for elsewhere in the HTS—e.g., aluminum-beryllium alloys are provided for in HTS 7601.20.90.

Commission should contact the Office of the Secretary at 202–205–2000. General information concerning the Commission may also be obtained by accessing its internet server (http://www.usitc.gov or ftp://ftp.usitc.gov).

SUPPLEMENTARY INFORMATION:

Background.—This investigation is being instituted in response to a petition filed on March 14, 1996, by Brush Wellman Inc., Cleveland, OH.

Participation in the investigation and public service list.—Persons (other than petitioners) wishing to participate in the investigation as parties must file an entry of appearance with the Secretary to the Commission, as provided in sections 201.11 and 207.10 of the Commission's rules, not later than seven days after publication of this notice in the Federal Register. The Secretary will prepare a public service list containing the names and addresses of all persons, or their representatives, who are parties to this investigation upon the expiration of the period for filing entries of appearance.

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

Conference.—The Commission's Director of Operations has scheduled a conference in connection with this investigation for 9:30 a.m. on April 3, 1996, at the U.S. International Trade Commission Building, 500 E Street SW., Washington, DC. Parties wishing to participate in the conference should contact Bonnie Noreen (202–205–3167) not later than April 1, 1996, 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. A nonparty who has testimony that may aid the Commission's deliberations may request permission to present a short statement at the conference.

Written submissions.—As provided in sections 201.8 and 207.15 of the Commission's rules, any person may submit to the Commission on or before April 9, 1996, a written brief containing information and arguments pertinent to the subject matter of the investigation. Parties may file written testimony in connection with their presentation at the conference no later than three days before the conference. If briefs or written testimony contain BPI, they must conform with the requirements of sections 201.6, 207.3, and 207.7 of the Commission's rules.

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

Authority: This investigation is being conducted under authority of title VII of the Tariff Act of 1930; this notice is published pursuant to section 207.12 of the Commission's rules.

Issued: March 20, 1996.

By order of the Commission.

Donna R. Koehnke,

Secretary.

[FR Doc. 96–7214 Filed 3–25–96; 8:45 am]

BILLING CODE 7020–02–P

Dated: March 20, 1996.
Susan G. Esserman,
Assistant Secretary for Import Administration.
[FR Doc. 96–8684 Filed 4–8–96; 8:45 am]
BILLING CODE 3510–DS–P

[A–834–805]

Initiation of Antidumping Duty Investigation: Beryllium Metal and High Beryllium Alloys From Kazakhstan

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

EFFECTIVE DATE: April 9, 1996.

FOR FURTHER INFORMATION CONTACT: Ellen Grebasch at (202) 482–3773 or Erik Warga at (202) 482–0922, Office of Antidumping Investigations, Import Administration, International Trade Administration, U.S. Department of Commerce, 14th Street and Constitution Avenue NW., Washington, DC 20230.

Initiation of Investigation

The Applicable Statute

Unless otherwise indicated, all citations to the statute are references to the provisions effective January 1, 1995, the effective date of the amendments made to the Tariff Act of 1930 ("the Act") by the Uruguay Round Agreements Act ("URAA").

The Petition

On March 14, 1996, the Department of Commerce ("the Department") received a petition filed in proper form by Brush Wellman Inc. ("petitioner"), a domestic producer of beryllium metal and high beryllium alloys ("beryllium"). The Department received supplemental information to the petition on March 28, and March 29, and April 1, 1996.

In accordance with section 732(b) of the Act, petitioner alleges that imports of beryllium from Kazakhstan 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 Act, and that such imports are materially injuring, or threatening material injury to, a U.S. industry.

Petitioner claims that it has standing to file the petition because it is an interested party, as defined under section 771(9)(C) of the Act.

Determination of Industry Support for the Petition

Section 732(c)(4)(A) of the Act requires the Department to determine, prior to the initiation of an investigation, that a minimum percentage of the domestic industry

supports an antidumping petition. A petition meets these minimum requirements if the domestic producers or workers who support the petition account for (1) at least 25 percent of the total production of the domestic like product; and (2) more than 50 percent of the production of the domestic like product produced by that portion of the industry expressing support for, or opposition to, the petition.

A review of the production data provided in the petition and other information readily available to the Department indicates that petitioner accounts for more than 50 percent of the total production of the domestic like product thus meeting the standard of 732(c)(4)(A) and requiring no further action by the Department pursuant to 732(c)(4)(D). Accordingly, the Department determines that the petition is supported by the domestic industry.

Scope of the Investigation

The scope of this investigation is beryllium metal and high beryllium alloys with a beryllium content equal to or greater than 30 percent by weight, whether in ingot, billet, powder, block, lump, chunk, blank, or other semifinished form. These are intermediate or semifinished products that require further machining, casting and/or fabricating into sheet, extrusions, forgings or other shapes in order to meet the specifications of the end user. Beryllium and high beryllium alloys within the scope of this investigation are classifiable under the Harmonized Tariff Schedule of the United States (HTSUS) 8112.11.6000, 8112.11.3000, 7601.20.9075, and 7601.20.9090. Although the HTSUS subheading is provided for convenience and customs purposes, our written description of the scope of this investigation is dispositive.

Export Price

Petitioner based export price on FAS Customs values reported in 1995 Bureau of Census data for HTS categories 8112.11.3000 (waste and scrap) and 8112.11.6000 (unwrought beryllium and beryllium powder). For purposes of this initiation, we have disallowed the data regarding the importation of waste and scrap because the majority of the shipment in question was non-subject merchandise.

Normal Value

Petitioner asserts that Kazakhstan is a non-market economy country (NME) within the meaning of sections 771(18) of the Act. In previous investigations, the Department has determined that Kazakhstan is an NME, and in accordance with section 771(18)(c)(i) of the Act, the presumption of NME status continues for the initiation of this investigation. *See, e.g., Final Determinations of Sales at Less Than Fair Value: Ferrosilicon from Kazakhstan and Ukraine; and Postponement of Final Determination; Ferrosilicon from the Russian Federation*, 58 FR 13050 (March 9, 1993). Accordingly, the normal value of the product should be based on the producer's factors of production, valued in a surrogate market economy country in accordance with section 773(c) of the Act.

In the course of this investigation, all parties will have the opportunity to provide relevant information related to the issues of Kazakhstan's NME status and the granting of separate rates to individual exporters. *See, e.g., Final Determination of Sales at Less Than Fair Value: Silicon Carbide from the PRC*, 59 FR 22585 (May 2, 1994).

It is our practice in NME cases to calculate NV based on the factors of production of those factories that produced the subject merchandise (in this case, beryllium) sold to the United States during the period of investigation.

Petitioner based the Kazak producers' factors of production as defined by section 773(c)(3) of the Act (raw materials, labor, energy and capital cost) for beryllium on petitioner's own usage amounts, adjusted for known differences in the production processes. In accordance with section 773(c)(4) of the Act, petitioner valued these factors, where possible, on publicly available published Brazilian data. Where this data was unavailable, petitioner used other acceptable sources of information.

Petitioner states that because the per capita GNP of Brazil and Kazakstan are relatively close, the two countries may be considered economically comparable. Further, petitioner has stated that while Brazil does not produce beryllium, it does produce beryl ore, a major input of beryllium. Based on these factors, petitioner argued that Brazil is an acceptable surrogate country, in accordance with 773(c)(4) of the Act, because its level of economic development is comparable to that of Kazakstan and Brazil is a significant producer of comparable merchandise.

Petitioner was unable to find data on factory overhead from an appropriate industry in Brazil; however, petitioner states that the first half of the production process for beryllium is similar to the production of uranium from ore. Therefore, petitioner used data for a Canadian uranium producer from the public record of the antidumping proceeding involving uranium from Kazakstan and other former USSR countries (*See Antidumping; Uranium from Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Ukraine, and Uzbekistan; Suspension of Investigations and Amendment of Preliminary Determinations* (57 FR 49220, October 30, 1992)) to value overhead. With respect to general expenses, petitioner was unable to obtain information regarding the general expenses from any closely related industry (*e.g.*, beryllium or uranium). Therefore, petitioner has used information on a Brazilian silicomanganese company from the record of the antidumping duty proceeding involving silicomanganese from Brazil (*Notice of Final Determination of Sales at Less Than Fair Value: Silicomanganese From Brazil* (59 FR 55432, November 7, 1994)) as the only information reasonably available.

Petitioner based profit incorrectly on the statutory eight percent minimum contained in the pre-URAA laws. This provision was specifically deleted from the URAA. Petitioner provided no reasonable grounds for the Department to assume that a figure of eight percent for profit is appropriate. Because petitioner has provided no other information, we have disallowed this figure for purposes of this initiation.

Based on comparisons of EP to the factors of production, the calculated dumping margin for beryllium from Kazakstan, after adjustments made by the Department, is 22.83 percent.

Fair Value Comparisons

Based on the data provided by petitioner, there is reason to believe that imports of beryllium from Kazakstan are being, or are likely to be, sold at less than fair value.

Initiation of Investigation

We have examined the petition on beryllium and have found that it meets the requirements of section 732 of the Act, including the requirements concerning allegations of the material injury or threat of material injury to the domestic producers of a domestic like product by reason of the complained-of imports, allegedly sold at less than fair value. Therefore, we are initiating an antidumping duty investigation to determine whether imports of beryllium from Kazakstan are being, or are likely to be, sold in the United States at less than fair value. Unless extended, we will make our preliminary determination by August 21, 1996.

Distribution of Copies of the Petition

In accordance with section 732(b)(3)(A) of the Act, a copy of the

public version of the petition has been provided to the representatives of the government of Kazakstan. We will attempt to provide a copy of the public version of the petition to the exporter named in the petition.

International Trade Commission (ITC) Notification

We have notified the ITC of our initiation, as required by section 732(d) of the Act.

Preliminary Determination by the ITC

The ITC will determine by April 28, 1996, whether there is a reasonable indication that imports of beryllium from Kazakstan are causing material injury, or threatening to cause material injury, to a U.S. industry. A negative ITC determination will result in the investigation being terminated; otherwise, the investigation will proceed according to statutory and regulatory time limits.

Dated: April 3, 1996.

Barbara R. Stafford,

Deputy Assistant Secretary for Investigations.

[FR Doc. 96–8824 Filed 4–8–96; 8:45 am]

BILLING CODE 3510–DS–P

APPENDIX B

CONFERENCE WITNESSES

CALENDAR OF THE PUBLIC CONFERENCE

Those listed below appeared as witnesses at the United States International Trade Commission's conference held in connection with the following investigation:

BERYLLIUM METAL AND HIGH-BERYLLIUM ALLOYS FROM KAZAKHSTAN

Investigation No. 731-TA-746 (Preliminary)

April 3, 1996 - 9:30 am

The conference was held in Room 111 (Courtroom B) of the United States International Trade Commission Building, 500 E Street, SW, Washington, DC.

IN SUPPORT OF THE IMPOSITION OF ANTIDUMPING DUTIES:

Stewart and Stewart
Washington, DC
on behalf of

Brush Wellman

Robert J. Rozek, Senior Vice President
Michael Anderson, Vice President, Beryllium Products
Hugh D. Hanes, Vice President, Government Affairs
Dr. Lyle C. MacAulay, Plant Manager, Elmore Operations

Terence P. Stewart--OF COUNSEL
James R. Cannon, Jr.--OF COUNSEL

IN OPPOSITION TO THE IMPOSITION OF ANTIDUMPING DUTIES:

Shearman & Sterling
Washington, DC
on behalf of

Kazakh State Atomic Energy and Industrial Corp.
Ulba Metallurgical Kombinat

Thomas Wilner--OF COUNSEL
Aaron Fishman--OF COUNSEL

CALENDAR OF THE PUBLIC CONFERENCE--Continued

IN OPPOSITION TO THE IMPOSITION OF ANTIDUMPING DUTIES--Continued:

Beryllium Metals International, L.C. (BMI)--a joint venture between Loral American Beryllium, Concord Trading, and Ulba Metallurgical Kombinat

George M. Allen, President of BMI
Samuel L. Hope, General Manager of BMI
Al Simon, Senior Vice President and Group Counsel, Loral Electronic Systems Div., Loral Corp

Nuclear Metals, Inc.

Robert E. Quinn, President
Kevin Raftery, Program Manager

Lockheed Martin

Rick Diamond, Director, Business Development, Electronic Division
Joseph Seinberg, Mechanical Engineering Manager

APPENDIX C

SUMMARY TABLES

Table C-1
Beryllium metal: Summary data concerning the U.S. market, 1993-95

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Table C-2
High-beryllium alloys: Summary data concerning the U.S. market, 1993-95

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Table C-3
Beryllium metal and high-beryllium alloys: Summary data concerning the U.S. market, 1993-95

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Table C-4
Beryllium hydroxide: Summary data concerning the U.S. market, 1993-95

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APPENDIX D

ALTERNATIVE APPARENT U.S. CONSUMPTION DATA

Table D-1
Beryllium metal and high-beryllium alloys (alternative scenario 1): U.S. shipments of domestic product, U.S. shipments of imports from Kazakhstan, and apparent U.S. consumption, by products, 1993-95

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Table D-2
Beryllium metal and high-beryllium alloys (alternative scenario 2): U.S. shipments of domestic product, U.S. shipments of imports from Kazakhstan, and apparent U.S. consumption, by products, 1993-95

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Table D-3
All beryllium: U.S. shipments of domestic product, U.S. shipments of imports from Kazakhstan, and apparent U.S. consumption, 1993-95

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Table D-4
All beryllium (alternative scenario 1): U.S. shipments of domestic product, U.S. shipments of imports from Kazakhstan, and apparent U.S. consumption, 1993-95

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Table D-5
All beryllium (alternative scenario 2): U.S. shipments of domestic product, U.S. shipments of imports from Kazakhstan, and apparent U.S. consumption, 1993-95

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Table D-6
Beryllium metal and high-beryllium alloys (adjusted by removing company transfers to low-beryllium alloy production): U.S. shipments of domestic product, U.S. shipments of imports from Kazakhstan, and apparent U.S. consumption, by products, 1993-95

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Table D-7
Beryllium metal and high-beryllium alloys (adjusted by removing company transfers to low-beryllium alloy production, alternative scenario 1): U.S. shipments of domestic product, U.S. shipments of imports from Kazakhstan, and apparent U.S. consumption, by products, 1993-95

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Table D-8
Beryllium metal and high-beryllium alloys (adjusted by removing company transfers to low-beryllium alloy production, alternative scenario 2): U.S. shipments of domestic product, U.S. shipments of imports from Kazakhstan, and apparent U.S. consumption, by products, 1993-95

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APPENDIX E

BRUSH WELLMAN SUPPLEMENTAL DATA

Table E-1
Beryllium metal and high-beryllium alloys: Shipments by Brush Wellman, by products, types, and uses, 1993-95

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Table E-2
Beryllium metal: Domestic shipments by Brush Wellman, by products and by types, 1993-95

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Table E-3
Average number of U.S. production and related workers producing beryllium metal and high-beryllium alloys in the Ohio plant, hours worked, wages paid to such employees, and hourly wages, productivity, and unit production costs, by products, 1993-95

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APPENDIX F

ALTERNATIVE U.S. IMPORTS AND IMPORTER INVENTORIES DATA

Table F-1
Beryllium metal: U.S. imports from Kazakhstan, by products, 1993-95

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Table F-2
Beryllium metal: End-of-period inventories of U.S. imports from Kazakhstan, by products, 1993-95

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APPENDIX G

FINANCIAL CONDITION OF NUCLEAR METALS

The following is from Nuclear Metals' 1995 10-K:[1]

Nuclear Metals is engaged in manufacturing a wide variety of specialty metal products using sophisticated metallurgical technology and metalworking processes. The Company operates in three industry segments: (1) uranium services and recycling of low-level contaminated steel; (2) fabrication of a large assortment of specialty metal products using foundry, extrusion, and machining capabilities; including the manufacture of high-purity, spherically shaped metal powders; and (3) manufacture of depleted uranium penetrators.

The following tabulation sets forth certain information presented in Nuclear Metals' 1995 10-K regarding the revenue, operating profit and identifiable assets attributable to the three industry segments in which the company operates. The change in industry segments from prior years have been restated (*in thousands of dollars*):

	Sept. 30, 1995	Sept. 30, 1994	Sept. 30, 1993
Net sales and contract revenues:			
Uranium services & recycle	4,969	4,752	-------
Specialty products	12,102	7,284	10,258
Depleted uranium penetrators	1,713	6,968	6,761
Operating profit (loss):			
Uranium services & recycle	(996)	(5,409)	-------
Specialty products	(341)	(162)	(2,816)
Depleted uranium penetrators	(237)	(5,033)	(7,330)
Identifiable assets:			
Uranium services & recycle	16,609	16,772	18,090
Specialty products	5,140	5,646	7,297
Depleted uranium penetrators	12,158	9,862	11,697

Nuclear Metals indicated the following in its submission[2] regarding research and development expenditures and the relative cost of beryllium compared to finished products :

* * * * * * *

[1] Nuclear Metals Inc, 1995 Form 10-K, pp. 1-3.

[2] Submission of Nuclear Metals dated Apr. 9, 1996, p. 2.