Ferrovanadium from China and South Africa

Investigation Nos. 731-TA-986-987 (Second Review)

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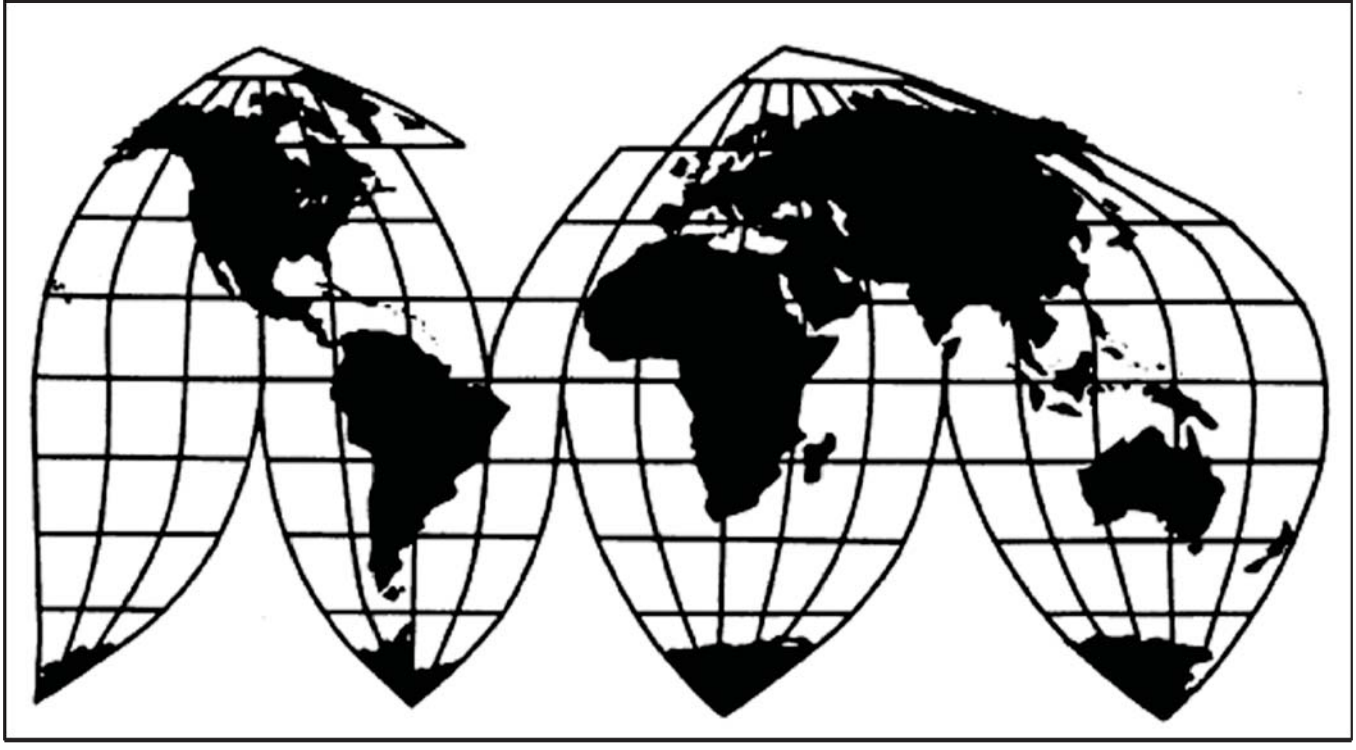
U.S. International Trade Commission



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UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation Nos. 731-TA-986-987 (Second Review)

FERROVANADIUM FROM CHINA AND SOUTH AFRICA

DETERMINATIONS

On the basis of the record[1] developed in the subject five-year reviews, the United States International Trade Commission ("Commission") determines, pursuant to section 751(c) of the Tariff Act of 1930 (19 U.S.C. § 1675(c)), that revocation of the antidumping duty orders on ferrovanadium from China and South Africa would be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.

BACKGROUND

The Commission instituted these reviews on November 1, 2013 (78 F.R. 65706) and determined on February 4, 2014 that it would conduct full reviews (79 F.R. 9000, February 14, 2014). Notice of the scheduling of the Commission's reviews and of a public hearing to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the *Federal Register* on July 10, 2014 (79 F.R. 39411). The hearing was held in Washington, DC, on November 20, 2014, and all persons who requested the opportunity were permitted to appear in person or by counsel.

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

Views of the Commission

Based on the record in these five-year reviews, we determine under section 751(c) of the Tariff Act of 1930, as amended ("the Tariff Act"), that revocation of the antidumping duty orders on ferrovanadium from China and South Africa would likely lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.

I. Background

In January 2003, the Commission determined that a domestic industry was materially injured by reason of less-than-fair-value imports of ferrovanadium from China and South Africa.[1] Commerce published antidumping duty orders on imports of ferrovanadium from China and South Africa on January 28, 2003.[2]

The Commission instituted the first five-year reviews of the antidumping duty orders on December 3, 2007.[3] On March 7, 2008, the Commission determined, in light of information regarding possible changes in the conditions of competition related to developments in the subject countries, to conduct full reviews of the orders on ferrovanadium from China and South Africa.[4] In November 2008, the Commission determined that revocation of the antidumping duty orders on ferrovanadium from China and South Africa would be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.[5]

The Commission instituted the instant reviews on November 1, 2013.[6] The Commission received a joint response to its notice of institution from the Vanadium Producers and Reclaimers Association (VPRA), an association of U.S. producers and tollees of ferrovanadium, and four VPRA members: Gulf Chemical & Metallurgical Corporation ("Gulf"), Gulf's wholly-owned subsidiary Bear Metallurgical Company ("Bear"), AMG Vanadium, Inc. ("AMG"), and Evraz Stratcor, Inc. (collectively "Domestic Interested Parties"). The Commission also received separate responses to its institution notice from two South African producers of ferrovanadium: Vanchem Vanadium Products (Pty) Ltd. ("Vanchem") and Rhovan PSV (Pooling and Sharing Venture) Glencore Operations South Africa (Pty) Ltd. ("Rhovan"). The Commission found the domestic and respondent interested party group responses adequate for the review of the order on ferrovanadium from South Africa and decided to conduct a full review of that order. In light of its

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[1] *Ferrovanadium from China and South Africa,* Inv. Nos. 731-TA-986-987 (Final), USITC Pub. 3570 (Jan. 2003) ("*Original Determinations*" or "USITC Pub. 3570").

[2] 68 Fed. Reg. 4168 (Jan. 28, 2003); 68 Fed. Reg. 4169 (Jan. 28, 2003).

[3] 72 Fed. Reg. 67962 (Dec. 3, 2007).

[4] *Ferrovanadium from China and South Africa,* Inv. Nos. 731-TA-986-987 (Review), USITC Pub. 4046 (Nov. 2008) at 7 ("*First Reviews*") at 3.

[5] *First Reviews,* USITC Pub. 4606 at 1.

[6] 78 Fed. Reg. 65706 (Nov. 1, 2013).

decision to conduct a full review with respect to the order on ferrovanadium from South Africa, the Commission determined to conduct a full review concerning the order on ferrovanadium from China despite the lack of any respondent interested party response, in order to promote administrative efficiency.[7]

The Commission received joint prehearing and posthearing briefs from the Domestic Interested Parties. It also received joint prehearing and posthearing briefs from respondent interested parties Vanchem, Rhovan, Duferco Steel Inc.,[8] Glencore plc, and Glencore Ltd.[9] ("Glencore") (collectively "Respondent Interested Parties"). No importer, exporter, or producer of subject merchandise from China participated in these reviews.

U.S. industry data are based on the questionnaire responses of two U.S. producers of ferrovanadium that are believed to account for all U.S. production of ferrovanadium since 2008.[10] U.S. import data and related information are based on Commerce's adjusted official import statistics and questionnaire responses of the 12 U.S. importers of ferrovanadium that accounted for nearly all imports of ferrovanadium during January 2008-June 2014,[11] the period of review. Foreign industry data and related information are based on the questionnaire responses of two producers and exporters of subject merchandise in South Africa believed to account for all production of ferrovanadium in South Africa.[12] No questionnaire responses were received from producers of ferrovanadium in China.[13]

II. Domestic Like Product and Industry

A. Domestic Like Product

In making its determination under section 751(c) of the Tariff Act, the Commission defines the "domestic like product" and the "industry."[14] The Tariff 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 under this subtitle."[15] The Commission's

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[7] *Ferrovanadium from China and South Africa: Notice of Commission Determination to Conduct Full Five-Year Reviews*, *79 Fed. Reg. 9000* (Feb. 14, 2014).

[8] Duferco Steel, Inc. is an affiliate of Vanchem, a South Africa producer of subject merchandise.

[9] Glencore Ltd. is a U.S. tollee that is related to South African subject producer Rhovan PSV. Confidential Report ("CR") and Public Report ("PR") at Table I-6. They are both owned by the same parent corporation. CR at E-3, PR at E-3.

[10] CR at I-11, PR at I-10. Six tollees also provided information concerning their shipments of ferrovanadium. CR at I-11 n.18, PR at I-10 n.18.

[11] CR at I-11, PR at I-10.

[12] CR at I-11 and IV-14, PR at I-10 and IV-10.

[13] CR at I-11, PR at I-10.

[14] 19 U.S.C. § 1677(4)(A).

[15] 19 U.S.C. § 1677(10); *see*, *e.g.*, *Cleo Inc. v. United States*, 501 F.3d 1291, 1299 (Fed. Cir. 2007); *NEC Corp. v. Department of Commerce*, 36 F. Supp. 2d 380, 383 (Ct. Int'l Trade 1998); *Nippon Steel Corp. v. United States*, 19 CIT 450, 455 (1995); *Timken Co. v. United States*, 913 F. Supp. 580, 584 (Ct. Int'l (Continued…)

practice in five-year reviews is to examine the domestic like product definition from the original investigation and consider whether the record indicates any reason to revisit the prior findings.[16]

Commerce has defined the scope of the orders in these five-year reviews as follows:

> all ferrovanadium regardless of grade, chemistry, form, shape, or size. Ferrovanadium is an alloy of iron and vanadium that is used chiefly as an additive in the manufacture of steel. The merchandise is commercially and scientifically identified as vanadium. It specifically excludes vanadium additives other than ferrovanadium such as nitride vanadium, vanadium-aluminum master alloys, vanadium chemicals, vanadium oxides, vanadium waste and scrap, and vanadium-bearing raw materials such as slag, boiler residues and fly ash.[17]

In the original investigations, respondents urged the Commission to define two domestic like products consisting of 45-percent and 80-percent grade ferrovanadium, although the scope of the investigations included all grades. The record indicated that in practice ferrovanadium was sold in two grades, one containing approximately 45 to 55 percent vanadium and the other containing 78 to 82 percent vanadium.[18] The Commission found that all grades of ferrovanadium shared similar physical characteristics and were used principally as an alloying agent in the production of steel and iron castings.[19] To obtain the same vanadium content, some purchasers preferred 80-percent grade ferrovanadium because it was easier to handle and cheaper to transport and store 31-pound bags of this product than 55.5-pound bags of 45-percent grade ferrovanadium.[20] Steel producers, however, had the capability to use different grades of ferrovanadium and simply adjusted their steelmaking process based on the grade of the ferrovanadium.[21]

Regardless of grade, the Commission found that the majority of ferrovanadium was sold through the same channels of distribution – directly to steel mills and iron foundries in the

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(…Continued)
Trade 1996); *Torrington Co. v. United States*, 747 F. Supp. 744, 748-49 (Ct. Int'l Trade 1990), *aff'd*, 938 F.2d 1278 (Fed. Cir. 1991); *see also* S. Rep. No. 249, 96th Cong., 1st Sess. 90-91 (1979).

[16] *See*, *e.g.*, *Internal Combustion Industrial Forklift Trucks from Japan*, Inv. No. 731-TA-377 (Second Review), USITC Pub. 3831 at 8-9 (Dec. 2005); *Crawfish Tail Meat from China*, Inv. No. 731-TA-752 (Review), USITC Pub. 3614 at 4 (July 2003); *Steel Concrete Reinforcing Bar from Turkey*, Inv. No. 731-TA-745 (Review), USITC Pub. 3577 at 4 (Feb. 2003).

[17] *Ferrovanadium from China and South Africa: Final Results of the Expedited Second Sunset Reviews of the Antidumping Duty Orders*, 79 Fed. Reg. 14216 (March 13, 2014). Commerce indicated that the merchandise subject to the orders is currently classifiable under item number 7202.92.00 of the Harmonized Tariff Schedule of the United States. *Id.*

[18] USITC Pub. 3570 at 5-6.

[19] USITC Pub. 3570 at 5.

[20] USITC Pub. 3570 at 7.

[21] USITC Pub. 3570 at 6-7.

United States and to a lesser extent to distributors that might repackage the material or blend it with ferrovanadium from different lots.[22] The Commission found only minor price differences among ferrovanadium grades and referenced a commercial practice of quoting ferrovanadium prices on the basis of the contained vanadium.[23] The Commission did not find any dividing lines that warranted finding separate domestic like products, and defined a single domestic like product consisting of ferrovanadium of all grades coextensive with the scope of the investigations.[24]

In the first reviews of the antidumping orders, no party argued that the Commission should depart from the domestic like product definition adopted in the original investigations. Additionally, the record did not reflect any material changes since the original investigations. Consequently, the Commission again defined the domestic like product to encompass all ferrovanadium regardless of grade and coextensive with the scope of the reviews.[25]

The record in these reviews continues to indicate that the characteristics and uses of ferrovanadium have not changed since the original investigations.[26] In other words, there is no evidence with respect to the factors that the Commission examines in its domestic like product analysis that supports revisiting the domestic like product definition the Commission used in the original determinations. Further, those parties that have addressed the issue have argued that the Commission should define the domestic like product as it did in the original investigations and first reviews.[27]

In light of these considerations, we again define a single domestic like product coextensive with Commerce's scope definition.

B. Domestic Industry

Section 771(4)(A) of the Tariff Act defines the relevant industry as the domestic "producers as a whole 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

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[22] USITC Pub. 3570 at 7.

[23] USITC Pub. 3570 at 8- 9.

[24] USITC Pub. 3570 at 8- 9.

[25] *First Reviews*, USITC Pub. 4606 at 7.

[26] *See generally* CR at I-14 to I-22, PR at I-12 to I-17. *See also* Domestic Interested Parties' Prehearing Brief at 4-5.

[27] The Domestic Interested Parties argue that there have been no material changes in the product or its production process in the United States and the Commission should once again define the domestic like product as all grades of ferrovanadium, coextensive with the scope of the orders. Domestic Interested Parties' Prehearing Brief at 3-4. Vanchem, in response to the notice of institution, indicated that it agreed with the Commission's definition of the domestic like product. *See* CR at I-23 and n.36, PR at I-17 and n.36.

the product."[28] In defining the domestic industry, the Commission's general practice has been to include in the industry producers of all domestic production of the like product, whether toll-produced, captively consumed, or sold in the domestic merchant market.

The record in these reviews indicates that the tollees are not producing the domestic like product; consequently, for the reasons stated in the prior determinations, we do not consider the tollees domestic producers, notwithstanding Gulf's ownership of Bear.[29] Rather, consistent with the Commission's approach in the original determinations and first reviews, we consider the information provided by tollees to measure U.S. shipments, U.S. consumption, inventories, and pricing of the domestic like product.[30]

> In the original investigations and first reviews, the Commission defined the domestic industry to be all domestic producers of ferrovanadium. The Commission did not find any related parties although it considered whether a tollee's relationship with South African producers provided a basis for finding the toller (Bear) to be a related party.[31] There are no related parties in these reviews.[32]

We consequently do not exclude any related parties and define the domestic industry as the two U.S. producers of ferrovanadium, AMG and Bear.

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[28] 19 U.S.C. § 1677(4)(A). The definitions in 19 U.S.C. § 1677 are applicable to the entire subtitle containing the antidumping and countervailing duty laws, including 19 U.S.C. §§ 1675 and 1675a. *See* 19 U.S.C. § 1677.

[29] Gulf acquired 100 percent of Bear in December 2005, an increase over the 49.5 percent share Gulf previously held during January 2002 to November 2005. CR at III-16 n.6, PR at III-9 n.6. *See* USITC Pub. 3570 at 10; USITC Pub. 4046 at 8; *Ferrovanadium and Nitrided Vanadium from Russia*, Inv. No. 731-TA-702 (Third Review), USITC Pub. 4345 at 6-7 (August 2012).

[30] *Original Determinations*, USITC Pub. 3570 at 10; *First Reviews,* USITC Pub. 4046 at 33.

[31] *Original Determinations*, USITC Pub. 3570 at 9-11; *First Reviews*, USITC Pub. 4046 at 10 n.65. The primary factors the Commission has examined in deciding whether appropriate circumstances exist to exclude a related party include the following:

(1) the percentage of domestic production attributable to the importing producer;

(2) the reason the U.S. producer has decided to import the product subject to investigation, *i.e.*, whether the firm benefits from the LTFV sales or subsidies or whether the firm must import in order to enable it to continue production and compete in the U.S. market; and

(3) the position of the related producer vis-a-vis the rest of the industry, *i.e.*, whether inclusion or exclusion of the related party will skew the data for the rest of the industry. *See*, *e.g., Torrington Co. v. United States*, 790 F. Supp. at 1168.

[32] Neither U.S. producer of ferrovanadium is related to a foreign producer or importer of the subject merchandise. Further, neither producer imported or purchased the subject merchandise. *See* CR at I-26, PR at I-19. Tollee Stratcor is related to two former producers of ferrovanadium in South Africa and tollee Glencore is related to South African producer Rhovan PSV. CR at E-3, PR at E-3. As the Commission found in the first reviews, the record does not indicate that a tollee controls the toller Bear, so that the toller may be deemed a related party. *First Reviews*, USITC Pub. 4046 at 10-11. Accordingly, we find that the toller Bear is not a related party.

III. Cumulation

A. Legal Standard

> With respect to five-year reviews, section 752(a) of the Tariff Act provides as follows: the Commission may cumulatively assess the volume and effect of imports of the subject merchandise from all countries with respect to which reviews under section 1675(b) or (c) of this title were initiated on the same day, if such imports would be likely to compete with each other and with domestic like products in the United States market. The Commission shall not cumulatively assess the volume and effects of imports of the subject merchandise in a case in which it determines that such imports are likely to have no discernible adverse impact on the domestic industry.[33]

Cumulation therefore is discretionary in five-year reviews, unlike original investigations, which are governed by section 771(7)(G)(i) of the Tariff Act.[34] The Commission may exercise its discretion to cumulate, however, only if the reviews are initiated on the same day, the Commission determines that the subject imports are likely to compete with each other and the domestic like product in the U.S. market, and imports from each such subject country are not likely to have no discernible adverse impact on the domestic industry in the event of revocation. Our focus in five-year reviews is not only on present conditions of competition, but also on likely conditions of competition in the reasonably foreseeable future.

In the original investigations, the Commission determined that there was a reasonable overlap of competition and cumulated subject imports from the two subject countries for purposes of analyzing material injury by reason of subject imports.[35] In the first reviews, the Commission did not find that subject imports from China or South Africa would have no discernible adverse impact on the domestic industry if the antidumping duty orders were revoked.[36] It also concluded that there would be a likely reasonable overlap of competition between subject imports from China and South Africa and between subject imports and the domestic like product, should the orders be revoked.[37] Finally it found no significant

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[33] 19 U.S.C. § 1675a(a)(7).

[34] 19 U.S.C. § 1677(7)(G)(i); *see also*, *e.g.*, *Nucor Corp. v. United States*, 601 F.3d 1291, 1293 (Fed. Cir. 2010) (Commission may reasonably consider likely differing conditions of competition in deciding whether to cumulate subject imports in five-year reviews); *Allegheny Ludlum Corp. v. United States*, 475 F. Supp. 2d 1370, 1378 (Ct. Int'l Trade 2006) (recognizing the wide latitude the Commission has in selecting the types of factors it considers relevant in deciding whether to exercise discretion to cumulate subject imports in five-year reviews); *Nucor Corp. v. United States*, 569 F. Supp. 2d 1328, 1337-38 (Ct. Int'l Trade 2008).

[35] *Original Determinations*, USITC Pub. 3570 at 13.

[36] *First Reviews,* USITC Pub. 4046 at 13.

[37] *First Reviews*, USITC Pub. 4046 at 15.

differences in likely conditions of competition between imports from China and South Africa and accordingly exercised its discretion to cumulate subject imports from China and South Africa.[38]

In these reviews, the statutory threshold for cumulation is satisfied because all reviews were initiated on the same day, November 1, 2013.[39] In addition, we consider the following issues in deciding whether to exercise our discretion to cumulate the subject imports: (1) whether imports from either of the subject countries are precluded from cumulation because they are likely to have no discernible adverse impact on the domestic industry; (2) whether there is a likelihood of a reasonable overlap of competition among subject imports from the subject countries and the domestic like product; and (3) whether subject imports are likely to compete in the U.S. market under different conditions of competition.

B. Likelihood of No Discernible Adverse Impact

The statute precludes cumulation if the Commission finds that subject imports from a country are likely to have no discernible adverse impact on the domestic industry.[40] Neither the statute nor the Uruguay Round Agreements Act ("URAA") Statement of Administrative Action ("SAA") provides specific guidance on what factors the Commission is to consider in determining that imports "are likely to have no discernible adverse impact" on the domestic industry.[41] With respect to this provision, the Commission generally considers the likely volume of subject imports and the likely impact of those imports on the domestic industry within a reasonably foreseeable time if the orders are revoked. Our analysis for each of the subject countries takes into account, among other things, the nature of the product and the behavior of subject imports in the original investigations.

1. China

In the original investigations, subject imports from China were present in the U.S. market in substantial quantities. The quantity in contained vanadium of subject ferrovanadium imported from China increased from 826,000 pounds in 1999 to 1.5 million pounds in 2000 before declining to 992,000 pounds in 2001.[42] In terms of their share of apparent U.S. consumption by quantity, subject imports from China increased from 6.4 percent in 1999 to 11.3 percent in 2000 before declining to 8.3 percent in 2001.[43]

Although the subject industry in China exported large quantities of ferrovanadium to the United States during the original investigations, its exports to the United States declined to minimal levels after imposition of the antidumping duty orders. Throughout the current period

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[38] *First Reviews*, USITC Pub. 4046 at 16.
[39] 78 Fed. Reg. 65614 (Nov. 1, 2013).
[40] 19 U.S.C. § 1675a(a)(7).
[41] SAA, H.R. Rep. No. 103-316, vol. I at 887 (1994).
[42] CR/PR at Appendix C (historic data).
[43] CR/PR at Appendix C (historic data).

of review (2008 to 2013 and during January-June ("interim") 2014, the share of the quantity of apparent U.S. consumption accounted for by subject imports from China was close to zero.[44]

No Chinese producer reported data to the Commission on its ferrovanadium operations in these reviews or the first reviews.[45] Available public data indicate that China is the world's largest producer of vanadium and is estimated to account for approximately 50 percent of global production of vanadium.[46] The Chinese industry continues to be export oriented and Chinese exports of ferrovanadium increased overall from 2008 to 2013, from 12.9 million pounds in 2008 to 13.4 million pounds in 2013.[47] At the same time its vanadium pentoxide exports have fallen, indicating a preference for exporting vanadium in the form of ferrovanadium.[48] Additionally, vanadium from China is still entering the United States after conversion from vanadium pentoxide into ferrovanadium in Korea.[49] In view of the foregoing, we do not find that subject imports from China would likely have no discernible adverse impact on the domestic industry in the event of revocation.

2. South Africa

In the original investigations, the quantity of subject imports of ferrovanadium from South Africa increased irregularly from 1.5 million pounds contained vanadium in 1999 to 2.5 million pounds contained vanadium in 2001. In terms of their share of apparent U.S. consumption by quantity, subject imports from South Africa increased from 11.4 percent in 1999 to 20.8 percent in 2001.[50]

Following imposition of the antidumping duty order in January 2003, subject imports from South Africa declined. During the period of review, the only subject imports from South Africa were in interim 2014, consisting of 11,000 pounds contained vanadium.[51] Since 2003, subject imports from South Africa have accounted for 0.1 percent or less of apparent U.S. consumption.[52]

The South African ferrovanadium industry is one of the world's largest. The two South African producers that provided information to the Commission indicated that their capacity allocated to production of ferrovanadium in South Africa increased from *** pounds contained vanadium in 2008 to *** pounds contained vanadium in 2013.[53] Production also increased

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[44] CR/PR at Table I-9.

[45] CR at IV-11, PR at IV-8.

[46] CR/PR at Fig IV-2; CR at IV-11, PR at IV-8; Domestic Interested Parties' Prehearing Brief at 14. *See also* CR/PR at Table IV-11.

[47] CR/PR at Table IV-12.

[48] CR /PR at Table IV-6.

[49] CR at IV-25, PR at IV-16.

[50] CR/PR at Appendix C (historic data).

[51] CR/PR at Table IV-1.

[52] CR/PR at Appendix C (historic data).

[53] CR/PR at Table IV-8.

from *** pounds contained vanadium in 2008 to *** pounds contained vanadium in 2013.[54] The industry is focused on exporting ferrovanadium, as there is virtually no home market; *** percent of shipments were exported in 2013.[55] The market accounting for the largest volume of ferrovanadium exports from South Africa during 2013 was the European Union; generally *** of the South African industry's shipments were to the European Union and approximately *** of shipments were to Asia over the period of review.[56]

The two South African producers of ferrovanadium, Rhovan and Vanchem, indicated that approximately *** percent of their 2015 production of ferrovanadium is under contract.[57] Therefore, by their own estimates, the South African subject producers would still have *** percent of their 2015 production uncommitted and available for shipment to the United States if the order were to be revoked. This uncommitted production is substantial: *** percent of the South African producers' 2013 production, for example, was equivalent to *** percent of apparent U.S. consumption during 2013.[58] Moreover, the South African producers have reported an even greater quantity of their 2016 production is not currently committed, thus providing these producers with flexibility to increase shipments to the United States in 2016.[59]

Further, although the South African producers Rhovan and Vanchem emphasize that it is more profitable to produce higher grade vanadium pentoxide for aerospace applications, vanadium pentoxide for aerospace applications accounted for only *** percent of their production of vanadium products during 2013.[60] Ferrovanadium accounted for, and is likely to continue to account for, the majority of both subject producers' production of vanadium products.[61]

The U.S. market is attractive relative to the South African producers' current primary export market. Prices are typically higher in the United States than in Europe, the largest market for South African exports, and the United States is a large market in which apparent

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[54] CR/PR at Table IV-8.

[55] CR/PR at Table IV-8.

[56] CR/PR at Table IV-8.

[57] Respondent Interested Parties' Posthearing Brief, Exhibit 2A at 3 and Exhibit 1A at 3.

[58] *See* CR/PR at Tables I-9 and IV-8.

[59] Respondent Interested Parties' Posthearing Brief, Exh 1A at 5, Exh 2A at 3.

[60] Respondent Interested Parties' Posthearing Brief, Exh 1A at 10, Exh 2A at 3, 6. The South African producers' shipments of vanadium pentoxide for aerospace applications were also ***. *Id.* Their production of vanadium products other than ferrovanadium totaled *** pounds contained vanadium in 2008, *** pounds contained vanadium in 2009, *** pounds contained vanadium in 2010, *** pounds contained vanadium in 2011, *** pounds contained vanadium in 2012, and *** pounds contained vanadium in 2013. CR/PR at Table IV-10. The South African producers' production of vanadium products other than ferrovanadium accounted for between *** and *** percent of their total production during the period of review. *Id*.

[61] CR/PR at Table IV-10 (ferrovanadium accounting for almost *** percent of vanadium products).

consumption is anticipated to grow, due to the growing intensity of the use of ferrovanadium in U.S. steel production and the industry's continuing economic growth since the recession.[62]

Although there have been few imports of subject ferrovandium from South Africa during the period of review, Rhovan's related entity Glencore Ltd. has actively participated in the U.S. ferrovanadium market. Rhovan has indicated that *** percent of the *** pounds of the ferrovanadium (contained vanadium) Glencore Ltd. sold in the United States during the period of review was converted in the United States or Canada from vanadium pentoxide that Rhovan produced in South Africa.[63] A Glencore representative testified that revocation of the antidumping duty order would facilitate the direct export of ferrovanadium from South Africa to the United States, providing Rhovan with greater flexibility in its operations.[64] This added flexibility would permit Rhovan to participate in the U.S. market in the same manner it participates in other markets. Glencore's established U.S. customers provide Rhovan with a potential avenue for increased U.S. sales of the ferrovandium it produces in South Africa.

In light of the above, including South Africa's large and growing production of ferrovanadium, its very high export orientation, its uncommitted production in South Africa, the attractiveness of the U.S. market, and the continued participation in the U.S. market of a South African producer's affiliate, we do not find that imports of ferrovanadium from South Africa would likely have no discernible adverse impact on the domestic industry in the event of revocation of the antidumping duty order.

C. Likelihood of a Reasonable Overlap of Competition

The Commission generally has considered four factors intended to provide a framework for determining whether subject imports compete with each other and with the domestic like

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[62] *See* CR/PR at Fig. IV-6 (reflecting a price premium for the U.S. market relative to the European market) Table C-1 (reflecting the size and growth in the U.S. market). *See also* CR/PR at Table II-3 (Fifteen of 37 reporting firms expect an increase in U.S. demand and only one of the 37 firms anticipates that U.S. demand will decline); Tr. at 64 (Bunting), 75 (Perles) (growing intensity of use of ferrovanadium in United States).

[63] CR at IV-17 n.22, PR at IV-11 n.22; Respondent Interested Parties' Posthearing Brief, Exhibit 2A at 9.

[64] Tr. at 160 (O'Connell). This fact, among others, distinguishes these reviews from *Ferrovanadium and Nitrided Vanadium from Russia*, Inv. No. 731-TA-702 (Third Review), USITC Pub. 4345 at 13-14 (August 2012. In that five-year review, the main Russian producer demonstrated that it was more cost-effective for it to continue to export vanadium pentoxide for conversion outside Russia, and that its exports of ferrovanadium to all markets had declined substantially. *Id.* By contrast, South African producers have exported far larger quantities of South African ferrovanadium than vanadium pentoxide to be converted elsewhere into ferrovanadium. *See* CR/PR at Tables IV-8 and IV-10, Respondent Interested Parties' Posthearing Brief, Exhibit 2A at 3. They have provided no information that it is more cost-effective to convert vanadium pentoxide to ferrovanadium in the United States or third-country markets rather than producing it in South Africa from vanadium pentoxide or (for Rhovan) vanadium trioxide.

product.[65] Only a "reasonable overlap" of competition is required.[66] In five-year reviews, the relevant inquiry is whether there likely would be competition even if none currently exists because the subject imports are absent from the U.S. market.[67]

Fungibility. In the original investigations, the Commission found there was at least a moderate level of fungibility between domestic ferrovanadium and the subject imports and among imports from China and South Africa. U.S. producers, tollees, and importers reported that subject imports and the domestic like product were always or frequently interchangeable.[68]

In the first reviews, domestic producers and tollees reported that subject imports were always interchangeable with one another and are always interchangeable with the domestic like product. A majority of purchasers and importers also said that ferrovanadium was at least frequently interchangeable in all comparisons between the domestic like product and the subject imports and in comparisons between subject imports from China and South Africa.[69]

The record in these reviews indicates that domestically produced and imported ferrovanadium from both subject countries continue to be interchangeable. All domestic producers/tollees and the vast majority of responding importers and purchasers reported that the domestic like product and imports from each subject source and nonsubject imports are always or frequently interchangeable.[70] As was true during the original investigations and first

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[65] The four factors generally considered by the Commission in assessing whether imports compete with each other and with the domestic like product are as follows: (1) the degree of fungibility between subject imports from different countries and between subject imports and the domestic like product, including consideration of specific customer requirements and other quality-related questions; (2) the presence of sales or offers to sell in the same geographical markets of imports from different countries and the domestic like product; (3) the existence of common or similar channels of distribution for subject imports from different countries and the domestic like product; and (4) whether subject imports are simultaneously present in the market with one another and the domestic like product. *See, e.g., Wieland Werke, AG v. United States*, 718 F. Supp. 50 (Ct. Int'l Trade 1989).

[66] *See Mukand Ltd. v. United States*, 937 F. Supp. 910, 916 (Ct. Int'l Trade 1996); *Wieland Werke,* 718 F. Supp. at 52 ("Completely overlapping markets are not required."); *United States Steel Group v. United States,* 873 F. Supp. 673, 685 (Ct. Int'l Trade 1994), *aff'd*, 96 F.3d 1352 (Fed. Cir. 1996). We note, however, that there have been investigations where the Commission has found an insufficient overlap in competition and has declined to cumulate subject imports. *See, e.g.*, *Live Cattle from Canada and Mexico*, Inv. Nos. 701-TA-386 and 731-TA-812-13 (Preliminary), USITC Pub. 3155 at 15 (Feb. 1999), *aff'd sub nom, Ranchers-Cattlemen Action Legal Foundation v. United States*, 74 F. Supp. 2d 1353 (Ct. Int'l Trade 1999); *Static Random Access Memory Semiconductors from the Republic of Korea and Taiwan*, Inv. Nos. 731-TA-761-62 (Final), USITC Pub. 3098 at 13-15 (Apr. 1998).

[67] *See generally*, *Chefline Corp. v. United States*, 219 F. Supp. 2d 1313, 1314 (Ct. Int'l Trade 2002).

[68] *Original Determinations*, USITC Pub. 3570 at 12.

[69] *First Reviews*, USITC Pub. 4046 at 14.

[70] CR/PR at Table II-9; CR at II-35, PR at II-23.

reviews, steel producers have the capability to use different grades of ferrovanadium by adjusting their steelmaking process.[71]

Channels of Distribution. In the original investigations and first reviews, both the domestic producers and importers sold the great majority of their ferrovanadium to end users, principally steel companies and iron foundries.[72] During the period of review, this pattern continued, with the vast majority of shipments from domestic producers, tollees and importers of ferrovanadium destined for end users.[73]

Simultaneous Presence and Geographic Overlap. In the original investigations, there was a significant geographical overlap among the subject merchandise from each subject country and the domestic like product.[74] Imports from both subject countries were also present in the U.S. market throughout the period of investigation.[75] Since 2002, however, there have, as noted, been only very limited imports from either subject country.

Conclusion. The record indicates that domestically produced ferrovanadium and subject imports from China and South Africa are generally fungible. Although subject imports were at low volumes during the period of review, we found above that subject imports would likely enter the U.S. market at levels sufficient to have a discernible adverse impact on the domestic industry if the orders are revoked. Therefore, based on the record, including evidence from the original investigations, we find that upon revocation the domestic like product and the subject imports likely would have similar channels of distribution, geographic overlaps in sales, and simultaneous presence in the U.S. market. Consequently, we find that there likely will be a reasonable overlap in competition between the domestic like product and subject imports from each country as well as among subject imports from each country upon revocation.

D. Likely Conditions of Competition

In determining whether to exercise our discretion to cumulate the subject imports, we assess whether subject imports from China and South Africa likely would compete under similar conditions in the U.S. market if the orders were revoked.

The record in these reviews does not indicate that there would likely be any significant difference in the conditions of competition between subject imports from China and South Africa if the orders were revoked. Both subject industries are large, export oriented, and—as previously discussed—are currently indirectly supplying ferrovanadium to the U.S. market after vanadium pentoxide from China and South Africa is converted to ferrovanadium in Korea and Canada, respectively.[76] Moreover, the ferrovanadium industry in each of the subject countries

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[71] CR at II-2, PR at II-1. *** reported that more consumers have shown a willingness to use 50 percent and 80 percent grades of ferrovanadium interchangeably. CR at II-1 to II-2, PR at II-1.

[72] *Original Determinations*, USITC Pub. 3570 at 13; *First Reviews*, USITC Pub. 4046 at 15.

[73] *See* CR/PR at Table II-1. Very limited data were reported for the subject imports due to their absence from the U.S market. *Id.*

[74] *Original Determinations*, USITC Pub. 3570 at 13.

[75] *Original Determinations*, USITC Pub. 4001 at 12.

[76] CR at IV-17 and IV-25, PR at IV-11 and IV-16.

supplied the U.S. market with substantial quantities of ferrovanadium in the original investigations.[77] Accordingly, we find that ferrovanadium from both subject countries would likely compete directly with one another and the domestic like product in the event of revocation, and we exercise our discretion to cumulate subject imports from China and South Africa.

IV. Revocation of the Antidumping Duty Orders Would Likely Lead to Continuation or Recurrence of Material Injury Within a Reasonably Foreseeable Time

A. Legal Standards

In a five-year review conducted under section 751(c) of the Tariff Act, Commerce will revoke an antidumping or countervailing duty order unless: (1) it makes a determination that dumping or subsidization is likely to continue or recur and (2) the Commission makes a determination that revocation of the antidumping or countervailing duty order "would be likely to lead to continuation or recurrence of material injury within a reasonably foreseeable time."[78] The SAA states that "under the likelihood standard, the Commission will engage in a counterfactual analysis; it must decide the likely impact in the reasonably foreseeable future of an important change in the status quo – the revocation or termination of a proceeding and the elimination of its restraining effects on volumes and prices of imports."[79] Thus, the likelihood standard is prospective in nature.[80] The U.S. Court of International Trade has found that

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[77] The Respondent Interested Parties argue that the Commission should exercise its discretion not to cumulate subject imports from South Africa because the subject producers in South Africa, due to contractual obligations, would be unable to supply the U.S. market with ferrovanadium upon revocation of the order while the Chinese subject producers would. We have explained above that this assertion is unsupported by the record, which indicates that the subject producers have uncommitted production sufficient to supply substantial additional quantities of ferrovanadium to the United States. The record also indicates that subject imports from China, and subject imports from South Africa to a lesser extent, are sold on the spot market. *See* CR at II-10, II-12, PR at II-6, II-8.

[78] 19 U.S.C. § 1675a(a).

[79] SAA at 883-84. The SAA states that "{t}he likelihood of injury standard applies regardless of the nature of the Commission's original determination (material injury, threat of material injury, or material retardation of an industry). Likewise, the standard applies to suspended investigations that were never completed." *Id*. at 883.

[80] While the SAA states that "a separate determination regarding current material injury is not necessary," it indicates that "the Commission may consider relevant factors such as current and likely continued depressed shipment levels and current and likely continued {sic} prices for the domestic like product in the U.S. market in making its determination of the likelihood of continuation or recurrence of material injury if the order is revoked." SAA at 884.

"likely," as used in the five-year review provisions of the Act, means "probable," and the Commission applies that standard in five-year reviews.[81]

The statute states that "the Commission shall consider that the effects of revocation or termination may not be imminent, but may manifest themselves only over a longer period of time."[82] According to the SAA, a "'reasonably foreseeable time' will vary from case-to-case, but normally will exceed the 'imminent' timeframe applicable in a threat of injury analysis in original investigations."[83]

Although the standard in a five-year review is not the same as the standard applied in an original investigation, it contains some of the same fundamental elements. The statute provides that the Commission is to "consider the likely volume, price effect, and impact of imports of the subject merchandise on the industry if the orders are revoked or the suspended investigation is terminated."[84] It directs the Commission to take into account its prior injury determination, whether any improvement in the state of the industry is related to the order or the suspension agreement under review, whether the industry is vulnerable to material injury if the orders are revoked or a suspension agreement is terminated, and any findings by Commerce regarding duty absorption pursuant to 19 U.S.C. § 1675(a)(4).[85] The statute further provides that the presence or absence of any factor that the Commission is required to consider shall not necessarily give decisive guidance with respect to the Commission's determination.[86]

In evaluating the likely volume of imports of subject merchandise if the orders under review are revoked and/or a suspended investigation is terminated, the Commission is directed to consider whether the likely volume of imports would be significant either in absolute terms

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[81] *See NMB Singapore Ltd. v. United States*, 288 F. Supp. 2d 1306, 1352 (Ct. Int'l Trade 2003) ("'likely' means probable within the context of 19 U.S.C. § 1675(c) and 19 U.S.C. § 1675a(a)"), *aff'd mem.*, 140 Fed. Appx. 268 (Fed. Cir. 2005); *Nippon Steel Corp. v. United States*, 26 CIT 1416, 1419 (2002) (same); *Usinor Industeel, S.A. v. United States*, 26 CIT 1402, 1404 nn.3, 6 (2002) ("more likely than not" standard is "consistent with the court's opinion;" "the court has not interpreted 'likely' to imply any particular degree of 'certainty'"); *Indorama Chemicals (Thailand) Ltd. v. United States*, 26 CIT 1059, 1070 (2002) ("standard is based on a likelihood of continuation or recurrence of injury, not a certainty"); *Usinor v. United States*, 26 CIT 767, 794 (2002) ("'likely' is tantamount to 'probable,' not merely 'possible'").

[82] 19 U.S.C. § 1675a(a)(5).

[83] SAA at 887. Among the factors that the Commission should consider in this regard are "the fungibility or differentiation within the product in question, the level of substitutability between the imported and domestic products, the channels of distribution used, the methods of contracting (such as spot sales or long-term contracts), and lead times for delivery of goods, as well as other factors that may only manifest themselves in the longer term, such as planned investment and the shifting of production facilities." *Id*.

[84] 19 U.S.C. § 1675a(a)(1).

[85] 19 U.S.C. § 1675a(a)(1). Commerce has not made any duty absorption findings with respect to the orders under review. CR at I-12, PR at I-10.

[86] 19 U.S.C. § 1675a(a)(5). Although the Commission must consider all factors, no one factor is necessarily dispositive. SAA at 886.

or relative to production or consumption in the United States.[87] In doing so, the Commission must consider "all relevant economic factors," including four enumerated factors: (1) any likely increase in production capacity or existing unused production capacity in the exporting country; (2) existing inventories of the subject merchandise, or likely increases in inventories; (3) the existence of barriers to the importation of the subject merchandise into countries other than the United States; and (4) the potential for product shifting if production facilities in the foreign country, which can be used to produce the subject merchandise, are currently being used to produce other products.[88]

In evaluating the likely price effects of subject imports if the orders under review are revoked and/or a suspended investigation is terminated, the Commission is directed to consider whether there is likely to be significant underselling by the subject imports as compared to the domestic like product and whether the subject imports are likely to enter the United States at prices that otherwise would have a significant depressing or suppressing effect on the price of the domestic like product.[89]

In evaluating the likely impact of imports of subject merchandise if the orders under review are revoked and/or a suspended investigation is terminated, the Commission is directed to consider all relevant economic factors that are likely to have a bearing on the state of the industry in the United States, including but not limited to the following: (1) likely declines in output, sales, market share, profits, productivity, return on investments, and utilization of capacity; (2) likely negative effects on cash flow, inventories, employment, wages, growth, ability to raise capital, and investment; and (3) likely negative effects on the existing development and production efforts of the industry, including efforts to develop a derivative or more advanced version of the domestic like product.[90] All relevant economic factors are to be considered within the context of the business cycle and the conditions of competition that are distinctive to the industry. As instructed by the statute, we have considered the extent to which any improvement in the state of the domestic industry is related to the orders under review and whether the industry is vulnerable to material injury upon revocation.[91]

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[87] 19 U.S.C. § 1675a(a)(2).

[88] 19 U.S.C. § 1675a(a)(2)(A-D).

[89] *See* 19 U.S.C. § 1675a(a)(3). The SAA states that "{c}onsistent with its practice in investigations, in considering the likely price effects of imports in the event of revocation and termination, the Commission may rely on circumstantial, as well as direct, evidence of the adverse effects of unfairly traded imports on domestic prices." SAA at 886.

[90] 19 U.S.C. § 1675a(a)(4).

[91] The SAA states that in assessing whether the domestic industry is vulnerable to injury if the order is revoked, the Commission "considers, in addition to imports, other factors that may be contributing to overall injury. While these factors, in some cases, may account for the injury to the domestic industry, they may also demonstrate that an industry is facing difficulties from a variety of sources and is vulnerable to dumped or subsidized imports." SAA at 885.

B. Conditions of Competition and the Business Cycle

In evaluating the likely impact of the subject imports on the domestic industry if an order is revoked, the statute directs the Commission to consider all relevant economic factors "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[92] The following conditions of competition inform our determinations.

Demand Conditions. In its original determinations, the Commission found that demand for ferrovanadium followed demand for steel products, and demand was relatively stable at the beginning of the period of investigation before declining towards the end. As measured by apparent U.S. consumption, U.S. ferrovanadium demand was relatively steady at 13.0 million pounds in 1999 and 2000, but then decreased to 11.9 million pounds in 2001. Questionnaire respondents agreed that the global market for ferrovanadium affected U.S. prices of ferrovanadium.[93]

In the first reviews, the Commission found that apparent U.S. consumption of ferrovanadium was higher at the conclusion of the period of review than at the beginning but fluctuated annually. Demand outside the United States also increased. Reasons given for the increase included greater steel and specialty steel production, particularly in India and China, and economic growth in China.[94]

In these reviews, the record indicates that ferrovanadium is used primarily in the production of steel, particularly high-strength, low-alloy steel, and that demand for ferrovanadium is determined largely by steel production.[95] The domestic ferrovanadium industry was affected by the sharp decline in steel production from 2008 to 2009.[96] There are also new sources of demand for vanadium such as use of vanadium pentoxide for aerospace applications and energy storage, but demand for vanadium in these applications is relatively small.[97]

Apparent U.S. consumption fell sharply from 14.9 million pounds contained vanadium in 2008 to 8.6 million pounds contained vanadium in 2009.[98] Apparent U.S. consumption then recovered, rising to 13.4 million pounds contained vanadium in 2010, 14.2 million pounds contained vanadium in 2011, 15.6 million pounds contained vanadium in 2012, and 15.3 million pounds contained vanadium during 2013.[99]

While the U.S. steel industry has recovered from the decline due to the recession early in the period of review, the European industry has not recovered as quickly.[100] China and

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[92] 19 U.S.C. § 1675a(a)(4).

[93] Original Determinations, USITC Pub. 3570 at 14.

[94] *First Reviews*, USITC Pub. 4046 at 20-22.

[95] CR at I-14, II-1 and II-17, PR at I-12, II-1 and II-10.

[96] Tr. at 34 (Orr).

[97] CR at II-19, PR at II-11.

[98] CR/PR at Table I-8.

[99] CR/PR at Table I-9. Apparent U.S. consumption was 8.0 million pounds contained vanadium in interim 2013 and 8.5 million pounds contained vanadium in interim 2014.

[100] Tr. at 33-34 (Orr), 60 (Button).

Taiwan, where growth in demand has recently been robust, accounted for almost half of global consumption of vanadium in 2013.[101]

The U.S. steel industry also consumes a larger percentage of vanadium per ton of steel produced compared to steel industries in many other countries, particularly countries with developing economies.[102] Steel that incorporates ferrovanadium, particularly high strength, low-alloy steel, is used more in the United States than in many other countries and this segment of the market continues to expand.[103]

In the current reviews, the record indicates that there continue to be few substitutes for ferrovanadium and its demand is relatively inelastic.[104] U.S. market participants reported that there have been no changes in the end uses of ferrovanadium since 2008 and they did not anticipate changes in the future.[105]

Supply Conditions. In the original investigations, the Commission identified three producers of ferrovanadium in the U.S. market and explained that two tollees arranged for one of those producers (Bear) to toll produce ferrovanadium for them. Nonsubject imports (primarily from Austria, Belgium, Canada, and the Czech Republic) increased from 1.9 million pounds in 1999 to 3.0 million pounds in 2000, before declining to 2.2 million pounds in 2001.[106]

In the first reviews, the Commission observed that about 50 percent of ferrovanadium imports from nonsubject countries since the original investigations were from the Czech Republic. Nonsubject imports from Korea had grown over the period of review and were almost as large as imports from the Czech Republic in 2007. Nonsubject imports from the Czech Republic were reportedly produced with vanadium pentoxide from Russia while nonsubject imports from Korea were reportedly produced with vanadium pentoxide from China.[107]

As was the case during the original investigations and first reviews, a substantial portion of domestic production continues to be produced pursuant to tolling agreements. The *** is under tolling agreements with several tollees including: Evraz East Metals AG; Evraz Stratcor, Inc.; Energy Fuels, Inc.; Glencore, Ltd.; Gulf Chemicals and Metallurgical Corporation; and Minerais US LLC.[108]

During the period of review, the domestic industry added to its production capacity. The industry's capacity increased from *** pounds contained vanadium in 2008 to *** pounds contained vanadium in 2013.[109] The domestic producers' ferrovanadium production and

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[101] CR/PR at Table IV-14.

[102] Tr. at 64 (Bunting), 75 (Perles).

[103] Tr. at 59, 64 (Bunting).

[104] CR at II-17 PR at II-10; Tr. at 44 (Lutz).

[105] CR at II-19, PR at II-11.

[106] *See, e.g., Original Determinations*, USITC Pub. 3570 at 14-17.

[107] *First Reviews*, USITC Pub. 4046 at 20-22.

[108] CR at I-24 to I-25, PR at I-18. Under the tolling arrangements, the tollees provide raw materials to Bear, pay Bear a conversion fee, retain title to the product produced, and sell the ferrovanadium to customers. CR at I-24, PR at I-18. *See also* CR at III-16 n.5, PR at III-9 n.5.

[109] CR/PR at Table III-4.

capacity utilization fell during the period and ferrovanadium's share of all vanadium products produced by the domestic industry declined from *** percent in 2008 to *** percent in 2013.[110] The domestic industry's share of apparent U.S. consumption was lower in 2013, at 46.9 percent, than it was in 2008 at 58.5 percent.[111]

The share of apparent U.S. consumption held by nonsubject imports was 53.1 percent in 2013, as compared to 41.5 percent in 2008.[112] Accounting for the increase in nonsubject imports has been the large increase in nonsubject imports from the Czech Republic, which accounted for the majority of ferrovanadium imports during 2013.[113] As previously stated, subject imports were essentially absent from the U.S. market during the period.[114]

The record indicates in these reviews that a large proportion of nonsubject U.S. imports of ferrovanadium from Canada consists of product converted from vanadium pentoxide exported from China and South Africa, and a large proportion of U.S. imports of ferrovanadium from Korea is product converted from vanadium pentoxide exported from China.[115]

There are also additional potential sources of supply of vanadium on the world market.[116] These include a new facility in Brazil that has recently started production. Glencore International Plc (the parent of Rhovan) has committed to purchasing the facility's output of vanadium pentoxide for six years.[117] Other potential producers include Windimurra in Australia and American Vanadium in the United States, although these operations have yet not initiated commercial production.[118]

Substitutability and Other Conditions. In the original investigations, the Commission found that ferrovanadium of all grades and sources is interchangeable and that most purchasers bought ferrovanadium at the lowest price. Prices were often based on industry benchmarks in publications such as *Ryan's Notes* and *American Metal Market.*[119] In the first reviews, the Commission observed that there were few applications in which other products (typically ferroniobium) could be substituted for ferrovanadium, and then only when the substitution could be justified on a price basis.[120]

In the current reviews, the record indicates that ferrovanadium from domestic sources and from the subject countries is highly substitutable and price remains the key determinant for U.S. purchasers.[121] Consistent with the Commission's observations in the prior proceedings, prices published in industry publications like *Ryan's Notes* and *American Metal Market* are used

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[110] CR/PR at Table III-4.
[111] CR/PR at Table I-1.
[112] CR/PR at Table I-9.
[113] CR/PR at Table IV-2.
[114] CR/PR at Table I-9.
[115] CR at CR at IV-17, IV-17 n.22, IV-25, PR at IV-11, IV-11 n.22, IV-16.
[116] CR at IV-25 to IV-26, PR at IV-16 to IV-17.
[117] CR at IV-26. *See also* Domestic Interested Parties' Posthearing Brief, Exhibit 9.
[118] CR at IV-25 to IV-26, PR at IV-16 to IV-17.
[119] *Original Determinations*, USITC Pub. 3570 at 14-17.
[120] *First Reviews*, USITC Pub. 4046 at 20-22.
[121] CR at II-22, PR at II-14.

in the U.S. market as benchmarks for pricing formulas in sales contracts as well as for spot sales.[122] *Ryan's Notes* is the most widely used benchmark in the United States.[123] Contract prices in the United States and Europe for ferrovanadium are typically quoted as a percentage discount from the published spot prices.[124] An estimated 85 percent of U.S. sales by producers/tollees are pursuant to contracts.[125] The majority of the South African producers' sales are pursuant to contract as well.[126]

Spot prices affect contract benchmarks quickly as contract prices adjust monthly based upon spot prices. For instance, contract prices for an October delivery of ferrovanadium would be adjusted based on changes in *Ryan's Notes* prices published in September. If published prices are lower in September than in August, the steel mill customer will pay the producer a lower price for ferrovanadium ordered in October compared to product ordered in September.[127] Thus, U.S. producers' contract prices are affected directly and within a very short time by the prices of spot sales.[128] Contracts are typically negotiated in the fourth quarter of the year for the following year.[129]

C. Likely Volume of Subject Imports

Original Investigations and First Reviews. In the original investigations, the Commission found that the volume of cumulated subject imports increased from 2.3 million pounds in 1999 to 2.5 million pounds in 2000 and then to 3.5 million pounds in 2001. Cumulated subject import volume was 1.6 million pounds in interim (January-June) 2001 and 0.5 million pounds in interim 2002. The market share of cumulated subject imports increased from 17.8 percent in 1999 to 19.4 percent in 2000 and then to 29.2 percent in 2001; the market share was lower at 8.1 percent of domestic consumption in interim 2002 than it was in interim 2001 at 26.3 percent. The Commission found that domestic producers and tollees lost market share progressively from 67.2 percent in 1999 to 57.6 percent in 2000 and then to 52.8 percent in 2001. Their market share was 55.9 percent in interim 2001 and 55.5 percent in interim 2002. The Commission found the volume and increase in volume of cumulated subject imports, both in absolute terms and relative to apparent domestic consumption in the United States, to be significant.[130]

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[122] CR at V-5, PR at V-3.

[123] Tr. at 45-46 (Lutz).

[124] Tr. at 199 (O'Connell).

[125] CR/PR at Table V-2.

[126] CR/PR at Table V-3. *See also* Respondent Interest Parties' Posthearing Brief, Exhibit 1A at 13 (*** percent of Vanchem's sales were pursuant to contract in 2013 and 2014, respectively); *Id.*, Exhibit 2A at 7 (*** percent of Rhovan's sales were pursuant to contract in 2013 and 2014, respectively).

[127] Tr. at 23-24 (Carter), 85-86 (Lutz).

[128] *Id.*

[129] Tr. at 91 (Carter).

[130] *See* USITC Pub. 3570 at 17-18.

In the first reviews, the Commission found that the evidence indicated that the orders had a restraining effect on subject imports from China and South Africa. It found that ferrovanadium industries in the subject countries were substantial, and there was substantial unused capacity available. Producers in South Africa reported *** end-of-period inventories as well.[131]

The Commission observed that producers in China and South Africa were significant world-wide exporters of ferrovanadium. It also cited the fact that in 2007, the Chinese government cancelled a 5 percent export tax rebate for vanadium pentoxide exports, and in January 2008, the Chinese government imposed a 5 percent duty on exports of vanadium pentoxide. It found that these changes would likely increase the availability of the intermediate material for Chinese production of ferrovanadium. The Commission additionally stated that the U.S. market for ferrovanadium was attractive because its published spot prices were generally significantly higher than spot prices in Europe and Asia.[132]

Given their substantial new and unused production capacity and end-of-period inventories, the Commission found that producers in the subject countries would likely direct substantial quantities of ferrovanadium to the U.S. market should the antidumping duty orders be revoked. The Commission concluded that there likely would be a significant increase in cumulated imports of ferrovanadium from the subject countries to the United States, both in absolute terms and relative to U.S. consumption, upon revocation.[133]

Current Reviews. In these reviews, the record indicates that the orders have had a disciplining effect on the volume of subject imports from China and South Africa, which decreased significantly since the imposition of the orders in 2003. With the exception of 2010 and interim 2014, cumulated subject imports have remained under 1,000 pounds contained vanadium and accounted for less than 0.1 percent of apparent U.S. consumption in each year and in interim 2014.[134]

As previously stated, the Commission has relatively complete information concerning the subject industry in South Africa, but no information from any foreign producer or exporter of subject merchandise from China. The lack of participation has prevented the Commission from assembling a comprehensive set of production and capacity data for the cumulated subject imports. Nonetheless, the record demonstrates that the subject industries have significant and increasing production capacity, and have exported large volumes of ferrovanadium and related vanadium products during the period of review.

Although the record contains no questionnaire data on ferrovanadium production in China, the industry in China is by far the world's largest producer of vanadium. It is estimated

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[131] *First Reviews*, USITC Pub. 4046 at 24.

[132] *First Reviews*, USITC Pub. 4046 at 25.

[133] *First Reviews*, USITC Pub. 4046 at 26-27.

[134] CR/PR at Table I-8, C-1 (historical table). Subject imports from South Africa totaled 11,000 pounds contained vanadium during interim 2014, which was less than 0.1 percent of apparent U.S. consumption. *Id.*

to account for more than 50 percent of global production.[135] Vanadium production in China also increased during the period of review.[136]

Public sources indicate that Panzhihua and Chengde are the largest producers of ferrovanadium in China, but there are 40 significant producers, and an estimated 150 small scale operations.[137] Panzhihua also reportedly opened a new ferrovanadium and vanadium bearing steel plant in Sichuan Province in 2012 with an annual capacity of 18,800 tons of ferrovanadium.[138] Thus, the record indicates that capacity and production of ferrovanadium in China has increased during the period of review.

The Chinese industry is one of the world's largest exporters of ferrovanadium.[139] Chinese exports of ferrovanadium increased from 12.9 million pounds in 2008 to 13.4 million pounds in 2013.[140] By contrast, Chinese exports of vanadium pentoxide declined from 33.2 million pounds in 2008 to 13.6 million pounds in 2013.[141] This decline reportedly reflects changes in the duties assessed in China on exports of vanadium pentoxide that discouraged exports of vanadium pentoxide and encouraged exports of ferrovanadium.[142]

South Africa is one of the world's largest producers of ferrovanadium.[143] Capacity allocated to the production of ferrovanadium in South Africa increased from *** pounds in 2008 to *** pounds in 2013; production also increased from *** pounds in 2008 to *** pounds in 2013.[144] Although the record reflected only a small increase in production capacity allocated to ferrovanadium in South Africa, production capacity for all vanadium products increased over the period.[145] Ferrovanadium also continues to account for a significant majority of both South African producers' production of vanadium products despite their contention that it is more profitable to produce vanadium pentoxide for aerospace applications.[146]

There is virtually no home market for ferrovanadium in South Africa, and consequently, the South African producers export virtually all of their production. South African exports of ferrovanadium increased from *** pounds contained vanadium in 2008 to *** pounds in

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[135] CR at IV-11, PR at IV-1; CR/PR at Table IV-11.

[136] CR/PR at Table IV-11; CR/PR at Fig. IV-2. Respondent Interested Parties state that China is likely to be a significant increased source of global vanadium supply. Respondent Interested Parties' Prehearing Brief at 24.

[137] CR at IV-11 to IV-12, PR at IV-7 to IV-8.

[138] CR at IV-11 to IV-12, PR at IV-7 to IV-8.

[139] CR/PR at Table IV-12.

[140] CR/PR at Table IV-5. The Chinese home market for vanadium products is relatively large. CR/PR at Fig. IV-4, Table IV-14.

[141] CR/PR at Table IV-6.

[142] Domestic Interested Parties' Prehearing Brief at 74.

[143] CR/PR at Table IV-12.

[144] CR/PR at Table IV-8.

[145] *See* CR/PR at Tables IV-8 and IV-10.

[146] CR/PR at Table IV-10 (ferrovanadium accounting for almost *** percent of vanadium products). As noted, Rhovan's projects *** for aerospace applications.

2013.[147] The South African producers have also shifted their exports of ferrovanadium between export markets in response to changing market conditions.[148]

As explained, the two South African subject producers reported uncommitted ferrovanadium production for 2015 which, if applied to their production in 2013, would be equivalent to nearly *** percent of apparent U.S. consumption in that year.[149] Furthermore, only approximately *** of the South African producers' sales of ferrovanadium are pursuant to contracts greater than one year.[150] As a result, the record indicates there will be substantial volumes of subject merchandise from South Africa available for sale to the United States during 2016 when contracts are negotiated in the fourth quarter of 2015.[151]

Therefore, the record indicates that the subject industries in China and South Africa are large, growing, and export oriented. Despite being largely absent from the U.S. market during the period of review, subject imports would likely reenter the market without the restraining effect of the orders, as the record indicates that the United States is a relatively attractive market for exports of ferrovanadium. The U.S. market has higher published spot prices than alternative markets such as Europe.[152] Demand in the United States is also relatively robust compared to other markets. The U.S. steel industry has recovered from the recession more quickly than the steel industry in Europe, and U.S. steel producers have increased their use of ferrovanadium as compared to steel producers in other markets.[153]

The subject producers' continued participation in the U.S. market during the period of review also provided evidence of the attractiveness of the U.S. market. The subject producers have continued to indirectly serve demand in the U.S. market for ferrovanadium by selling vanadium pentoxide that is converted in the United States or third country markets. As discussed above, vanadium from China continues to enter the United States after conversion to

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[147] CR/PR at Table IV-8.

[148] CR/PR at Table IV-8.

[149] Respondent Interested Parties' Posthearing Brief, Exhibit 2A at 3 and Exhibit 1A at 3.

[150] CR/PR at Table V-3. Respondent Interest Parties' Posthearing Brief, Exhibit 1A at 13 and Exhibit 2A at 7.

[151] Given that subject producers in South Africa report operating *** and the record does not contain specific production and capacity data for the ferrovanadium industry in China, we have not relied upon unused production capacity in the subject countries as a basis for our finding of likely significant volumes of subject imports.

[152] CR/PR at Fig. IV-6. The Respondent Interested Parties dispute there is a meaningful price differential and assert that the costs associated with selling in the United States are higher because of packaging and duties, but have not documented these costs. Respondent Interested Parties' Posthearing Brief at 5 and Exhibit 3. Domestic producers claim that any differences alleged by Respondent either do not exist or do not overcome the disparity. Domestic Interested Parties' Posthearing Brief at Tab A, pp. 53-58.

[153] Tr. at 33-34 (Orr), 60 (Button); 64 (Bunting).

ferrovanadium in Korea, and Glencore ships vanadium pentoxide to the United States and Canada for conversion into ferrovanadium.[154]

Thus, the U.S. market is an attractive market for subject producers in China and South Africa, and given the industries' export orientation as well as large production volumes and capacities, we find it likely that there will be significant shipments of cumulated subject imports if the antidumping duty orders were revoked.[155]

In light of these factors, we find that the subject producers are likely, absent the restraining effects of the orders, to direct significant volumes of ferrovanadium to the U.S. market, as they did during the original period of investigation. We find that the likely volume of subject imports, both in absolute terms and relative to consumption in the United States, would be significant if the orders were revoked.

D. Likely Price Effects

Original Investigations and First Reviews. In its original determinations, the Commission found that domestically produced ferrovanadium and subject imports were generally substitutable, and that price was the key factor in purchasing decisions. Because the Commission noted that its price comparison data indicated mostly overselling, the Commission did not find significant underselling. It observed that prices for both the domestic like product and the subject merchandise declined over the period of investigation. In light of the highly substitutable nature of the products and the increasing volume of subject imports, the Commission found that subject imports depressed domestic prices to a significant degree. The Commission indicated that the confirmed lost sales and revenue allegations of the domestic industry supported its price depression findings.[156] It found that the increasing volumes of highly substitutable subject imports played a significant role in driving down ferrovanadium

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[154] *See, e.g.,* CR at IV-17, IV-25, PR at IV-11 and IV-16. Glencore Ltd., acting as a tollee, has converted South African vanadium pentoxide to ferrovanadium in the United States. CR at IV-17, PR at IV-11.

[155] We have also considered the potential for product shifting by subject producers. The record indicates that the subject producers produce vanadium pentoxide and other vanadium products on the same equipment and with the same machinery that they produce ferrovanadium. CR at IV-20, PR at IV-12. However, we do not rely on the potential for product shifting for purposes of our analysis of likely subject import volume.

Information concerning inventories in South Africa indicates that inventories as a ratio to shipments decreased from *** percent in 2008 to about *** percent in 2013. CR at II-14, PR at II-8; CR/PR at Table IV-8. While the levels of these inventories are large, the South African producers indicate that these inventories are already earmarked for customers and cannot be directed to the United States. *Id.* The record does not contain data with respect to inventories in China. CR at II-10, PR at II-6. We therefore do not consider inventories to be a potential source of shipments to the United States. The record does not indicate that there are barriers to imports of ferrovanadium from the subject countries in third country markets.

[156] *See* USITC Pub. 3570 at 19-20.

prices in the United States. The Commission therefore concluded that domestic prices had been depressed to a significant degree by the subject imports.[157]

In the first reviews of the antidumping duty orders, prices of the domestic like product increased during the period of review as the costs of vanadium-bearing inputs used to produce ferrovanadium in the United States increased. However, the Commission found that the likely significant quantities of low-priced subject imports from China and South Africa would likely limit the domestic industry's ability to raise prices commensurately with increased costs in the event of revocation. The Commission concluded that significant additional quantities of subject imports were likely if the antidumping duty orders were revoked and that subject imports would likely have significant price-suppressing or -depressing effects in light of the highly substitutable nature of ferrovanadium, the sensitivity of ferrovanadium prices to changes in the supply of ferrovanadium and vanadium pentoxide, and the fact that low-priced subject imports from China and South Africa gained significant market share at the expense of nonsubject imports and the domestic industry during the original investigations.[158]

Current Reviews. As discussed above, subject imports from China and South Africa are highly substitutable for ferrovanadium produced in the United States. Purchasers frequently indicated that price is the most important factor in purchasing decisions.[159] Demand is also relatively inelastic. Consequently, even relatively modest volumes of subject imports could have significant price-suppressing or price-depressing effects.

The Commission collected pricing data on sales of two ferrovanadium products in these reviews.[160] Seven U.S. producers and tollees provided usable pricing data, which represented *** percent of U.S. commercial market shipments of domestically produced ferrovanadium.[161] Twelve importers provided usable pricing data, which represented all imported product from China and South Africa.[162] As discussed, the volume of subject imports from both countries was very limited during the period of review. In the three instances in which subject merchandise was imported, it oversold domestically produced ferrovanadium.[163] The pricing data also indicate that prices for domestically produced ferrovanadium fell sharply during 2008 and then were relatively stable during the remainder of the period of review.[164]

We find that additional significant volumes of subject imports are likely to place pressure on the prices domestic producers and tollees charge for ferrovanadium. Chinese and

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[157] *See* USITC Pub. 3570 at 19-20.

[158] *First Reviews*, USITC Pub. 4046 at 27.

[159] *See* CR at II-24, PR at II-15. Purchasers most frequently indicated that price was the most important factor in purchasing decisions. *Id.;* CR/PR at Table II-5.

[160] CR at V-10, PR at V-6.

[161] CR at V-10, PR at V-7.

[162] CR at V-10, PR at V-7.

[163] CR at V-16, PR at V-9; CR/PR at Table V-8. During the original investigations, there were five instances of underselling and 28 instances of overselling. During the first reviews, there were seven instances of underselling and two instances of overselling by the subject imports. CR at V-16 n.13, PR at V-8 n.13.

[164] CR/PR at Table V-15, Fig. V-3, Fig. V-4.

South African producers currently sell a portion of their ferrovanadium on the spot market.[165] Given the South African producers' reported commitments and the prevalence of contracts in the market, subject imports are likely to first be sold on the spot market in the event of revocation of the orders. However, because contracts are based on spot prices, a decline in spot prices will quickly affect existing and future contract prices as well. As additional contracts are bid, subject imports are likely to enter the short-term contract and long-term contract portions of the market as well.

Because of the importance of price in purchasing decisions and the inelasticity of demand for ferrovanadium, the increasing volumes of subject imports are likely to place downward pressure on prices and in turn cause the domestic industry to consider either reducing its prices or foregoing price increases in order to maintain market share. We therefore conclude that the likely significant volume of cumulated imports of ferrovanadium from China and South Africa would likely have significant price depressing or suppressing effects if the antidumping duty orders were revoked.

E. Likely Impact[166]

Original Investigations and First Reviews. In the original investigations, the Commission found that as the volume of subject imports increased, the industry's condition worsened, as evidenced by declines in a number of performance indicators. Domestic producers' commercial shipments remained steady in 1999 and 2000 before falling in 2001, and were lower in interim 2002 than in interim 2001. The domestic industry's production capacity increased between 2000 and 2001, but domestic producers decreased production from 1999 to 2001. The domestic industry's capacity utilization dropped as did the domestic industry's average number of production workers.[167]

The domestic industry also sustained *** throughout the period of investigation. The domestic industry's *** in 2001 coincided with the dramatic increase in subject import volume in 2001. The Commission attributed domestic producers' continued performance declines in interim 2002 to the release of the significant increases in subject import inventories held by

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[165] CR/PR at Table V-3; CR at II-10 and II-12, PR at II-6 and II-7; Tr. at 130 (O'Connell).

[166] Under the statute, "the Commission may consider the magnitude of the margin of dumping" in making its determination in a five-year review. 19 U.S.C. § 1675a(a)(6). The statute defines the "magnitude of the margin of dumping" to be used by the Commission in a five-year review as "the dumping margin or margins determined by the administering authority under section 1675a(c)(3) of this title." 19 U.S.C. § 1677(35)(C)(iv); see also SAA at 887. Commerce expedited its determinations in both reviews and made affirmative determinations. With regard to subject imports from China, Commerce found a likely dumping margin of 12.97 percent for the Pangang Group International Economic & Trading Corporation and 66.71 percent for all other entities. CR/PR at Table I-3; *Ferrovanadium from China and South Africa: Final Results of the Expedited Second Sunset Reviews of the Antidumping Duty Orders*, 79 Fed. Reg. 14216-17 (March 13, 2014). With respect to subject imports from South Africa, Commerce found likely dumping margins of 116.00 percent for all entities. *Id.*

[167] *Original Determinations*, USITC Pub. 3570 at 21.

U.S. importers through the end of 2001, even while actual subject import volume declined after the filing of the petition. The Commission found there were significant increases in the volume and market share of the subject imports and that subject imports had a significant depressing effect on domestic prices. Large volumes of subject imports and depressed prices in the U.S. market led to deterioration in the overall condition of the domestic industry during the period of investigation. Accordingly, the Commission found that the subject imports were having a significant adverse impact on the domestic industry.[168]

In the first reviews, the Commission found that after progressively losing market share in the original investigations to subject imports, which also displaced nonsubject imports, the domestic industry increased its share of apparent U.S. consumption. The domestic industry's market share rose irregularly from 55.9 percent in 2002 to 63.4 percent 2007.[169] Its market share was 55.9 percent in 2002, 74.5 percent in 2003, 56.7 percent in 2004, 60.8 percent in 2005, 64.8 percent in 2006, and 63.4 percent in 2007. Further, in contrast to the period examined in the original investigations, domestic producers operated profitably during much of the period of review, although their performance fluctuated considerably. These trends were also consistent with the performance of Bear's tollees Gulf and Stratcor during the period of review. By restraining the volume of subject imports, the Commission found that the orders contributed to the industry's improved financial performance during the period of review. In light of the domestic industry's performance, the Commission did not find that the domestic industry as a whole was in a vulnerable state.[170]

The Commission additionally found that there was unlikely to be sufficient increased demand to fully absorb a substantial increase in supply. Potential vanadium production in Australia coupled with the opening of a new ferrovanadium facility in Australia also increased the likelihood that, if the antidumping duty orders were revoked, subject producers in China and South Africa would ship a significant volume of ferrovanadium to the U.S. market. Thus, the Commission found that revocation of the antidumping duty orders on the cumulated subject imports would likely have a significant adverse impact on the domestic industry's output, sales, market share, employment, profits, and return on investment.[171]

Current Reviews. During the period of review, the condition of the domestic industry was initially affected by the U.S. economic downturn,[172] but the industry recovered and

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[168] *See, e.g.,* USITC Pub. 3570 at 21-22. The Commission noted that its conclusion was further confirmed by consideration of the performance of Bear's tollees, Gulf and USV, and it noted that such consideration is consistent with the statutory requirement to "evaluate all relevant economic factors ... within the context of the business cycle and conditions of competition that are distinctive to the affected industry."

[169] Its market share was 55.9 percent in 2002, 74.5 percent in 2003, 56.7 percent in 2004, 60.8 percent in 2005, 64.8 percent in 2006, and 63.4 percent in 2007. *First Reviews*, USITC Pub. 4046 at 33-24.

[170] *First Reviews*, USITC Pub. 4046 at 33-34.

[171] *First Reviews*, USITC Pub. 4046 at 34.

[172] In these reviews, we have focused on the financial condition of domestic producers AMG and Bear. Because the *** of Bear's production is sold into the market by its tollees, Bear is principally (Continued…)

remained profitable during the period of review as apparent U.S. consumption increased in most years after 2009.[173] During the final two years of the period of review, there was some deterioration in the performance of the industry despite increased apparent U.S. consumption as the industry's net sales and U.S. shipments declined overall.[174] However, during interim 2014, the domestic industry reported increased shipments and sales values resulting in increased profitability.[175]

Average production capacity increased between 2008 and 2013.[176] Production levels declined substantially from 2008 to 2009, increased in 2010, but then declined, and remained at lower levels in 2012 and 2013 relative to 2008.[177] Capacity utilization also declined from 2008 to 2009, then rose from 2009 to 2010 before declining from 2011 to 2013.[178] Trends in

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(…Continued)
affected by market conditions through its tollees. CR/PR at Table III-8. A reduction in demand for ferrovanadium sold by the tollees would reduce the volume of Bear's toll conversion and its profits. If ferrovanadium prices were to fall, Bear's tollees become less profitable and would exert pressure on Bear to reduce its conversion fee, which in turn would reduce Bear's profit. Thus, although Bear is for the most part not directly exposed to the conditions in the ferrovanadium sales market, these conditions, and the health of its tollees, impact Bear's financial condition. AMG, on the other hand, is directly exposed to market conditions, and therefore is directly injured by falling sales volume and prices. The data reflect decreasing commercial sales and tolling volumes from 2008 to 2013 for both the domestic industry, CR/PR at Table III-11, and for the commercial sales operations of the domestic industry consolidated with those of the tollees, CR/PR at Table III-15.

[173] *See* CR/PR at Tables I-8, III-7, III-11 and III-12.

[174] *See* CR/PR at Tables I-8, III-7, III-11 and III-12.

[175] See CR/PR at Tables III-7, III-11 and III-12.

[176] The domestic industry's average overall capacity was *** pounds contained vanadium in 2008, *** pounds contained vanadium in 2009 and *** pounds during 2010 to 2012. Its capacity was *** pounds contained vanadium in 2013, *** pounds contained vanadium in interim 2013 and *** pounds contained vanadium in interim 2014. CR/PR at Table III-4.

[177] CR/PR at Table III-4. The domestic industry's production was *** pounds contained vanadium in 2008, *** pounds contained vanadium in 2009, *** pounds contained vanadium in 2010, *** pounds contained vanadium in 2011, *** pounds contained vanadium in 2012, and *** pounds contained vanadium in 2013. Production was *** pounds contained vanadium in interim 2013 and *** pounds contained vanadium in interim 2014. CR/PR at Table III-4. Net sales by quantity followed a similar trend, falling from *** pounds contained vanadium in 2008 to *** pounds contained vanadium in 2009, and then increasing to *** pounds contained vanadium in 2010, *** pounds contained vanadium in 2011, *** pounds contained vanadium in 2012 and *** pounds contained vanadium in 2013. Net sales were *** pounds contained vanadium in interim 2013 and *** pounds contained vanadium in interim 2014. CR/PR at Table III-11.

[178] The domestic industry's capacity utilization was *** percent in 2008, *** percent in 2009, *** percent in 2010, *** percent in 2011, *** percent in 2012, and *** percent in 2013. It was *** percent in interim 2013 and *** percent in interim 2014. CR/PR at Table III-4. The domestic industry produces other vanadium products using the same employees and production and related equipment as ferrovanadium. The portion of the domestic industry's total capacity to manufacture ferrovanadium decreased over the period, from *** percent in 2008 to *** percent in 2013. CR/PR at Table III-6.

the domestic industry's U.S. shipments mirrored those for production.[179] End-of-period inventories relative to production and shipments fluctuated on an annual basis but declined from 2008 to 2013.[180] As nonsubject imports increased during the period, the domestic industry lost market share.[181]

The number of production and related workers and total hours worked and wages paid decreased overall from 2008 to 2013.[182] Hourly wages, notwithstanding annual fluctuations, were relatively steady from 2008 to 2013, whereas productivity decreased.[183]

The domestic industry's net sales value, operating income, and operating income ratio fluctuated but declined overall from 2008 to 2013.[184] The industry earned operating profits

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[179] The domestic producers' and tollees' U.S. shipments were 8.7 million pounds contained vanadium in 2008, 7.9 million pounds contained vanadium in 2009, 10.4 million pounds contained vanadium in 2010, 9.4 million pounds contained vanadium in 2011, 6.4 million pounds contained vanadium in 2012, and 7.2 million pounds contained vanadium in 2013. The domestic industry's U.S. shipments were 3.3 million pounds contained vanadium in interim 2013 and 4.3 million pounds contained vanadium in interim 2014. CR/PR at Table III-7. Exports were a small portion of total shipments. CR/PR at Table III-7.

[180] The ratio of domestic producers' and tollees' end-of-period inventories to total shipments was *** percent in 2008, *** percent in 2009, *** percent in 2010, *** percent in 2011, *** percent in 2012, and *** percent in 2013. CR/PR at Table III-9. The ratio was *** percent in interim 2014 as compared to *** percent in interim 2013. *Id.*

[181] The domestic producers' and tollee's market share was 58.5 percent in 2008, 91.0 percent in 2009, 78.0 percent in 2010, 65.9 percent in 2011, 40.9 percent in 2012, and 46.9 percent in 2013. It was 40.7 percent in interim 2013 and 50.3 percent in interim 2014. CR/PR at Table I-9.

[182] There were *** production and related workers in 2008, *** in 2009, *** in 2010, *** in 2011, *** in 2012, and *** in 2013. There were *** workers during interim 2013 and *** during interim 2014. CR/PR at Table III-10. Hours worked were *** in 2008, *** in 2009, *** in 2010, *** in 2011, *** in 2012, and *** in 2013. Hours worked were *** in interim 2013 and *** during interim 2014. CR/PR at Table III-10. Wages paid were $*** in 2008, $*** in 2009, $*** in 2010, $*** in 2011, $*** in 2012, and $*** in 2013. Wages paid were $*** interim 2013 and $*** in interim 2014. CR/PR at Table III-10.

[183] Hourly wages were $*** in 2008, $*** in 2009, $*** in 2010, $*** in 2011, $*** in 2012, and $*** in 2013. Hourly wages were $*** in interim 2013 and $*** in interim 2014. Productivity in pounds contained vanadium per hour was *** in 2008, *** in 2009, *** in 2010, *** in 2011, *** in 2012, and *** in 2013. It was *** in interim 2013 and *** in interim 2014. CR/PR at Table III-10.

[184] Total net sales by value were $*** in 2008, $*** in 2009, $*** in 2010, $*** in 2011, $*** in 2012, and $*** in 2013. CR/PR at Table III-11. Total net sales by value were $*** in interim 2013 and $*** in interim 2014. Operating income was $*** in 2008, $*** in 2009, $*** in 2010, $*** in 2011, $*** in 2012, and $*** in 2013. CR/PR at Table III-11. It was $*** interim 2013 and $*** in interim 2014. *Id.* The domestic industry's operating income as a ratio of net sales was *** percent in 2008, *** percent in 2009, *** percent in 2010, *** percent in 2011, *** percent in 2012, and *** percent in 2013. CR/PR at Table III-11. The industry reported operating income ratios of *** percent in interim 2013 and *** percent in interim 2014. *Id.*

throughout the period of review.[185] Between 2008 and 2013, the domestic industry made annual capital expenditures that ranged from a low of $*** in 2009 to a high of $*** in 2012.[186]

Although certain aspects of the domestic industry's performance have declined, the industry's current performance indicators and recent and likely demand trends indicate that the industry is not currently in a vulnerable condition.[187] The industry, nevertheless, is not in such a strong condition, nor are likely demand conditions sufficiently strong, that the industry could withstand significantly increased subject imports without likely sustaining significant adverse effects.

As explained above, we find that cumulated subject imports would likely be significant in the reasonably foreseeable future if the orders under review were revoked. The domestic industry and the tollees supply roughly half of the U.S. market, and because subject imports are good substitutes for the domestic like product, any increase in cumulated subject imports would likely lead to declines in the domestic industry's and/or tollees' production, shipments, market share, and employment. Although the effects will be more indirect on Bear because it is primarily a toller, decreased demand (or lower prices) for ferrovanadium sold by Bear's tollees will reduce the volume of Bear's toll conversion and its profits.

We have further found that these additional volumes of cumulated subject imports would enter the market in a manner that would likely have significant depressing or suppressing effects on prices of the domestic like product. Consequently, to compete with the likely additional volumes of subject imports, the domestic industry and tollees would need to cut prices, forego needed price increases, or lose sales, as they did in the original investigations. The resulting loss of revenues would likely cause deterioration in the financial performance of the domestic industry which would result in likely reductions in employment and, ultimately, likely losses in output and market share. Therefore, we find that revocation of the orders under review would likely have a significant adverse impact on the domestic industry.

We have also considered the role of factors other than subject imports so as not to attribute likely injury from other factors to the subject imports. Given the high substitutability of ferrovanadium from all sources, if the orders on subject imports from China and South Africa were revoked, the likely significant volume of cumulated subject imports would likely compete with both the domestic like product and nonsubject imports. As was the case in the original investigations, the continued presence of nonsubject imports in the U.S. market would not preclude subject imports from taking market share from the domestic industry and tollees or forcing the domestic industry and tollees to lower prices in order to compete.

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[185] *See* CR/PR at Table III-11.

[186] CR/PR at Table III-13. The domestic industry made very limited research and development expenditures during the period of review. *Id*.

[187] Purchasers, producers, importers, and foreign producers offered a generally optimistic assessment of likely U.S. demand for ferrovanadium. *See* CR/PR at Table II-3. Fifteen of 37 reporting firms expect an increase in U.S. demand and only one of the 37 firms anticipates that U.S. demand will decline. *Id.* They also expect that demand outside of the United States will increase. Eighteen reporting firms anticipate an increase in demand and no firms anticipate a decline. CR/PR at Table IV-15.

We also have considered the likely role of demand in the reasonably foreseeable future. Overall, demand, as measured by apparent U.S. consumption, increased from 2008 to 2013 and was higher in interim 2014 than in interim 2013.[188] The moderately increased level of demand likely in the reasonably foreseeable future, while likely to affect the domestic industry's condition positively, would not preclude the domestic industry from incurring an adverse impact due to the likely significant volume and price effects of the cumulated subject imports.

Accordingly, we conclude that, if the antidumping duty orders were revoked, cumulated subject imports from China and South Africa would likely have a significant adverse impact on the domestic industry within a reasonably foreseeable time.

V. Conclusion

For the above reasons, we determine that revocation of the antidumping duty orders on ferrovanadium from China and South Africa would likely lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.

[188] *See* CR/PR at Table I-9.

PART I: INTRODUCTION

BACKGROUND

On November 1, 2013, the U.S. International Trade Commission ("Commission" or "USITC") gave notice, pursuant to section 751(c) of the Tariff Act of 1930, as amended ("the Act"),[1] that it had instituted reviews to determine whether revocation of the antidumping duty orders on ferrovanadium from China and South Africa would likely lead to the continuation or recurrence of material injury to a domestic industry.[2] [3] On February 4, 2014, the Commission determined that it would conduct full reviews pursuant to section 751(c)(5) of the Act. [4] The following tabulation presents information relating to the background and schedule of this proceeding:[5]

[1] 19 U.S.C. 1675(c).

[2] *Ferrovanadium from China and South Africa; Institution of Five-Year Reviews,* 78 FR 65706*,* November 1, 2013. All interested parties were requested to respond to this notice by submitting the information requested by the Commission.

[3] In accordance with section 751(c) of the Act, the U.S. Department of Commerce ("Commerce") published a notice of initiation of five-year reviews of the subject antidumping and countervailing duty orders concurrently with the Commission's notice of institution. *Initiation of Five-Year ("Sunset") Review,* 78 FR 65614, November 1, 2013*.*

[4] *Ferrovanadium from China and South Africa: Notice of Commission Determination to Conduct Full Five-Year Reviews,* 79 FR 9000, February 14, 2014*.* The Commission found that the domestic interested party group response to its notice of institution was adequate, as was the respondent interested party group response of South Africa. The Commission found that the respondent interested party group response of China was inadequate. The Commission concluded that it would conduct full reviews pursuant to section 751 (c)(5) of the Act to promote administrative efficiency.

[5] The Commission's notice of institution, notice to conduct full reviews, scheduling notice, and statement on adequacy are referenced in appendix A and may also be found at the Commission's web site (internet address *www.usitc.gov*). Commissioners' votes on whether to conduct expedited or full reviews may also be found at the web site. Appendix B presents the witnesses appearing at the Commission's hearing.

Effective date	Action
January 28, 2003	Commerce's antidumping duty orders on ferrovanadium from China (68 FR 4168) and South Africa (68 FR 4169)
December 19, 2008	Commerce's continuation of antidumping duty orders on ferrovanadium from China and South Africa (73 FR 77609)
November 1, 2013	Commission's institution of five-year reviews (78 FR 65706)
	Commerce's initiation of five-year reviews (78 FR 65614)
February 4, 2014	Commission's determinations to conduct full five-year reviews (79 FR 9000, February 14, 2014)
March 13, 2014	Commerce's final results of expedited five-year reviews of the antidumping duty orders (79 FR 14216)
June 24, 2014	Commission's scheduling of the reviews (79 FR 39411, July 10, 2014)
November 20, 2014	Commission's hearing
January 14, 2015	Commission's vote
January 28, 2015	Commission's determinations and views

The original investigations

The original investigations resulted from petitions filed by Ferroalloys Association Vanadium Committee and its members: Bear Metallurgical Co. ("Bear"), Butler, Pennsylvania; Shieldalloy Metallurgical Corp. ("Shieldalloy"), Cambridge, Ohio; Gulf Chemical & Metallurgical Corp. ("Gulf"), Freeport, Texas; U.S. Vanadium Corp. ("USV"), Danbury, Connecticut; and CS Metals of Louisiana ("CS Metals"), Convent, Louisiana, on November 26, 2001, alleging that an industry in the United States is materially injured and threatened with material injury by reason of less-than-fair-value ("LTFV") imports of ferrovanadium from China and South Africa. Following notification of a final determination by Commerce that imports of ferrovanadium from China and South Africa were being sold at LTFV, the Commission determined that a domestic industry was materially injured by reason of LTFV imports of ferrovanadium from China and South Africa.[6] Commerce published the antidumping duty orders on ferrovanadium from China[7] and South Africa[8] on January 28, 2003.

Subsequent five-year reviews

In November 2008, the Commission completed full five-year reviews of the subject orders and determined that revocation of the antidumping duty orders on ferrovanadium from

[6] *Ferrovanadium from China and South Africa*, *Inv. Nos. 731-TA-986-987 (Final)*, USITC Publication 3570, January 2003.

[7] *Notice of Amended Final Antidumping Duty Determination of Sales at Less Than Fair Value and Antidumping Duty Order: Ferrovanadium from China*, 68 FR 4168, January 28, 2003.

[8] *Notice of Antidumping Duty Order: Ferrovanadium from the Republic of South Africa*, 68 FR 4169, January 28, 2003.

China and South Africa would be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.[9] Following affirmative determinations in the first five-year reviews by Commerce and the Commission,[10] Commerce issued notice of continuation of the antidumping duty orders on imports of ferrovanadium from China and South Africa, effective December 19, 2008.[11]

RELATED INVESTIGATION

Shieldalloy Metallurgical Corp. ("Shieldalloy"), New York, New York, filed a petition on May 31, 1994, alleging that an industry in the United States was materially injured and threatened with material injury by reason of less-than-fair-value ("LTFV") imports of ferrovanadium and nitrided vanadium from Russia. Following notification of a final determination by Commerce that imports of ferrovanadium and nitrided vanadium from Russia were being sold at LTFV, the Commission determined on May 19, 1995 that a domestic industry was materially injured by reason of LTFV imports of ferrovanadium and nitrided vanadium from Russia. Commerce published the antidumping duty order on ferrovanadium and nitrided vanadium from Russia on July 10, 1995.[12]

In May 2001, the Commission completed a full five-year review of the subject order and determined that revocation of the antidumping duty order on ferrovanadium and nitrided vanadium from Russia would be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time. Following the affirmative determinations in the first five-year review by Commerce and the Commission, Commerce issued notice of a continuation of the antidumping duty order on imports of ferrovanadium and nitrided vanadium from Russia, effective June 7, 2001.[13]

In September 2006, the Commission completed an expedited five-year review of the subject order and determined that revocation of the antidumping duty order on ferrovanadium and nitrided vanadium from Russia would be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time. Following the affirmative determinations in the second five-year review by Commerce and the

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[9] *Ferrovanadium from China and South Africa, Inv. Nos. 731-TA-986-987 (Review)*, USITC Publication 4046, November 2008.

[10] *Ferrovanadium from China and South Africa: Final Results of the Expedited Sunset Reviews of the Antidumping Duty Orders*, 73 FR 19192, April 9, 2008; *Ferrovanadium from China and South Africa*, 73 FR 72837, December 1, 2008.

[11] *Ferrovanadium from China and South Africa: Continuation of Antidumping Duty Orders*, 73 FR 77609, December 19, 2008.

[12] *Notice of Antidumping Order: Ferrovanadium and Nitrided Vanadium from the Russian Federation*, 60 FR 35550, July 10, 1995.

[13] *Continuation of Antidumping Duty Order: Ferrovanadium and Nitrided Vanadium from Russia*, 66 FR 30694, June 7, 2001.

Commission, Commerce issued notice of a continuation of the antidumping duty order on imports of ferrovanadium and nitrided vanadium from Russia, effective October 13, 2006.[14]

In August 2012, the Commission completed a full five-year review of the antidumping duty order on ferrovanadium and nitrided vanadium from Russia and determined that revocation of the subject order would not be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.[15] On September 6, 2012, Commerce published notice of a revocation of the antidumping duty order on ferrovanadium and nitrided vanadium from Russia, effective October 13, 2011.[16]

SUMMARY DATA

Table I-1 presents a summary of data from the original investigations (2001), first full five-year reviews (2007), and the current full five-year reviews (2013) for U.S. producers and tollees.[17] Table I-2 presents a summary of data from the original investigations (2001), first full five-year reviews (2007), and the current full five-year reviews (2013) for U.S. producers. Complete historical data appear in appendix C.

[14] *Ferrovanadium and Nitrided Vanadium from Russia: Notice of Continuation of Antidumping Duty Order*, 71 FR 60475, October 13, 2006.

[15] *Ferrovanadium and Nitrided Vanadium from Russia*, 77 FR 51825, August 27, 2012.

[16] *Ferrovanadium and Nitrided Vanadium from Russia: Revocation of Antidumping Duty Order*, 77 FR 54897, September 6, 2012.

[17] Tables I-1 and I-2 show ***.

Table I-1
Ferrovanadium: Summary data for U.S. producers/tollees from the original investigations (2001), first reviews (2007), and second reviews (2013)

(Quantity = 1,000 pounds contained vanadium, value = 1,000 dollars, unit values, unit labor costs, and unit financial data are dollars per pound)

Item	Period		
	2001	2007	2013
U.S. consumption quantity:			
Amount	11,891	13,327	15,312
Producers' share	52.8	63.4	46.9
Importers' share:			
China	8.3	0.0	0.0
South Africa	20.8	0.1	0.0
Subtotal	29.2	0.1	0.0
All other countries	18.1	36.5	53.1
Total imports	47.2	36.6	53.1
U.S. consumption value:			
Amount	45,430	199,156	180,574
Producers' share	52.2	67.6	48.5
Importers' share:			
China	8.2	0.0	0.0
South Africa	21.1	0.2	0.0
Subtotal	29.3	0.2	0.0
All other countries	18.4	32.2	51.5
Total imports	47.8	32.4	51.5
U.S. imports from --			
China			
Quantity	992	0	0
Value	3,744	0	0
Unit value	3.78	---	---
South Africa			
Quantity	2,475	17	0
Value	9,588	350	0
Unit value	3.87	20.59	---
Subject			
Quantity	3,466	17	0
Value	13,333	350	0
Unit value	3.85	20.59	---
All other sources			
Quantity	2,150	4,866	8,125
Value	8,362	64,120	92,923
Unit value	3.89	13.18	11.44

Table continued on next page.

Table I-1--*Continued*
Ferrovanadium: Summary data for U.S. producers/tollees from the original investigations (2001), first reviews (2007), and second reviews (2013)

(Quantity = 1,000 pounds contained vanadium, value = 1,000 dollars, unit values, unit labor costs, and unit financial data are dollars per pound)

Item	Period		
	2001	2007	2013
All countries combined			
Quantity	5,617	4,883	8,125
Value	21,695	64,470	92,923
Unit value	3.86	13.20	11.44
U.S. producers':			
Capacity quantity	***	***	***
Production quantity	***	***	***
Capacity utilization	***	***	***
U.S. shipments:			
Quantity	6,274	8,444	7,187
Value	23,735	134,868	87,651
Unit value	3.78	15.95	12.20
Ending inventory quantity	***	***	***
Inventories/total shipments	***	***	***
Production workers	***	***	***
Hours worked (*1,000 hours*)	***	***	***
Wages paid (*1,000 dollars*)	***	***	***
Hourly wages	***	***	***
Productivity (*pounds per hour*)	***	***	***
Net sales:			
Quantity	***	***	***
Value	***	***	***
Unit value	***	***	***
Cost of goods sold	***	***	***
Gross profit or (loss)	***	***	***
Operating income or (loss)	***	***	***
Unit cost of goods sold	***	***	***
Unit operating income or (loss)	***	***	***
Cost of goods sold/sales	***	***	***
Operating income or (loss)/sales	***	***	***

Note.—Reported production and employment data are based on data submitted by U.S. producers (including toll production). U.S. shipment, inventory, and financial data include U.S. producers and tollee operations.

Source: Compiled from data submitted in response to Commission questionnaires and adjusted official Commerce statistics (2013); *Ferrovanadium from China and South Africa Inv. Nos. 731-TA-986-987 (Final)*, INV-Z-197, December 11, 2002 (2001); and *Ferrovanadium from China and South Africa Inv. Nos. 731-TA-986-987 (Review)*, INV-FF-137, October 29, 2008 (2007).

Table I-2
Ferrovanadium: Summary data for U.S. producers (AMG and Bear) from the original investigations (2001), first reviews (2007), and second reviews (2013)

(Quantity = 1,000 pounds contained vanadium, value = 1,000 dollars, unit values, unit labor costs, and unit financial data are dollars per pound)

Item	Period		
	2001	2007	2013
U.S. producers':			
Capacity quantity	***	***	***
Production quantity	***	***	***
Capacity utilization	***	***	***
U.S. shipments:			
Quantity	***	***	***
Value	***	***	***
Unit value	***	***	***
Export shipments:			
Quantity	***	***	***
Value	***	***	***
Unit value	***	***	***
Ending inventory quantity	***	***	***
Inventories/total shipments	***	***	***
Production workers	***	***	***
Hours worked (1,000)	***	***	***
Wages paid (1,000 dollars)	***	***	***
Hourly Wages	***	***	***
Productivity (pounds per hour)	***	***	***
Net sales:			
Quantity	***	***	***
Value	***	***	***
Unit value	***	***	***
Cost of goods sold	***	***	***
Gross profit or (loss)	***	***	***
SG&A expenses	***	***	***
Operating income or (loss)	***	***	***
Capital expenditures	***	***	***
Unit cost of goods sold	***	***	***
Unit SG&A expense	***	***	***
Unit operating income or (loss)	***	***	***
Cost of goods sold/sales	***	***	***
Operating income or (loss)/sales	***	***	***

Note.—These data are from the two U.S. producers. The unit values are lower because in the case of Bear reported values are primarily toll revenues.

Source: Compiled from data submitted in response to Commission questionnaires and adjusted official Commerce statistics (2013); *Ferrovanadium from China and South Africa Inv. Nos. 731-TA-986-987 (Final)*, INV-Z-197, December 11, 2002 (2001); and *Ferrovanadium from China and South Africa Inv. Nos. 731-TA-986-987 (Review)*, INV-FF-137, October 29, 2008 (2007).

STATUTORY CRITERIA AND ORGANIZATION OF THE REPORT

Statutory criteria

Section 751(c) of the Act requires Commerce and the Commission to conduct a review no later than five years after the issuance of an antidumping or countervailing duty order or the suspension of an investigation to determine whether revocation of the order or termination of the suspended investigation "would be likely to lead to continuation or recurrence of dumping or a countervailable subsidy (as the case may be) and of material injury."

Section 752(a) of the Act provides that in making its determination of likelihood of continuation or recurrence of material injury--

> *(1) IN GENERAL.-- . . . the Commission shall determine whether revocation of an order, or termination of a suspended investigation, would be likely to lead to continuation or recurrence of material injury within a reasonably foreseeable time. The Commission shall consider the likely volume, price effect, and impact of imports of the subject merchandise on the industry if the order is revoked or the suspended investigation is terminated. The Commission shall take into account--*
>
> *(A) its prior injury determinations, including the volume, price effect, and impact of imports of the subject merchandise on the industry before the order was issued or the suspension agreement was accepted,*
>
> *(B) whether any improvement in the state of the industry is related to the order or the suspension agreement,*
>
> *(C) whether the industry is vulnerable to material injury if the order is revoked or the suspension agreement is terminated, and*
>
> *(D) in an antidumping proceeding . . ., (Commerce's findings) regarding duty absorption . . ..*
>
> *(2) VOLUME.--In evaluating the likely volume of imports of the subject merchandise if the order is revoked or the suspended investigation is terminated, the Commission shall consider whether the likely volume of imports of the subject merchandise would be significant if the order is revoked or the suspended investigation is terminated, either in absolute terms or relative to production or consumption in the United States. In so doing, the Commission shall consider all relevant economic factors, including--*
>
> *(A) any likely increase in production capacity or existing unused production capacity in the exporting country,*
>
> *(B) existing inventories of the subject merchandise, or likely increases in inventories,*
>
> *(C) the existence of barriers to the importation of such merchandise into countries other than the United States, and*
>
> *(D) the potential for product-shifting if production facilities in the foreign country, which can be used to produce the subject merchandise, are currently being used to produce other products.*

(3) PRICE.--In evaluating the likely price effects of imports of the subject merchandise if the order is revoked or the suspended investigation is terminated, the Commission shall consider whether--

> *(A) there is likely to be significant price underselling by imports of the subject merchandise as compared to domestic like products, and*
> *(B) imports of the subject merchandise are likely to enter the United States at prices that otherwise would have a significant depressing or suppressing effect on the price of domestic like products.*

(4) IMPACT ON THE INDUSTRY.--In evaluating the likely impact of imports of the subject merchandise on the industry if the order is revoked or the suspended investigation is terminated, the Commission shall consider all relevant economic factors which are likely to have a bearing on the state of the industry in the United States, including, but not limited to–

> *(A) likely declines in output, sales, market share, profits, productivity, return on investments, and utilization of capacity,*
> *(B) likely negative effects on cash flow, inventories, employment, wages, growth, ability to raise capital, and investment, and*
> *(C) likely negative effects on the existing development and production efforts of the industry, including efforts to develop a derivative or more advanced version of the domestic like product.*

The Commission shall evaluate all such relevant economic factors . . . within the context of the business cycle and the conditions of competition that are distinctive to the affected industry.

Section 752(a)(6) of the Act states further that in making its determination, "the Commission may consider the magnitude of the margin of dumping or the magnitude of the net countervailable subsidy. If a countervailable subsidy is involved, the Commission shall consider information regarding the nature of the countervailable subsidy and whether the subsidy is a subsidy described in Article 3 or 6.1 of the Subsidies Agreement."

Organization of report

Information obtained during the course of the reviews that relates to the statutory criteria is presented throughout this report. Appendix C provides a summary of trade and financial data for ferrovanadium as collected in the reviews, followed by summaries of historical data from the prior proceedings. U.S. industry data are based on the questionnaire responses of two U.S. producers of ferrovanadium that are believed to have accounted for all

domestic production of ferrovanadium since 2008.[18] U.S. import data and related information are based on Commerce's adjusted official import statistics and the questionnaire responses of 12 U.S. importers of ferrovanadium that are believed to have accounted for nearly all U.S. imports of ferrovanadium during the period of review. Foreign industry data and related information are based on the questionnaire responses of two producers of ferrovanadium in South Africa. No producers in China submitted questionnaire responses. Responses by U.S. producers, importers, purchasers, and foreign producers of ferrovanadium to a series of questions concerning the significance of the existing antidumping and countervailing duty orders and the likely effects of revocation of such orders are presented in appendix D. Appendix E presents a figure depicting U.S. industry relationships.

COMMERCE'S REVIEWS

Administrative reviews

There have been no completed administrative reviews since the issuance of the antidumping duty orders on ferrovanadium from China and South Africa. Similarly, there have been no related findings or rulings (e.g., changed circumstances reviews, scope rulings, or duty absorption reviews) since the issuance of the antidumping duty orders on ferrovanadium from China and South Africa.

Five-year reviews

Commerce has issued the final results of its expedited reviews with respect to both countries.[19] Tables I-3 and I-4 present the dumping margins calculated by Commerce in its original investigations, first reviews and second reviews.

[18] U.S. industry data are also based on U.S. tollee questionnaire responses from six firms that are believed to account for almost all U.S. shipments of ferrovanadium since 2008.

[19] *Ferrovanadium from China and South Africa: Final Results of the Expedited Second Sunset Reviews of the Antidumping Duty Orders*, 79 FR 14216, March 13, 2014.

Table I-3
Ferrovanadium: Commerce's original, first five-year, and second five-year dumping margins for producers/exporters in China

Producer/exporter	Original margin (*percent*)	First five-year review margin (*percent*)	Second five-year review margin (*percent*)
Pangang Group International Economic & Trading Corporation	12.97	12.97	12.97
All others	66.71	66.71	66.71

Source: *Notice of Amended Final Antidumping Duty Determination of Sales at Less than Fair Value and Antidumping Duty Order: Ferrovanadium from China*, 68 FR 4168, January 28, 2003; *Ferrovanadium from China and South Africa: Final Results of the Expedited Sunset Reviews of the Antidumping Duty Orders*, 73 FR 19192, April 9, 2008; and *Ferrovanadium from China and South Africa: Final Results of the Expedited Second Sunset Reviews of the Antidumping Duty Orders*, 79 FR 14216, March 13, 2014.

Table I-4
Ferrovanadium: Commerce's original, first five-year, and second five-year dumping margins for producers/exporters in South Africa

Producer/exporter	Original margin (*percent*)	First five-year review margin (*percent*)	Second five-year review margin (*percent*)
Highveld Steel and Vanadium Corporation, Ltd	116.00	116.00	116.00
Xstrata South Africa (Proprietary) Limited	116.00	116.00	116.00
All others	116.00	116.00	116.00

Source: *Notice of Antidumping Duty Order: Ferrovanadium from South Africa*, 68 FR 4169, January 28, 2003; *Ferrovanadium from China and South Africa: Final Results of the Expedited Sunset Reviews of the Antidumping Duty Orders*, 73 FR 19192, April 9, 2008; and *Ferrovanadium from China and South Africa: Final Results of the Expedited Second Sunset Reviews of the Antidumping Duty Orders*, 79 FR 14216, March 13, 2014.

THE SUBJECT MERCHANDISE

Commerce's scope

Commerce has defined the scope of these reviews as follows:

> *. . . all ferrovanadium regardless of grade, chemistry, form, shape, or size. Ferrovanadium is an alloy of iron and vanadium that is used chiefly as an additive in the manufacture of steel. The merchandise is commercially and scientifically identified as vanadium. It specifically excludes vanadium additives other than ferrovanadium, such as nitride vanadium, vanadium-aluminum master alloys, vanadium chemicals, vanadium oxides, vanadium waste and scrap, and vanadium-bearing raw materials such as slag, boiler residues and fly ash.*[20]

[20] *Ferrovanadium from China and South Africa: Final Results of the Expedited Second Sunset Reviews of the Antidumping Duty Orders*, 79 FR 14216, March 13, 2014.

Tariff treatment

Ferrovanadium is classifiable in the Harmonized Tariff Schedule of the United States ("HTS") under subheading 7202.92.00 and reported for statistical purposes under statistical reporting number 7202.92.0000. The normal trade relations import duty (applicable to both China and South Africa) is 4.2 percent *ad valorem*. Merchandise imported under HTS subheadings 2850.00.2000, 8112.92.0600, 8112.92.7000 and 8112.99.2000 are specifically excluded. [21]

THE PRODUCT

Description and applications

Ferrovanadium is an alloy used to add vanadium to molten steel. Steelmaking is the largest use of vanadium and accounts for 90 percent or more of all vanadium consumption worldwide.[22] Steel products that may include vanadium are certain construction alloy steels, rail steels, high-speed and heat-resisting tool and die steels, and high-strength low-alloy steels, often called microalloy steels. Microalloy steels are used in pipeline steel, concrete reinforcing bars, structural shapes and plate for construction, and in automobile components.[23]

Ferrovanadium is commonly produced in grades having a vanadium content of 40–60 percent or 75-85 percent. Regardless of grade, commercial practice is to quote the price of ferrovanadium on the basis of the contained vanadium content. Ferrovanadium is commonly packaged for sale in the United States in containers of a specified content of contained vanadium, typically 25 pounds.

Although vanadium is one of the most common elements in the earth's crust, it frequently is found in concentrations that would be uneconomical to mine or process for vanadium content alone. As a result, it is most often produced as a byproduct or co-product of other mineral operations. For example, the largest source of vanadium (59 percent in 2010) is a byproduct of the production of steel using iron ore with a high vanadium content. Iron ore containing recoverable vanadium is mined in only a few places in the world; the major producers are China, South Africa, and Russia.[24] The second most common production method

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[21] The scope of the subject orders identifies HTS statistical reporting numbers 8112.40.3000 and 8112.40.6000 as specifically excluded; however, these statistical reporting numbers were deleted from the HTS effective February 3, 2007. The corresponding excluded statistical reporting numbers include 8112.92.0600, 8112.92.7000, and 8112.99.2000 and are listed above.

[22] Roskill Information Services, *Vanadium: Global Industry Markets and Outlook: Overview*, 13th edition 2013, http://www.roskill.com/reports/steel-alloys/vanadium/leaflet, March 31, 2013.

[23] The Vanadium International Technical Committee, "Vanadium Applications," http://vanitec.org/vanadium/vanadium-solutions-and-advantages/, accessed October 16, 2014.

[24] Ibid.

is recovery from vanadium-containing ore. Most ore production is in South Africa and China. The third and final method of vanadium production is secondary production from such sources as the residue from the processing and burning of vanadium-containing oil products. Such secondary production is the source of about 15 percent of vanadium worldwide and is the primary vanadium source in the United States.[25]

Manufacturing processes[26]

The manufacturing process to produce ferrovanadium is determined by the raw material to be used. Most operations utilize a two-step process: first, the production and separation of vanadium pentoxide from the other contents of the starting raw material, and second, the production of ferrovanadium from vanadium pentoxide. Vanadium pentoxide is an important intermediate chemical compound that is used primarily to produce ferrovanadium, but also is used to produce many other vanadium chemicals and alloys. It is widely traded and industry publications regularly report its price.

Ferrovanadium production in the United States

Bear's operations are based on the production of ferrovanadium for a processing fee (toll production), using vanadium pentoxide provided by its customers. The process used by Bear is aluminothermic, in which heat for the process is derived from chemical reactions. Vanadium pentoxide and aluminum are placed in a conversion vessel along with steel scrap and flux materials.[27] The contents are ignited with a fuse and the reaction proceeds quickly, with the oxidation (burning) of aluminum providing the heat. The oxygen in the vanadium pentoxide attaches to the aluminum and the vanadium attaches to the iron in the steel scrap. The result is molten ferrovanadium and an aluminum oxide-rich slag. After cooling, both are crushed and sized for sale. The ferrovanadium is packaged in individual containers, usually of 25 pounds of vanadium, or in 2,000-pound supersacks. Slag is sold for use as flux in steelmaking operations.

Gulf is primarily a processor of spent catalyst from oil refineries. Catalyst contains recoverable cobalt, molybdenum, nickel, and vanadium, and Gulf's operation depends upon the profitable recovery not only of vanadium but of the other elements as well. Gulf produces vanadium pentoxide, which it transfers to its corporate affiliate, Bear, which processes the

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[25] Ibid. See also Polyak, Désirée, *2012 Minerals Yearbook: Vanadium*, United States Geological Survey, October 2013, p. 80.1.

[26] Unless otherwise specified, information on U.S. manufacturing processes is from *Ferrovanadium and Nitrided Vanadium from Russia*, *Investigation Nos. 731-TA-702 (Third Review)*, USITC Publication 4345, August 2012, pp. I-14 – I-15.

[27] Flux is a purifying agent added during the manufacturing process. The flux reacts with the impurities to form a slag (agglomerated impurities) which floats on top of the ferrovanadium and can be skimmed off.

vanadium pentoxide into ferrovanadium in exchange for a processing fee. The toll-produced ferrovanadium remains the property of Gulf.

Evraz Stratcor produces vanadium pentoxide as well as a variety of vanadium chemicals from vanadium ashes, residues, and other raw materials including vanadium-containing slag.[28] The company transfers vanadium pentoxide to Bear, which processes the vanadium pentoxide into ferrovanadium. The toll-produced ferrovanadium remains the property of Evraz Stratcor, which is responsible for selling the product and administering the sales.

AMG produces ferrovanadium and other ferroalloys from spent catalyst and petroleum combustion residues and uses pyrometallurgical processing in electrical furnaces. AMG's ferrovanadium contains approximately 55 percent of vanadium, in contrast to Bear's product, which contains 80 percent. AMG's product also contains more silicon but less aluminum than Bear's. Despite the difference in the contained content of vanadium, the product is packaged similarly to 80-percent product, in individual cans or paper sacks, typically of 25 pounds of vanadium content, or in 2,000-pound supersacks.

Spent oil refinery catalyst, as well as oil residues and ash, are waste products that are subject to regulation with respect to their handling, processing, and disposition. Two classes of spent catalysts are specifically classified as hazardous wastes under the RCRA (the Resource Conservation and Recovery Act): hydrotreating catalysts (RCRA waste K171) and hydrorefining catalysts (RCRA waste K172). Receivers and processors of hazardous waste must be licensed and comply with RCRA regulations with respect to handling, processing, and record-keeping related to the hazardous wastes.[29]

Ferrovanadium production outside the United States[30]

The source material for the great majority of global vanadium production is titaniferous magnetite ore, which is an iron ore that contains titanium and vanadium. In 2010, the four principal locations where this ore was mined in commercially substantial quantities were:[31]

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[28] In February 2014, Evraz Stratcor began importing vanadium-containing slag from its parent company's steelmaking plant in Nizhny Tagil, Russia. When Evraz Stratcor's new slag processing facilities in the United States are at full production, this slag will be the primary feedstock. Evraz Stratcor, "New Facilities at Hot Springs Plant Start Processing Vanadium-Bearing Steelmaking Slag," press release, February 6, 2014. Stratcor ***. Domestic interested parties' posthearing brief, "Responses to Commission's Questions and Requests for Information," p. 60.

[29] *Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Petroleum Refining Process Wastes; Land Disposal Restrictions for Newly Identified Wastes; and CERCLA Hazardous Substance Designation and Reportable*, 63 FR 42110, August 6, 1998.

[30] Unless otherwise noted, information in this section was obtained from The Vanadium International Technical Committee, "Vanadium Production," http://vanitec.org/vanadium/vanadium-production-2/ , accessed December 2, 2014 and John Macdonald, *NiPlats Australia Limited,* Green Leader Equities Research, June 24, 2010.

[31] Information on producers not located in China, Russia, or South Africa appears in the "Global Market" section of Part IV.

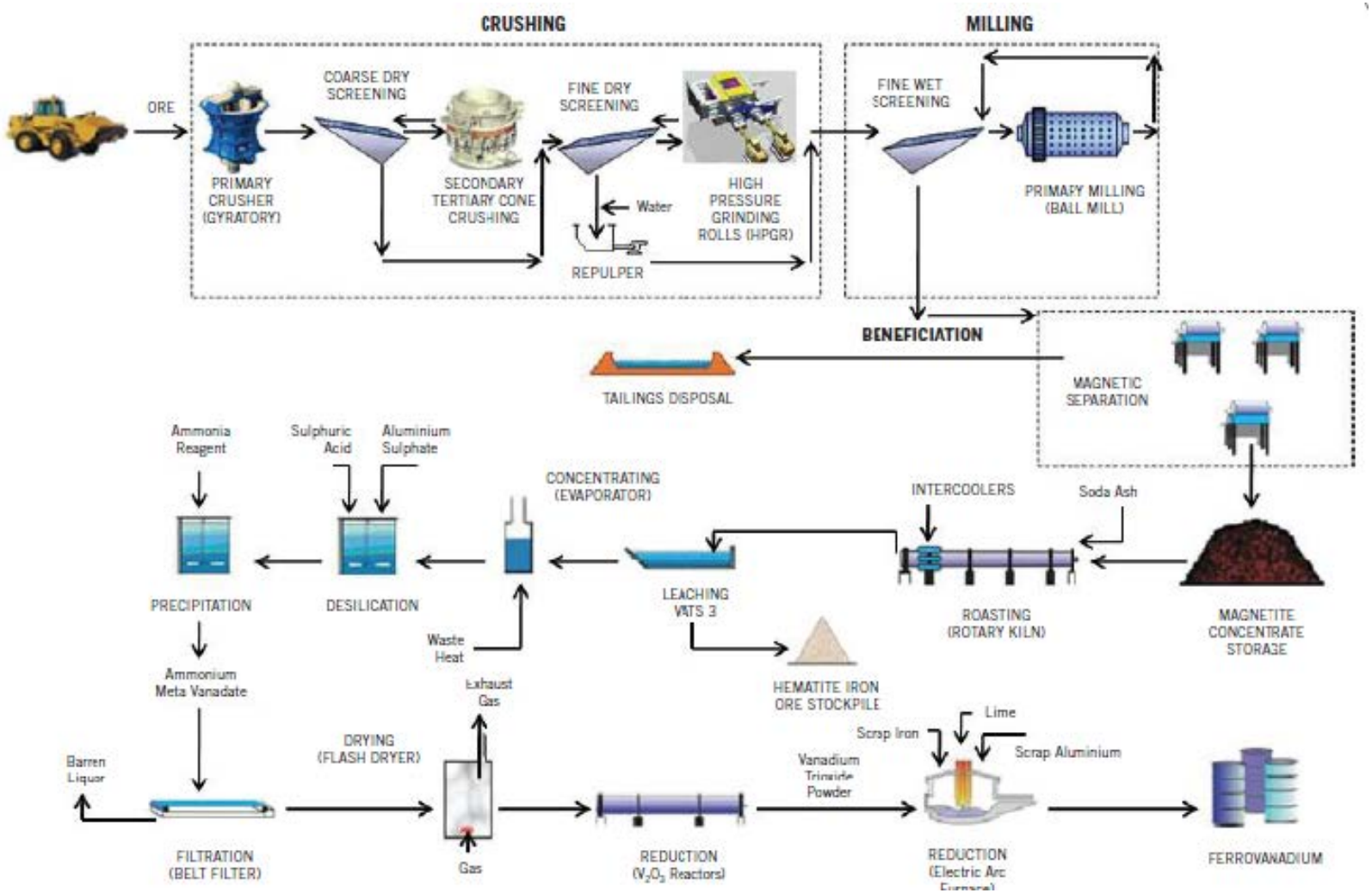
- The Bushveld Complex in South Africa. There are two separate mines on the Bushveld: Mapochs (operated by Evraz Group S.A., with an estimated output of 15,400 short tons of vanadium) and Ba-Mogopa (or Rhovan) (formerly operated by Xstrata plc and now operated by Glencore, with an estimated output of 8,800 short tons of vanadium).[32]
- The Damiao Complex, Hebei Province China (operated by Chengde Iron and Steel Group Co., Ltd., with an estimated output 9,900 short tons of vanadium).
- The Panzhihua Layered Intrusion, Sichuan Province China (operated by Panzhihua Iron and Steel Group Co., Ltd., with an estimated output 12,100 short tons of vanadium).
- The Kachkanar Complex, Southern Urals Russia (operated by Evraz Group S.A, with an estimated output 16,000 short tons of vanadium).

The producers noted above, with the exception of Glencore at the Rhovan mine in South Africa, produce vanadium as a co-product in steelmaking. Glencore, in South Africa, produces vanadium directly from ore without also producing steel. During steelmaking, the iron produced contains about 1.5 percent vanadium, which is removed as slag. The slag in South Africa contains up to 25 percent vanadium pentoxide whereas the slag in China contains 14-22 percent.

Whether the raw material is slag or vanadium-containing ore the basic extractive process for recovering the vanadium is similar. The vanadium in such raw materials is in a highly oxidized form. Conversion involves "salt roasting," a process in which the vanadium-bearing material is mixed with a chemical such as sodium chloride and roasted. After the oxidized vanadium is converted to a water soluble salt through the roasting process, it is leached, precipitated, and refined to a vanadium oxide. Production of ferrovanadium from the vanadium oxide (such as vanadium pentoxide or vanadium trioxide) is similar to Bear's production process described above. The process of producing ferrovanadium from vanadium-bearing ore is illustrated in figures I-1 which shows the production process at the Windimurra project in Australia (described in greater detail in Part IV of this report) and figure I-2 which illustrates Rhovan's production process.

[32] In 2008, Evraz divested certain vanadium assets in South Africa as a condition of acquiring Highveld Steel and Vanadium Corp. Ltd. Vanchem Vanadium Products (owned by Duferco) now owns these vanadium assets. Vanchem also owns, as a result of the agreement Evraz made to acquire Highveld, a 50 percent share of South Africa Japan Vanadium Ltd, and shares in the Mapochs mine in order to protect its rights under a fines ore supply agreement with Evraz. Highveld has an agreement to supply Vanchem with a certain volume of fines ore (those that are unusable by Highveld for its steelworks) and certain volumes of vanadium-bearing slag from its steelmaking operations. Evraz press release, "Highveld Agrees on Disposal of Certain Vanadium Assets," April 22, 2008.

Figure I-1
Windimurra's ferrovanadium production process



Source: Atlantic Ltd and Midwest Vanadium Pty Ltd, presentation at annual general meeting, November 29, 2013, page 6, http://atlanticltd.com.au/upload/documents/InvestorRelations/presentations/131129AGMPresentation.pdf, retrieved December 3, 2014.

Figure I-2
Rhovan's ferrovanadium and vanadium pentoxide production process

* * * * * * *

DOMESTIC LIKE PRODUCT ISSUES

In its original determinations, the Commission defined the domestic like product as ferrovanadium of all grades coextensive with the scope of the investigations.[33] In its first reviews, the Commission defined the domestic like product as ferrovanadium of all grades coextensive with the scope of the reviews.[34] In its notice of institution in these current five-year reviews, the Commission solicited comments from interested parties regarding the appropriate domestic like product and domestic industry.[35] Two interested parties commented on the Commission's definition of the domestic like product and indicated that they agree with the Commission's definition of the domestic like product.[36] [37] No party requested that the Commission collect data concerning other possible domestic like products in their comments on the Commission's draft questionnaires. In their prehearing brief, domestic interested parties submitted that a definition of the domestic like product that includes all grades of ferrovanadium continues to apply, and no other party advanced a contrary argument.[38]

U.S. MARKET PARTICIPANTS

U.S. producers

During the original investigations, five firms supplied the Commission with information on their U.S. operations with respect to ferrovanadium. These firms accounted for all U.S.

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[33] *Ferrovanadium from China and South Africa*, *Inv. Nos. 731-TA-986-987 (Final)*, USITC Publication 3570, January 2003.

[34] *Ferrovanadium from China and South Africa*, Inv. Nos. 731-TA-986-987 (Review), USITC Publication 4046, November 2008.

[35] *Ferrovanadium from China and South Africa; Institution of Five-Year Reviews*, 78 FR 65706, November 1, 2013.

[36] *Substantive Response of the domestic interested parties*, p. 60; *Substantive Response of Vanchem Vanadium Products (Pty) Ltd. ("Vanchem")*, p. 8. Vanchem reserved the right to comment further as evidence is gathered.

[37] Interested party, Glencore Xstrata plc and its subsidiaries ("Glencore"), did not provide a statement as to whether it agreed or disagreed with the Commission's definition of the domestic like product. *Substantive Response of Glencore*, p. 10.

[38] Prehearing brief of domestic interested parties, p. 3.

production and shipments of ferrovanadium in 2001.[39] During the first five-year reviews, four firms supplied the Commission with information on their U.S. operations with respect to ferrovanadium. These firms accounted for the great bulk of U.S. production and shipments of ferrovanadium during the review period.[40]

In these current proceedings, the Commission issued U.S. producers' questionnaires to 13 firms, eight of which provided the Commission with information on their product operations. These firms are believed to account for all U.S. production and nearly all U.S. shipments of ferrovanadium during January 2008 through June 2014. The responding firms comprise two groups. The first group includes producers that either produce ferrovanadium for their own account or process the product for the account of other firms under a toll agreement. This group consists of U.S. producers AMG Vanadium, Inc. ("AMG") (formerly Metvan) and Bear. The second group includes firms that provide raw materials to the producer, retain title to the product produced, and ultimately sell the ferrovanadium to their customers. This group is commonly referred to as tollees, and consists of Evraz East Metals AG ("EMAG"), Evraz Stratcor, Inc. ("Evraz Stratcor"), Energy Fuels, Inc. ("Energy Fuels"), Glencore, Ltd. ("Glencore"), Gulf Chemicals and Metallurgical Corporation ("Gulf"), and Minerais US LLC ("Minerais").[41] Table I-5 presents a list of current U.S. producers of ferrovanadium and each company's position on continuation of the orders, production location, and share of reported production of ferrovanadium in 2013.

Table I-5
Ferrovanadium: U.S. producers, positions on orders, U.S. production locations, and shares of 2013 reported U.S. production

Firm	Position on orders		Production location(s)	Share of production (percent)
	China	South Africa		
AMG	Support	Support	Cambridge, OH	***
Bear	Support	Support	Butler, PA	***
Total				100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Table I-6 presents a list of current U.S. producers and U.S. tollees of ferrovanadium and each company's position on continuation of the orders, headquarters, and share of reported commercial shipments of ferrovanadium in 2013.

[39] The five U.S. producers that supplied the Commission with usable questionnaire information during the original investigations were: Bear; Shieldalloy; International Specialty Alloys ("ISA"); Gulf; and USV.

[40] The four U.S. producers that supplied the Commission with usable questionnaire information during the first five-year reviews were: Bear; Metallurg Vanadium Corp. ("Metvan") (formerly Shieldalloy); Gulf; and Stratcor, Inc. ("Stratcor") (formerly USV).

[41] ***. Staff telephone interview with ***, September 22, 2014

Table I-6
Ferrovanadium: U.S. producers/tollees, positions on orders, headquarters, and shares of 2013 reported U.S. commercial shipments

Firm	Position on orders		Headquarters	Share of commercial U.S. shipments (percent)
	China	South Africa		
AMG	Support	Support	Cambridge, OH	***
Bear	Support	Support	Butler, PA	***
EMAG	***	***	Zug, Switzerland	***
Energy Fuels	***	***	Lakewood, CO	***
Evraz Stratcor	***	***	Hot Springs, AR	***
Glencore	***	***	Stamford, CT	***
Gulf	***	***	Freeport, TX	***
Minerais	***	***	Hillsborough, NJ	***
Total				100.0

Note. – Glencore is related to South African producer Rhovan. For additional details please refer to appendix E.

Source: Compiled from data submitted in response to Commission questionnaires.

No U.S. producer is related to a foreign producer of the subject merchandise and none is related to a U.S. importer of the subject merchandise. In addition, no U.S. producer directly imports the subject merchandise and none purchases the subject merchandise from U.S. importers.

U.S. importers

In the original investigations, 12 U.S. firms supplied the Commission with usable information on their operations involving the importation of ferrovanadium. Because of the less-than-complete coverage of the 12 U.S. importers, U.S. imports were based on official Commerce data. Of the responding U.S. importers, two were a U.S. tollee: ***.

In the first full five-year reviews, six firms supplied usable questionnaire information regarding their U.S. imports of ferrovanadium. Data received in response to U.S. importers' questionnaires were consistent with official import statistics, as adjusted, with regard to imports of ferrovanadium from subject countries. However, official imports statistics, as adjusted, were deemed to be preferable to the incomplete data received in response to importers' questionnaires with regard to imports of ferrovanadium from nonsubject countries.

In the current proceeding, the Commission issued U.S. importers' questionnaires to 19 firms believed to be importers of ferrovanadium, as well as to all U.S. producers of ferrovanadium. Usable questionnaire responses were received from 12 firms, representing nearly all U.S. imports from China and South Africa. Table I-7 lists all responding U.S. importers

of ferrovanadium from China, South Africa, and other sources, their headquarters, and their shares of U.S. imports in 2013.

Table I-7
Ferrovanadium: U.S. importers, U.S. headquarters, and shares of imports in 2013

Firm	Headquarters	Share of imports by source (percent)		
		China	South Africa	All other sources
Alloy Sales	Weirton, WV	***	***	***
CCMA	Amherst, NY	***	***	***
David J. Joseph Co.	Cincinnati, OH	***	***	***
Evraz Stratcor	Chicago, IL	***	***	***
Glencore	Stamford, CT	***	***	***
ICD	New York, NY	***	***	***
JuliMar	Jenks, OK	***	***	***
Masterloy	Ottawa, ON	***	***	***
Minerais	Hillsborough, NJ	***	***	***
Sideralloys	Lugano (Switzerland)	***	***	***
Trans-Global	Novato, CA	***	***	***
Treibacher	Althofen, AT	***	***	***
Total				100.0

Note.—*** reported imports from China in 2010. *** reported imports from South Africa in January-June 2014.

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. purchasers

The Commission received 23 usable questionnaire responses from firms that bought ferrovanadium since 2008.[42] Fourteen responding purchasers are end-users (iron or steel producers), five are distributors, two are traders, and one purchaser *** identifies itself as a nickel alloys producer. In general, responding U.S. purchasers were located in the Midwest (13 of 23 firms.) The responding purchasers represented firms primarily in the steel industry. The largest purchasers of ferrovanadium are ***.

[42] Of the 22 responding purchasers, 16 purchased the domestic ferrovanadium in 2013, zero purchased imports of the subject merchandise from China or South Africa, and 16 purchased imports of ferrovanadium from other sources.

APPARENT U.S. CONSUMPTION

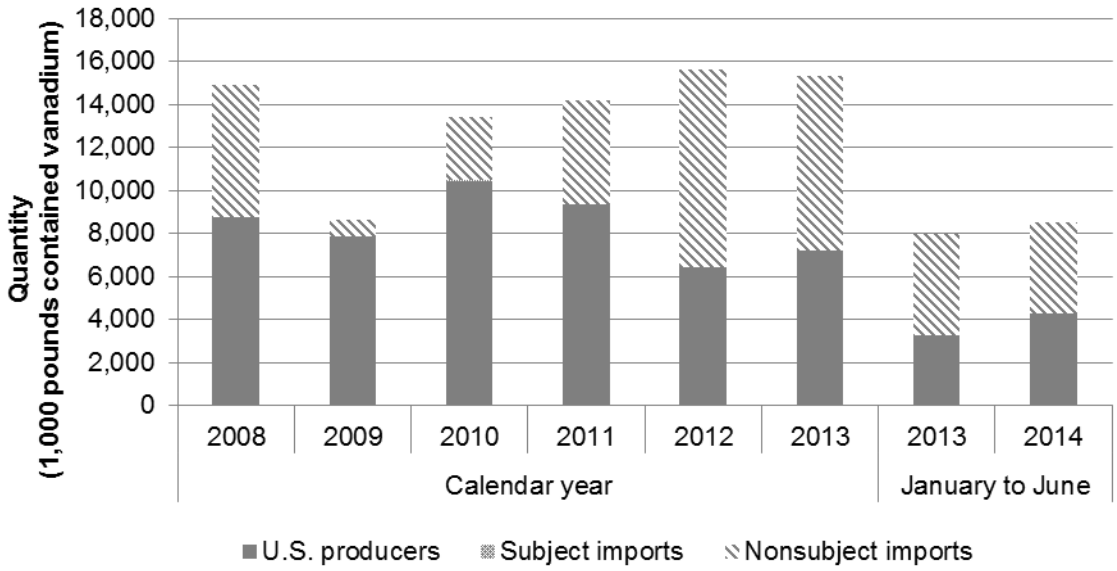
Data concerning apparent U.S. consumption of ferrovanadium during the period for which data were collected in this proceeding are shown in table I-8 and figure I-1. The quantity of apparent U.S. consumption increased overall from 2008 to 2013, but declined markedly in 2009 (consistent with the global financial crisis). U.S. imports of ferrovanadium from China or South Africa were present in only two years since 2008 and only in small volumes.

Table I-8
Ferrovanadium: U.S. shipments of domestic product, U.S. imports, and apparent U.S. consumption, 2008-13, January-June 2013, and January-June 2014

Item	Calendar year						January to June	
	2008	2009	2010	2011	2012	2013	2013	2014
	Quantity (1,000 pounds of contained vanadium)							
U.S. producers'/tollees' U.S. shipments	8,722	7,855	10,447	9,350	6,401	7,187	3,257	4,284
U.S. imports from.--								
China	0	0	1	0	0	0	0	0
South Africa	0	0	0	0	0	0	0	11
Subtotal	0	0	1	0	0	0	0	11
All other sources	6,180	777	2,952	4,840	9,237	8,125	4,739	4,219
Total U.S. imports	6,180	777	2,954	4,840	9,237	8,125	4,739	4,230
Apparent U.S. consumption	14,902	8,632	13,401	14,190	15,638	15,312	7,996	8,514
	Value (1,000 dollars)							
U.S. producers'/tollees' U.S. shipments	249,014	80,243	134,284	119,454	82,841	87,651	42,137	51,408
U.S. imports from.--								
China	0	0	25	0	0	0	0	0
South Africa	0	0	0	0	0	0	0	130
Subtotal	0	0	25	0	0	0	0	130
All other sources	164,414	12,954	42,682	66,797	112,777	92,923	57,325	49,982
Total U.S. imports	164,414	12,954	42,707	66,797	112,777	92,923	57,325	50,113
Apparent U.S. consumption	413,428	93,197	176,991	186,251	195,618	180,574	99,462	101,521

Source: Compiled from data submitted in response to Commission questionnaires.

Figure I-1
Ferrovanadium: Apparent U.S. consumption, 2008-13, January-June 2013, and January-June 2014



Source: Compiled from data submitted in response to Commission questionnaires.

U.S. MARKET SHARES

U.S. market share data are presented in table I-9.

Table I-9
Ferrovanadium: U.S. consumption and market shares, 2008-13, January-June 2013, January-June 2014

Item	Calendar year						January to June	
	2008	2009	2010	2011	2012	2013	2013	2014
Quantity (1,000 pounds of contained vanadium)								
Apparent U.S. consumption	14,902	8,632	13,401	14,190	15,638	15,312	7,996	8,514
Share of quantity (percent)								
U.S. producers'/tollees' U.S. shipments	58.5	91.0	78.0	65.9	40.9	46.9	40.7	50.3
U.S. imports from.--								
China	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Subtotal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
All other sources	41.5	9.0	22.0	34.1	59.1	53.1	59.3	49.6
Total U.S. imports	41.5	9.0	22.0	34.1	59.1	53.1	59.3	49.7
Value (1,000 dollars)								
Apparent U.S. consumption	413,428	93,197	176,991	186,251	195,618	180,574	99,462	101,521
Share of value (percent)								
U.S. producers'/tollees' U.S. shipments	60.2	86.1	75.9	64.1	42.3	48.5	42.4	50.6
U.S. imports from.--								
China	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Subtotal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
All other sources	39.8	13.9	24.1	35.9	57.7	51.5	57.6	49.2
Total U.S. imports	39.8	13.9	24.1	35.9	57.7	51.5	57.6	49.4

Source: Compiled from data submitted in response to Commission questionnaires.

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

U.S. MARKET CHARACTERISTICS

Ferrovanadium is sold primarily to end users, principally steel companies but also iron foundries. It can be produced directly from mined vanadium bearing iron ore, by recycling spent oil refinery catalyst, or from vanadium bearing iron slag.[1] [2] Ferrovanadium enhances the physical properties of the steel in such products as line pipe, rebar, steel beams, and other structural products. The vanadium-intensive portion of the U.S. steel market reportedly is expanding.[3] Steel producers have the capability to use different grades of ferrovanadium, but must adjust their steelmaking process accordingly.[4]

Apparent U.S. consumption of ferrovanadium fluctuated during 2008-13. Apparent U.S. consumption declined substantially in 2009 due to the recession, but recovered in 2010 and 2011, and apparent consumption levels in 2012 and 2013 surpassed 2008 levels. Overall, apparent U.S. consumption in 2013 was 2.8 percent higher than in 2008.

Several U.S. producers/tollees reported changes in the product range, product mix, or marketing of ferrovanadium. *** reported that since 2008, import sources have changed[5] and imported quantities have increased. *** reported that more consumers have shown a willingness to use 50 percent and 80 percent grades of ferrovanadium interchangeably. *** anticipate that there will be more pressure to use both 40-60 percent ferrovanadium and 75-85 percent ferrovanadium in the future, and that imports of ferrovanadium will continue to increase.

CHANNELS OF DISTRIBUTION

U.S. producers/tollees and U.S. importers usually sell ferrovanadium directly to end users, as shown in table II-1. However, ***, reported that although its usual practice is to sell

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[1] Hearing transcript, pp. 27-28 (Carter).

[2] Vanadium oxides – especially vanadium pentoxide – are the principal intermediate product used in the production of ferrovanadium. The steel industry accounts from 80-90 percent of vanadium pentoxide demand and the aerospace industry for the remaining 10-20 percent. Hearing transcript, p. 176 (Weigel).

[3] Hearing transcript, p. 59 (Button).

[4] *Ferrovanadium from China and South Africa, Inv. No. 731-TA-986-987,* October 29, 2003.

[5] *** reported increased imports from Canada, Korea, Austria, and the Czech Republic, and that product from Russia, Japan, and Australia have begun. *** also noted increased imports from Russia following the revocation of the antidumping duty order covering ferrovanadium and nitrided vanadium from Russia.

ferrovanadium ***, during ***, *** purchased a substantial portion of its production. In ***, *** resumed its usual practice of selling ***.[6]

Table II-1
Ferrovanadium: U.S. producers/tollees' and importers' share of reported U.S. shipments (percent), by sources and channels of distribution, 2008-13, January to June 2013, and January to June 2014

Item	Calendar year						January to June	
	2008	2009	2010	2011	2012	2013	2013	2014
	Share of quantity (percent)							
U.S. producers'/tollees' U.S. shipments to:								
Distributors	***	***	***	***	***	***	***	***
End users	***	***	***	***	***	***	***	***
U.S. importers' U.S. shipments of imports from China to:								
Distributors	***	***	***	***	***	***	***	***
End users	***	***	***	***	***	***	***	***
U.S. importers' U.S. shipments of imports from South Africa to:								
Distributors	***	***	***	***	***	***	***	***
End users	***	***	***	***	***	***	***	***
U.S. importers' U.S. shipments of imports from subject sources to:								
Distributors	***	***	***	***	***	***	***	***
End users	***	***	***	***	***	***	***	***
U.S. importers' U.S. shipments of imports from all other sources to:								
Distributors	31.3	50.7	32.2	54.8	33.1	17.0	16.7	12.7
End users	68.7	49.3	67.8	45.2	66.9	83.0	83.3	87.3

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. importers show greater variation in their distribution patterns. Respondent interested parties report that this variation can be attributed to the different roles played by importers. As an example, Glencore is a distributor and an importer; when Glencore acts as an importer, ***, but will occasionally ***. Additionally, respondent interested parties state there has been *** thus reducing imports sold to distributors.[7] U.S. importer *** explained this

[6] ***, response to staff question, October 29, 2014. In ***, *** reportedly approached *** and offered to buy *** percent of *** during ***; *** negotiated sales volumes ***. See posthearing brief of domestic interested parties, p. 4

[7] Respondent interested parties posthearing brief, Exhibit 2A, pp. 13-14.

fluctuation not as a property of the ferrovanadium market, but rather results of firm-level decisions.[8] If the U.S. market price is low (or at the price level of other markets), there are better returns for traders in other parts of the world, so there is a shift towards end users in the domestic market. However, if there is a price premium in the U.S. market, distributors and traders are likely to be more active domestically.[9]

GEOGRAPHIC DISTRIBUTION

U.S. producers/tollees and importers reported selling ferrovanadium to all regions in the United States (table II-2). All producers/tollees and most importers (10 of 12) reported sales to the Midwest. The Northeast and Southeast are also regions in which the majority of producers/tollees and a substantial number of importers reported sales.

Table II-2

Ferrovanadium: Geographic market areas in the United States served by U.S. producers/tollees and importers, by number of responding firms

Region	U.S. producers/tollees	U.S. imports from		
		China	South Africa	Other
Northeast	6	0	0	8
Midwest	8	0	0	10
Southeast[1]	5	1	1	9
Central Southwest	4	0	0	6
Mountains	4	0	0	3
Pacific Coast	4	0	0	3
Other[2]	0	0	0	1
Present in all continental regions	3	0	0	2

[1] Both importers of subject product, *** reported sales to the Southeast.
[2] All other U.S. markets, including AK, HI, PR, and VI, among others.

Source: Compiled from data submitted in response to Commission questionnaires.

For U.S. producers/tollees, 5.4 percent of sales were within 100 miles of their production facility, 86.6 percent were between 101 and 1,000 miles, and 8.1 percent were over 1,000 miles. Of the two importers that imported Chinese or South African product, ***.

[8] Staff telephone interview with ***, November 25, 2014.
[9] Staff telephone interview with ***, November 25, 2014.

SUPPLY AND DEMAND CONSIDERATIONS

U.S. supply

Domestic production

Based on available information, U.S. producers/tollees of ferrovanadium have the ability to respond to changes in demand with moderate-to-large changes in the quantity of shipments of U.S.-produced ferrovanadium to the U.S. market due to the increase in inventories since the last review, the ability of these producers/tollees to shift production to other products, and the availability of unused capacity. Some U.S. producers/tollees and importers reported that the availability of raw material (vanadium pentoxide) is a limiting factor in some kinds of production. Domestic interested parties state that availability of these raw materials can fluctuate. ***.[10] However, the current availability of raw materials is adequate and the types of catalysts and raw materials used in U.S. production are expected to expand in the coming years.[11]

Industry capacity

Domestic capacity utilization for ferrovanadium decreased overall from *** percent in 2008 to *** percent in 2013, despite a brief recovery in 2010. This level of capacity utilization suggests that U.S. producers have some ability to increase production of product in response to an increase in prices.

Alternative markets

U.S. producers/tollees' exports, as a share of total shipments, have fluctuated since 2008. U.S. producers/tollees' export shipments declined from *** percent in 2008 to *** percent in 2013, after peaking in 2009 and 2010 (*** percent and *** percent, respectively). This indicates that U.S. producers/tollees may have limited ability to shift shipments between the U.S. market and other markets in response to price changes.

All but two U.S. producers/tollees stated that it would be difficult to shift their shipments to other markets. *** stated that it would be difficult to shift sales between the U.S. market and alternative country markets due to lower sales prices and high duties, and other costs associated with exporting such as ocean freight, agents' fees, warehousing costs, and higher working capital costs. *** reported that their staffs do not have export experience or information on export markets. In contrast, *** reported that there are no export restraints and it seeks the best return for shareholders. However, *** also stated that within the calendar year, once business is concluded, there is little ability to shift sales.

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[10] Domestic interested parties' prehearing brief, p. 11

[11] Hearing transcript, p. 51 (Kidd).

Most U.S. producers/tollees (five of six firms) reported there were no tariff barriers to trade in other markets. The remaining firm, ***, cited barriers to trade specifically in China, India, and the EU. The firm stated that China imposes high import duties and value-added taxes, and India charges countervailing duties, special duties, and customs-related duties. The same firm added that the EU's environmental controls are costly, and as the amount of ferrovanadium exported to the EU increases, the costs associated with the environmental controls escalate as well.

Inventory levels

U.S. producers/tollees' inventories decreased from *** percent of total shipments to *** percent of total shipments from 2008 to 2013. Despite this decrease from a period high, the 2013 inventory ratio is still higher than it was at the close of the prior review period,[12] and suggests that U.S. producers/tollees may have some ability to respond to changes in demand. The effects of the recession in 2008-10 on the steel industry likely led to a decrease in demand of ferrovanadium, and thus higher inventories during that time.

Production alternatives

U.S. producers *** reported production of other products[13] using the same machinery and equipment used to produce ferrovanadium. *** stated that it could switch production from ferrovanadium to ferromolybdenum using the same equipment and labor. However, *** stated that since ferrovanadium is *** as ferromolybdenum, a switch in production ***.

Supply constraints

Most purchasers[14] reported that they had not been declined supply of ferrovanadium since 2008. However, four of the 23 responding purchasers reported that they did experience supply constraints, including insufficient supply to meet delivery needs, suppliers are unable to quote, suppliers are sold out, or suppliers are focusing on another market. *** reported that *** declined to quote in ***, and was only able to partially fulfill a requirement in ***. *** also reported that *** declined to quote in 2013 for contract business.

Most U.S. producers/tollees and importers did not report supply constraints of domestic ferrovanadium since 2008. The firms that did report supply constraints reported that some spent catalysts are being exported, thus not available for conversion into ferrovanadium; and

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[12]As presented earlier in table I-1, U.S. producers' and tollees' inventories in 2007 were equivalent to *** percent of total shipments.

[13] ***.

[14] The Commission received 24 questionnaire responses from U.S. purchasers, of which 23 responses are included in the analysis portion of the report. One purchaser, ***, did not purchase ferrovanadium in true form, but rather ***. Staff excluded this purchaser's data because its purchasing behavior differs from typical purchasers.

that some domestic producers have increased production, while others have decreased production.

Subject imports from China[15]

No Chinese producers responded to the Commission's foreign producer questionnaire. Based on information provided by U.S. producer, importer, and purchaser questionnaire responses, Chinese producers of ferrovanadium have the ability to respond to changes in demand with large changes in the quantity of shipments of ferrovanadium to the U.S. market. The main contributing factor to this degree of responsiveness of supply is the capacity for production. Several U.S. producers/tollees, ***, reported that market conditions have not changed since the implementation of the original order, but if the order were revoked, Chinese producers would likely export large volumes of ferrovanadium to the U.S. market.

Industry capacity

*** reported that production of ferrovanadium is expected to begin in 2014 at two new vanadium facilities in China, and that other vanadium projects have been announced.[16]

Alternative markets

Ferrovanadium exports from China have increased by about 4 percent since 2008 (see Part IV). This increase may suggest the Chinese industry has the ability to shift its shipments between export markets in response to price changes.

According to respondent South African parties, most Chinese ferrovanadium is sold on the spot market by traders and sold below U.S. prices.[17] Domestic interested parties report that consumption of ferrovanadium in China has decreased because Chinese steel producers have switched to the use of a vanadium carbon nitride alloy rather than ferrovanadium.[18]

Inventory levels

There were no responses from Chinese producers of ferrovanadium.

Production alternatives

Chinese product is reported to be largely produced from slag generated in the production of steel by the parent companies of the main Chinese ferrovanadium producers; therefore, Chinese overall ferrovanadium production may be constrained by these firms' steel production.[19]

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[15] The Commission received no questionnaire response from Chinese producers/tollees.
[16] ***'s U.S. producer questionnaire response for IV-15, reporting that ***.
[17] Hearing transcript, p. 148 (Holec).
[18] Hearing transcript, p. 96 (Perles).
[19] *Ferrovanadium from China and South Africa, Inv. Nos. 731-TA-986-987,* October 29, 2008, p. II-4.

Subject imports from South Africa[20]

Based on available information, producers of ferrovanadium from South Africa have the ability to respond to changes in demand with moderate-to-large changes in the quantity of shipments of ferrovanadium to the U.S. market. The main contributing factors to this degree of responsiveness of supply are the existence of relatively large inventories,[21] and availability of alternative export markets. Several U.S. producers/tollees and importers reported that market conditions have not changed since the implementation of the original order, and if the order were to be revoked, the U.S. market would likely import large volumes of ferrovanadium from South Africa.

According to respondent parties, most South African ferrovanadium is sold on the basis of long-term contracts, rather than on the spot market.[22] *** reported over *** percent of its sales in 2014 were on the basis of one year or long-term contracts, and *** reported *** percent of its sales in 2014 were on the basis of one year or long-term contracts.[23] Like domestic contracts, South African producers' contracts are based off of monthly published indices.[24]

Industry capacity

Capacity utilization increased from *** percent in 2008 to *** percent in 2013, as production of contained vanadium increased by approximately *** pounds. This current high level of capacity utilization suggests that producers of ferrovanadium in South Africa have limited ability to increase production of ferrovanadium in response to an increase in prices. However, data also indicate that ferrovanadium production levels in South Africa have fluctuated, *** exceeding the levels of reported capacity since 2008.[25]

Alternative markets

In 2013, *** percent of South African ferrovanadium sales was exported to non-U.S. markets. This level of exports suggests that South African producers have the ability to shift

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[20] The Commission received two foreign producer questionnaires from South African producers, covering all known production.

[21] During the hearing, respondent interested parties argued that these large inventories have actually been sold and are not available to divert to the U.S. market in 2015. Hearing transcript, p. 133, 168, (O'Connell).

[22] Hearing transcript, p. 148 (Holec).

[23] Respondent interested parties' joint post-hearing brief, Exhibit 1A, p. 14 and Exhibit 2A, p. 7. See also table V-3.

[24] Hearing transcript, p. 136 (O'Connell).

[25] Domestic interested parties argued that South African producers substantially understated production capacity, and that these producers would be able to increase production of ferrovanadium by a substantial factor if the antidumping order was lifted. Domestic interested parties' prehearing brief, p. 55.

between markets as a response to price changes. Respondent interested parties argue that the majority of Rhovan's ferrovanadium exports have gone to European and Asian markets, and Glencore's established relationships with buyers in these other countries will continue.[26] Approximately 80 percent of Rhovan's ferrovanadium production is under contract for 2015 and Rhovan expects to commit similar quantities in 2016 because ***. Glencore has ***.[27]

*** reported it does not face competition from imports of ferrovanadium in the South African market, and that only very small sales occur in South Africa. The same firm reported selling to ***. According to ***, long-term contractual obligations would slow any potential diversion of sales to the United States, because many of the sales are already committed through 2014 and part of 2015. Regarding anticipated changes to South African product supply in the U.S. market, the firm said it depends on the economic viability of sales in the United States. [28]

For periods beyond 2015, Vanchem will continue to supply *** with approximately *** and similar volumes to its current customers, in ***.[29]

Inventory levels

Inventory ratios to total shipments decreased from *** percent in 2008 to about *** percent in 2013. Respondent interested parties state that "inventories are *** for these producers, and *** and do not indicate any excess inventory for export."[30] *** explains that "***."[31] Glencore stated that there is approximately a two to three-month supply of ferrovanadium in the distribution chain – from mine to customer. The inventory levels reported reflect all ferrovanadium in the distribution chain, and may not be excess inventory.[32]

While the inventory levels held by the South African industry are relatively large, for the reasons indicated above, inventory levels may not necessarily indicate a large ability to increase shipments in response to price change. While "earmarks" and other commitments may constrain the South African producers' ability to increase shipments immediately in response to price change, these inventories may provide some degree of flexibility in responding to such changes. Therefore, inventory shares[33] may suggest a moderate ability for South African producers to increase shipments in response to price changes.

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[26] Respondent interested parties' joint prehearing brief, p. 7.

[27] Respondent interested parties' joint posthearing brief, Exhibit 2A, pp. 2-3.

[28] Foreign producer ***'s questionnaire responses, II-12, II-14, II-15, III-7, and III-19.

[29] Respondent interested parties' joint posthearing brief, Exhibit 1A, pp. 3-5.

[30] Respondent interested parties' joint prehearing brief, p. 15.

[31] Respondent interested parties' joint prehearing brief, p. 29.

[32] Hearing transcript, p. 134 (O'Connell).

[33] Approximately 80 percent of Rhovan's 2015 ferrovanadium production has been committed to customers. "Rhovan/Glencore considers this a 'sold-out' situation as there must be a buffer to accommodate the variations in production at the mine, delivery schedules and monthly fluctuations in customers' requirements. Respondent interested parties' joint posthearing brief, Exhibit 2A, p. 2.

Production alternatives

*** responding South African producers reported the ability to shift production between ferrovanadium and other products (***) using the same equipment and labor. South African producer *** reported that ***.[34] Additionally, *** reported that ***. *** reported plans to produce more ***. The firm adds that all the production of vanadium chemicals will be maintained. South African producer Rhovan reported that vanadium pentoxide production is aligned with the aerospace industry demands. Any remaining vanadium pentoxide is then converted into ferrovanadium.[35] Rhovan noted that the remaining vanadium pentoxide cannot be converted at Rhovan, because the firm's electrothermic production process can only process vanadium trioxide.[36] The vanadium pentoxide must be toll converted.[37] Additionally, respondent interested parties argued that *** will lead to less ferrovanadium exports in the future.[38]

Nonsubject imports

The largest sources of nonsubject imports during 2008-2013 were Austria, Canada, and the Czech Republic. Combined, these countries accounted for 85.3 percent of nonsubject imports in 2013. Czech Republic alone accounted for 60.7 percent of all nonsubject imports in 2013.

New suppliers

Most purchasers reported no new suppliers in the U.S. market since 2008. The remaining 9 of 23 purchasers identified Duferco, JFE (Japan), and Atlantic Ltd.'s Windimurra project in Australia (noting that it produced a small amount in 2012, but is not currently producing ferrovanadium). Nine of 22 responding purchasers expect additional entrants in the future. Three firms, ***, reported that Windimurra is repairing its facility with the stated intent of exporting ferrovanadium to the U.S. market.[39] Another anticipated entrant into the market is ***. *** reported that new ferrovanadium is supposed to be introduced from ***.

Respondent interested parties suggested the greatest source of increased vanadium supply is expected to be in China due to growth in coproduct steelmaking slag from expanding Chinese steel mills, and expect this growth to subside after 2018.[40] Additionally, two firms, ***, reported that Largo (Brazil) is commissioning a new facility to export vanadium pentoxide to the U.S. market by 2015 to be sold through Glencore.

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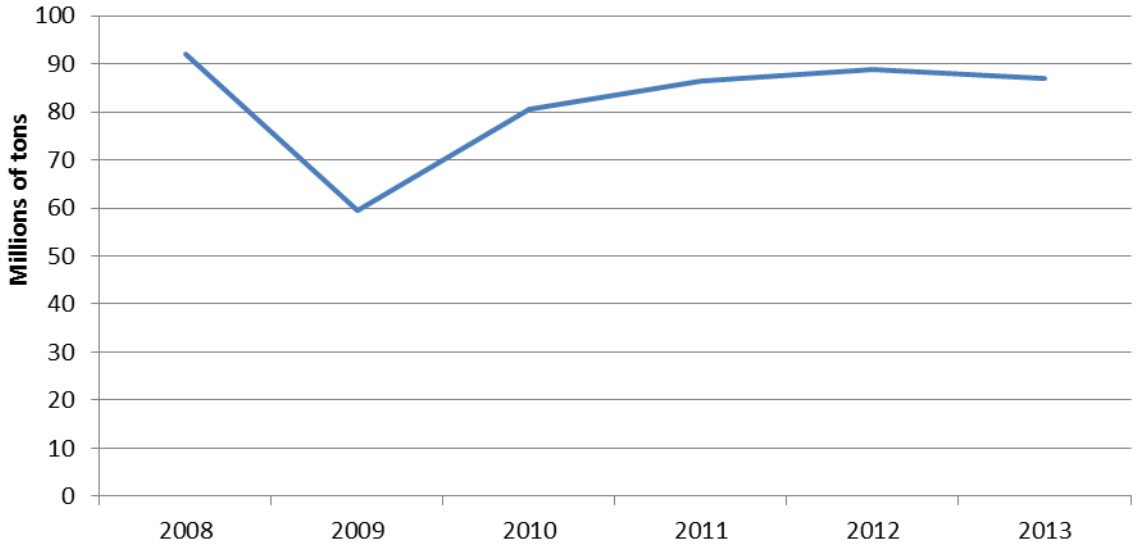
[34] Respondent interested parties' joint prehearing brief, p. 30.
[35] Hearing transcript, p. 132 (O'Connell).
[36] Hearing transcript, p. 133 (O'Connell).
[37] Hearing transcript, p. 145 (Holec).
[38] Respondent interested parties' joint prehearing brief, p. 7.
[39] Respondent interested parties' joint prehearing brief, p. 24.
[40] Respondent interested parties' joint prehearing brief, p. 24.

U.S. demand

Based on available information, the overall demand for ferrovanadium is likely to experience small changes in response to changes in price. The main contributing factors are the limited range of substitute products and the small cost share of ferrovanadium in most of its end-use products.

Demand for ferrovanadium reportedly follows trends in steel consumption as well as overall economic conditions.[41] Consumption of ferrovanadium is primarily driven by two factors: steel production and intensity of vanadium use.[42] Figure II-1 shows the production levels of crude steel in the United States since 2008, and shows the large drop in production of crude steel in 2009. This decline was driven by the recession, as the U.S. gross domestic product decreased by almost 10 percent in late 2008 and into 2009, as shown in figure II-2.[43]

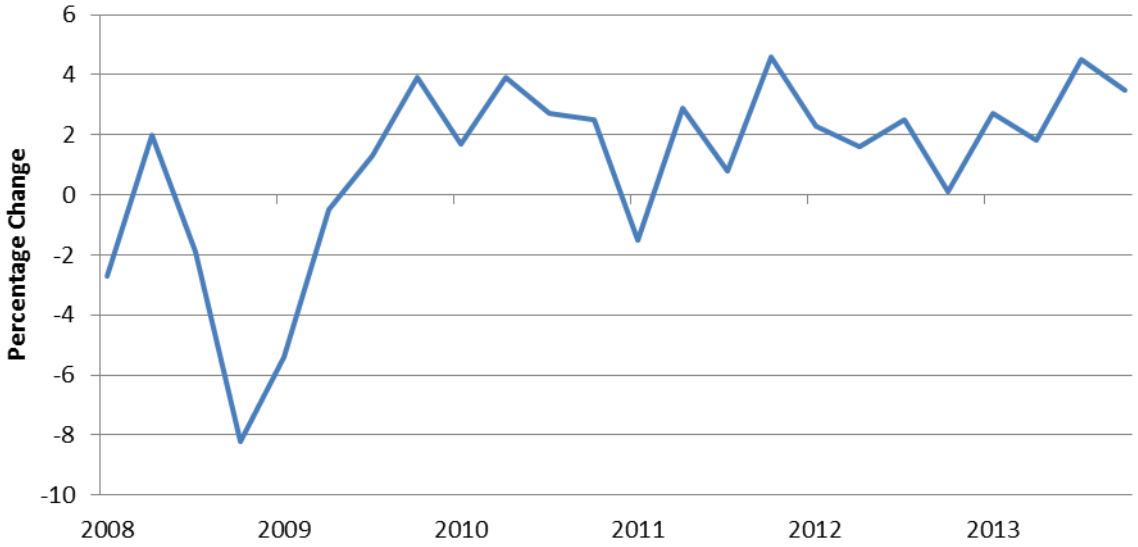
Figure II-1
Crude steel: Production of crude steel in the United States, in millions of tons, by year, 2008-2013



Source: World Steel Association

[41] *Ferrovanadium from China and South Africa, Inv. Nos. 731-TA-986-987,* October 29, 2008.
[42] Hearing transcript, p. 63 (Perles).
[43] Bureau of Economic Analysis, Interactive Data

Figure II-2
Real U.S. GDP growth: Percentage change, quarterly, January 2008-December 2013



Source: National Income and Product Accounts – Table 1.1.1, Percent Change from Preceding Period in Real Gross Domestic Product, Bureau of Economic Analysis, http://www.bea.gov/iTable/iTable.cfm, retrieved December 8, 2014.

End uses

U.S. demand for ferrovanadium depends on the demand for U.S.-produced downstream products. Reported end uses include hard facing powder, other steel alloys, and steel products such as line pipe, rebar, finished bar and coil steel, wire rod, structural steel, steel rounds, and wide flange steel beams. The vast majority of firms reported no changes in end uses since 2008, and did not anticipate future changes in end uses of ferrovanadium. Six of seven responding U.S. producers/tollees, 10 of 11 importers, 21 of 22 purchasers, and all responding foreign producers reported no changes in end uses since 2008.

The firms that did note changes cited increased demand for the ferrovanadium input, vanadium pentoxide, from the aerospace and battery industries ***, and the development of new grades of steel since 2008 ***. Vanadium redox batteries are used in large power storage applications, such as for wind or solar applications, and lithium vanadium phosphate batteries are used for electric cars.[44] However, the amount of vanadium used energy storage applications (including redox batteries) is extremely small, currently accounting for less than half of a percent of total ferrovanadium production.[45] Two firms noted an increase in ferrovanadium consumption in certain existing applications, particularly high strength steel.

[44] Respondent interested parties' joint prehearing brief, p. 21.
[45] Hearing transcript, p. 74 (Carter).

Business cycles

Most responding U.S. producers/tollees (3 of 4), importers (6 of 10), and purchasers (20 of 23) indicated that the market was not subject to business cycles. Importers and purchasers reported similar information regarding conditions of competition. Four of seven responding U.S. producers/tollees reported that the ferrovanadium market is subject to distinctive conditions of competition. *** reported that demand for ferrovanadium is dependent on steel production and on steel imports. *** reported continuing large growth in vanadium usage in countries such as China and Russia, as requirements for higher-strength steels increase. *** reported that the ferrovanadium market is volatile, with many price spikes and valleys that appear to be random. *** reported that foreign currency valuations relative to the U.S. dollar may affect the quantity of imported material entering the U.S. market; that stronger or weaker demand in other parts of the world may cause dislocations of material either into or away from the U.S. market; and that the quantity of contract versus spot business throughout the year can also affect market dynamics.[46]

Demand trends

A plurality of responding firms reported an increase in U.S. demand for ferrovanadium since 2008 (table II-3). All responding U.S. producers/tollees reported an increase in U.S. demand for ferrovanadium, while importer and purchaser responses were more evenly distributed.

[46] Most ferrovanadium is sold on a contractual basis rather than on a spot basis, but these contractual prices are directly linked to published spot prices, as *Ryan's Notes* or *Metal Bulletin* monthly spot prices are generally used as a benchmark in contract negotiations. Contract prices are typically based on formulas that discount the published prices from the previous month. Hearing transcript, p. 23 (Carter).

Table II-3
Ferrovanadium: Firms' responses regarding U.S. demand, by number of responding firms, since 2008

Item	Number of firms reporting			
	Increase	No change	Decrease	Fluctuate
Demand since 2008:				
U.S. producers/tollees	6	0	0	0
Importers	4	1	3	2
Purchasers	4	6	4	7
Foreign producers	0	0	0	0
Anticipated demand:				
U.S. producers/tollees	3	3	0	0
Importers	6	1	1	2
Purchasers	5	8	0	7
Foreign producers	1	0	0	0
Demand for purchasers' final products since 2008:				
Purchasers	3	8	1	5

Source: Compiled from data submitted in response to Commission questionnaires.

Substitute products

Substitutes for ferrovanadium include ferroniobium (FeNb, or ferrocolumbium, FeCb) which can be used in structural beams, steel plates, rebar, grain refiner, merchant bar, and other high-strength, low-alloy (HSLA) steels. *** reported that ferroniobium can substitute ferrovanadium in approximately 10-15 percent of steel grades. Two firms, ***, reported that vanadium carbonitride (VCN) can act as a substitute for ferrovanadium in some steel manufacturing. *** reported 40-60 percent grade ferrovanadium can be used to replace 80 percent grade ferrovanadium, and *** reported that titanium could also act as a substitute in steel. None of the responding firms anticipate any changes to ferrovanadium substitutes.

Cost share

In general, ferrovanadium accounts for a small share of the cost of the end-use products in which it is used, though cost share varies largely by product and can be relatively high for certain end uses. Ferrovanadium generally accounts for a minimal cost share (less than 1 percent of total cost) for end products such as steel long products, wire rod, flat roll products, rebar, and steel alloys. Ferrovanadium makes up between 1 and 5 percent of total cost for steel alloys, line pipe, coil steel, and high carbon rod with vanadium. However, two firms reported powder end uses, for which ferrovanadium makes up a larger share of total cost, representing *** percent (hard facing powder) and *** percent (ferrovanadium powder).

SUBSTITUTABILITY ISSUES

The degree of substitution between domestic and imported ferrovanadium depends upon such factors as relative prices, quality (e.g., grade standards, reliability of supply, defect

rates, etc.), and conditions of sale (e.g., price discounts/rebates, lead times between order and delivery dates, payment terms, product services, etc.). Based on available data, staff believes that there is high degree of substitutability between domestically produced ferrovanadium and ferrovanadium imported from subject sources.

Lead times

Ferrovanadium is primarily sold from inventory. U.S. producers/tollees reported that 98.5 percent of their commercial shipments were from inventory, with lead times averaging 8 days. The remaining 1.5 percent of their commercial shipments was produced to order, with lead times averaging 17.5 days. One responding U.S. importer, ***, said average lead time for ferrovanadium sold from U.S. inventory is 5 days.[47]

Knowledge of country sources

Nineteen purchasers indicated they had marketing/pricing knowledge of domestic product, one of Chinese product, and ten of nonsubject product, including Austria (4 firms), Canada (4), Czech Republic (4), Germany (1), Japan (4), Korea (6), and Russia (2). One purchaser reported pricing knowledge of the European market. No purchasers indicated marketing/pricing knowledge of South African product.

As shown in table II-4, most purchasers and their customers never make purchasing decisions based on the producer or country of origin. Eight of 23 purchasers reported that they always or usually make decisions based on the manufacturer, citing having approved a supplier based on internal specifications, establishing a reliable and competitive supply chain, and always purchasing FeV80 (80 percent vanadium).

Rather than basing purchasing decisions on producer or country of origin, most purchasers based purchasing decisions on product grade or other considerations, such as internal specifications or other element contents. Of the purchasers that reported always or usually purchasing based on other considerations, five firms based purchasing decisions on internal specifications or ASTM specifications, and five firms based purchasing decisions based on the presence of other trace elements such as aluminum, silicon, or other impurities.

[47] This was the only response from importers regarding lead times.

Table II-4

Ferrovanadium: Purchasing decisions based on producer and country of origin, by number of reporting firms

Decision	Always	Usually	Sometimes	Never
Purchases based on producer:				
Purchaser's decision	5	3	3	12
Purchaser's customer's decision	1	1	1	11
Purchases based on country of origin:				
Purchaser's decision	4	2	4	12
Purchaser's customer's decision	1	0	2	10
Purchases based on product grade:				
Purchaser's decision	15	4	1	3
Purchaser's customer's decision	5	3	1	5
Purchases based on other considerations:				
Purchaser's decision	12	1	2	7
Purchaser's customer's decision	5	1	2	5

Source: Compiled from data submitted in response to Commission questionnaires.

Factors affecting purchasing decisions

The most often cited top three factors firms consider in their purchasing decisions for ferrovanadium were price (22 firms), availability/delivery on time (18 firms), and quality[48] (16 firms) as shown in table II-5. Price was the most frequently cited first-most important factor (cited by 11 firms), followed by quality (6 firms); quality was the most frequently reported second-most important factor (8 firms); and availability/delivery on time was the most frequently reported third-most important factor (8 firms).

Table II-5

Ferrovanadium: Ranking of factors used in purchasing decisions as reported by U.S. purchasers, by number of reporting firms

Factor	First	Second	Third	Total
Price	11	5	6	22
Quality	6	8	2	16
Availability/Delivery on time	4	6	8	18
Other[1]	1	3	5	9

[1] Known and reliable suppliers, discount offered, location, other terms of contract, product consignment, extension of credit, technical service, and packaging.

Source: Compiled from data submitted in response to Commission questionnaires.

[48] Quality characteristics listed by responding purchasers include: Sizing (9 firms), assay, or the content or quality of ore, (9), chemistry (8), packaging (7), product consistency (2), product form (1), and delivery specifications (1).

The majority of purchasers (15 of 21) reported that they "usually" purchase the lowest-priced product for their purchases. Ten purchasers reported purchasing ferrovanadium from one source although a comparable product was available at a lower price from another source, citing reasons such as the lowest price must also meet other purchase requirements for best overall value; on-time delivery; preference for Made in the USA product; low silicon content; and purchases from a parent company. No purchasers reported that certain types of product were only available from a single source.

Importance of specified purchase factors

Purchasers were asked to rate the importance of 15 factors in their purchasing decisions (table II-6). The factors rated as "very important" by more than half of responding purchasers were availability (23 firms), price (22), product consistency (22), reliability of supply (21), delivery time (21), quality exceeds industry standards (21), packaging (14), [49] delivery terms (13), and discounts offered (12).

Table II-6
Ferrovanadium: Importance of purchase factors, as reported by U.S. purchasers, by number of responding firms

Factor	Number of firms reporting		
	Very	Somewhat	Not
Availability	23	0	0
Delivery terms	13	9	1
Delivery time	21	1	1
Discounts offered	12	9	2
Extension of credit	7	8	8
Minimum quantity requirements	5	11	7
Packaging	14	8	1
Price	22	1	0
Product consistency	22	1	0
Product range	7	10	6
Quality exceeds industry standards	21	2	0
Quality meets industry standards	7	7	9
Reliability of supply	21	2	0
Technical support/service	5	9	9
U.S. transportation costs	5	11	7

Source: Compiled from data submitted in response to Commission questionnaires.

[49] A larger share of the U.S. market will request ferrovanadium in smaller packages, rather than large bulk bags, drums, or loose in dump trucks. Packaging in small bags is more costly than the other options, and account for about 2 percent additional charge for the packaging service. Hearing transcript, pp. 116-118 (Carter).

Supplier certification

Fourteen of 23 responding purchasers require that the product they purchase be certified. Most purchasers reported that the time to qualify a new supplier ranged from seven to 30 days. No purchasers reported instances where a supplier had failed in its attempt to qualify product, or had lost its approved status since 2008. Most purchasers reported that they conduct trials of the material before purchasing. *** reported that ***. *** reported that its trial

***. In addition to material trials, many purchasers reported credit reports, audits, third-party inspections, ownership structure, ISO certification status, and references. Purchasers also listed quality control systems, production location, availability, chemical specifications, and reliability as other considerations in the certification process.

Changes in purchasing patterns

Purchasers were asked about changes in their purchasing patterns from different sources since 2008 (table II-7). No purchaser reported purchasing ferrovanadium from China or South Africa. Although purchasers reported various changes in their purchasing patterns with respect to the U.S. and nonsubject sources, no purchaser reported decreased purchases from nonsubject sources. For decreasing purchases of domestic product, purchasers cited changes in supplier's (***) preferred country of origin from U.S. to Canadian product; price; and competition with the aerospace market drives up prices.[50] Reasons listed for increased purchases of domestic product were vendor preference; better quality; and a long-term agreement with U.S. producer ***. Purchasers attributed fluctuations in purchase patterns to fluctuations in the steel business and production levels; demand usage; economy and production levels; changing market opportunities based on price and availability; and purchasing patterns depend solely on the contract pricing negotiated each year.

Table II-7
Ferrovanadium: Changes in purchase patterns from U.S., subject, and nonsubject countries

Source of purchases	Did not purchase	Decreased	Increased	Constant	Fluctuated
United States	2	5	4	5	6
China	21	0	0	0	0
South Africa	21	0	0	0	0
All other sources	6	0	6	5	6

Source: Compiled from data submitted in response to Commission questionnaires.

Fifteen of 23 responding purchasers reported that they had changed suppliers since 2008. Reasons reported for changes in sourcing included changes based solely on overall value; total cost ownership optimization; lowest price offer; based on best price for quality in proper packaging and location; changed to ***; and change based on availability of product.

[50] U.S. purchaser *** reported its ***.

Specifically, firms stopped or reduced purchases from *** because of price, product specifications, and breadth; *** because of price; and *** because it was not competitive. Firms added or increased purchases from *** because of price, product specifications, breadth, and these firms were more competitive; and *** because of price. Purchasers also added *** as suppliers. Firms also reported changes because of mill/vendor consolidation.

Nine of 23 purchasers reported new suppliers since 2008, including the Windimurra facility in Australia (owned by Atlantic, Ltd. and selling through MoTiV Metals in the United States), Duferco, EMAG, and JFE (Japan). Nine of 22 purchasers anticipate new suppliers to enter the U.S. market, again citing Windimurra, and Duferco. *** reported that it anticipates additional ferrovanadium supply as a result of the vanadium pentoxide produced by Largo Resources at its new plant in Brazil. *** reported that it anticipates new material coming in from ***.

Importance of purchasing domestic product

Virtually all purchasers (22 of 23) reported that purchasing U.S.-produced product was not an important factor in their purchasing decisions. The remaining purchaser stated that U.S. product was purchased because it meets the firm's specifications.

Comparisons of domestic products, subject imports, and nonsubject imports

Purchasers were asked to compare ferrovanadium produced in the United States, subject countries, and nonsubject countries. First, purchasers were asked for a country-by-country comparison on the same 15 factors (table II-8) for which they were asked to rate the importance.

Most purchasers reported that U.S. product compared to nonsubject product[51] was "superior" or "comparable" on all fifteen factors. Three[52] purchasers compared product from China with that from South Africa, and most reported that ferrovanadium was comparable for all fifteen factors. When comparing U.S. to Chinese ferrovanadium, most purchasers reported that U.S. product is superior in availability, and delivery time. In the remaining factors, purchasers were generally split between whether U.S. product is comparable or superior to Chinese ferrovanadium. Most U.S. purchasers reported that U.S. and South African product were comparable, with the exception of delivery time, technical support/service, and U.S. transportation costs, where purchasers were generally split between ranking U.S. product comparable or superior to South African product.

[51] Product from Austria, Canada, Czech Republic, Europe, Germany, Japan, Russia, and Korea was considered by purchasers in these comparisons.

[52] Three purchasers, ***, compared China and South African product for all factors. A fourth purchaser, ***, responded for only one comparison on availability.

Table II-8

Ferrovanadium: Purchasers' comparisons between U.S.-produced and imported product

Factor	Number of firms reporting								
	U.S. vs. China			U.S. vs. South Africa			U.S. vs. Nonsubject[1]		
	S	C	I	S	C	I	S	C	I
Availability	3	1	0	1	2	0	5	13	1
Delivery terms	2	2	0	1	2	0	3	15	1
Delivery time	3	1	0	2	1	0	5	13	1
Discounts offered	1	1	1	0	1	1	1	16	1
Extension of credit	2	1	1	1	1	1	2	16	1
Minimum quantity requirements	2	2	0	1	2	0	1	18	0
Packaging	2	2	0	1	2	0	3	16	0
Price	2	2	0	1	2	0	4	14	1
Product consistency	2	2	0	1	2	0	2	17	0
Product range	1	2	0	0	2	0	2	15	1
Quality exceeds industry standards	2	2	0	1	2	0	1	18	0
Quality meets industry standards	2	2	0	1	2	0	1	18	0
Reliability of supply	2	2	0	1	2	0	4	15	0
Technical support/service	2	2	0	2	1	0	4	15	0
U.S. transportation costs	2	2	0	2	1	0	5	13	1

Table continued.

Table II-8 -- *Continued*

Ferrovanadium: Purchasers' comparisons between U.S.-produced and imported product

Factor	Number of firms reporting								
	China vs. South Africa			China vs. Nonsubject[2]			South Africa vs. Nonsubject[2]		
	S	C	I	S	C	I	S	C	I
Availability	1	3	0	0	3	0	0	3	0
Delivery terms	0	3	0	0	3	0	0	3	0
Delivery time	0	3	0	0	3	0	0	3	0
Discounts offered	1	2	0	0	3	0	0	3	0
Extension of credit	0	2	1	0	3	0	0	3	0
Minimum quantity requirements	1	2	0	0	3	0	0	3	0
Packaging	0	3	0	0	3	0	0	3	0
Price	0	2	1	0	3	0	0	3	0
Product consistency	0	3	0	0	3	0	0	3	0
Product range	0	3	0	0	3	0	0	3	0
Quality exceeds industry standards	0	3	0	0	3	0	0	3	0
Quality meets industry standards	0	3	0	0	3	0	0	3	0
Reliability of supply	0	2	1	0	3	0	0	3	0
Technical support/service	0	2	1	0	3	0	0	3	0
U.S. transportation costs	1	2	0	0	3	0	0	3	0

[1]Nonsubject countries listed in comparisons with the United States were Austria, Canada, Czech Republic, Europe, Germany, Japan, Russia, Korea, and *** listed "all other"
[2]Nonsubject countries listed in comparisons with China and South Africa were "all other" and Korea.

Note.-- A rating of superior means that price/U.S. transportation costs is generally lower. For example, if a firm reported "U.S. superior," it meant that the U.S. product was generally priced lower than the imported product.

Note.--S=first listed country's product is superior; C=both countries' products are comparable; I=first list country's product is inferior.

Comparison of U.S.-produced and imported ferrovanadium

In order to determine whether U.S.-produced ferrovanadium can generally be used in the same applications as imports from China and South Africa, U.S. producers/tollees, importers, and purchasers were asked whether the products can "always," "frequently," "sometimes," or "never" be used interchangeably. As shown in table II-9, six of seven responding producers/tollees reported that ferrovanadium from all sources can always be used interchangeably. The majority of U.S. importers and purchasers reported that ferrovanadium from all identified sources is "always" or "frequently" interchangeable. ***.

Table II-9

Ferrovanadium: Interchangeability between ferrovanadium produced in the United States and in other countries, by country pairs

Country pair	U.S. producers				U.S. importers				U.S. purchasers			
	A	F	S	N	A	F	S	N	A	F	S	N
United States vs. China	6	1	0	0	4	4	0	0	5	2	1	0
United States vs. South Africa	6	1	0	0	6	2	0	0	6	3	0	0
China vs. South Africa	6	1	0	0	3	4	0	0	3	2	1	0
United States vs. other	6	1	0	0	5	6	0	0	7	7	0	0
China vs. other	6	1	0	0	3	5	0	0	3	4	0	0
South Africa vs. other	6	1	0	0	3	5	0	0	4	4	0	0

Note.—A=Always, F=Frequently, S=Sometimes, N=Never.

Source: Compiled from data submitted in response to Commission questionnaires.

As can be seen from table II-10, most responding firms indicated that ferrovanadium from all identified sources "always" met minimum quality specifications. Fourteen of 21 responding purchasers reported that domestically produced product "always" met minimum quality specifications. Three of five responding purchasers reported that Chinese product and South African product "always" met minimum quality specifications. Most purchasers reported nonsubject product (Austria, Canada, Czech Republic, Japan, Korea, and the EU) also "always" met minimum quality specifications.

Table II-10

Ferrovanadium: Ability to meet minimum quality specifications, by source and number of reporting firms[1]

Source	Always	Usually	Sometimes	Rarely or never
United States	14	6	1	0
China	3	1	1	0
South Africa	3	1	1	0
All other sources[2]	21	6	0	0

[1]Purchasers were asked how often domestically produced or imported ferrovanadium meets minimum quality specifications for their own or their customers' uses.
[2]Other sources listed were Australia, Austria, Canada, Czech Republic, EU, Japan, Russia, and Korea

Source: Compiled from data submitted in response to Commission questionnaires.

In addition, producers/tollees, importers, and purchasers were asked to assess how often differences other than price were significant in sales of ferrovanadium from the United States, subject, or nonsubject countries. As seen in table II-11, U.S. producers/tollees and importers reported that differences other than price were "sometimes" or "never" significant. U.S. purchasers provided more varied responses. When comparing the United States to China or South Africa, most U.S. purchasers reported that differences were "always" or "frequently" significant. Purchasers reported that lead time and availability are important factors other than price that would be considered.

Table II-11

Ferrovanadium: Significance of differences other than price between ferrovanadium produced in the United States and in other countries, by country pairs

Country pair	U.S. producers				U.S. importers				U.S. purchasers			
	A	F	S	N	A	F	S	N	A	F	S	N
United States vs. China	0	0	3	4	0	0	3	5	2	4	1	1
United States vs. South Africa	0	0	3	4	0	0	2	5	2	4	1	2
China vs. South Africa	0	0	1	6	0	0	2	5	1	3	1	1
United States vs. other	0	0	3	4	0	1	6	4	2	6	4	4
China vs. other	0	0	1	6	0	0	3	5	1	4	2	1
South Africa vs. other	0	0	1	6	0	0	3	5	1	4	2	1

Note.--A = Always, F = Frequently, S = Sometimes, N = Never.

Source: Compiled from data submitted in response to Commission questionnaires.

ELASTICITY ESTIMATES

This section discusses elasticity estimates; parties' comments on these estimates are included below.

U.S. supply elasticity

The domestic supply elasticity for ferrovanadium measures the sensitivity of the quantity supplied by U.S. producers/tollees to changes in the U.S. market price of ferrovanadium. The elasticity of domestic supply depends on several factors including the level of excess capacity, the ease with which producers can alter capacity, producers' ability to shift to production of other products, the existence of inventories, and the availability of alternate markets for U.S.-produced ferrovanadium. Exports are relatively small so responses to price changes would be relatively limited. In recent years, the U.S. industry's capacity utilization rate has dropped. Additionally, inventories have increased since the last review. Based on the industry's excess capacity and its inventories in recent years, supply is estimated to be at least moderately elastic, and a range of 3 to 5 is suggested.

U.S. demand elasticity

The U.S. demand elasticity for ferrovanadium measures the sensitivity of the overall quantity demanded to a change in the U.S. market price of ferrovanadium. This estimate depends on factors discussed earlier such as the existence, availability, and commercial viability of substitute products, as well as the component share of the ferrovanadium in the production of any downstream products. Responding firms reported that there is a substitute for ferrovanadium in the production of some types of steel, indicating that demand is sensitive to price at some price levels. Based on the available information, the aggregate demand for ferrovanadium is likely to be inelastic; a range of -0.5 to -1 is suggested.

Substitution elasticity

The elasticity of substitution depends upon the extent of product differentiation between the domestic and imported products. Product differentiation, in turn, depends upon such factors as quality (e.g., chemistry, appearance, etc.) and conditions of sale (e.g., availability, sales terms/ discounts/ promotions, etc.). All producers/tollees found that ferrovanadium from the U.S. and from other countries was "always" interchangeable, and most importers and purchasers reported ferrovanadium was "always" or "frequently" interchangeable. Since most firms have reported that U.S. ferrovanadium is generally comparable to Chinese and South African product, the elasticity of substitution between U.S.-produced ferrovanadium and imported ferrovanadium is likely to be in the range of 3 to 5.

Domestic interested parties state that substitution elasticity is likely higher, in the range of 5 to 10, because the questionnaires of producers, importers, and purchasers reported high degrees of substitutability between domestically produced ferrovanadium and ferrovanadium imported from other sources. Additionally, domestic interested parties argue that since price is the primary determinant for U.S. purchasers in their purchasing decisions, the substitution elasticity should be high.[53]

[53] Domestic interested parties' prehearing brief, p. 17 and Exhibit A.

PART III: CONDITION OF THE U.S. INDUSTRY

OVERVIEW

The information in this section of the report was compiled from responses to the Commission's questionnaires. Eight firms, which accounted for all known U.S. production of ferrovanadium and almost all U.S. shipments of ferrovanadium during January 2008 through June 2014, supplied information on their operations in these reviews on ferrovanadium.

Table III-1 presents information on the domestic industry and notes important changes in the operations since the first reviews.

Table III-1
Ferrovanadium: Important industry events, since January 1, 2008

Date	Entity	Description of event
2009	Bear	Bear reduces capacity and work force due to decreased demand and has trouble meeting increased demand in 2010.
June 2009	AMG	Metallurg Vanadium Corp. (now AMG Vanadium Inc.) halts production for 6 weeks at its Cambridge, OH facility.
November 2010	AMG	"Commissioned a new $6 million raw material storage building which has a dedicated railcar unloading system to increase operating efficiency and a unique subfloor liner system to ensure safety storage of spent refinery catalysts.
January 1, 2011	AMG	Metallurg Vanadium Corp. changes its corporate name to AMG Vanadium Inc.
April 2011	AMG	Installed a solar power system at its Cambridge plant that will produce 230,000 kilowatt hours of electricity annually. Also installed new emission control equipment on its existing roaster and both of its electric arc furnaces.
May 2011	Commerce	In response to a request from AMG, Commerce initiated an anticircumvention inquiry to determine whether imports of vanadium pentoxide from Russia that are converted into ferrovanadium in the United States are circumventing the antidumping duty order on ferrovanadium and nitrided vanadium (ferrovanadium) from Russia.

Table continued on next page.

Table III-1--*Continued*
Ferrovanadium: Important industry events, since January 1, 2008

October 1, 2011	Evraz Stratcor	Changes name of its Strategic Minerals Corp. ("Stratcor") subsidiary to Evraz Stratcor. Russian-owned Evraz acquired a majority interest in Strategic Minerals Corp. in 2006.
November 2011	AMG	Announces plans to install a new 100-ton-per-day roaster at its facility in Cambridge, OH. The current roaster will be used as a backup.
August 2012	Commerce	Commerce determines that the importation of vanadium pentoxide from Russia by the Evraz Group, which is toll-converted into ferrovanadium in the United States by Bear, prior to sale to unaffiliated customers in the United States, does not constitute circumvention of the antidumping duty order on ferrovanadium and nitrided vanadium from Russia.
2012	AMG	A new multi-hearth roaster is under construction that will enhance AMG's ability to process spent catalysts and significantly increase its ferrovanadium production.
February 2014	Evraz Stratcor	Begins importing vanadium-containing slag from its parent company's steel mill in Nizhny Tagil, Russia and processing the slag at its Hot Springs, Arkansas facility to use as feedstock for its vanadium operations.

Source: American Metal Market, "U.S. Ferrovanadium Rises and Bear Struggles with Higher Demand," April 30, 2010; "Metvan Halts Production for Six Weeks," June 30, 2009; "Metallurg Promotes Carter, Anderson, Changes Name," January 6, 2011; "AMG Vanadium Plans New Roaster," November 1, 2011; "Evraz Stratcor Ramping Up Slag Processing," June 3, 2013; Evraz Stratcor, "Evraz Worldwide Vanadium Business Rebranded," press release, October 1, 2011; *Ferrovanadium and Nitrided Vanadium From the Russian Federation: Negative Final Determination of Circumvention of the Antidumping Duty Order*, 77 FR 46712, August 6, 2012; and *Ferrovanadium and Nitrided Vanadium from Russia*, Investigation No. 731-TA-702 (Third Review), USITC Publication 4345, August 2012, table III-1, p. III-1.

Changes experienced by the industry

Domestic producers were asked to indicate whether their firm had experienced any plant openings, relocations, expansions, acquisitions, consolidations, closures, or prolonged shutdowns because of strikes or equipment failure; curtailment of production because of shortages of materials or other reasons, including revision of labor agreements; or any other change in the character of their operations or organization relating to the production of ferrovanadium since 2008. Four of the eight domestic producers/tollees indicated that they had experienced such changes; their responses are presented in table III-2.

Table III-2
Ferrovanadium: Changes in the character of U.S. operations since January 1, 2008

* * * * * * *

Anticipated changes in operations

The Commission asked domestic producers/tollees to report anticipated changes in the character of their operations relating to the production of ferrovanadium. Their responses appear in table III-3.

Table III-3
Ferrovanadium: Anticipated changes in the character of U.S. operations

* * * * * * *

U.S. PRODUCTION, CAPACITY, AND CAPACITY UTILIZATION

Table III-4 and figure III-1 presents U.S. producers' production, capacity, and capacity utilization. Capacity increased from 2009 to 2010. The increase was driven by ***. *** explained that the increase in capacity was due to ***.[1]

Table III-4
Ferrovanadium: U.S. producers' production, capacity, and capacity utilization, 2008-13, January-June 2013, and January-June 2014

* * * * * * *

Figure III-1
Ferrovanadium: U.S. producers' production, capacity, and capacity utilization, 2008-13, January-June 2013, and January-June 2014

* * * * * * *

Presented in table III-5 is U.S. producers' reported shares of total production of ferrovanadium by grade in 2013.

Table III-5
Ferrovanadium: U.S. producers' production, by grade, 2013

* * * * * * *

Constraints on capacity

*** responding U.S. producers reported constraints in the manufacturing process. *** reported its *** constrain its capacity. *** reported its capacity is constrained by ***.

[1] ***.

Alternative products

*** reported producing other products on the same equipment and machinery used in the production of ferrovanadium. *** produced *** using the same equipment and machinery used in the production of ferrovanadium. *** produced *** using the same equipment and machinery used in the production of ferrovanadium.[2] Table III-6 presents data on U.S. producers' overall production, capacity, and capacity utilization.

Table III-6
Ferrovanadium: U.S. producers' overall production, capacity, and capacity utilization, 2008-13, January-June 2013, and January-June 2014

* * * * * * *

U.S. PRODUCERS'/TOLLEES' SHIPMENTS

Table III-7 presents U.S. producers'/tollees' U.S. shipments, export shipments, and total shipments of ferrovanadium during January 2008 through June 2014.[3] Total U.S. shipments decreased by *** percent from 2008 to 2013. However, January-June 2014 U.S. shipments were higher (by approximately *** pounds of contained vanadium) compared to the same time last year. Average unit values, and thus U.S. export and total shipment values, declined sharply in 2009, and fluctuated with less pronounced movements thereafter. Between January 2008 and June 2014, U.S. shipments comprised 90 percent or more of total shipments, whether by quantity or by value.

[2] Bear ***.

[3] U.S. shipment data are understated to the extent that they do not include any shipments of product toll-produced by Bear on behalf of its tollees: ***. Staff attempted to collect such data, but did not receive complete responses from the firms. Such shipments are believed to be relatively small.

Table III-7
Ferrovanadium: U.S. producers'/tollees' U.S. shipments, exports shipments, and total shipments, 2008-13, January-June 2013, and January-June 2014

Item	Calendar year						January to June	
	2008	2009	2010	2011	2012	2013	2013	2014
Quantity (1,000 pounds of contained vanadium)								
Commercial U.S. shipments	***	***	***	***	***	***	***	***
Internal consumption	***	***	***	***	***	***	***	***
Transfers to related firms	***	***	***	***	***	***	***	***
Subtotal, U.S. shipments	8,722	7,855	10,447	9,350	6,401	7,187	3,257	4,284
Export shipments	***	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***	***
Value (1,000 dollars)								
Commercial U.S. shipments	***	***	***	***	***	***	***	***
Internal consumption	***	***	***	***	***	***	***	***
Transfers to related firms	***	***	***	***	***	***	***	***
Subtotal, U.S. shipments	249,014	80,243	134,284	119,454	82,841	87,651	42,137	51,408
Export shipments	***	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***	***
Unit value (dollars per pound contained vanadium)								
Commercial U.S. shipments	***	***	***	***	***	***	***	***
Internal consumption	***	***	***	***	***	***	***	***
Transfers to related firms	***	***	***	***	***	***	***	***
Subtotal, U.S. shipments	28.55	10.22	12.85	12.78	12.94	12.20	12.94	12.00
Export shipments	***	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***	***
Share of quantity (percent)								
Commercial U.S. shipments	***	***	***	***	***	***	***	***
Internal consumption	***	***	***	***	***	***	***	***
Transfers to related firms	***	***	***	***	***	***	***	***
Subtotal, U.S. shipments	***	***	***	***	***	***	***	***
Export shipments	***	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***	***
Share of value (percent)								
Commercial U.S. shipments	***	***	***	***	***	***	***	***
Internal consumption	***	***	***	***	***	***	***	***
Transfers to related firms	***	***	***	***	***	***	***	***
Subtotal, U.S. shipments	***	***	***	***	***	***	***	***
Export shipments	***	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table III-8 presents U.S. shipments of ferrovanadium produced and sold by AMG and Bear; produced by Bear and sold by its owner, Gulf; and produced by Bear and sold by tollees Energy Fuels, EMAG, Evraz Stratcor, Glencore, and Minerais.

Table III-8
Ferrovanadium: U.S. producers'/tollees' U.S. shipments, by firm, 2008-13, January-June 2013, and January-June 2014

Item	Calendar year						January to June	
	2008	2009	2010	2011	2012	2013	2013	2014
Quantity (1,000 pounds of contained vanadium)								
AMG	***	***	***	***	***	***	***	***
Bear	***	***	***	***	***	***	***	***
Subtotal	***	***	***	***	***	***	***	***
Energy Fuels	***	***	***	***	***	***	***	***
EMAG	***	***	***	***	***	***	***	***
Evraz Stratcor	***	***	***	***	***	***	***	***
Glencore	***	***	***	***	***	***	***	***
Gulf	***	***	***	***	***	***	***	***
Minerais	***	***	***	***	***	***	***	***
Subtotal	***	***	***	***	***	***	***	***
Total	8,722	7,855	10,447	9,350	6,401	7,187	3,257	4,284
Value (1,000 dollars)								
AMG	***	***	***	***	***	***	***	***
Bear	***	***	***	***	***	***	***	***
Subtotal	***	***	***	***	***	***	***	***
Energy Fuels	***	***	***	***	***	***	***	***
EMAG	***	***	***	***	***	***	***	***
Evraz Stratcor	***	***	***	***	***	***	***	***
Glencore	***	***	***	***	***	***	***	***
Gulf	***	***	***	***	***	***	***	***
Minerais	***	***	***	***	***	***	***	***
Subtotal	***	***	***	***	***	***	***	***
Total	249,014	80,243	134,284	119,454	82,841	87,651	42,137	51,408

Table continued on next page.

Table III-8--*Continued*
Ferrovanadium: U.S. producers'/tollees' U.S. shipments, by firm, 2008-13, January-June 2013, and January-June 2014

Item	Calendar year						January to June	
	2008	2009	2010	2011	2012	2013	2013	2014
	Unit value (dollars per pound contained vanadium)							
AMG	***	***	***	***	***	***	***	***
Bear	***	***	***	***	***	***	***	***
Subtotal	***	***	***	***	***	***	***	***
Energy Fuels	***	***	***	***	***	***	***	***
EMAG	***	***	***	***	***	***	***	***
Evraz Stratcor	***	***	***	***	***	***	***	***
Glencore	***	***	***	***	***	***	***	***
Gulf	***	***	***	***	***	***	***	***
Minerais	***	***	***	***	***	***	***	***
Subtotal	***	***	***	***	***	***	***	***
Total	28.55	10.22	12.85	12.78	12.94	12.20	12.94	12.00

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. PRODUCERS'/TOLLEES' INVENTORIES

Table III-9 presents U.S. producers'/tollees' end-of-period inventories and the ratio of these inventories to U.S. producers' production, U.S. shipments, and total shipments**.** The data are for inventories resulting from production as reported by AMG and Bear, and include end-of-period inventories of ferrovanadium held by tollees ***.

Table III-9
Ferrovanadium: U.S. producers'/tollees' end-of-period inventories, by firm, 2008-13, January-June 2013, January-June 2014

* * * * * * *

U.S. TOLLEES' IMPORTS AND PURCHASES[4]

There are *** imports of subject product from China or South Africa and no U.S. producer or tollee reported purchasing or importing ferrovanadium from China or South Africa during the January 2008-June 2014.

Three tollees reported importing ferrovanadium from nonsubject sources. *** reported nonsubject imports ***. It ***. *** reported nonsubject imports ***. ***.

Four tollees reported purchases of ferrovanadium from nonsubject sources. ***. ***. ***. ***. ***. ***. ***. ***.

U.S. EMPLOYMENT, WAGES, AND PRODUCTIVITY

The employment data presented in table III-10 show data for the two U.S. producers of ferrovanadium, AMG and Bear (including Bear's activities as a toll producer). AMG's reported labor and wages reflect its production process which includes the conversion of spent catalyst into vanadium pentoxide. Bear's production process starts with vanadium pentoxide (Bear's parent company Gulf converts spent catalyst into vanadium pentoxide but is not itself a producer of ferrovanadium). Accordingly, Bear reported lower labor and direct wages.

Table III-10
Ferrovanadium: Average number of production and related workers, hours worked, wages paid to such employees, hourly wages, productivity, and unit labor costs, 2008-13, January-June 2013, and January-June 2014

* * * * * * *

[4] U.S producer ***. U.S. producer ***.

FINANCIAL EXPERIENCE OF U.S. PRODUCERS

Background

AMG and Bear provided financial data on their operations producing and selling ferrovanadium and Bear provided data on its operations toll-producing ferrovanadium from tollee-provided raw material inputs.[5] Tollee firms, including Gulf, Evraz Stratcor, Evraz East Metals (EMAG), Glencore, and Energy Fuels, also provided financial data on their operations selling ferrovanadium that Bear toll-produced on their behalf.[6] As noted earlier in this report, the operations of the individual firms differ, leading to a distinction between producer and tollee.[7] For a more detailed description of the domestic producers' manufacturing processes, including a discussion of the vanadium-bearing inputs, see the discussion in Part I of this report.

---

[5] In the relationship between toller and tollee, the tollee provides the raw material inputs (here, vanadium pentoxide) to the toller, retaining title to the inputs, and the toller returns a guarantee percentage of the input as finished product (here, ferrovanadium) to the tollee. The toller converts the input to the finished product and charges a tolling fee, which differs in concept and unit value from commercial sales, and may arrange packaging and shipment on behalf of the tollee. Bear is contractually obligated to return a specified percentage of vanadium contained in the tollee-supplied vanadium pentoxides; Bear's commercial shipments are from the excess of the guaranteed return from its tolling operations.

[6] Minerais provided ***.

Gulf acquired 100 percent of Bear in December 2005, an increase over the 49.5 percent share Gulf previously held during January 2002 to November 2005. Subsequent to Gulf's purchase of Bear, Gulf was itself purchased by Eramet. Within Eramet, ***. Within Eramet, Gulf is responsible for the production of the raw materials (Gulf recycles vanadium oxides from oil catalysts) and sells the finished product while Bear is responsible for the production of the saleable products. Reportedly, because Gulf is not able to provide as much vanadium pentoxide as would keep Bear at full production, Bear toll-produces ferrovanadium on behalf of other firms, from vanadium pentoxide produced or imported by these firms.

Stratcor was formed from U.S. Vanadium in 2004. The Evraz Group, S.A. purchased a majority interest in Strategic Minerals Corporation (the parent company of Stratcor, Inc.) in 2006. Press release by Evraz Group, S.A., "Evraz acquires leading vanadium producer Stratcor," April 10, 2006, evraz.com/media/news/1726. The ongoing relationship with Bear in which the ferrovanadium that Statcor/Evraz sells is toll-produced by Bear from Stratcor-produced vanadium pentoxide began in 1993. This tolling arrangement was joined by East Metals AG, which has sold ferrovanadium in North America that was produced by Bear from Evraz Group vanadium pentoxide.

[7] In the original investigations, the Commission determined that AMG (then Shieldalloy and subsequently Metvan), ***, Stratcor (then USV) and Bear (which toll-produces ferrovanadium on behalf of other firms) were engaged in the production of ferrovanadium and comprised the domestic industry. In subsequent reviews of orders on this and related products, the Commission determined that tollees, Gulf and Stratcor were not engaged in the production of ferrovanadium, and were therefore not part of the domestic industry producing ferrovanadium. See *Ferrovanadium from China and South Africa,*

(*continued*...)

Ferrovanadium operations of AMG and Bear

The data in this section of the report presents the commercial operations of AMG and Bear together with Bear's tolling operations and then presents those same data for the two firms separately (tables III-11 and III-12). Between 2008 and 2013, the total quantity, average unit value, and value of *** fell.[8] These indicators were greater in January-June 2014 compared to January-June 2013. Total cost of goods sold (COGS) also fell between 2008 and 2013 but was higher in January-June 2014 than in the period one year earlier. The average unit value of total COGS fell between 2008 and 2013 and was lower in interim 2014 than in interim 2013; the ratio of total COGS to sales irregularly rose from 2008 to 2013 but was lower in January-June 2014 than in the comparable period one year earlier.[9] Operating income fell *** from 2008 to 2013 but was *** higher in January-June 2014 compared with January-June 2013. The ratio of operating income to total net sales and the average unit value of operating income followed a similar trend as did net income and cash flow.

(…*continued*)
Investigation Nos. 731-TA-986 and 987 (Review), USITC Publication 4046, November 2008, p. 8, footnote 48, and pp. 9-10. See also *Ferrovanadium and Nitrided Vanadium from Russia, Investigation No. 731-TA-702 (Third Review)*, USITC Publication 4345, August 2012, pp. 6-7.

[8] Demand for ferrovanadium is derived from the demand for certain types of high-strength low alloy (microalloyed) steels; hence, sales changed, at least in part, with the demand for those steels in construction, the automobile industry, and others as described in Part II of this report. In the most recent review covering ferrovanadium, the large change in the average unit value of industry shipments between 2008 and 2009 is explained by the collapse in demand from the steel industry for ferrovanadium beginning in September-October 2008. Domestic interested parties indicated that the drivers of unit shipments and costs in 2008 and 2009 were the onset of a United States and global economic crisis and the fall in demand for ferrovanadium; prices failed subsequently to recover to pre-recession levels. *Ferrovanadium and Nitrided Vanadium from Russia, Investigation No. 731-TA-702 (Third Review)*, USITC Publication 4345, August 2012, p. III-6.

[9] Domestic interested parties stated that AMG ***. In addition, Bear ***. Prehearing brief of domestic interested parties, pp. 103-105.

Table III-11
Ferrovanadium: Results of operations of AMG and Bear, 2008-13, January-June 2013, and January-June 2014

* * * * * * *

Selected company-by-company financial data of AMG's commercial sales and Bear's commercial sales and data on tolling are presented in table III-12.

Table III-12
Ferrovanadium: Results of operations of AMG and Bear, 2008-13, January-June 2013, and January-June 2014

* * * * * * *

Given the *** in unit sales values and cost structure between Bear and AMG, a variance analysis is not presented. Variance analyses are useful in quantifying the effects of changes in volume, unit prices, and unit costs on operating profitability when the product mix is generally homogeneous. As shown by the data in tables III-11 and III-12, that is not the case.

Capital expenditures and research and development expenses

The capital expenditures and research and development (R&D) expenses of AMG and Bear are presented in table III-13. Total capital expenditures fell irregularly from 2008 to 2011 and rose *** in 2012. Capital expenditures fell from 2012 to 2013 and were lower in January-June 2014 than in January-June 2013. These changes ***.[10] The capital expenditures of both AMG and Bear reportedly have been focused on increasing capacity and the addition of

[10] AMG's capital investments included: ***. Producer questionnaire response of AMG, section II-2 and prehearing brief of domestic interested parties, p. 103. In a previous review on ferrovanadium from Russia, AMG cited (1) the construction of a new multi-hearth roaster in 2012 to enhance the firm's ability to process spent catalysts and significantly increase its ferrovanadium production; (2) the commissioning of a new $6 million, 43,000-square foot raw material storage building, which has a dedicated railcar unloading system to increase operating efficiency, and a "unique" subfloor liner system to ensure safety storage of spent refinery catalysts in November 2010; (3) other environmental upgrades, including new emission control equipment on the existing roaster and both electric arc furnaces; and (4) installation of a solar power system at the Cambridge, OH plant that will produce "230,000 kilowatt hours of electicity annually." *See Ferrovanadium and Nitrided Vanadium from Russia, Investigation No. 731-TA-702 (Third Review)*, USITC Publication 4345, August 2012, p. III-8, footnote 20.

improved technology to upgrade and expand ferrovanadium production capability.[11] For example, production capacity of AMG and Bear increased as a result of ***.[12]

Table III-13
Ferrovanadium: Capital expenditures and research and development expenses of AMG and Bear, 2008-13, January-June 2013, and January-June 2014

* * * * * * *

Assets and return on investment

The assets of AMG and Bear and the ratio of operating income to such assets are presented in table III-14. This ratio mirrored the trends of the operating income to sales ratio as presented in tables III-11 and III-12.

Table III-14
Ferrovanadium: U.S. producers' total assets and ratio of operating income/(loss) to assets, 2008-13

* * * * * * *

Consolidated ferrovanadium operations of AMG, Bear, and Tollees

The consolidated ferrovanadium operations of AMG, Bear, and tollee firms are presented in table III-15 (table III-16 presents consolidated data on a firm-by-firm basis). These data differ from those in table III-11 in that they consist of the sales revenues earned and costs incurred by AMG, Bear, and tollee firms in selling ferrovanadum to independent third parties. In other words, while table III-11 includes the revenues earned by Bear in toll-converting raw materials (provided by the tollee), table III-15 instead substitutes the shipments and revenues earned by the tollee firms selling the finished ferrovanadium to other parties. The trends in tables III-11 and III-15 are substantially the same. The absolute values and per-unit values are higher in table III-15, reflecting open market sales values and "fully loaded costs" in table III-15, and that the firms' revenues matched with their production costs. The presentation in table III-15 differs from prior reviews insofar as the profit on ***.

The sales quantities in table III-15 differ from those in table III-11 because: (1) several firms that are included in Bear's tolling data did not provide shipment or financial information to the Commission; and (2) there are timing differences between tolling and the subsequent commercial sales; (3) as well as of the changes in inventory held by the commercial seller. The difference between toller conversion (net quantity tolled) and tollee shipments (quantity of net

[11] *Ibid.* Footnote 19. Domestic interested parties provided a list of Bear's capital expenditures, which included: ***. Prehearing brief of domestic interested parties, pp. 105-106.

[12] Prehearing brief of domestic interested parties, p. 10.

sales) ranged between periods. Toller conversion exceeded shipments by tollees: in 2008 for a difference of ***; in 2011 when it was ***; and in 2012 when it was ***. Reported shipments by tollees exceeded reported toller conversion: in 2009 when the difference was ***; in 2010 when it was ***; and in 2013 when it was ***. Reported shipments by tollees also exceeded toller conversion in both interim periods as well, by *** in January-June 2013 and January-June 2014, respectively.

Table III-15
Ferrovanadium: Results of operations of U.S. firms, 2008-13, January-June 2013, and January-June 2014

* * * * * * *

Table III-16
Ferrovanadium: Results of U.S. firms' operations, by firm, 2008-13, January-June 2013, and January-June 2014

* * * * * * *

As reflected by the data in table III-16, Gulf *** in each of the years from 2009 through 2013, attributable to the firm's high fixed costs and ***, further affected by interruptions in raw material inputs.[13] Reportedly in 2010, several ***. Gulf describes itself as a high-cost producer and it ***. Gulf's production process recovers vanadium, molybdenum, nickel, and cobalt from the catalysts, and, in turn, Bear's process produces ferrovanadum and ferromolybdenum from Gulf's material inputs. Gulf provided a breakdown of its current operating income, including its non-vanadium products, which shows its operating results (before depreciation charges) during the six yearly periods between 2008 and 2013.[14] Gulf recorded an operating ***. With regard to its co-products, Gulf recorded an operating ***. In summary, Gulf incurred an operating ***.

Evraz Stratcor sold ferrovanadium that was toll-produced for it by Bear from vanadium pentoxide and non-prime vanadium-aluminum master alloy supplied by Stratcor, and ***.[15] Reportedly, Evraz Stratcor's production ***.[16] According to the data in table III-16, Evraz Stratcor reduced its toll-production at Bear and its sales of ferrovanadium after 2010. This was because the firm used more of its vanadium oxide to produce higher-margin vanadium products like high-purity vanadium pentoxide, vanadium chemicals, and vanadium aluminum master alloys for the titanium market.[17] Even as Stratcor focuses more on vanadium chemicals

[13] Prehearing brief of domestic interested parties, pp. 106-107.
[14] Response to questions from Commission staff by John Totaro, counsel to Gulf, December 2, 2014.
[15] Prehearing brief of domestic interested parties, p. 107.
[16] Posthearing brief of domestic interested parties, answers to questions, pp. 59-60.
[17] Hearing transcript, p. 37 (Bunting). See also posthearing brief of domestic interested parties, answers to questions, pp. 58-60 and exh. 15.

and the titanium market, its affiliate imports vanadium pentoxide for toll-conversion at Bear into ferrovanadium.[18]

Glencore imports vanadium pentoxide from the Rhovan mine (South Africa) for tolling at Bear.[19] The firm produces high-grade vanadium pentoxide for aerospace applications; as explained by an industry witness for Glencore, if the vanadium pentoxide does not meet the specification for aerospace applications (chiefly, titanium), the below-specification material is exported for conversion outside of South Africa into ferrovanadium. According to the industry witness, Rhovan cannot convert vanadium pentoxide into ferrovanadium in South Africa; instead, its South African operations use vanadium trioxide to produce ferrovanadium.[20]

[18] Hearing transcript, p. 38 (Bunting). Also, domestic interested parties stated that Evraz East Metals supplied the U.S. market with ferrovanadium by exporting Russian vanadium pentoxide to the United States for conversion by Bear. Reportedly, Evraz largely ceased converting at Bear in favor of importing ferrovanadium from its affiliate Evraz Nikom in the Czech Republic. Evraz Nikom converted the vanadium pentoxide that its Russian affiliate supplied. This change was reportedly to avoid a potential liability when the Department of Commerce initiated an anticircumvention inquiry on vanadium pentoxide from Russia (imports of ferrovanadium from Russia were subject to orders). Posthearing brief of domestic interested parties, answers to questions, p. 8. Reportedly, Evraz Stratcor ***. Posthearing brief of domestic interested parties, answers to questions, p. 61 and exh. 15.

[19] Hearing transcript, p. 127 (O'Connell).

[20] Hearing transcript, p. 133 (O'Connell).

PART IV: U.S. IMPORTS AND THE FOREIGN INDUSTRIES

U.S. IMPORTS

Overview

The Commission issued questionnaires to 19 firms believed to have imported ferrovanadium since January 2008, as well as to all U.S. producers. Twelve firms provided data and information in response to the questionnaires, while three firms indicated that they had not imported ferrovanadium since January 2008.[1] Based on adjusted official Commerce statistics for imports of ferrovanadium, importers' questionnaire data accounted for 97.9 percent of total U.S. imports from January 2008 through June 2014 and all known U.S. imports of ferrovanadium from China and South Africa.[2] Adjusted official Commerce statistics were deemed to be preferable to the incomplete data received in response to importers' questionnaires with regard to imports of ferrovanadium from nonsubject countries.[3] [4]

Imports from subject and nonsubject countries

Table IV-1 presents information on U.S. imports of ferrovanadium from China, South Africa, and all other sources between January 2008 and June 2014. There were only two instances of imports of ferrovanadium from subject countries between January 2008 and June 2014. In ***, importer *** reported importing ferrovanadium from China. *** reported ***. During ***, importer *** reported importing ferrovanadium from South Africa. ***.

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[1] An additional firm, ***, provided a letter detailing its U.S. import operations, but did not complete a questionnaire. ***.

[2] ***. *See* ***'s importer questionnaire response, clarification to question II-7b.

[3] Import data are based on adjusted official Commerce statistics for HTS subheading 7202.92.0000. Domestic interested parties provided adjusted official Commerce statistics as part of their response to the notice of institution. *See* domestic interested parties' response to the notice of institution, exh. 1.

[4] Two responding importers (***) reported entering ferrovanadium into or withdrawing ferrovanadium from foreign trade zones ("FTZs"). One responding importer (***) reported entering ferrovanadium into or withdrawing ferrovanadium from bonded warehouses. No responding importer reported importing ferrovanadium under temporary importation under bond ("TIB").

Table IV-1
Ferrovanadium: U.S. imports by source, 2008-13, January-June 2013, and January-June 2014

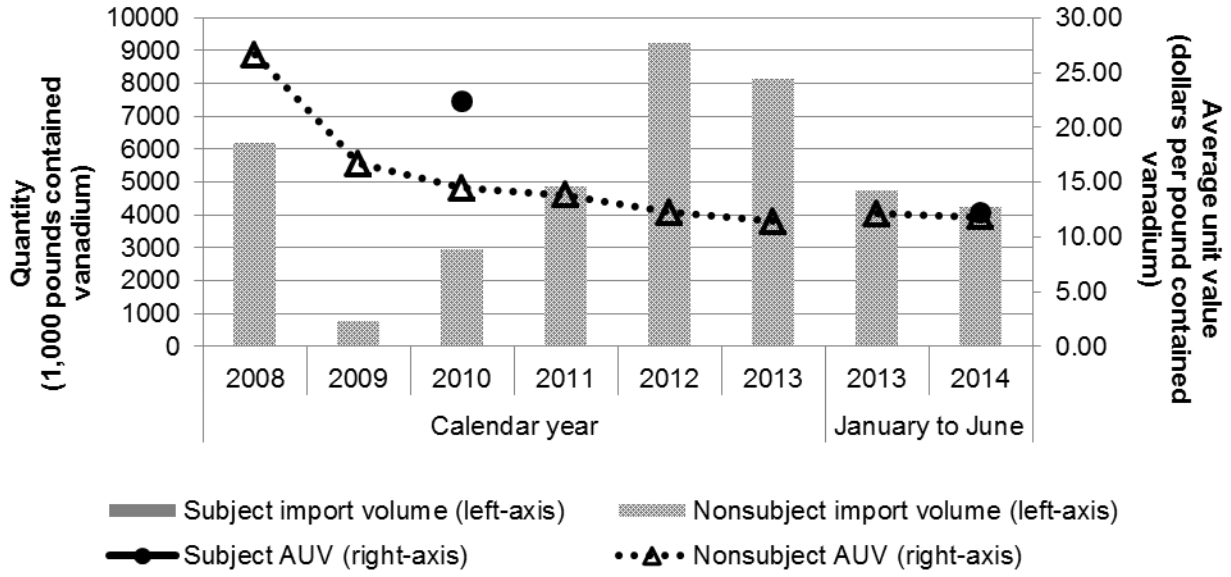
Item	Calendar year						January to June	
	2008	2009	2010	2011	2012	2013	2013	2014
Quantity (1,000 pounds of contained vanadium)								
U.S. imports from.--								
China	0	0	1	0	0	0	0	0
South Africa	0	0	0	0	0	0	0	11
Subtotal (subject)	0	0	1	0	0	0	0	11
All other sources	6,180	777	2,952	4,840	9,237	8,125	4,739	4,219
Total U.S. imports	6,180	777	2,954	4,840	9,237	8,125	4,739	4,230
Value (1,000 dollars)								
U.S. imports from.--								
China	0	0	25	0	0	0	0	0
South Africa	0	0	0	0	0	0	0	130
Subtotal (subject)	0	0	25	0	0	0	0	130
All other sources	164,414	12,954	42,682	66,797	112,777	92,923	57,325	49,982
Total U.S. imports	164,414	12,954	42,707	66,797	112,777	92,923	57,325	50,113
Unit value (dollars per pound contained vanadium)								
U.S. imports from.--								
China	---	---	22.35	---	---	---	---	---
South Africa	---	---	---	---	---	---	---	12.19
Subtotal (subject)	---	---	22.35	---	---	---	---	12.19
All other sources	26.61	16.66	14.46	13.80	12.21	11.44	12.10	11.85
Total U.S. imports	26.61	16.66	14.46	13.80	12.21	11.44	12.10	11.85
Share of quantity (percent)								
U.S. imports from.--								
China	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Subtotal (subject)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
All other sources	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7
Total U.S. imports	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Share of value (percent)								
U.S. imports from.--								
China	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
South Africa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Subtotal (subject)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3
All other sources	100.0	100.0	99.9	100.0	100.0	100.0	100.0	99.7
Total U.S. imports	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Ratio to U.S. production (percent)								
U.S. imports from.--								
China	***	***	***	***	***	***	***	***
South Africa	***	***	***	***	***	***	***	***
Subtotal (subject)	***	***	***	***	***	***	***	***
All other sources	***	***	***	***	***	***	***	***
Total U.S. imports	***	***	***	***	***	***	***	***

Note.—The reported quantities of U.S. production are presented in table III-4.

Source: Compiled from adjusted official Commerce statistics.

Figure IV-1 presents information on U.S. import volumes and average unit values of ferrovanadium from subject and nonsubject sources.

Figure IV-1
Ferrovanadium: U.S. imports and average unit values (subject and nonsubject sources), 2008-13, January-June 2013, and January-June 2014



Source: Compiled from adjusted official Commerce statistics and data submitted in response to Commission questionnaires.

Table IV-2 presents information on U.S. imports of ferrovanadium from nonsubject sources. Since 2012, the principal nonsubject country supplier has been the Czech Republic.[5] Despite revocation of the order on imports of ferrovanadium and nitrided vanadium from Russia there has been only a small volume of imports during January-June 2014.[6]

[5] Evraz Nikom is the only known producer of ferrovanadium in the Czech Republic. It was acquired by Evraz in 2007. Evraz Nikom can produce 4,600 metric tons of ferrovanadium annually. Evraz Vanady Tula (of Russia) supplies Evraz Nikom with vanadium oxide which Evraz Nikom converts to ferrovanadium. http://www.evraz.com/products/business/vanadium/nikom/, retrieved November 2, 2014.

[6] *Ferrovanadium and Nitrided Vanadium from Russia: Revocation of Antidumping Duty Order*, 77 FR 54897, September 6, 2012.

Table IV-2
Ferrovanadium: U.S. nonsubject imports by source, 2008-13, January-June 2013, and January-June 2014

Item	Calendar year						January to June	
	2008	2009	2010	2011	2012	2013	2013	2014
	Quantity (1,000 pounds of contained vanadium)							
U.S. imports from --								
Austria	710	108	1,076	1,303	980	880	501	468
Canada	1,427	434	1,051	1,677	1,835	1,119	758	882
Czech Republic	156	0	0	410	4,592	4,933	2,878	1,965
Germany	8	4	5	7	3	6	2	1
Japan	13	0	0	0	0	308	192	121
Korea	3,772	223	820	1,369	1,769	784	314	694
Russia	0	0	0	0	0	0	0	89
All others	94	8	1	75	57	94	93	0
Nonsubject total	6,180	777	2,952	4,840	9,237	8,125	4,739	4,219
	Value (1,000 dollars)							
U.S. imports from --								
Austria	19,426	1,238	16,123	17,460	12,526	11,597	6,792	6,471
Canada	34,493	7,397	15,116	22,244	22,548	13,194	9,355	11,191
Czech Republic	3,970	0	0	5,172	53,547	53,144	33,263	21,544
Germany	492	139	173	216	114	216	88	44
Japan	282	0	0	0	0	3,900	2,529	1,370
Korea	102,875	3,994	11,232	20,546	23,380	9,599	4,053	8,291
Russia	0	0	0	0	0	0	0	1,071
All others	2,877	185	38	1,159	662	1,275	1,245	0
Nonsubject total	164,414	12,954	42,682	66,797	112,777	92,923	57,325	49,982

Table continued on next page.

Table IV-2--*Continued*

Ferrovanadium: U.S nonsubject imports by source, 2008-13, January-June 2013, and January-June 2014

Item	Calendar year						January to June	
	2008	2009	2010	2011	2012	2013	2013	2014
Unit value (dollars per pound contained vanadium)								
U.S. imports from --								
Austria	27.38	11.51	14.99	13.40	12.79	13.18	13.56	13.83
Canada	24.17	17.05	14.39	13.26	12.29	11.79	12.34	12.69
Czech Republic	25.38	---	---	12.62	11.66	10.77	11.56	10.96
Germany	61.58	31.23	33.50	32.78	36.63	36.39	37.71	37.69
Japan	21.84	---	---	---	---	12.65	13.15	11.28
Korea	27.27	17.88	13.70	15.00	13.21	12.24	12.92	11.95
Russia	---	---	---	---	---	---	---	12.09
All others	30.68	22.37	31.84	15.55	11.51	13.58	13.37	---
Total	26.61	16.66	14.46	13.80	12.21	11.44	12.10	11.85
Share of quantity of imports from all countries (percent)								
U.S. imports from --								
Austria	11.5	13.8	36.4	26.9	10.6	10.8	10.6	11.1
Canada	23.1	55.8	35.6	34.6	19.9	13.8	16.0	20.8
Czech Republic	2.5	0.0	0.0	8.5	49.7	60.7	60.7	46.5
Germany	0.1	0.6	0.2	0.1	0.0	0.1	0.0	0.0
Japan	0.2	0.0	0.0	0.0	0.0	3.8	4.1	2.9
Korea	61.0	28.7	27.8	28.3	19.2	9.7	6.6	16.4
Russia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1
All others	1.5	1.1	0.0	1.5	0.6	1.2	2.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7

Note.—Unit values derived from unrounded data.

Source: Compiled from adjusted official Commerce statistics and data submitted in response to Commission questionnaires.

U.S. IMPORTERS' IMPORTS SUBSEQUENT TO JUNE 30, 2014

The Commission requested importers to indicate whether they had imported or arranged for the importation of ferrovanadium from China, South Africa, and all other sources for delivery after June 30, 2014. Table IV-3 presents the importers' responses. No importer reported arranging for imports from China or South Africa. Six importers reported arranging for imports of ferrovanadium from other countries.

Table IV-3
Ferrovanadium: U.S. importers' current orders arranged for delivery after June 30, 2014

* * * * * * *

U.S. IMPORTERS' INVENTORIES

Table IV-4 presents data for inventories of U.S. imports of ferrovanadium from China, South Africa, and all other sources held in the United States.

Table IV-4
Ferrovanadium: U.S. importers' end-of-period inventories of imports, by source, 2008-13, January-June 2013, and January-June 2014

* * * * * * *

CUMULATION CONSIDERATIONS

In the original investigations, the Commission found a reasonable overlap of competition among the subject imports, and between the subject imports and the domestic like product. The Commission found ferrovanadium of 45-percent and 80-percent grade product from all subject countries and the United States to be interchangeable and thus sufficiently fungible with each other as well as with the domestic like product. The Commission further found that the record indicated that subject imports from China and South Africa and ferrovanadium produced in the United States were sold in the same geographic markets throughout the United States. In addition, the Commission found that questionnaire responses indicated that subject imports from China and South Africa and domestically produced ferrovanadium were all sold in the U.S. market during each year of the period of investigation. Finally, the Commission found that the record showed that ferrovanadium (whether from subject countries or produced domestically) was sold primarily to end users, namely steel companies and iron foundries.[7]

In the first full five-year reviews, the Commission concluded that there was a likely reasonable overlap of competition between subject imports from China and South Africa and between subject imports and the domestic like product. No party asserted, and the Commission did not find based on the record, any significant differences in likely conditions of competition

[7] *Ferrovanadium from China and South Africa, Inv. Nos. 731-TA-986-987 (Final)*, USITC Publication 3570, January 2003, pp. 11-13.

between imports from China and South Africa. Accordingly the Commission exercised its discretion to cumulate subject imports from China and South Africa.[8]

In assessing whether imports should be cumulated, the Commission determines whether U.S. imports from the subject countries compete with each other and with the domestic like product and has generally considered four factors: (1) fungibility, (2) presence of sales or offers to sell in the same geographical markets, (3) common or similar channels of distribution, and (4) simultaneous presence in the market. Additional information concerning fungibility, geographical markets, and simultaneous presence in the market is presented below.

As mentioned above, the imports from subject countries had a limited presence in the market. Subject imports were present only in 2010 (2 thousand pounds) from China and in January-June 2014 (11 thousand pounds) from South Africa.

The ferrovanadium imported from China was grade *** percent ferrovanadium while the ferrovanadium imported from South Africa was grade *** percent ferrovanadium. As previously stated, U.S. producers produce ***. *** reported producing grade *** percent ferrovanadium and *** reported producing grade *** percent ferrovanadium.

The limited subject imports were both sold in the *** area of the United States. The subject imports from China were sold to *** while the subject imports from South Africa were sold to ***.

THE INDUSTRY IN CHINA

In the original investigations, there were three firms identified in the petition as principal producers of ferrovanadium in China: Chengde Xinghua Vanadium Chemical Co., Ltd. ("Chengde"); Jinzhou Ferroalloy (Group) Co., Ltd. ("Jinzhou"); and Panzhihua Iron & Steel Group ("Panzhihua"). In the original investigations, the Commission received information from Chengde and Panzhihua. Together these two firms estimated that they accounted for *** percent of China's total ferrovanadium production in 2001. Based on Chinese export statistics,

[8] *Ferrovanadium from China and South Africa, Inv. Nos. 731-TA-986-987 (Review)*, USITC Publication 4046, November 2008, pp. 11-16.

Panzhihua accounted for nearly all ferrovanadium exported directly from China to the United States.[9]

In the first full five-year reviews, the Commission issued questionnaires to Chengde, Jinzhou, Panzhihua, and seven other possible Chinese producers, but no responses were received. The domestic interested parties reported that Panzhihua and Chengde ***. The domestic interested parties maintained that ***.[10]

In these reviews, the Commission issued questionnaires to four Chinese firms identified as producers: Chengde, Huludao Hongjing Molybdenum ("Huludao"), Jinzhou, and Panzhihua.[11] No responses were received. The domestic interested parties reported that China is the world's largest producer of vanadium, estimated to account for approximately 50 percent of global production. Panzhihua and Chengde remain the largest Chinese producers of ferrovanadium. In 2012, Panzhihua began trial production at a new ferrovanadium and vanadium bearing steel plant in Xichang, Sichuan Province; the plant reportedly has an annual capacity of 18,800 tons of ferrovanadium.[12] There are reportedly 40 significant producers and an estimated 150 small-scale producers.[13]

Table IV-5 presents data on China's exports of ferrovanadium. According to data from Global Trade Atlas, China's exports of ferrovanadium increased irregularly from 2008 to 2013. According to these data, most of China's exports of ferrovanadium in 2013 were shipped to the Netherlands (39.6 percent), followed by Japan (19.6 percent), Taiwan (19.5 percent), and Korea (15.5 percent).

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[9] Chengde estimated that its production amounted to *** percent of China's total ferrovanadium production, and Panzhihua estimated that its production amounted to *** percent of total production. *Ferrovanadium from China and South Africa Inv. Nos. 731-TA-986-987 (Final)*, INV-Z-197, December 11, 2002, p. VII-1, fn. 3.

[10] *Ferrovanadium from China and South Africa Inv. Nos. 731-TA-986-987 (Review)*, INV-FF-137, October 29, 2008, p. IV-6.

[11] Panzhihua is affiliated with Pangang (Group) Corp. http://www.panyan.com/introduc/ , retrieved October 16, 2014.

[12] Domestic interested parties' response to the notice of institution, p. 22.

[13] http://www.roskill.com/reports/steel-alloys/vanadium/leaflet, retrieved October 16, 2014.

Table IV-5
Ferrovanadium: Exports from China, by destination, 2008-13

Country	Quantity (1,000 pounds)					
	2008	2009	2010	2011	2012	2013
Netherlands	4,694	2,337	5,333	5,930	3,934	5,305
Japan	2,402	265	2,053	2,666	2,307	2,620
Taiwan	1,530	838	1,739	1,980	1,546	2,612
Korea South	1,307	1,642	2,860	2,763	1,830	2,072
India	44	176	474	829	631	304
United States	0	0	1	0	0	0
Subtotal	9,978	5,258	12,460	14,168	10,268	12,914
All others	2,938	262	766	771	530	487
Total	12,916	5,520	13,226	14,939	10,778	13,401

Source: Global Trade Atlas.

Table IV-6 presents data on China's exports of vanadium pentoxide. According to data from Global Trade Atlas, China's exports of vanadium pentoxide have decreased from 2008 to 2013. According to these data, most of China's exports of vanadium pentoxide in 2013 were shipped to the Netherlands (25.6 percent), followed by Germany (20.8 percent), Japan (19.4 percent), and Korea (17.6 percent).

Table IV-6
Vanadium pentoxide: Exports from China, by destination, 2008-13

Country	Quantity (1,000 pounds)					
	2008	2009	2010	2011	2012	2013
Netherlands	4,198	1,036	2,903	3,228	2,480	3,468
Germany	2,771	737	1,812	1,429	2,734	2,822
Japan	5,900	3,126	3,170	2,892	3,479	2,637
Korea	14,488	3,339	5,472	8,598	6,413	2,383
United States	2,658	530	571	778	1,189	859
Subtotal	30,015	8,767	13,929	16,926	16,294	12,169
All others	3,180	705	1,603	2,757	2,003	1,394
Total	33,196	9,472	15,532	19,682	18,297	13,563

Source: Global Trade Atlas.

THE INDUSTRY IN SOUTH AFRICA

At the time of the original investigations, there were two major producers and exporters of ferrovanadium in South Africa: Highveld Steel & Vanadium Corp. Ltd. ("Highveld") and Xstrata South Africa Pty Ltd. ("Xstrata"). In the first five-year reviews, questionnaires were issued to Highveld, Xstrata, and one other firm. The Commission received completed foreign producers' questionnaire responses from Xstrata and Highveld's Vanchem division, which Highveld had recently sold off as an independent unit. In these second five-year reviews,

questionnaires were issued to Rhovan PSV-Glencore South Africa Pty Ltd ("Rhovan") (formerly referred to as Xstrata) and Vanchem Vanadium Products (Pty) Ltd. ("Vanchem") (formerly referred to as Highveld).[14] The Commission received completed foreign producers' questionnaire responses from both Rhovan and Vanchem.

Table IV-7 presents production, exports to the United States, and total shipments data by firm for 2013. *** is the larger of the two South African producers. Neither producer reported exporting ferrovanadium to the United States in 2013.

Table IV-7
Ferrovanadium: Summary data on firms from South Africa, 2013

Firm	Production (1,000 pounds of contained vanadium)	Share of reported production (percent)	Exports to the United States (1,000 pounds of contained vanadium)	Share of reported exports to the United States (percent)	Total shipments (1,000 pounds of contained vanadium)	Share of firm's total shipments exported to the United States (percent)
Rhovan PSV - Glencore South Africa Pty Ltd	***	***	***	***	***	***
Vanchem Vanadium Products (Pty) Limited	***	***	***	***	***	***
Total	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Rhovan and Vanchem estimated that they accounted for all South African production of ferrovanadium in 2013. Rhovan reported that ferrovanadium accounted for *** percent of its total sales in its most recent fiscal year. Vanchem reported that ferrovanadium accounted for *** percent of its total sales in its most recent fiscal year. Both firms reported ***.

Table IV-8 presents aggregate data for Rhovan and Vanchem. South African production of ferrovanadium increased from *** pounds to *** pounds (contained vanadium) between 2008 and 2013. Reported capacity allocated to ferrovanadium, however, increased by less than *** pounds.[15] Rhovan and Vanchem collectively held inventories equivalent to more than *** percent of total shipments in each full year between 2008 and 2013. More than *** percent of

[14] Effective September 2008, Vanchem Vanadium Products, a subsidiary of the Swiss firm Duferco Investment Partners, acquired Highveld's Vanchem operations, as well as a 50-percent stake in the South Africa Japan Vanadium ferrovanadium plant in Witbank, South Africa (a joint venture between Highveld, Nippon Denko, and Mitsui & Co.) and 350 ordinary shares in the Mapochs mine, which produced titaniferous ore for Highveld Steel and ore fines for Vanchem.

[15] As discussed below, overall capacity using shared equipment increased during 2008-13, but alternative products accounted for an increasing share of production and allocated capacity.

ferrovanadium shipments were exported in each full year since 2008, although ***.[16] Rhovan's leading ferrovanadium export markets in 2013 were ***.[17] ***.[18] The level of exports ***.[19]

Table IV-8

Ferrovanadium: South African producers' capacity, production, shipments, and inventories, 2008-13, January-June 2013, and January-June 2014

* * * * * * *

Both South African producers reported *** capacity utilization rates. In fact, during much of the review period (***) Rhovan's ***.[20] Rhovan has explained that its reported capacity is based on ore that Rhovan mines in South Africa and uses to produce both ferrovanadium and vanadium pentoxide. In recent years the demand for high quality vanadium pentoxide has grown and offers a better return than ferrovanadium. Therefore, Rhovan indicated a preference for the production of vanadium pentoxide.[21] Approximately *** percent of its vanadium pentoxide is satisfactory for use in the aerospace industry. *** the vanadium pentoxide is sold to Rhovan's related company Glencore. Glencore sells the higher quality vanadium pentoxide to the aerospace industry and has the remaining vanadium pentoxide converted to ferrovanadium in the United States or Canada.[22] The Rhovan facility does not use vanadium pentoxide in its production of ferrovanadium because it uses an electrothermic production technology which requires vanadium trioxide.[23]

Vanchem explained that its reported capacity takes into account ***.[24]

During the first reviews, South African producers reported *** capacity than what is reported in these reviews. *** firms reported ***. ***. Neither company was able to provide additional details regarding the effect of product mix on reported capacity prior to 2008.[25]

Public sources suggest greater capacity for both South African producers than what has been reported to the Commission. Public data suggest that capacity for Rhovan could be

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[16] One firm (***) reported importing ferrovanadium from South Africa. *** reported that its supplier was ***.

[17] Joint posthearing brief of respondent interested parties, exhibit 2B2.

[18] Joint posthearing brief of respondent interested parties, exhibit 1A, p.2.

[19] Joint posthearing brief of respondent interested parties, exhibit 1A, p.5 and exhibit 1B2. For purposes of Vanchem's budget, sales assumptions are allocated based on vanadium pentoxide. Id., exhibit 1B3.

[20] This difference was most pronounced in ***, when reported *** exceeded *** by ***.

[21] Sales of Rhovan's vanadium pentoxide for aerospace and non-aerospace applications have fluctuated since 2008. Sales for aeorospace were ***. Sales for non-aerospace applications were ***. Joint posthearing brief of respondent interested parties, exhibit 2A, p. 5.

[22] According to Rhovan, ***. Joint posthearing brief of respondent interested parties, exhibit 2A, p. 9.

[23] See generally hearing transcript, pp. 128-133 (O'Connell).

[24] See also joint posthearing brief of respondent interested parties, exhibit 1A, p. 12 (indicating that ***).

[25] Joint posthearing brief of respondent interested parties, exhibit 1A, p. 1, and exhibit 1B, p. 1.

between 9.9 million and 11.2 million pounds of contained vanadium.[26] Rhovan explained ***. Public data suggest that capacity for Vanchem could be 11 million pounds of contained vanadium per year.[27] Vanchem explained ***.

Table IV-9 presents data on South African producers' production by grade in 2013. *** reported production of ***. *** reported production of ***.

Table IV-9
Ferrovanadium: South African producers' production, by grade, 2013

* * * * * * *

Table IV-10 presents responding South African producers' overall production, capacity, and capacity utilization. *** reported ***. *** reported ***. *** reported also producing ***. *** firms reported ***.[28]

Table IV-10
Ferrovanadium: South African producers' overall production, capacity, and capacity utilization, 2008-13, January-June 2013, and January-June 2014

* * * * * * *

GLOBAL MARKET

Supply

Table IV-11 presents world vanadium production, which increased by 4.4 percent during 2011-13. The largest producing regions noted in the table are China and Europe/Kazakhstan/Russia/South Africa which accounted for 90 percent of world vanadium production. Figure IV-2 presents global vanadium production during 2001-13.

[26] http://www.steelworld.com/featurefeb07.pdf , retrieved September 29, 2014.
[27] http://www.vanchemvanadiumproducts.com/02-About/About.aspx?page=About, retrieved September 29, 2014.
[28] With respect to operations in 2015, Rhovan characterized *** as committed, while Vanchem characterized *** as under contract. Joint posthearing brief of respondent interested parties, exhibit 1A, pp. 3-7, and exhibit 2A, p. 3.

Table IV-11

Vanadium:[1] Production by country and region, 2011-13

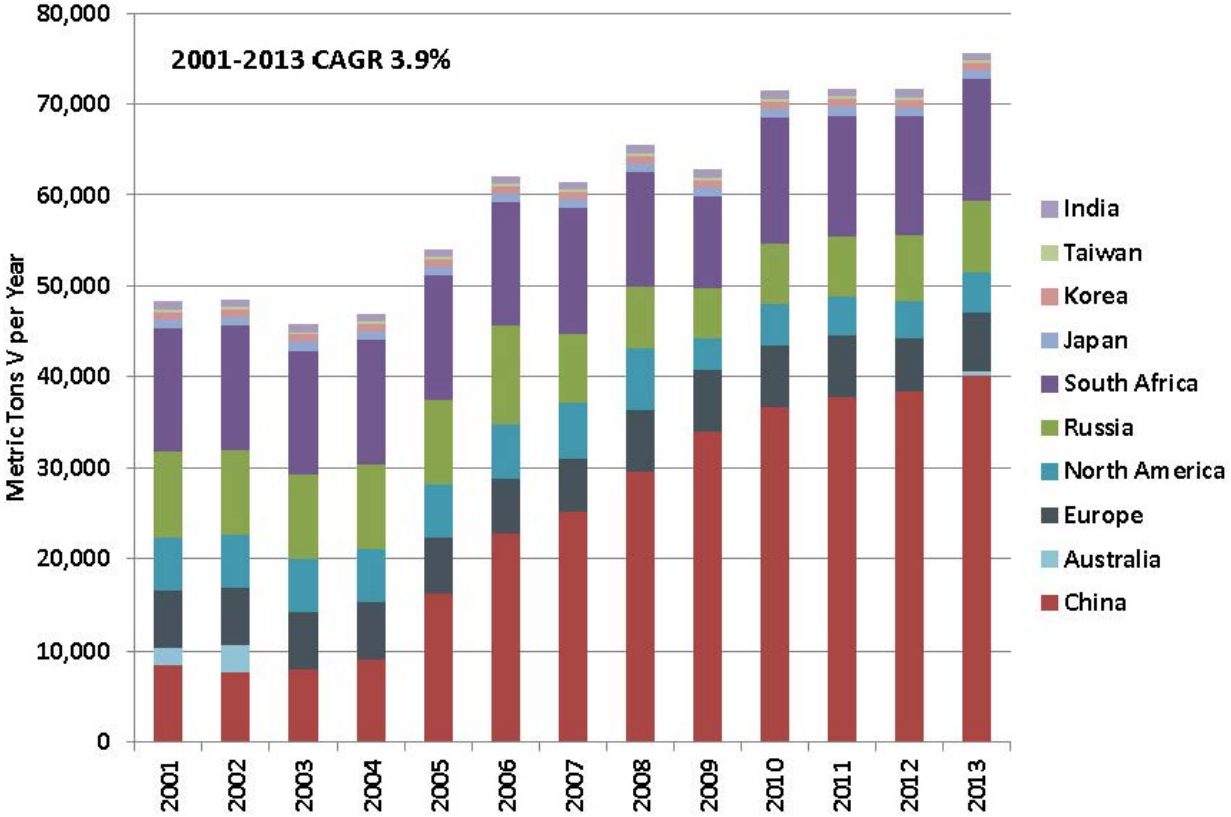
Country/Region	2011	2012	2013
	Quantity (1,000 pounds contained vanadium)		
China[2]	83,996	82,673	95,901
Canada and the United States	8,680	8,616	9,769
Europe, Kazakhstan, Russia, and South Africa	69,289	57,719	61,957
Australia, Japan, Korea, New Zealand, and Taiwan	4,409	6,173	5,512
India[2]	1,543	1,984	2,205
Total	167,917	157,165	175,342

[1] Vanadium = all vanadium oxides produced, plus vanadium in other vanadium compounds (e.g. vanadium chemicals) that have not been produced using vanadium oxide produced in a separate production step, plus vanadium in ferrovanadium that has not been produced via vanadium oxide produced as a separate production process (e.g. from certain recycling processes).
[2] Estimated.

Note.--Vanadium oxides are frequently used as an intermediate material in the production of other vanadium compounds, including ferrovanadium. The quantity of downstream products made from vanadium oxides is not included presumably to avoid the double counting of vanadium units.
Note.--Although the great majority of vanadium produced is consumed as ferrovanadium, the table data do not necessarily reflect ferrovanadium production nor where ferrovanadium is produced. A vanadium intermediate compound such as vanadium pentoxide can be produced in one location and converted to ferrovanadium in another location which would not be captured in the table data.

Source: The Vanadium International Technical Committee, "Vanadium Production & Consumption Statistics," http://vanitec.org/vanadium-production-consumption-statistics/, retrieved October 20, 2014. The country/regional breakouts in the table are per the Vanadium International Technical Committee's "antitrust guidelines."

Figure IV-2
Vanadium: Global production, by country and region, 2001-13

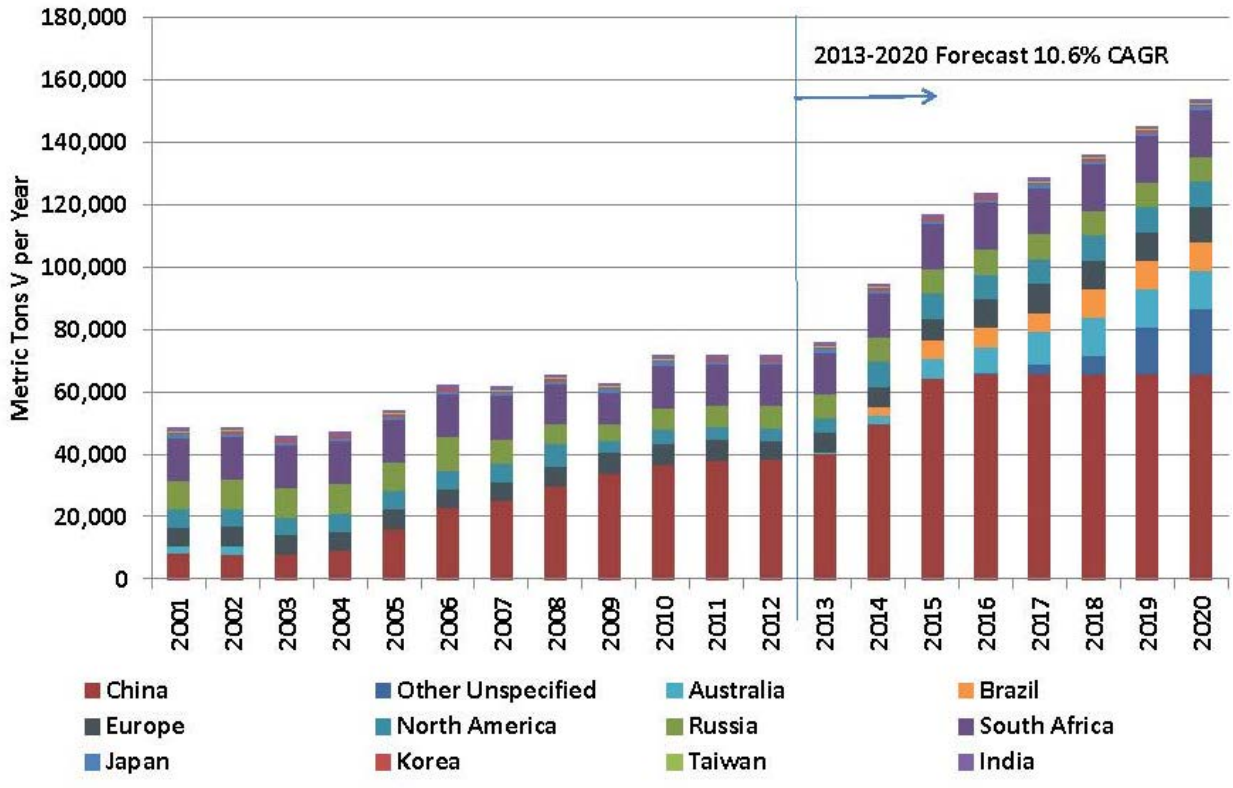


Note.—CAGR = Compound Annual Growth Rate.

Source: VanadiumCorp Resource Inc.,"Vanadium Market," November 13, 2013, http://www.vanadiumcorp.com/tech/market, retrieved December 3, 2014.

Figure IV-3 presents forecasted world vanadium production to 2020. Production is forecasted to grow at a higher rate (10.6 percent compound annual growth rate) during 2013-2020 than it did during 2001-2013 (3.9 percent compound annual growth rate).

Figure IV-3
Vanadium: Global production, by country and region, 2001-12, production forecast 2013-20



Note.—CAGR = Compound Annual Growth Rate.

Source: VanadiumCorp Resource Inc.,"Vanadium Market," November 13, 2013, http://www.vanadiumcorp.com/tech/market, retrieved December 3, 2014.

Producers[29]

Most ferrovanadium production is in China, Russia, and South Africa, although there are producers in other areas as noted below.

[29] Unless otherwise noted, information in this section was obtained *from Ferrovanadium and Nitrided Vanadium from Russia, Investigation No. 731-TA-702 (Third Review)*, USITC Publication 4345, August 2012, pp. IV-8 – IV-9.

Russia

Evraz Vanady Tula described itself as the largest European producer of vanadium pentoxide and ferrovanadium in the 50 percent and 80 percent grades. Evraz Vanady Tula's production capacity for vanadium pentoxide was 13,779 short tons and for ferrovanadium was 7,826 short tons in 2012.[30] Evraz acquired the Vanady Tula facility in December 2009.[31]

Canada

Masterloy Products Co. is Canada's sole ferrovanadium producer and toll processor. It ships ferrovanadium to the United States.[32]

Austria

Treibacher Industrie is an integrated producer of ferrovanadium in Austria. Treibacher has a joint venture, Hochvanadium AG, with Evraz Highveld, and processes vanadium slag from Highveld to produce ferrovanadium and other vanadium products.

Czech Republic

Evraz Nikom is the only known producer of ferrovanadium in the Czech Republic. Nikom was acquired by Evraz in 2007. Nikom can produce 5,071 short tons per year of ferrovanadium.[33] Nikom converts vanadium pentoxide from Evraz Vanady Tula into ferrovanadium.

Korea

There are at least two producers of ferrovanadium in Korea: Korvan Co., Ltd. and Woojin Industry Corp. Both convert vanadium pentoxide, imported primarily from China, into ferrovanadium.

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[30] Metal Bulletin, "U.S. Duties on Russian Ferrovanadium Revoked," August 10, 2012.

[31] Evraz, "EVRAZ Vanady Tula," http://www.evraz.com/products/business/vanadium/vanady_tula/, retrieved October 20, 2014 and *Evraz Completes Acquisition of Vanady-Tula,* press release*,* December 15, 2009.

[32] Masterloy Products Co., "About Us," http://www.masterloy.com/about.html, retrieved October 20, 2014 and "Products: Ferrovanadium," http://www.masterloy.com/products.html, retrieved October 20, 2014.

[33] Evraz, "EVRAZ Nikom," http://www.evraz.com/products/business/vanadium/nikom/, retrieved October 20, 2014.

Potential new producers

In addition to the ferrovanadium producers noted above, there are vanadium projects that have the potential to increase the vanadium supply. These include a planned restart of vanadium production in Australia and potential new vanadium production in Brazil and the United States.

- Vanadium production at the Windimurra mine in Australia began in 1999 but was idled in 2003 and shut down in 2004 due to poor market conditions. The operation was sold to Precious Metals Australia in 2005. After start-up delays and financing troubles, the project was taken over in 2010 by a consortium headed by Atlantic Ltd. who had the majority interest in the project (and subsequently acquired a 100 percent interest). Ferrovanadium production was restarted in 2012, resulting in small quantities of ferrovanadium as start-up issues delayed full production. Production was suspended after a fire in February 2014 caused serious damage to the plant. Damage from the fire decreased first-quarter 2014 production to only ten tons. The plant is scheduled to be rebuilt by February 2015 with the post-rebuild full production level estimated at 5,300-5,700 short tons of contained vanadium per year.[34]

- In Brazil, Largo Resources Ltd. (the sole owner of a vanadium production project at the Maracás Menchen mine), began vanadium pentoxide production in August 2014 and shipments in September 2014. The production ramp-up is underway and is expected to reach a production level of 10,600 short tons by August 2015 for Phase 1 of the project.[35] Largo has a take-or-pay off-take agreement with Glencore International Plc. for 100 percent of its vanadium production for six years.[36]

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[34] Metal Bulletin, "Commissioning of Windimurra Vanadium Project Begins," November 1, 1999; "Xstrata: Windimurra Shut Down Because High Prices Unsustainable," May 10, 2004; "Xstrata Finalises Sale of Windimurra to PMA," August 9, 2005; "Windimurra Vanadium will Produce in 2011 Under New Owners," April 13, 2010; "Atlantic Restarts Ferro-Vanadium Output at Windimurra," January 9, 2012; "Atlantic Ships First FeV from Windimurra Mine," May 30, 2012; "Atlantic Aims for North American Vanadium Market on Ramp-Up at Windimurra," April 18, 2013; "Windimurra Fire Lasted 3-4 Hours; Atlantic Assesses Damage," February 6, 2014; "Windimurra Vanadium Production Down 96% in Q1; Beneficiation Plant Must be Completely Rebuilt," April 29, 2014; "Atlantic will 'Right-Size' Business; Confirms'De-Bottlenecking' Plan," August 1, 2014.

[35] The project will be conducted in two phases each phase developing a part of the mine.

[36] Largo Resources Ltd., "Projects Overview Maracás," http://www.largoresources.com/English/projects/maracas/default.aspx, retrieved December 3, 2014; press release, "Largo Provides Operational Update on Production Ramp-Up at its Maracas Menchen Mine," http://www.largoresources.com/English/investors/news/news-release-details/2014/Largo-Provides-Operational-Update-on-Production-Ramp-up-at-its-Maracas-Menchen-Mine/default.aspx, December 3, 2014.

- American Vanadium Corp., based in Canada, describes itself as, "an integrated energy storage company and the Master Sales Agent in North America for GILDEMEISTER energy solution's CellCube energy storage system. The CellCube is the world's only commercially available vanadium flow battery."[37] American Vanadium plans to develop the Gibellini mine in Nevada;[38] the project was in the technical design and permitting phase in 2012 and the plans were to start production by 2015.[39] The original feasibility study assumed production of ferrovanadium. The feasibility study's results led the company to plan production of high purity vanadium products for aerospace alloys and flow battery systems.[40]

Global exports of ferrovanadium

Table IV-12 presents exports of ferrovanadium. Although China and Russia are major ferrovanadium producers, their exports are less than those from South Africa and Austria because a greater share of Chinese and Russian product is consumed in their home markets. South Africa and Austria, however, have relatively small home markets for ferrovanadium and are primarily exporters. South Africa was the largest exporter and accounted for *** percent of 2013 global exports. Austria was the second-leading exporting nation and accounted for *** percent of world exports in 2013. Other leading countries were the Czech Republic, China, Russia, and Korea.

[37] American Vanadium Corp., "About Us," http://www.americanvanadium.com/about-us.php, retrieved December 3, 2014.

[38] According to American Vanadium, the Gibellini mine is the only vanadium mine in the United States. American Vanadium Corp., press release, "American Vanadium Announces Submission of the Plan of Operations to the Bureau of Land Management," December 24, 2012.

[39] American Metal Market, "American Vanadium Targets Defense with Gibellini Output," July 16, 2012.

[40] Id.

Table IV-12
Ferrovanadium: Reporting country exports, 2008-13

Reporting country	Calendar year					
	2008	2009	2010	2011	2012	2013
	Quantity (1,000 pounds)[1]					
South Africa	***	***	***	***	***	***
Austria	23,235	13,143	17,721	19,414	17,107	15,722
Czech Republic	6,235	4,118	7,533	10,148	12,668	14,039
China	12,916	5,520	13,226	14,939	10,778	13,401
Russia	7,048	2,376	582	1,527	4,107	3,048
Korea	9,897	2,159	4,377	6,456	5,634	2,899
United States	1,151	2,381	1,998	1,240	1,521	1,736
All others	***	***	***	***	***	***
Total	***	***	***	***	***	***

[1] Not all countries report ferrovanadium exports in terms of contained vanadium. Therefore, table data are for total quantity of ferrovanadium exported. South Africa's quantity data were obtained from questionnaire data which are converted from a contained vanadium basis to total ferrovanadium basis using a conversion factor of 1.25.

Note.--Export data are not reported by Austria. Data for Austria are import data for all reporting countries of product from Austria (mirror exports).

Source: Compiled from Global Trade Atlas. Reported data from South Africa appear to contain substantial errors. Therefore, questionnaire data are used for South African exports. Reported exports from the Netherlands, which are substantial, are not included because they are believed to comprise re-exports of product imported from other sources.

Global exports of vanadium pentoxide and other oxides of vanadium

Vanadium pentoxide is not subject product in these reviews, but it is an important intermediate product used to produce ferrovanadium as well as other vanadium products. Ferrovanadium accounts for 90 percent or more of the usage of vanadium, and alloys for titanium account for much of the remainder. Vanadium chemicals that have a variety of uses, such as for catalysts, batteries, and many other uses account for the balance. Vanadium pentoxide is produced primarily in the countries that are the sources of vanadium resources. Table IV-13 presents reported exports of vanadium pentoxide and other vanadium oxides to all importing nations. Russia (36.0 percent), China (25.2 percent), and South Africa (20.8 percent), in 2013 accounted for 82.0 percent of global vanadium oxide exports.

Table IV-13
Vanadium oxides and hydroxides: Reporting country exports, 2008-13

Reporting country	Calendar year					
	2008	2009	2010	2011	2012	2013
	Quantity (1,000 pounds *contained vanadium*)					
Russia	14,187	7,011	16,490	17,108	18,078	19,797
China	33,195	9,473	15,575	19,826	18,298	13,871
South Africa	8,329	5,388	12,253	17,844	16,715	11,464
Netherlands	478	639	798	1,559	1,653	2,015
Taiwan	564	112	463	772	1,034	1,903
Korea	366	465	209	904	2,533	1,770
Thailand	0	0	0	1,367	1,411	1,587
United States	3,417	2,410	3,527	1,041	913	1,268
All other	7,205	3,664	4,387	3,803	1,140	1,336
Total	67,741	29,162	53,704	64,218	61,773	55,007

Note.—Data are for HTS 2825.30.

Source: Compiled from Global Trade Atlas.

DEMAND

Table IV-14 and figure IV-4 present global ferrovanadium consumption by country and region. China and Taiwan (calculated jointly in table IV-14), accounted for 44.8 percent of 2013 global consumption. The European Union and North America accounted for 13.9 percent and 14.2 percent, respectively. Global consumption increased by 10.6 percent during 2011-13. Figure IV-5 presents forecasted ferrovanadium consumption to 2020. Forecasted consumption increases at a higher rate (9.1 percent compound annual growth rate) during 2013-20 than it did during 2001-2013 (6.7 percent compound annual growth rate).

Table IV-14

Vanadium[1]: Estimated consumption by country and region, 2011-13

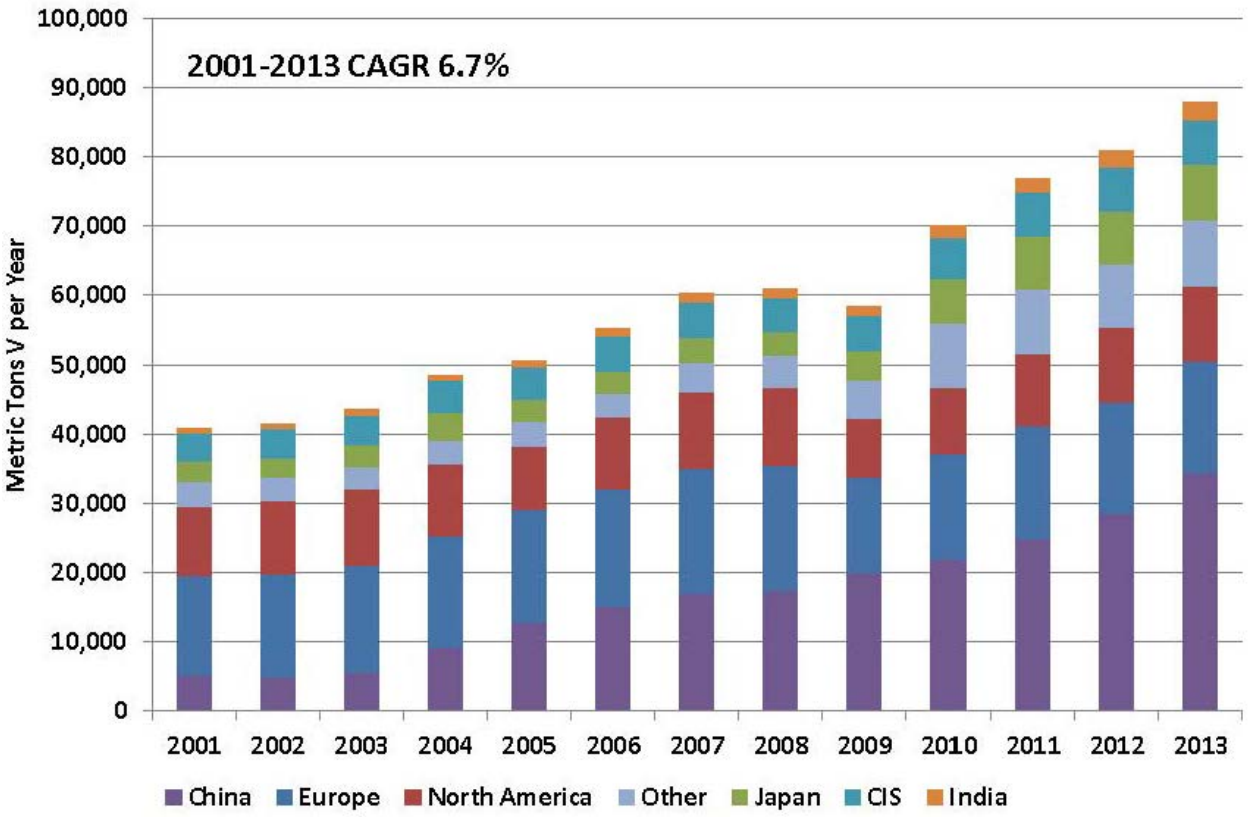
Country/Region	2011	2012	2013
	Quantity (1,000 pounds contained vanadium)		
European Union (27)	(2)	25,794	24,251
Other Europe	(2)	3,968	3,748
Commonwealth of Independent States (6)	(2)	10,803	11,684
North America	(2)	24,912	24,912
South America	(2)	5,732	4,850
Africa	(2)	1,323	1,543
Middle East	(2)	1,323	1,764
China (including Taiwan)	(2)	67,020	78,263
India	(2)	5,291	5,952
Asia (excluding China) and India	(2)	19,400	16,975
Oceania	(2)	882	882
Total	158,070	166,447	174,825

[1] Vanadium = all vanadium oxides produced, plus vanadium in other vanadium compounds (e.g. vanadium chemicals) that have not been produced using vanadium oxide produced in a separate production step, plus vanadium in ferrovanadium that has not been produced via vanadium oxide produced as a separate production process (e.g. from certain recycling processes).
[2] Data are unavailable.

Note.—Although the great majority of vanadium produced is consumed as ferrovanadium, the table data do not necessarily reflect solely ferrovanadium consumption.

Source: The Vanadium International Technical Committee, "Vanadium Production & Consumption Statistics," http://vanitec.org/vanadium-production-consumption-statistics/, retrieved October 20, 2014. The country/regional breakouts in the table are per the Vanadium International Technical Committee's "antitrust guidelines."

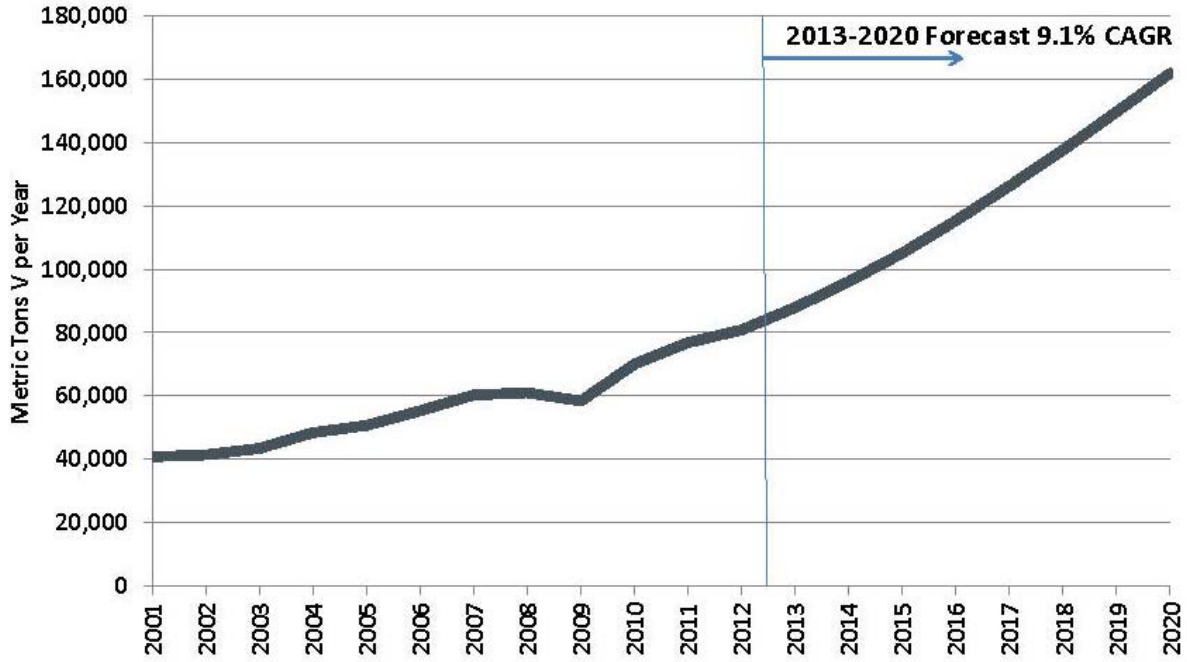
Figure IV-4
Vanadium: Global consumption, by country and region, 2001-13



Note.—CAGR=Compound Annual Growth Rate.

Source: VanadiumCorp Resource Inc.,"Vanadium Market," November 13, 2013, http://www.vanadiumcorp.com/tech/market, retrieved December 3, 2014.

Figure IV-5
Vanadium: Global consumption, 2001-12 and forecasted consumption 2013-20



Note.—CAGR=Compound Annual Growth Rate.

Source: VanadiumCorp Resource Inc.,"Vanadium Market," November 13, 2013, http://www.vanadiumcorp.com/tech/market, retrieved December 3, 2014.

Firms' responses regarding demand outside the United States since 2008 and anticipated future demand are summarized in table IV-15 below. The majority of firms reported that demand has increased since 2008, and indicated that they expect these trends to continue. U.S. purchasers gave more varied responses than producers and importers, reporting that they experienced more fluctuation and anticipate demand to fluctuate in the future.

In additional comments, firms stated that demand outside of the United States also depends on the demand for steel, with infrastructure and construction growth in China and Russia as major drivers of demand for high-grade steel. But as *** stated, demand for vanadium pentoxide is also growing due to battery and aerospace applications as well.

Table IV-15
Ferrovanadium: Firms' perceptions regarding demand outside of the United States

Item	Number of firms reporting			
	Increase	No change	Decrease	Fluctuate
Demand since 2008				
U.S. producers	6	0	0	0
Importers	7	0	2	1
Purchasers	5	3	3	7
Foreign producers	1	1	0	0
Demand in home markets since 2008				
Foreign producers	0	1	0	0
Anticipated demand				
U.S. producers	6	0	0	0
Importers	7	0	0	3
Purchasers	4	7	0	7
Foreign producers	1	1	0	0
Anticipated demand in home markets				
Foreign producers	0	1	0	0

Source: Compiled from data submitted in response to Commission questionnaires.

Prices

Producers and importers were asked to compare prices of ferrovanadium in U.S. and foreign markets. Responding U.S. producers/tollees reported that U.S. market prices for ferrovanadium typically are higher than in European markets. Tollees *** add that U.S. prices generally are higher than non-U.S. prices because there is higher overall demand in the United States, and because of the distribution costs associated with importing ferrovanadium. *** reported that while the nominal U.S. market price is higher than European or Asian indexes, after accounting for logistics costs such as transport, duties, finance, warehousing, etc., the U.S. ferrovanadium market is at parity with global markets. Responding importers report similarly, also citing overall higher demand in the United States and higher logistics costs. *** added that U.S. prices are slightly higher than European prices where there are more spot transactions, and since "contract pricing is affected by the publications (*Ryan's Notes*), the U.S. market is more stable and generally keeps higher prices." A responding foreign producer reported that

the prices of ferrovanadium in the Japanese and European markets are very similar, but that there are no comparable statistics available for the South African market, since it is so small.

Figure IV-6 shows U.S. and European ferrovanadium prices from Metal Bulletin for European prices and Ryan's Notes for U.S. prices. The two series follow the same general pattern, with European prices often somewhat lower.

Figure IV-6
Ferrovanadium: U.S. and European prices, January 2008-November 2014

* * * * * * *

PART V: PRICING DATA

FACTORS AFFECTING PRICES

Raw material costs

The primary inputs used in production of ferrovanadium in the United States are spent catalyst from oil refineries and residuals from combustion of fuel oil, which are either processed into vanadium pentoxide (which can be further processed to produce ferrovanadium) or are processed directly into ferrovanadium and other products. Vanadium pentoxide is also imported directly into the U.S. for toll conversion. Thus, U.S. production of ferrovanadium may be limited by the availability of the catalysts and residuals and imports of vanadium pentoxide (for further details on ferrovanadium production, see Part I).

Raw materials accounted for *** percent of cost of goods sold in 2013. Between 2008 and 2010, raw material costs increased as a percentage of cost of goods sold, and peaked at *** percent in 2010. Since 2010, raw materials as a percentage of costs of goods sold have decreased and are lower than 2008.[1]

Domestic interested parties state that availability of these raw materials can fluctuate. ***.[2] However, the current availability of raw materials is adequate and the types of catalysts and raw materials used in U.S. production are expected to expand in the coming years.[3]

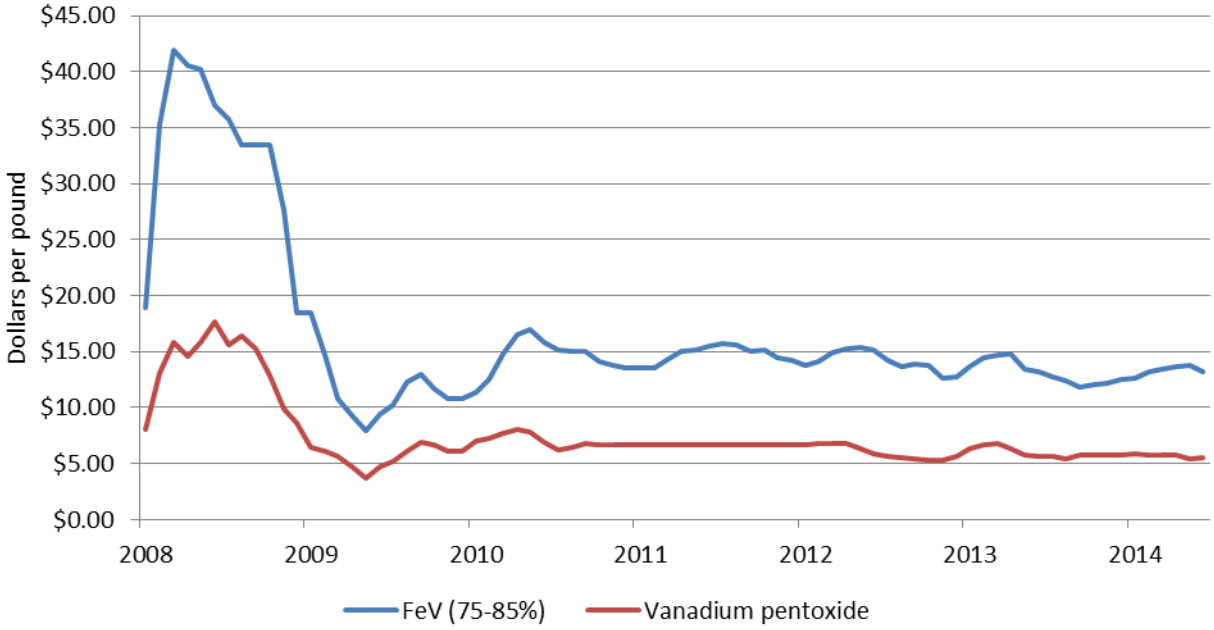
Published price data for vanadium pentoxide used in most production of ferrovanadium, and for ferrovanadium itself, are shown in figure V-1 for January 2008 – June 2014. Prices of both ferrovanadium and vanadium pentoxide show similar trends. Prices declined steeply in late 2008, recovered modestly in 2009 and 2010, then fluctuated with no clear trend thereafter. Figure V-2 shows average prices published by Ryan's Notes, and these prices follow similar trends.

[1] The share of raw materials as a percentage of cost of goods sold is reported for the entire market, and includes data from both the producers and tollees.

[2] Domestic interested parties' prehearing brief, p. 11

[3] Hearing transcript, p. 51 (Kidd).

Figure V-1
Ferrovanadium and vanadium pentoxide: Prices, dollars/pound by month, January 2008 – June 2014



Note.-- The data presented are the average monthly prices on a monthly basis.
Source: American Metal Market

Figure V-2
Ferrovanadium: Ryan's Notes prices, dollars/pound reported twice weekly, January 2008 – June 2014

* * * * * * *

Eight of fourteen U.S. producers and importers reported that prices of raw materials have decreased since 2008, and five of seven producers/tollees expect that prices will fluctuate in the future. U.S. producers *** reported that ferrovanadium prices have adjusted downward, but import volumes have restricted the two firms' ability to raise prices to a profitable level. *** also reported that vanadium pentoxide prices have decreased due to decreased demand in the U.S. market for ferrovanadium and an increased supply. One foreign producer, ***, reported that it anticipates changes to raw material costs due to supply and demand of the products, and to inflation in South Africa.

Transportation costs to the U.S. market

Most responding importers (7 of 11) reported that the exporter typically arranges international transportation. Foreign producers were evenly split (1 firm each) in reporting that

either the importer or exporter arranges international transportation. Neither importers nor foreign producers provided data for transportation costs to the U.S. market. Transportation costs for ferrovanadium shipped from subject countries to the United States averaged 0.7 percent for South Africa in 2013.[4] No data were available for transportation costs for ferrovanadium from China. [5] These estimates were derived from official import data and represent transportation and other charges on imports.

U.S. inland transportation costs

Most responding U.S. producers/tollees (5 of 8) and importers (4 of 6) reported that they typically arrange transportation to their customers. U.S. producers reported that their U.S. inland transportation costs ranged from *** to *** percent while the two responding importers reported costs of 0.4 to 1 percent. ***.

PRICING PRACTICES

Pricing methods

As presented in table V-1, all U.S. producers/tollees and importers reported using transaction-by-transaction pricing methods. Firms also reported using contracts or other pricing methods, such as reference prices either from *Ryan's Notes* or *Metal Bulletin*. Contract prices are generally determined by the published prices of ferrovanadium during the previous month.[6] Contracts normally contain pricing formulas that use such published prices as benchmarks causing changes in prevailing market prices to affect all contract prices quickly.[7] Domestic parties argue that if the orders are revoked, subject imports would enter the U.S. market through spot sales, and would depress the price of U.S. contractual sales, because contracts are directly linked to changes in prices of spot sales. Pricing methods have not changed substantially since the original investigations.[8]

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[4] The estimated transportation costs were obtained by subtracting the customs value from the c.i.f. value of the imports for the year and then dividing by the customs value based on the HTS subheading 7202.92.00

[5] Based on Dataweb data, transportation costs for imports from Korea, a proximate, nonsubject country were 0.9 percent in 2013.

[6] Domestic interested parties contend that "because U.S. producers' contract prices are affected directly and within a very short time by the prices of spot sales, these producers are extremely sensitive to the influx of low-priced" products. Domestic interested parties' prehearing brief, p. 19.

[7] Hearing transcript, p. 46 (Lutz).

[8] *Ferrovanadium from China and South Africa, Inv. Nos. 731-TA-986-987 (Final),* USITC Publication 3570, January 2003, p. 19.

Table V-1

Ferrovanadium: U.S. producers'/tollees' and importers' reported price setting methods, by number of responding firms[1]

Method	U.S. producers	U.S. importers
Transaction-by-transaction	8	12
Contract	4	8
Set price list	0	0
Other	0	2[2]

[1]The sum of responses down may not add up to the total number of responding firms as each firm was instructed to check all applicable price setting methods employed.
[2] Other price setting methods were prevailing market prices or prices based on *Ryan's Notes* and *Metal Bulletin*.

Source: Compiled from data submitted in response to Commission questionnaires.

Most U.S. producers/tollees reported selling under either one year contracts (*** of 2013 commercial shipments) or through spot sales (***) as shown in table V-2. Producer ***'s short-term contracts range from 30-60 days and importer ***'s short-term contracts range from 15-30 days. U.S. producer ***'s long-term contracts last for *** years.

Table V-2

Ferrovanadium: U.S. producers'/tollees' and importers' shares of U.S. commercial shipments by type of sale, 2013

	Share of commercial U.S. shipments (percent)		
		U.S. importers	
Type of sale	U.S. producers	China	South Africa
Long-term contracts	***	***	***
One year contracts	***	***	***
Short-term contracts	***	***	***
Spot sales	***	***	***

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

Source: Compiled from data submitted in response to Commission questionnaires.

South African producer, Rhovan, reported that it sells predominately through annual and long-term contracts, and as with the U.S. producers, contract prices are based off of an index, less a discount.[9] Table V-3 shows South African producers share of sales by type. Rhovan

[9] Respondent interested parties' joint posthearing brief, Exhibit 2A, p. 7; Hearing transcript, p. 136 (O'Connell).

reported *** of sales (*** in 2013 and *** in 2014) were made through *** and Vanchem, reported *** of sales (*** in 2013 and *** in 2014) were made through ***.[10]

Table V-3
Ferrovanadium: South African producers' shares of sales by type of sale, 2013-14

Type of sale	Rhovan		Vanchem	
	Share of 2013 sales	Share of 2014 sales	Share of 2013 sales	Share of 2014 sales
Long-term contracts	***	***	***	***
One year contracts	***	***	***	***
Short-term contracts	***	***	***	***
Spot sales	***	***	***	***

Source: Respondent interested parties' joint post-hearing brief, Exhibit 1A, p. 14 and Exhibit 2A, p. 7.

Purchasers most commonly reported that they purchase product on a monthly basis (8 firms), or on an "as needed" basis depending on inventory or price trends (6 firms). Three purchasers reported that they purchase product on a quarterly basis, and five on an annual basis. *** responding purchasers reported that they did not expect their purchasing patterns to change in the next two years. Most (14 of 21) purchasers contact 3 to 5 suppliers before making a purchase. The majority of purchasers' ferrovanadium purchases involved negotiations between supplier and purchaser. Common points of negotiation include price, quality, packaging, location, delivery, and availability. Additional points of negotiation include best overall value, applicable price index, discounts or premiums, payment terms, consignment terms, freight terms, price caps, service, flexibility, commercial conditions, and contract duration. The purchasers that reported not negotiating indicated renewing with the existing contracted supplier under the same terms as before; basing purchases on a competitive bidding process; or purchasing exclusively from a related firm.

Sales terms and discounts

Five of eight U.S. producers/tollees quote prices on a delivered basis, and four of eight firms quote prices on an f.o.b. basis, with *** reporting both. Ten of thirteen U.S. importers typically quote prices on a delivered basis, three on an f.o.b basis, and importer *** reports quoting prices on both bases. As shown in table V-4, most producers/tollees and importers do not offer discounts. Some producers/tollees reported offering quantity or total volume discounts (two firms each); four firms reported offering no discounts; and one firm reported including discounts in the annual contracts. Importers most often reported offering no discounts (seven firms), while three firms offer quantity discounts, and two firms offer total volume discounts. Importer *** reported offering no discounts for spot sales, but that it occasionally offers discounts for long-term contracts or premiums for specialty grades. Another

[10] Respondent interested parties' joint posthearing brief, Exhibit 1A, p. 14 and Exhibit 2A, p. 7.

importer, ***, reported that it offers discounts on a case-by-case basis and is not limited to quantity-based discounts.

Table V-4
Ferrovanadium: Discount policies, by number of responding firms[1]

	Quantity	Total volume	No discounts	Other[2]
Producers/tollees	2	2	4	1
Importers	3	2	7	2

[1]Eight U.S. producers and twelve U.S. importers responded.
[2]Discount policies listed under "Other" include discount policies that are determined on a case-by-case basis; only occasional discounts for long-term contracts; and discount is part of the annual contract.

Source: Compiled from data submitted in response to Commission questionnaires.

A large majority of producers reported net 30 days as their typical sales terms. U.S. producer *** reported typical sales terms of 1/10 net 30 days. U.S. producer *** reported a variety of sales terms, including 30 days, 45 days, and 60 days. Likewise, nearly all importers (11 of 12) reported sales terms of net 30 days,[11] with importer *** reporting that it requires payment against presentation of documents (invoice, shipping documents, and certificate of analysis) or payment against conditional warehouse release and documents.

Price leadership

Four firms listed U.S. tollees EMAG or Evraz Stratcor as price leaders due to their consistent availability and analysis of material, quick responses to market conditions, aggressive pricing, and large market share. Purchasers reported several importers as price leaders. One purchaser reported Hickman Williams, David Joseph, and Masterloy as price leaders. Another purchaser listed Duferco and Sideralloys because they offered the lowest prices while meeting standards for quality, packaging, and delivery.

PRICE DATA

The Commission requested U.S. producers and importers to provide quarterly data for the total quantity and f.o.b. value of the following ferrovanadium products shipped to unrelated U.S. customers during January 2008-June 2014.

Product 1.—Grade 40-60 percent ferrovanadium, 2" by down

Product 2.—Grade 75-85 percent ferrovanadium, 2" by down

[11] *** also sells on a net 90 days and consignment terms basis.

Seven U.S. producers/tollees and 12 importers provided usable pricing data for sales of the requested products, although not all firms reported pricing for all products for all quarters. Pricing data reported by these firms accounted for approximately *** percent of U.S. producers' commercial shipments of ferrovanadium for the period of January 2008-June 2014. Subject imports from China were reported for only two quarters in 2010, and the pricing data reported accounted for *** U.S. shipments of Chinese ferrovanadium.[12] Subject imports from South Africa were reported only for 2014, and the reported pricing data accounted for *** U.S. shipments from South Africa. Price data for products 1 and 2 are presented in tables V-5 and V-6 and figures V-2 and V-3.

Table V-5
Ferrovanadium: Weighted-average f.o.b. prices and quantities of domestic and imported product 1 and margins of underselling/(overselling), by quarters, January 2008-June 2014

* * * * * * *

Table V-6
Ferrovanadium: Weighted-average f.o.b. prices and quantities of domestic and imported product 2 and margins of underselling/(overselling), by quarters, January 2008-June 2014

* * * * * * *

Figure V-3
Ferrovanadium: Weighted-average prices and quantities of domestic product 1, by quarters, January 2008-June 2014

* * * * * * *

Figure V-4
Ferrovanadium: Weighted-average prices and quantities of domestic product 2, by quarters, January 2008-June 2014

* * * * * * *

[12] The only U.S. importer of ferrovanadium from China, ***, had incomplete records, but provided estimated trade and pricing data. During 2010, *** imported and sold *** shipments of ferrovanadium from China, with values that reflected antidumping duties of 66.71 percent. The price data reported by *** accounted for all U.S. commercial shipments of ferrovanadium from China since 2008.

Price trends

As shown in figure V-3 and V-4, after experiencing a sharp decline in prices during 2008-09, prices maintained levels around $*** per pound of contained vanadium for both products 1 and 2. Table V-7 summarizes the price trends, by country and by product. Domestic price for product 1 decreased by *** percent during January 2008-June 2014, and domestic price for product 2 decreased by *** percent during the same period. There were not enough data to measure price changes for product 1 or product 2 from either subject country for January 2008-June 2014.

Table V-7
Ferrovanadium: Summary of weighted-average f.o.b. prices for products 1-2 from the United States, China, and South Africa, January 2008-June 2014

* * * * * * *

Price comparisons

As shown in table V-8, the price for ferrovanadium imported from China was *** percent *** the price for U.S. produced ferrovanadium in the two instances it was imported. The price of imported ferrovanadium from South Africa was *** percent higher than U.S.-produced domestic product in the one instance it was imported. Combined, the average margin of overselling was *** percent, and there were no instances of underselling.[13]

[13] The Commissions' staff reports present historical price data for 1999-2007. During January 1999-March 2002, there were 5 quarters of underselling and 13 quarters of overselling for Chinese product. There were 15 quarters of overselling for South African product. During the initial sunset review (2002-07), there were four quarters of underselling for Chinese ferrovanadium, and three quarters of underselling and two quarters of overselling for South African ferrovanadium. *Ferrovanadium from China and South Africa, Investigation Nos. 731-TA-986 and 987 (Review),* USITC Publication, October 29, 2008, tables V-6 and V-7.

In the original investigations, the Commission found that "subject imports depressed domestic prices to a significant degree, even though there was insufficient evidence of consistent underselling." *Ferrovanadium from China and South Africa, Investigation Nos. 731-TA-986 and 987* (*Final),* USITC Publication 3570, January 2003, p. 19.

Domestic interested parties argue that while overselling appears to have occurred, it is only because prices of contract sales and spot sales are combined. Spot prices will consistently be higher than contract prices, but due to the nature of contract pricing, if prices decrease in the spot market, that price depression will be reflected in the contract prices, as they formulaically discount the prices reflected in the spot market. Hearing transcript, pp. 46, 49, 73-74 (Lutz).

Table V-8

Ferrovanadium: Instances of underselling/overselling and the range and average of margins, by country, January 2008-June 2014

Source	Underselling			Overselling		
	Number of instances	Range (percent)	Average margin (percent)	Number of instances	Range (percent)	Average margin (percent)
China	0	---	---	2	*** to ***	***
South Africa	0	---	---	1	***	***
Total	0	---	---	3	*** to ***	***

[1]Not applicable.

Source: Compiled from data submitted in response to Commission questionnaires.

Purchasers' perceptions of relative price trends

Purchasers were asked how the prices of ferrovanadium from the United States had changed relative to the prices of product from China and South Africa since 2008. The large majority of purchasers, 10 of 13 responding firms, reported that prices of U.S.-produced ferrovanadium changed by the same amount as the price of imported ferrovanadium. The remaining three firms reported that there has been no change in relative prices.

APPENDIX A

FEDERAL REGISTER NOTICES

The Commission makes available notices relevant to its investigations and reviews on its website, www.usitc.gov. In addition, the following tabulation presents, in chronological order, *Federal Register* notices issued by the Commission and Commerce during the current proceeding.

Citation	Title	Link
78 FR 65614 November 1, 2013	*Initiation of Five-Year ("Sunset") Review*	http://www.gpo.gov/fdsys/pkg/FR-2013-11-01/pdf/2013-26240.pdf
78 FR 65706 November 1, 2013	*Ferrovanadium from China and South Africa; Institution of Five-year Reviews*	http://www.gpo.gov/fdsys/pkg/FR-2013-11-01/pdf/2013-26104.pdf
79 FR 9000 February 14, 2014	*Ferrovanadium from China and South Africa: Notice of Commission Determination to Conduct Full Five-Year Reviews*	http://www.gpo.gov/fdsys/pkg/FR-2014-02-14/pdf/2014-03262.pdf
79 FR 14216 March 13, 2014	*Ferrovanadium from the People's Republic of China and the Republic of South Africa: Final Results of the Expedited Second Sunset Reviews of the Antidumping Duty Orders*	http://www.gpo.gov/fdsys/pkg/FR-2014-03-13/pdf/2014-05528.pdf
79 FR 39411 July 10, 2014	*Ferrovanadium from China and South Africa; Scheduling of Full Five-Year Reviews*	http://www.gpo.gov/fdsys/pkg/FR-2014-07-10/pdf/2014-16122.pdf
Note.–The press release announcing the Commission's determinations concerning adequacy and the conduct of a full or expedited review can be found at http://usitc.gov/press_room/news_release/2014/er0204mm2.htm. A summary of the Commission's votes concerning adequacy and the conduct of a full or expedited review can be found at http://pubapps2.usitc.gov/sunset/caseProfSuppAttmnt/download/11637. The Commission's explanation of its determinations can be found at http://pubapps2.usitc.gov/sunset/caseProfSuppAttmnt/download/11683.		

APPENDIX B

LIST OF HEARING WITNESSES

CALENDAR OF PUBLIC HEARING

Those listed below appeared as witnesses at the United States International Trade Commission's hearing:

Subject:	Ferrovanadium from China and South Africa
Inv. Nos.:	731-TA-986 and 987 (Second Review)
Date and Time:	November 20, 2014 - 9:30 a.m.

Sessions were held in connection with these reviews in the Main Hearing Room (room 101), 500 E Street, SW, Washington, DC.

OPENING REMARKS:

In Support of Continuation (**John B. Totaro, Jr.**, Neville Peterson LLP)
In Opposition to Continuation (**Kenneth Weigel**, Alston & Bird LLP)

In Support of the Continuation of Antidumping Duties:

Neville Peterson LLP
Washington, DC
on behalf of

The Vanadium Producers and Reclaimers Association ("VPRA")
and VPRA Members:
Gulf Chemical & Metallurgical Corporation ("Gulf")
Bear Metallurgical Company ("Bear")
AMG Vanadium, Inc. ("AMG V")
Evraz Stratcor, Inc. ("Stratcor")

Kevin H. Jones, Vice President, AMG Advanced Metallurgical Group N.V.

Mitchell E. Kidd, President, AMG V

R. James Carter, Vanadium Industry Subject Matter Expert, AMG V

In Support of the Continuation of
Antidumping Duties (continued):

Mark Anderson, Director of Sales and Marketing, AMG V

Allan R. Orr, Executive Vice President of Metal Sales, Gulf

David F. Carey, General Manager, Bear

Robert Bunting, Consultant, Stratcor

Terry Perles, President, TTP Squared, Inc.; President, MoTiV Metals LLC; *and* President, North America of Atlantic Ltd.

Kenneth R. Button, Senior Vice President, Economic Consulting Services, LLC

Jennifer Lutz, Senior Economist, Economic Consulting Services, LLC

John B. Totaro, Jr.)
) – OF COUNSEL
Peter Bogard)

In Opposition to the Continuation of Antidumping Duties:

Alston & Bird LLP
Washington, DC
on behalf of

Glencore plc and its affiliates:
Rhovan PSV (Pooling and Sharing Joint Venture)
Glencore Operations South Africa (Pty) Ltd.
Glencore Ltd.

Michael O'Connell, Product Manager, Glencore, Ltd.

Lynn Holec, Economist, ITR LLC/Marks Paneth LLP

Kenneth Weigel)
) – OF COUNSEL
Chunlian Yang)

White & Case LLP
Washington, DC
on behalf of

Vanchem Vanadium Products (Pty) Ltd. ("Vanchem")

Kristina Zissis)
) – OF COUNSEL
Dean Barclay)

REBUTTAL/CLOSING REMARKS:

In Support of Continuation (**John B. Totaro, Jr.**, Neville Peterson LLP)
In Opposition to Continuation (**Kenneth Weigel**, Alston & Bird LLP)

-END-

APPENDIX C

SUMMARY DATA

Table C-1
Ferrovanadium: Summary data concerning the U.S. market, 2008-13, January to June 2013, and January to June 2014
(Quantity=1,000 pounds of contained vanadium; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per pound contained vanadium; Period changes=percent--exceptions noted)

	Reported data								Period changes						
	Calendar year						January-June		Calendar year						Jan-Jun
	2008	2009	2010	2011	2012	2013	2013	2014	2008-13	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
U.S. consumption quantity:															
Amount	14,902	8,632	13,401	14,190	15,638	15,312	7,996	8,514	2.8	(42.1)	55.2	5.9	10.2	(2.1)	6.5
Producers' share (fn1)	58.5	91.0	78.0	65.9	40.9	46.9	40.7	50.3	(11.6)	32.5	(13.0)	(12.1)	(25.0)	6.0	9.6
Importers' share (fn1):															
China	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0
South Africa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Subtotal, subject	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	(0.0)	0.0	0.0	0.1
All others sources	41.5	9.0	22.0	34.1	59.1	53.1	59.3	49.6	11.6	(32.5)	13.0	12.1	25.0	(6.0)	(9.7)
Total imports	41.5	9.0	22.0	34.1	59.1	53.1	59.3	49.7	11.6	(32.5)	13.0	12.1	25.0	(6.0)	(9.6)
U.S. consumption value:															
Amount	413,428	93,197	176,991	186,251	195,618	180,574	99,462	101,521	(56.3)	(77.5)	89.9	5.2	5.0	(7.7)	2.1
Producers' share (fn1)	60.2	86.1	75.9	64.1	42.3	48.5	42.4	50.6	(11.7)	25.9	(10.2)	(11.7)	(21.8)	6.2	8.3
Importers' share (fn1):															
China	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0
South Africa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Subtotal, subject	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	(0.0)	0.0	0.0	0.1
All others sources	39.8	13.9	24.1	35.9	57.7	51.5	57.6	49.2	11.7	(25.9)	10.2	11.7	21.8	(6.2)	(8.4)
Total imports	39.8	13.9	24.1	35.9	57.7	51.5	57.6	49.4	11.7	(25.9)	10.2	11.7	21.8	(6.2)	(8.3)
U.S. imports from:															
China:															
Quantity	0	0	1	0	0	0	0	0	fn2	fn2	fn2	(100.0)	fn2	fn2	fn2
Value	0	0	25	0	0	0	0	0	fn2	fn2	fn2	(100.0)	fn2	fn2	fn2
Unit value	---	---	22.35	---	---	---	---	---	fn2	fn2	fn2	(100.0)	fn2	fn2	fn2
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
South Africa:															
Quantity	0	0	0	0	0	0	0	11	fn2	fn2	fn2	fn2	fn2	fn2	fn2
Value	0	0	0	0	0	0	0	130	fn2	fn2	fn2	fn2	fn2	fn2	fn2
Unit value	---	---	---	---	---	---	---	12.19	fn2	fn2	fn2	fn2	fn2	fn2	fn2
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Subject:															
Quantity	0	0	1	0	0	0	0	11	fn2	fn2	fn2	(100.0)	fn2	fn2	fn2
Value	0	0	25	0	0	0	0	130	fn2	fn2	fn2	(100.0)	fn2	fn2	fn2
Unit value	---	---	22.35	---	---	---	---	12.19	fn2	fn2	fn2	(100.0)	fn2	fn2	fn2
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
All other sources:															
Quantity	6,180	777	2,952	4,840	9,237	8,125	4,739	4,219	31.5	(87.4)	279.8	63.9	90.8	(12.0)	(11.0)
Value	164,414	12,954	42,682	66,797	112,777	92,923	57,325	49,982	(43.5)	(92.1)	229.5	56.5	68.8	(17.6)	(12.8)
Unit value	26.61	16.66	14.46	13.80	12.21	11.44	12.10	11.85	(57.0)	(37.4)	(13.2)	(4.5)	(11.5)	(6.3)	(2.1)
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Total imports:															
Quantity	6,180	777	2,954	4,840	9,237	8,125	4,739	4,230	31.5	(87.4)	279.9	63.9	90.8	(12.0)	(10.7)
Value	164,414	12,954	42,707	66,797	112,777	92,923	57,325	50,113	(43.5)	(92.1)	229.7	56.4	68.8	(17.6)	(12.6)
Unit value	26.61	16.66	14.46	13.80	12.21	11.44	12.10	11.85	(57.0)	(37.4)	(13.2)	(4.6)	(11.5)	(6.3)	(2.1)
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
U.S. producers':															
Average capacity quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Production quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Capacity utilization (fn1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
U.S. shipments:															
Quantity	8,722	7,855	10,447	9,350	6,401	7,187	3,257	4,284	(17.6)	(9.9)	33.0	(10.5)	(31.5)	12.3	31.5
Value	249,014	80,243	134,284	119,454	82,841	87,651	42,137	51,408	(64.8)	(67.8)	67.3	(11.0)	(30.7)	5.8	22.0
Unit value	28.55	10.22	12.85	12.78	12.94	12.20	12.94	12.00	(57.3)	(64.2)	25.8	(0.6)	1.3	(5.8)	(7.2)
Export shipments:															
Quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Inventories/total shipments (fn1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Production workers	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Hours worked (1,000s)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Wages paid ($1,000)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Hourly wages	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Productivity (pounds contained vanadium per hour)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit labor costs	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
U.S. producers':															
Net sales:															
Quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Gross profit of (loss)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit operating income or (loss)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
COGS/sales (fn1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
U.S. producers' and tollees':															
Net sales:															
Quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Gross profit of (loss)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit operating income or (loss) (fn3)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
COGS/sales (fn1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***

Notes:

fn1.--Reported data are in percent and period changes are in percentage points.
fn2.--Undefined.
fn3.--Toller's operating income has been added to the U.S. producers' and tollees' operating income

Note.—Reported production and employment data are based on data submitted by U.S. producers (including toll production). U.S. shipment, inventory, and financial data include U.S. producers and tollee operations.

Source: Compiled from adjusted official commerce statistics and from data submitted in response to Commission questionnaires.

APPENDICES C

HISTORICAL SUMMARY DATA

Table C-1
Ferrovanadium: Summary data concerning the U.S. market, 1999-2001, January-June 2001, and January-June 2002

(Quantity=1,000 pounds of contained vanadium; value=1,000 dollars, unit values, unit labor costs, and unit expenses are per pound; period changes=percent, except where noted)

Item	Reported data			January-June		Period changes			
	1999	2000	2001	2001	2002	1999-2001	1999-2000	2000-2001	Jan.-June 2001-2002
U.S. consumption quantity:									
Amount	12,965	13,012	11,891	6,260	6,370	-8.3	0.4	-8.6	1.8
Producers' share (1)	67.2	57.6	52.8	55.9	55.5	-14.5	-9.7	-4.8	-0.4
Importers' share (1):									
China	6.4	11.3	8.3	11.4	1.7	2.0	4.9	-2.9	-9.7
South Africa	11.4	8.1	20.8	14.9	6.4	9.4	-3.3	12.7	-8.5
Subtotal	17.8	19.4	29.2	26.3	8.1	11.3	1.6	9.7	-18.2
Other sources	15.0	23.0	18.1	17.8	36.4	3.1	8.1	-4.9	18.6
Total imports	32.8	42.4	47.2	44.1	44.5	14.5	9.7	4.8	0.4
U.S. consumption value:									
Amount	65,239	61,738	45,430	24,060	21,563	-30.4	-5.4	-26.4	-10.4
Producers' share (1)	67.0	57.6	52.2	55.7	56.8	-14.8	-9.5	-5.3	1.1
Importers' share (1):									
China	5.9	10.2	8.2	11.2	1.6	2.3	4.2	-1.9	-9.6
South Africa	10.7	9.0	21.1	15.2	6.9	10.4	-1.7	12.1	-8.3
Subtotal	16.6	19.1	29.3	26.4	8.5	12.7	2.5	10.2	-17.9
Other sources	16.3	23.3	18.4	17.9	34.7	2.1	7.0	-4.9	16.8
Total imports	33.0	42.4	47.8	44.3	43.2	14.8	9.5	5.3	-1.1
U.S. imports from:									
China:									
Quantity	826	1,469	992	712	109	20.1	77.8	-32.5	-84.7
Value	3,861	6,270	3,744	2,691	349	-3.0	62.4	-40.3	-87.0
Unit value	$4.67	$4.27	$3.78	$3.78	$3.20	-19.2	-8.7	-11.5	-15.3
Ending inventory quantity	***	***	***	***	***	***	***	***	***
South Africa:									
Quantity	1,483	1,059	2,475	931	405	66.9	-28.6	133.8	-56.5
Value	6,991	5,536	9,588	3,659	1,479	37.1	-20.8	73.2	-59.6
Unit value	$4.72	$5.23	$3.87	$3.93	$3.65	-17.8	10.9	-25.9	-7.1
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Subtotal:									
Quantity	2,309	2,528	3,466	1,644	514	50.1	9.5	37.1	-68.7
Value	10,852	11,806	13,333	6,350	1,829	22.9	8.8	12.9	-71.2
Unit value	$4.70	$4.67	$3.85	$3.86	$3.55	-18.2	-0.6	-17.7	-8.0
Ending inventory quantity	***	***	***	***	***	***	***	***	***
All other sources:									
Quantity	1,941	2,995	2,150	1,114	2,319	10.8	54.4	-28.2	108.2
Value	10,657	14,399	8,362	4,314	7,485	-21.5	35.1	-41.9	73.5
Unit value	$5.49	$4.81	$3.89	$3.87	$3.23	-29.2	-12.5	-19.1	-16.7
Ending inventory quantity	***	***	***	***	***	***	***	***	***
All sources:									
Quantity	4,249	5,523	5,617	2,758	2,834	32.2	30.0	1.7	2.8
Value	21,509	26,205	21,695	10,664	9,314	0.9	21.8	-17.2	-12.7
Unit value	$5.06	$4.74	$3.86	$3.87	$3.29	-23.7	-6.3	-18.6	-15.0
Ending inventory quantity	627	705	1,257	670	1,980	100.5	12.4	78.3	195.5

Table continued on next page.

Table C-1--Continued
Ferrovanadium: Summary data concerning the U.S. market, 1999-2001, January-June 2001, and January-June 2002

(Quantity=1,000 pounds of contained vanadium; value=1,000 dollars, unit values, unit labor costs, and unit expenses are per pound; period changes=percent, except where noted)

	Reported data					Period changes			
				January-June					Jan.-June
Item	1999	2000	2001	2001	2002	1999-2001	1999-2000	2000-2001	2001-2002
U.S. producers': (2)									
Average capacity quantity	***	***	***	***	***	***	***	***	***
Production quantity	***	***	***	***	***	***	***	***	***
Capacity utilization (1)	***	***	***	***	***	***	***	***	***
U.S. shipments:									
Quantity	8,716	7,489	6,274	3,502	3,536	-28.0	-14.1	-16.2	1.0
Value	43,730	35,533	23,735	13,396	12,249	-45.7	-18.7	-33.2	-8.6
Unit value	$5.02	$4.74	$3.78	$3.83	$3.46	-24.6	-5.4	-20.3	-9.4
Export shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Inventories/total shipments (1)	***	***	***	***	***	***	***	***	***
Production workers (3)	187	222	199	204	205	6.4	18.7	-10.4	0.5
Hours worked (1,000s) (3)	395	473	421	215	234	6.6	19.7	-11.0	8.8
Wages paid ($1,000s) (3)	7,937	9,525	8,718	4,359	4,804	9.8	20.0	-8.5	10.2
Hourly wages (3)	$20.09	$20.14	$20.71	$20.27	$20.53	3.1	0.2	2.8	1.3
Productivity (pounds per hour) (4)	***	***	***	***	***	***	***	***	***
Unit labor costs (4)	***	***	***	***	***	***	***	***	***
Net sales:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***
Gross profit or (loss)	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***
Unit operating income or (loss)	***	***	***	***	***	***	***	***	***
COGS/sales (1)	***	***	***	***	***	***	***	***	***
Operating income or (loss)/ sales (1)	***	***	***	***	***	***	***	***	***

(1) "Reported data" are in percent and "period changes" are in percentage points.
(2) Capacity and production data are for two firms: Bear and Shieldalloy. All other data are for Bear, Gulf, Shieldalloy, and USV. To avoid double-counting, U.S. shipments exclude Bear's reported shipments of toll-produced product. Instead, such shipments are reported as U.S. commercial shipments by the tollees.
(3) Includes data as reported by Gulf and USV for their production and related workers involved in the production of vanadium pentoxide.
(4) Calculated using data supplied by Bear and Shieldalloy only.

Note.--Financial data are reported on a fiscal year basis and may not necessarily be comparable to data reported on a calendar year basis. Because of rounding, figures may not add to the totals shown. Unit values and shares are calculated from the unrounded figures.

Source: Compiled from data submitted in response to Commission questionnaires.

Table C-2
Ferrovanadium: Summary data for Bear and Shieldalloy, 1999-2001, January-June 2001, and January-June 2002

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Table C-1
Ferrovanadium: Summary data concerning the U.S. market (with data for domestic producers/tollees) 2002-07, January-June 2007, and January-June 2008

(Quantity=1,000 pounds, value=1,000 dollars, unit values, unit labor costs, and unit expenses are per pound; period changes=percent, except where noted)

	Reported data								Period changes						
							January-June								Jan.-June
Item	2002	2003	2004	2005	2006	2007	2007	2008	2002-07	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
U.S. consumption quantity:															
Amount	12,606	11,625	15,381	12,397	13,403	13,327	6,422	7,851	5.7	-7.8	32.3	-19.4	8.1	-0.6	22.3
Producers' share (1)	55.9	74.5	56.7	60.8	64.8	63.4	58.1	50.3	7.5	18.6	-17.8	4.1	4.0	-1.4	-7.8
Importers' share (1):															
China	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.9	-0.9	0.0	0.0	-0.0	-0.0	0.0
South Africa	3.5	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-3.4	-3.5	0.0	0.0	0.0	0.1	0.0
Subtotal	4.4	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-4.2	-4.4	0.0	0.0	-0.0	0.1	0.0
All other sources	39.8	25.5	43.3	39.2	35.2	36.5	41.9	49.7	-3.2	-14.3	17.8	-4.1	-4.0	1.3	7.8
Total imports	44.1	25.5	43.3	39.2	35.2	36.6	41.9	49.7	-7.5	-18.6	17.8	-4.1	-4.0	1.4	7.8
U.S. consumption value:															
Amount	47,903	57,676	158,693	363,381	240,344	199,156	101,683	210,509	315.7	20.4	175.1	129.0	-33.9	-17.1	107.0
Producers' share (1)	57.7	74.2	59.0	62.4	60.8	67.6	56.5	54.2	9.9	16.4	-15.2	3.5	-1.6	6.8	-2.2
Importers' share (1):															
China	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.7	-0.7	0.0	0.0	0.0	-0.0	0.0
South Africa	3.4	0.0	0.0	0.0	0.0	0.2	0.0	0.0	-3.3	-3.4	0.0	0.0	0.0	0.2	0.0
Subtotal	4.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	-4.0	-4.2	0.0	0.0	0.0	0.2	0.0
All other sources	38.1	25.8	41.0	37.5	39.1	32.2	43.5	45.8	-5.9	-12.3	15.2	-3.5	1.6	-6.9	2.2
Total imports	42.3	25.8	41.0	37.6	39.2	32.4	43.5	45.8	-9.9	-16.4	15.2	-3.5	1.6	-6.8	2.2
U.S. shipments of imports from:															
China:															
Quantity	109	0	0	1	1	0	0	0	-100.0	-100.0	(2)	(2)	0.0	-100.0	(2)
Value	349	0	0	16	24	0	0	0	-100.0	-100.0	(2)	(2)	50.0	-100.0	(2)
Unit value	$3.20	(2)	(2)	$16.00	$24.00	(2)	(2)	(2)	(2)	(2)	(2)	(2)	50.0	(2)	(2)
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
South Africa:															
Quantity	441	0	0	0	0	17	0	0	-96.1	-100.0	(2)	(2)	(2)	(2)	(2)
Value	1,644	0	0	0	0	350	0	0	-78.7	-100.0	(2)	(2)	(2)	(2)	(2)
Unit value	$3.73	(2)	(2)	(2)	(2)	$20.59	(2)	(2)	452.3	(2)	(2)	(2)	(2)	(2)	(2)
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Subtotal:															
Quantity	550	0	0	1	1	17	0	0	-96.9	-100.0	(2)	(2)	0.0	1600.0	(2)
Value	1,993	0	0	16	24	350	0	0	-82.4	-100.0	(2)	(2)	50.0	1358.3	(2)
Unit value	$3.62	(2)	(2)	$16.00	$24.00	$20.59	(2)	(2)	468.2	(2)	(2)	(2)	50.0	-14.2	(2)
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
All other sources:															
Quantity	5,011	2,964	6,664	4,859	4,718	4,866	2,691	3,905	-2.9	-40.9	124.8	-27.1	-2.9	3.1	45.1
Value	18,263	14,903	65,107	136,445	94,075	64,120	44,281	96,324	251.1	-18.4	336.9	109.6	-31.1	-31.8	117.5
Unit value	$3.64	$5.03	$9.77	$28.08	$19.94	$13.18	$16.46	$24.67	261.6	38.0	94.3	187.4	-29.0	-33.9	49.9
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
All sources:															
Quantity	5,561	2,964	6,664	4,860	4,719	4,883	2,691	3,905	-12.2	-46.7	124.8	-27.1	-2.9	3.5	45.1
Value	20,256	14,903	65,107	136,461	94,099	64,470	44,281	96,324	218.3	-26.4	336.9	109.6	-31.0	-31.5	117.5
Unit value	$3.64	$5.03	$9.77	$28.08	$19.94	$13.20	$16.46	$24.67	262.5	38.0	94.3	187.4	-29.0	-33.8	49.9
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
U.S. producers'/tollees':															
Average capacity quantity (3)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Production quantity (3)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Capacity utilization (1) (3)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
U.S. shipments:															
Quantity	7,045	8,661	8,717	7,537	8,684	8,444	3,731	3,946	19.9	22.9	0.6	-13.5	15.2	-2.8	5.8
Value	27,647	42,773	93,586	226,920	146,245	134,686	57,402	114,185	387.2	54.7	118.8	142.5	-35.6	-7.9	98.9
Unit value	$3.92	$4.94	$10.74	$30.11	$16.84	$15.95	$15.39	$28.94	306.4	25.8	117.4	180.4	-44.1	-5.3	88.1
Export shipments:															
Quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Inventories/total shipments (1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Production workers	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Hours worked (1,000s)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Wages paid ($1,000)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Hourly wages	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Productivity (lbs. per hour) (3)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit labor costs	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Net sales:															
Quantity	7,413	9,063	8,638	7,240	8,053	7,554	3,864	4,175	1.9	22.3	-4.7	-16.2	11.2	-6.2	8.0
Value	29,060	44,889	94,195	216,944	137,221	122,259	61,329	119,756	320.7	54.5	109.8	130.3	-36.7	-10.9	95.3
Unit value	$3.92	$4.95	$10.90	$29.96	$17.04	$16.18	$15.87	$28.68	312.9	26.3	120.2	174.8	-43.1	-5.0	80.7
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Gross profit or (loss)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Operating income or (loss)	(10,773)	(8,479)	21,453	102,547	31,925	986	932	31,207	(2)	21.3	(2)	378.0	-68.9	-96.9	3248.4
Capital expenditures	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit operating income or (loss)	($1.45)	($0.94)	$2.48	$14.16	$3.96	$0.13	$0.24	$7.47	(2)	35.6	(2)	470.3	-72.0	-96.7	2999.0
COGS/sales (1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Operating income or (loss)/ sales (1)	-37.1	-18.9	22.8	47.3	23.3	0.8	1.5	26.1	37.9	18.2	41.7	24.5	-24.0	-22.5	24.5

(1) "Reported data" are in percent and "period changes" are in percentage points.
(2) Not applicable.
(3) Data are for Bear and Metvan only.

Note.--Financial data are reported on a fiscal year basis and may not necessarily be comparable to data reported on a calendar year basis. Because of rounding, figures may not add to the totals shown. Unit values and shares are calculated from the unrounded figures.

Source: Compiled from data submitted in response to Commission questionnaires.

Table C-2
Ferrovanadium: Summary data for producers Bear and Metvan, 2002-2007, January-June 2007 and January-June 2008

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APPENDIX D

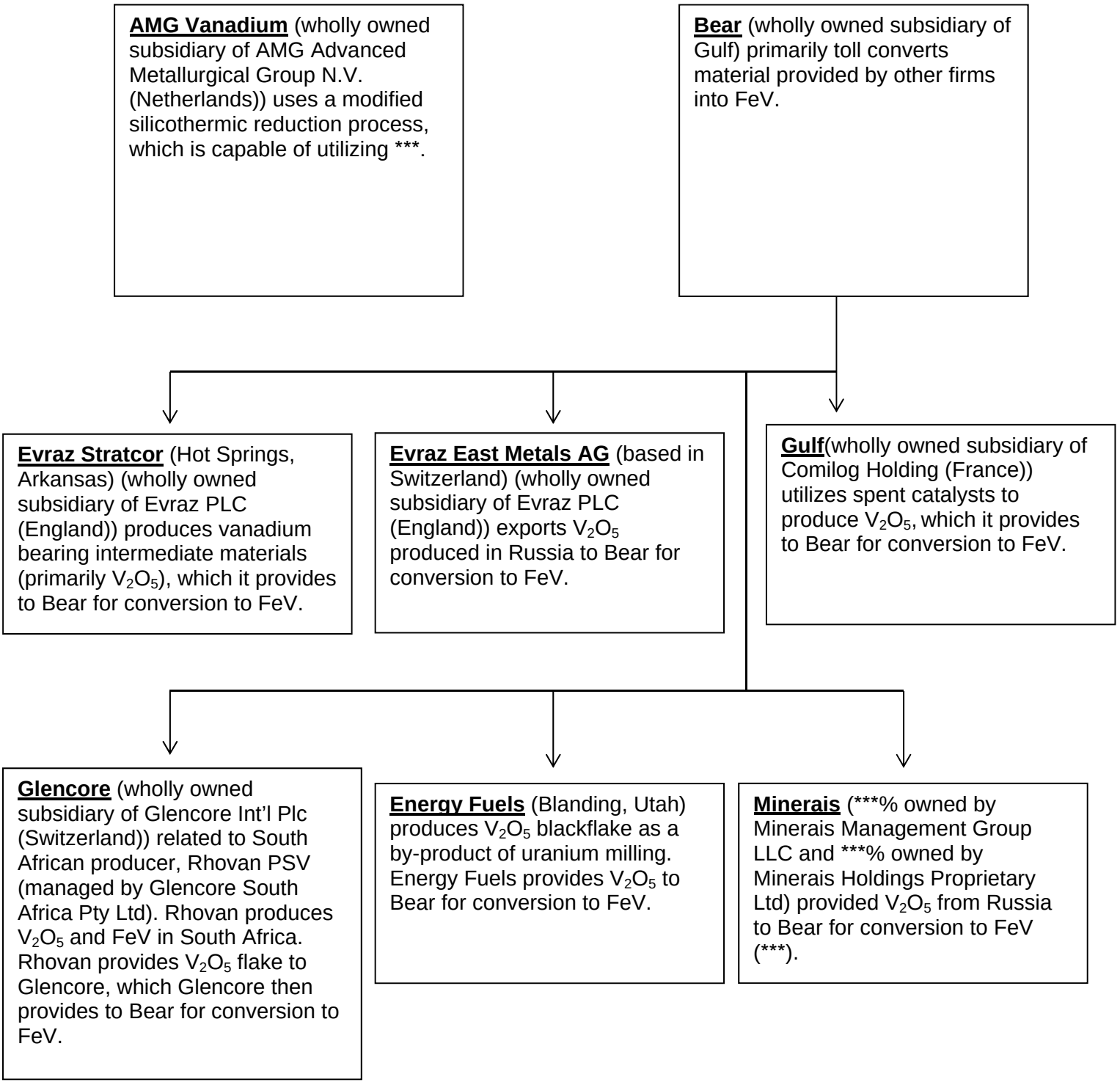
COMMENTS REGARDING THE EFFECTS OF THE ORDERS AND THE LIKELY EFFECTS OF REVOCATION

Appendix D
is confidential in its entirety.

APPENDIX E

U.S. INDUSTRY RELATIONSHIPS

Chart E-1
Ferrovanadium: U.S. industry relationships



Source: Compiled from data submitted in response to Commission questionnaires and *Ferrovanadium from China and South Africa Inv. Nos. 731-TA-986-987 (Review)*, INV-FF-137, October 29, 2008, p. I-18.