Fluid End Blocks from China, Germany, India, and Italy

Investigation Nos. 701-TA-632-635 and 731-TA-1466-1468 (Preliminary)

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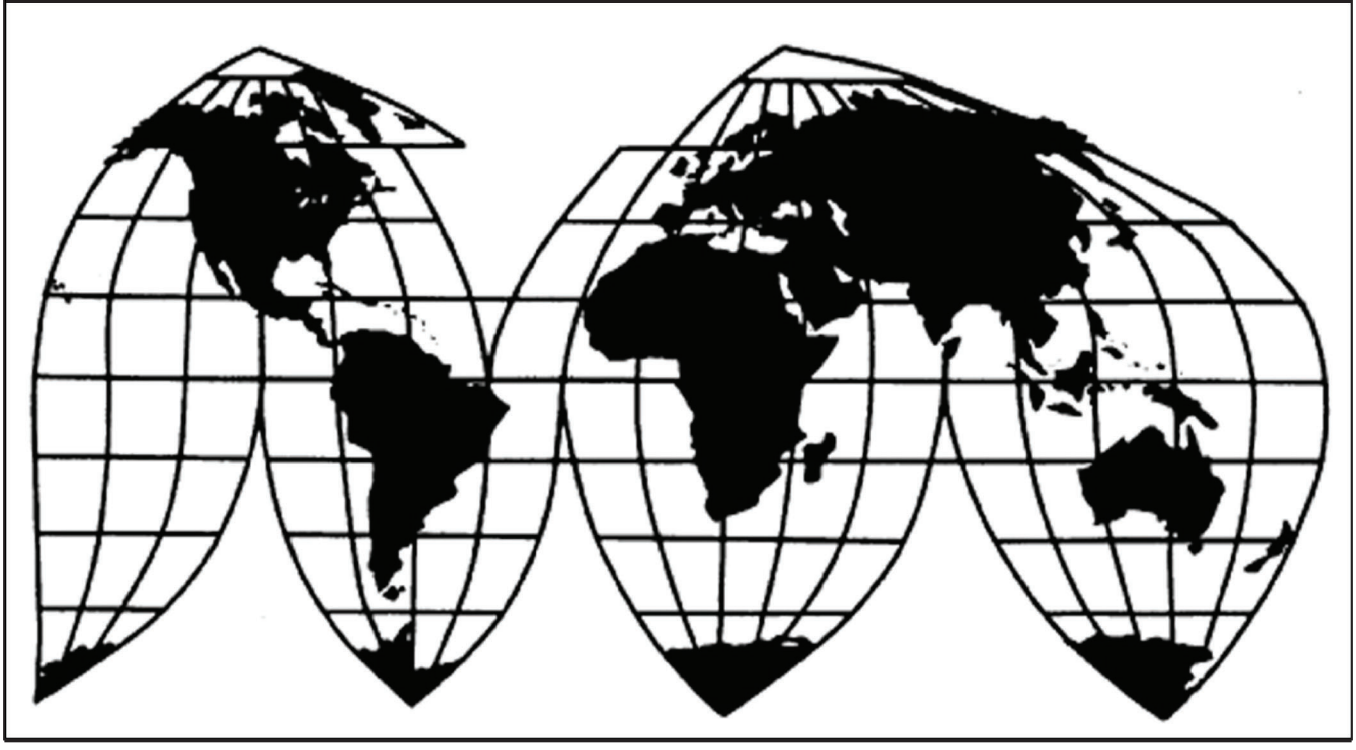
U.S. International Trade Commission



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Note.—Information that would reveal confidential operations of individual concerns may not be published. Such information is identified by brackets in confidential reports and is deleted and replaced with asterisks (***) in public reports.

UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation Nos. 701-TA-632-635 and 731-TA-1466-1468 (Preliminary)

Fluid End Blocks from China, Germany, India, and Italy

DETERMINATIONS

On the basis of the record[1] developed in the subject investigations, the United States International Trade Commission ("Commission") determines, pursuant to the Tariff Act of 1930 ("the Act"), that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of fluid end blocks from Germany, India, and Italy, provided for in subheadings 7218.91.00, 7218.99.00, 7224.90.00, 7326.19.00, 7326.90.86, and 8413.91.90 of the Harmonized Tariff Schedule of the United States, that are alleged to be sold in the United States at less than fair value ("LTFV") and to be subsidized by the Governments of China, Germany, India, and Italy.[2]

COMMENCEMENT OF FINAL PHASE INVESTIGATIONS

Pursuant to section 207.18 of the Commission's rules, the Commission also gives notice of the commencement of the final phase of its investigations. The Commission will issue a final phase notice of scheduling, which will be published in the *Federal Register* as provided in section 207.21 of the Commission's rules, upon notice from the U.S. Department of Commerce ("Commerce") of affirmative preliminary determinations in the investigations under sections 703(b) or 733(b) of the Act, or, if the preliminary determinations are negative, upon notice of affirmative final determinations in those investigations under sections 705(a) or 735(a) of the Act. Parties that filed entries of appearance in the preliminary phase of the investigations need not enter a separate appearance for the final phase of the investigations. Industrial users, and, if the merchandise under investigation is sold at the retail level, representative consumer organizations have the right to appear as parties in Commission antidumping and countervailing duty investigations. The Secretary will prepare a public service list containing the names and addresses of all persons, or their representatives, who are parties to the investigations.

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

[2] 85 FR 2385 and 85 FR 2394 (January 15, 2020).

BACKGROUND

On December 19, 2019, Ellwood City Forge Company, Ellwood Quality Steels Company, and Ellwood National Steel Company, Ellwood City, Pennsylvania; A. Finkl & Sons, Chicago, Illinois; and FEB Fair Trade Coalition, Cleveland, Ohio, filed petitions with the Commission and Commerce, alleging that an industry in the United States is materially injured or threatened with material injury by reason of subsidized imports of fluid end blocks from China, Germany, India, and Italy and LTFV imports of fluid end blocks from Germany, India, and Italy. Accordingly, effective December 19, 2019, the Commission instituted countervailing duty investigation Nos. 701-TA-632-635 and antidumping duty investigation Nos. 731-TA-1466-1468 (Preliminary).

Notice of the institution of the Commission's investigations and of a public conference to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the *Federal Register* of December 27, 2019 (84 FR 71462). The conference was held in Washington, DC, on January 9, 2020, and all persons who requested the opportunity were permitted to appear in person or by counsel.

Views of the Commission

Based on the record in the preliminary phase of these investigations, we determine that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of fluid end blocks ("FEBs") that are allegedly subsidized by the governments of China, Germany, India, and Italy and imports of the subject merchandise from Germany, India, and Italy that are allegedly sold at less than fair value.

I. The Legal Standard for Preliminary Determinations

The legal standard for preliminary antidumping and countervailing duty determinations requires the Commission to determine, based upon the information available at the time of the preliminary determinations, whether there is a reasonable indication that a domestic industry is materially injured or threatened with material injury, or that the establishment of an industry is materially retarded, by reason of the allegedly unfairly traded imports.[1] In applying this standard, the Commission weighs the evidence before it and determines whether "(1) the record as a whole contains clear and convincing evidence that there is no material injury or threat of such injury; and (2) no likelihood exists that contrary evidence will arise in a final investigation."[2]

II. Background

The petitions in these investigations were filed on December 19, 2019, by Ellwood City Forge Company, Ellwood Quality Steels Company, and Ellwood National Steel Company (collectively, "Ellwood Group") and A. Finkl & Sons ("Finkl Steel"), U.S. producers of FEBs, and the FEB Fair Trade Coalition, an *ad hoc* group whose members include Ellwood Group, Finkl Steel, and the Forging Industry Association (collectively, "petitioners").[3] Representatives of Ellwood Group and Finkl Steel appeared at the staff conference with counsel and submitted a postconference brief.[4]

Several respondent entities participated in these investigations. Schmiedewerke Gröditz GmbH ("SWG") and BGH Edelstahl Siegen GmbH ("BGH"), producers of subject merchandise in Germany, participated in the staff conference and submitted postconference

[1] 19 U.S.C. §§ 1671b(a), 1673b(a) (2000); *see also American Lamb Co. v. United States*, 785 F.2d 994, 1001–04 (Fed. Cir. 1986); *Aristech Chem. Corp. v. United States, 2*0 CIT 353, 354–55 (1996). No party argues that the establishment of an industry in the United States is materially retarded by the allegedly unfairly traded imports.

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

[3] Confidential Report, Memorandum INV-SS-006 (Jan. 27, 2020) as revised by Memorandum INV-SS-008 (Jan. 30, 2020) ("CR") at I-1; Public Report, *Fluid End Blocks from China, Germany, India, and Italy*, Inv. Nos. 701-TA-632–635 and 731-TA-1466–1468 (Preliminary), USITC Pub. 5017 (Feb. 2020) ("PR") at I-1. Ellwood Group and Finkl Steel are also members of the Forging Industry Association.

[4] FEB Fair Trade Coalition, Ellwood Group, and Finkl Steel Postconference Brief (Jan. 14, 2020) ("Petitioners Postconf. Br.").

briefs.[5] Bharat Forge Ltd. ("Bharat"), a producer of subject merchandise in India, participated in the staff conference and submitted a postconference brief.[6] Lucchini Mamé Forge S.p.A. and parent company Lucchini RS S.p.A. ("Lucchini"), a producer of subject merchandise in Italy, submitted a postconference brief.[7] Galtway Industries ("Galtway"), a U.S. supply chain consultancy, participated in the staff conference and submitted a postconference statement.[8] ST9 Gas + Oil, a U.S. purchaser, participated in the staff conference. Halliburton Energy Services Inc. ("Halliburton"), a U.S. purchaser, submitted a postconference statement.[9] No producers or exporters of subject merchandise from China participated in these investigations.

U.S. industry data in the body of the Commission Report are based on the questionnaire responses of *** producers, accounting for *** percent of U.S. production of FEBs in 2018.[10] U.S. import data are based on questionnaire responses from 16 U.S. importers, accounting for *** percent of subject imports from all sources and an estimated *** percent of subject imports from China, *** percent of subject imports from Germany, *** subject imports from India, and *** percent of subject imports from Italy.[11] The Commission received responses to its questionnaires from *** producers of subject merchandise: *** producers/exporters in China, *** producers/exporters in Germany, one producer/exporter in India, and *** producers/exporters in Italy.[12]

III. Domestic Like Product

In determining whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of imports of the subject merchandise, the Commission first defines the "domestic like product" and the

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[5] SWG Post-Conference Brief (Jan. 14, 2020) (as revised Jan. 15, 2020) ("SWG Postconf. Br."); BGH Post-Conference Brief (Jan. 14, 2020) ("BGH Postconf. Br.").

[6] Bharat Post-Conference Brief (Jan. 14, 2020) ("Bharat Postconf. Br.").

[7] Lucchini Post-Conference Brief (Jan. 14, 2020) ("Lucchini Postconf. Br.").

[8] Galtway Post-Conference Submission (Jan. 14, 2020).

[9] Halliburton Statement of Information (Jan. 14, 2020).

[10] CR/PR at I-4, III-1. *** provided production and capacity data for only a portion of the January 2016-September 2019 period of investigation ("POI"). The *** usable questionnaire responses and the *** with limited data represent the vast majority of U.S. production of FEBs. *Id.* at III-1 n.2. Two firms, which only perform finishing operations on FEBs on a tolling basis, provided limited trade and financial data, which are included in appendix E to the report. *Id.* at III-1 n.3. Three producers accounting for approximately *** percent of production in 2018 provided complete financial data. Derived from *id.* at Table III-4; ***, EDIS Doc. ***; ***, EDIS Doc. ***; ***, EDIS Doc. ***.

[11] CR/PR at IV-1. Official import statistics include substantial amounts of out-of-scope product. *Id.* at IV-1 n.4.

[12] The reporting producers/exporters from Germany account for approximately *** percent of production of subject merchandise in Germany in 2018. CR/PR at VII-3 to VII-4. Although ***, it reported that it is the largest producer and exporter of FEBs from India and estimated that its exports to the United States accounted for *** percent of FEB exports from India in 2018. *Id.* at VII-8. The reporting producers/exporters from Italy accounted for account for *** production of subject merchandise in Italy in 2018. *Id.* at VII-12.

"industry."[13] Section 771(4)(A) of the Tariff Act of 1930, as amended ("the Tariff Act"), defines the relevant domestic industry as the "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 the product."[14] In turn, 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."[15]

The decision regarding the appropriate domestic like product(s) in an investigation is a factual determination, and the Commission has applied the statutory standard of "like" or "most similar in characteristics and uses" on a case-by-case basis.[16] No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a particular investigation.[17] The Commission looks for clear dividing lines among possible like products and disregards minor variations.[18] Although the Commission must accept Commerce's determination as to the scope of the imported merchandise that is subsidized

[13] 19 U.S.C. § 1677(4)(A).

[14] 19 U.S.C. § 1677(4)(A).

[15] 19 U.S.C. § 1677(10).

[16] *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); *Torrington Co. v. United States*, 747 F. Supp. 744, 749 n.3 (Ct. Int'l Trade 1990), aff'd, 938 F.2d 1278 (Fed. Cir. 1991) ("every like product determination 'must be made on the particular record at issue' and the 'unique facts of each case'"). The Commission generally considers a number of factors including the following: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) customer and producer perceptions of the products; (5) common manufacturing facilities, production processes, and production employees; and, where appropriate, (6) price. *See Nippon*, 19 CIT at 455 n.4; *Timken Co. v. United States*, 913 F. Supp. 580, 584 (Ct. Int'l Trade 1996).

In a semifinished products analysis, the Commission examines the following: (1) the significance and extent of the processes used to transform the upstream into the downstream articles; (2) whether the upstream article is dedicated to the production of the downstream article or has independent uses; (3) differences in the physical characteristics and functions of the upstream and downstream articles; (4) whether there are perceived to be separate markets for the upstream and downstream articles; and (5) differences in the costs or value of the vertically differentiated articles. *See, e.g.*, *Steel Trailer Wheels from China*, Inv. Nos. 701-TA-609 and 731-TA-1421 (Preliminary), USITC Pub. 4830 (Oct. 2018) at 8–10; *Glycine from India, Japan, and Korea*, Inv. Nos. 731-TA-1111–1113 (Preliminary), USITC Pub. 3921 (May 2007) at 7; *Artists' Canvas from China*, Inv. No. 731-TA-1091 (Final), USITC Pub. 3853 (May 2006) at 6; *Live Swine from Canada*, Inv. No. 731-TA-1076 (Final), USITC Pub. 3766 (Apr. 2005) at 8 n.40; *Certain Frozen Fish Fillets from Vietnam*, Inv. No. 731-TA-1012 (Preliminary), USITC Pub. 3533 (Aug. 2002) at 7.

[17] *See*, *e.g.*, S. Rep. No. 96-249 at 90–91 (1979).

[18] *See*, *e.g.*, *Nippon*, 19 CIT at 455; *Torrington*, 747 F. Supp. at 748–49*; see also* S. Rep. No. 96-249 at 90–91 (Congress has indicated that the like product standard should not be interpreted in "such a narrow fashion as to permit minor differences in physical characteristics or uses to lead to the conclusion that the product and article are not 'like' each other, nor should the definition of 'like product' be interpreted in such a fashion as to prevent consideration of an industry adversely affected by the imports under consideration.").

and/or sold at less than fair value,[19] the Commission determines what domestic product is like the imported articles Commerce has identified.[20]

A. Scope Definition

In its notices of initiation, Commerce defined the imported merchandise within the scope of these investigations as follows:

> {F}orged steel fluid end blocks (fluid end blocks), whether in finished or unfinished form, and which are typically used in the manufacture or service of hydraulic pumps.
>
> The term "forged" is an industry term used to describe the grain texture of steel resulting from the application of localized compressive force. Illustrative forging standards include, but are not limited to, American Society for Testing and Materials (ASTM) specifications A668 and A788.
>
> For purposes of these investigations, the term "steel" denotes metal containing the following chemical elements, by weight: (i) iron greater than or equal to 60 percent; (ii) nickel less than or equal to 8.5 percent; (iii) copper less than or equal to 6 percent; (iv) chromium greater than or equal to 0.4 percent, but less than or equal to 20 percent; and (v) molybdenum greater than or equal to 0.15 percent, but less than or equal to 3 percent. Illustrative steel standards include, but are not limited to, American Iron and Steel Institute (AISI) or Society of Automotive Engineers (SAE) grades 4130, 4135, 4140, 4320, 4330, 4340, 8630, 15-5, 17-4, F6NM, F22, F60, and XM25, as well as modified varieties of these grades.
>
> The products covered by these investigations are: (1) cut-to-length fluid end blocks with an actual height (measured from its highest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), an actual width (measured from its widest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), and an actual length (measured from its longest point) of 11 inches (279.4 mm) to 75 inches (1,905.0 mm); and (2) strings of fluid end blocks with an actual height (measured from its highest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), an actual width (measured from its widest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), and an actual length (measured from its longest point) up to 360 inches (9,144.0 mm).

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[19] *See*, *e.g.*, *USEC, Inc. v. United States*, 34 Fed. App'x 725, 730 (Fed. Cir. 2002) ("The ITC may not modify the class or kind of imported merchandise examined by Commerce."); *Algoma Steel Corp. v. United States,* 688 F. Supp. 639, 644 (Ct. Int'l Trade 1988), *aff'd*, 865 F.3d 240 (Fed. Cir.), *cert. denied*, 492 U.S. 919 (1989).

[20] *Hosiden Corp. v. Advanced Display Mfrs.,* 85 F.3d 1561, 1568 (Fed. Cir. 1996) (the Commission may find a single like product corresponding to several different classes or kinds defined by Commerce); *Cleo*, 501 F.3d at 1298 n.1 ("Commerce's {scope} finding does not control the Commission's {like product} determination."); *Torrington*, 747 F. Supp. at 748–52 (affirming the Commission's determination defining six like products in investigations where Commerce found five classes or kinds).

> The products included in the scope of these investigations have a tensile strength of at least 70 KSI (measured in accordance with ASTM A370) and a hardness of at least 140 HBW (measured in accordance with ASTM E10).
>
> A fluid end block may be imported in finished condition (i.e., ready for incorporation into a pump fluid end assembly without further finishing operations) or unfinished condition (i.e., forged but still requiring one or more finishing operations before it is ready for incorporation into a pump fluid end assembly). Such finishing operations may include: (1) heat treating; (2) milling one or more flat surfaces; (3) contour machining to custom shapes or dimensions; (4) drilling or boring holes; (5) threading holes; and/or (6) painting, varnishing, or coating.
>
> The products included in the scope of these investigations may enter under Harmonized Tariff Schedule of the United States (HTSUS) subheadings 7218.91.0030, 7218.99.0030, 7224.90.0015, 7224.90.0045, 7326.19.0010, 7326.90.8688, or 8413.91.9055. While these HTSUS subheadings are provided for convenience and customs purposes, the written description of the scope of the investigations is dispositive.[21]

FEBs are steel forgings that are a component of fluid end modules ("FEMs"), which are incorporated into hydraulic pumps used for drilling or hydraulic fracturing ("fracking") in the oil and gas industry.[22] Some FEBs are incorporated into mud pumps, which use lower pressures and primarily pump water or a mud mixture.[23]

Most FEBs are made from stainless steel ("SS") or non-stainless alloy steel ("NSS").[24] Many FEB producers experiment with different steel chemistries in an effort to improve FEB hardness, toughness, strength, and machinability.[25] In the fracking pump context, the FEBs

[21] *Forged Steel Fluid End Blocks from the Federal Republic of Germany, India, Italy and the People's Republic of China: Initiation of Countervailing Duty Investigations*, 85 Fed. Reg. 2385, 2389–90 (Jan. 15, 2020); *Forged Steel Fluid End Blocks from the Federal Republic of Germany, India, and Italy: Initiation of Less-Than-Fair-Value Investigations*, 85 Fed. Reg. 2394, 2399 (Jan. 15, 2020). Petitioners amended the petitions as originally filed to remove "semifinished" as a descriptor of subject FEBs after the Commission issued its questionnaires in the preliminary phase of these investigations. Amendment to Antidumping and Countervailing Duty Petitions on Behalf of the FEB Fair Trade Coalition, Ellwood Group, and Finkl Steel, Dec. 30, 2019 ("Pets. Amdt."), at 3. They state that the intent of the scope language amendment, which Commerce incorporated into the scope definition in its initiation notices, is to clarify that all FEBs, whether finished (ready for incorporation into a fluid end module without further finishing operations) or unfinished (not yet ready for incorporation into such a module without further finishing operations), are covered by the scope. Petitioners Postconf. Br. at I-13 n.36.

[22] CR/PR at I-10, I-12.

[23] CR/PR at I-12 to I-13.

[24] CR/PR at I-11.

[25] CR/PR at I-11.

pressurize fluid pumped into an oil and gas well.[26] The high pressures involved at the fluid end of FEMs, where the FEBs are situated, and project site characteristics dictate the chemical and manufacturing specifications for FEBs.[27] FEBs are produced to meet the specifications, applications, and designs of individual FEM or hydraulic pump manufacturers.[28] FEM and pump manufacturers have multiple pump models and therefore multiple FEB designs, which can be proprietary.[29]

Unfinished FEBs can be sold to FEM manufacturers that undertake further machining and finishing processes before selling the FEMs to hydraulic pump manufacturers.[30] Alternatively, unfinished FEBs can be sold to vertically integrated hydraulic pump manufacturers capable of further processing and finishing prior to incorporation into FEMs.[31] Forgers themselves can conduct certain or all finishing operations necessary to transform unfinished FEBs into finished FEBs, *i.e.*, FEBs ready to be directly incorporated into FEMs.[32]

The life span of an FEB depends on several factors, including use,[33] maintenance, and the geographic characteristics of the project site.[34] FEBs in fracking pumps have particularly limited life spans because of fatigue cracking and abrasions that may cause a pump to fail in as little as 100 to 500 hours of service, depending on various factors.[35] FEBs often require frequent replacement by pump producers and operators, which purchase FEBs to service a particular pump model.[36]

B. Arguments of the Parties

Petitioners argue that there is one domestic like product coextensive with the scope of these investigations.[37] They assert that all FEBs are forged steel blocks with specific ranges of input elements measured in accordance with relevant ASTM International standards, that all FEBs are used as a component in FEMs, and that FEBs produced to a customer's specifications are interchangeable.[38] They argue that FEBs constitute a single continuum of products that use common manufacturing facilities, production processes, and employees.[39] They assert that,

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[26] CR/PR at I-10.

[27] CR/PR at I-11, I-13.

[28] CR/PR at I-11.

[29] CR/PR at I-11, I-13.

[30] CR/PR at I-12.

[31] CR/PR at I-12.

[32] CR/PR at I-14, IV-8 n.9.

[33] Pumps may generate pressures as high as 20,000 PSI, with flow rates above 100 barrels per minute. CR/PR at I-11. Generally, mud pumps employ lower pressures than pumps used for fracking. *Id.* at I-13.

[34] CR/PR at I-13 n.28.

[35] CR/PR at I-13 & n.30; Conference Transcript ("Tr.") at 104–105, 107–108 (Buckley).

[36] CR/PR at I-13.

[37] Petitioners Postconf. Br. at I-6.

[38] Petitioners Postconf. Br. at I-8 to I-9.

[39] Petitioners Postconf. Br. at I-11 to I-12.

although purchasers may have different preferences for SS FEBs or NSS FEBs, purchasers and producers perceive the full continuum of FEBs to be uniquely suited for the production of FEMs used in hydraulic pumps for the oil and gas sector.[40] Petitioners also contend that FEBs are sold through similar channels of distribution to FEM manufacturers, and that FEBs are sold in a range of prices, which vary depending on the specifications.[41]

Bharat argued at the staff conference that, for purposes of the preliminary phase of these investigations, there is one domestic like product coextensive with the scope of these investigations.[42] In its postconference brief, in the context of cumulation, Bharat argues that finished FEBs and unfinished FEBs are "distinct" FEB products and are not interchangeable.[43] Bharat does not specifically assert that separate domestic like product treatment is warranted for unfinished and finished FEBs under the semifinished products like product analysis.

SWG argues that SS FEBs and NSS FEBs should be separate domestic like products.[44] It contends that the chemical composition of SS FEBs results in better field performance in "extreme environments and high pressures" than NSS FEBs.[45] SWG asserts that FEB customers that require SS FEBs consider them to be "markedly different" than NSS FEBs and "will not accept" NSS FEBs because of performance requirements allegedly not met by NSS FEBs.[46] SWG argues that SS FEBs have different raw material costs and manufacturing processes and are therefore more expensive than NSS FEBs.[47]

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[40] Petitioners Postconf. Br. at I-10 to I-11.

[41] Petitioners Postconf. Br. at I-9 to I-12.

[42] Tr. at 94 (Powell).

[43] Bharat Postconf. Br. at 8.

[44] SWG Postconf. Br. at 3.

[45] SWG Postconf. Br. at 3–4.

[46] SWG Postconf. Br. at 4–5.

[47] SWG Postconf. Br. at 5–6.

Lucchini argues that FEBs used in fracking pumps and those used in mud pumps should be separate domestic like products. Specifically, it argues that mud pump FEBs are smaller, designed to lesser specifications, made with lower-quality materials, and produced by less-skilled labor using less-sophisticated machinery and processes than fracking pump FEBs. Lucchini Postconf. Br. at 12–14. Lucchini, however, provides no criteria other than end use by which a mud pump FEB could be distinguished from a fracking pump FEB, and there is no clear information on the record to suggest any criteria. With respect to end use, Lucchini has not provided a clear definition of a mud pump or how FEBs for use in mud pumps differ from FEBs used in other applications. To the contrary, petitioners represent that FEBs used in fracking pumps and those used in mud pumps overlap in materials, weight, and configuration. Petitioners Postconf. Br. at II-9; Tr. at 63 (Levy). Accordingly, based on the record in the preliminary phase of these investigations, there is no basis at this stage of the proceeding to identify a dividing line between different types of domestically produced FEBs based on end use. We consequently do not discuss this argument further.

BGH summarily argues for six domestic like products—unfinished, semifinished, and finished FEBs, divided between stainless steel and non-stainless alloy steel—but does not address any of the necessary factors for examination under either the traditional or the semifinished product analysis. BGH Postconf. Br. at 12. Nonetheless, BGH's contentions are addressed by the discussion below.

C. Analysis

There are two issues with respect to the definition of domestic like product that arise in these investigations: (1) whether, under a semifinished product analysis, unfinished FEBs should be included in the same domestic like product as finished FEBs and (2) whether, under the Commission's traditional six-factor like product analysis, SS FEBs and NSS FEBs should be separate domestic like products. We address these issues below.

1. Whether unfinished FEBs should be included in the same domestic like product as finished FEBs.

Petitioners were the sole party to make arguments in the context of a semifinished product analysis and argue that unfinished FEBs should be included in the same domestic like product as finished FEBs. They argue that the domestic industry produces FEBs at various stages of finishing, including completely finished, regardless of whether the finishing takes place within their own production facilities or by use of outside machine shops ("finishers").[48] They contend that "nearly all" FEBs sold in the United States are unfinished because pump manufacturers commonly perform at least some finishing operations after purchasing FEBs from a producer.[49] They assert that the act of forging steel of a particular chemistry imparts the "essential character" of the FEB and that an FEB's cost and value are "principally defined" by the forger's activities.[50] Petitioners argue that all parties agree that an unfinished FEB is dedicated for eventual use in the FEM of a hydraulic pump.[51] They contend that finished and unfinished FEBs are sold to and used by FEM manufacturers.[52]

Because unfinished FEBs are an intermediate product whose ultimate use is to undergo finishing operations and become finished FEBs, we use the semifinished like product analysis to examine whether, as argued by Bharat, unfinished and finished FEBs should be in the same domestic like product. Based on the record, we find that unfinished and finished FEBs should be included in the same domestic like product.[53]

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[48] Petitioners Postconf. Br. at I-14.

[49] Petitioners Postconf. Br. at I-14.

[50] Petitioners Postconf. Br. at I-15 to I-16.

[51] Petitioners Postconf. Br. at I-15.

[52] Petitioners Postconf. Br. at I-15.

[53] In our examination, we distinguish generally between unfinished and finished FEBs. As explained further below, because finishing operations can consist of one or more of a variety of processes (heat treating, milling one or more flat surfaces, contour machining to custom shapes or dimensions, drilling or boring holes, threading holes, and/or painting, varnishing, or coating) and may involve any number of steps, there is no specific point at which an FEB definitively transitions from an unfinished to a "semifinished" state. *See* CR/PR at I-14 n.32. *See also id.* at IV-8 n.9. Moreover, as previously discussed, petitioners amended the petitions after the Commission issued questionnaires in the preliminary phase of these investigations to remove references to semifinished, as opposed to unfinished, FEBs. *See* Pets. Amdt. at 3.

Dedication for Use. The parties agree that unfinished FEBs are an intermediate product dedicated exclusively to the production of finished FEBs, with no other uses.[54]

Separate Markets. There is no separate market for unfinished FEBs even though they may be transferred in an unfinished form to an intermediate firm that performs the final finishing operations or sold directly to the end user that performs the final finishing operations itself.[55] Some forgers perform all required finishing operations themselves.[56]

Differences in Physical Characteristics and Functions of the Upstream and Downstream Articles. Differences in physical characteristics and functions between unfinished and finished FEBs are related to the number of finishing operations performed on a forged FEB and the extent to which any finishing operation alters the forged FEB before it is a finished FEB ready for incorporation into an FEM.[57] Referring to the six finishing operations listed in the scope, for example, one FEB may be heat treated with no holes drilled, while another may be heat treated with holes drilled but not threaded, and still another may be heat treated with holes drilled and threaded but not painted.[58] The functions of unfinished and finished FEBs are different in that unfinished FEBs cannot be used in FEMs, which require finished FEBs, although the function of an unfinished FEB is to become a finished FEB.[59]

Differences in Value. Differences in value between unfinished and finished FEBs are dependent on the number and complexity of finishing operations that are required before an FEB is finished according to its specification. For example, an unfinished FEB that requires only painting would be closer in value to a finished FEB than would an unfinished FEB that requires milling, boring, and coating before meeting the required specifications.[60] Petitioners argue that the greatest value component of a finished FEB lies in the forging and heat treatment, although they acknowledge that identical finishing operations "could be valued differently."[61] The record indicates that finished FEBs have considerably greater average unit values ("AUVs") than unfinished FEBs.[62]

Extent of Processes Used to Transform Upstream Product into Downstream Product. The extent of the processes used to transform unfinished FEBs into finished FEBs is dependent on the number and complexity of finishing operations that are required before an FEB is finished,

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[54] Tr. at 53–54 (Shirley, Saunders), 54 (Levy) (once a block is initially produced to custom chemistry, forging, and dimensional specifications, it is "dedicated for use" in an FEM, and "all that remains is the finishing so that it can be employed in that use."), 136 (Lowrey, Brower).

[55] CR/PR at I-12.

[56] CR/PR at I-14.

[57] CR/PR at I-13 to I-16, I-13 n.31.

[58] *See* 85 Fed. Reg. at 2389–90; *id.* at 2399.

[59] Tr. at 54 (Shirley, Saunders, Levy).

[60] CR/PR at I-13 to I-15, II-8, VI-9, Table E-1.

[61] Tr. at 33–34 (Boyd).

[62] CR/PR at Table F-1. The AUV data reflect a range of levels of finishing operations and include SS FEBs and NSS FEBs. *Id.*

according to the required specifications. An unfinished FEB may be required to undergo either all six or fewer finishing operations depending on end user requirements.[63]

Conclusion. The information available indicates that all unfinished FEBs are dedicated to the production of finished FEBs, and there is no separate market for unfinished FEBs. Although unfinished FEBs undergo multiple finishing operations to become finished FEBs, which results in some differences in characteristics and values between the unfinished and finished products, for the purposes of these preliminary determinations, the record on balance leads us to conclude that there is not a clear dividing line between unfinished and finished FEBs. Consequently, we include unfinished and finished FEBs within the same domestic like product.

2. Whether SS FEBs and NSS FEBs should be separate domestic like products.

Based on the record, we find that SS FEBs and NSS FEBs are a single domestic like product.

Physical Characteristics and Uses. Although SS FEBs are made from different types of steel (stainless steel versus non-stainless alloy steel), the record contains no evidence regarding any design differences between SS FEBs and NSS FEBs because of their composition. SS FEBs have a longer life span than NSS FEBs, but petitioners argue that good maintenance practices can extend the life span of NSS FEBs, thereby making them more cost effective.[64] SS FEBs and NSS FEBs have the same end use as a component of an FEM used in a pump.[65] Fracking pumps use both SS FEBs and NSS FEBs; mud pumps use NSS FEBs to a much greater extent than SS FEBs.[66]

Manufacturing Facilities, Production Processes, and Employees. Petitioners Ellwood Group and Finkl Steel ***.[67] Both SS and NSS FEBs undergo forging and finishing operations.[68] During the production process, SS FEBs reportedly require a greater amount of time to forge and machine than NSS FEBs, but a lesser amount of time during some intermediate processing steps.[69]

[63] CR/PR at I-14, I-16.

[64] Tr. at 57–58 (Saunders), 107–108 (Poradek). *See also id.* at 62 (Levy). The chrome content in SS FEBs assists with stress and corrosion resistance. *Id.* at 106 (Buckley).

[65] CR/PR at I-12.

[66] Tr. at 63 (Levy).

[67] CR/PR at I-14 n.34, Table III-1; Tr. at 37 (Boyd); Petitioners Postconf. Br. at I-11; Ellwood Group Producer Questionnaire Response, EDIS Doc. 698418 (Jan. 6, 2020) at questions I-2a, II-3c, II-3d, II-4, II-10; Finkl Steel Producer Questionnaire Response, EDIS Doc. 698417 (Jan. 6, 2020) at questions I-2a, II-3c, II-3d, II-4, II-10.

[68] CR/PR at I-13 to I-16.

[69] Tr. at 44–45 (Boyd).

Channels of Distribution. The record indicates that, regardless of composition, finish, or configuration, nearly all domestically produced FEBs are sold to end users.[70]

Interchangeability. SS FEBs and NSS FEBs can be used in FEM applications interchangeably.[71] Wear and cost of replacement are considerations when a customer chooses an SS FEB or an NSS FEB.[72] Use of SS FEBs instead of NSS FEBs in FEM applications is increasing, with demand for SS FEBs increasing relative to NSS FEBs.[73] It is unclear whether, or to what extent, SS FEBs are replacing NSS FEBs in all FEM applications.[74]

Producer and Customer Perceptions. The websites of Ellwood Group and Finkl Steel characterize FEBs generally as a single product category.[75] Ellwood Group stated that "a very large pump maker" has used both SS FEBs and NSS FEBs.[76] Several parties stated that U.S. demand for SS FEBs has increased even though they are more expensive because they can be used in the field for a greater length of time before needing to be replaced.[77]

Price. SS FEBs generally are priced higher than NSS FEBs.[78] U.S. shipment data for U.S.

[70] CR/PR at V-I, Table II-2.

[71] Ellwood Group stated that "a very large pump maker" has used both SS FEBs and NSS FEBs. Tr. at 37 (Boyd). *See also id.* at 106–107 (Buckley).

[72] Tr. at 106–107 (Buckley).

[73] CR/PR at Table F-2 (showing share of U.S. shipments of SS FEBs increasing relative to U.S. shipments of NSS FEBs for both the domestic like product and subject imports).

[74] *See, e.g.*, Tr. at 37 (Boyd) (domestic producer stating that "{t}he industry began shifting" to SS FEBs after downturn in 2015 and that "it's not settled science that {SS FEBs} are always the right way to go"); 57 (Saunders) (domestic producer asserting that "{s}ome people have not switched" to SS FEBs); 106–107 (Buckley) (explaining "why people went to all stainless steel or predominantly stainless steel"); 108 (Poradek) (purchaser asserting "the general trend for the industry is to switch towards {SS FEBs}"); 111 (Lowrey) (industry consultant asserting the industry switched to SS FEBs after oil and gas industry downturn in 2015).

[75] Finkl Steel, "Oil & Gas," EDIS Doc. 700407 (Jan. 27, 2020); Ellwood Group, "Oil and Gas," EDIS Doc. 700407 (Jan. 27, 2020); Tr. at 36–38 (Boyd, Shirley).

[76] Tr. at 37 (Boyd).

[77] CR/PR at IV-10 n.13, V-1; Tr. at 38 (Shirley), 108 (Poradek) (SS FEBs generally last three to five times longer than NSS FEBs). One domestic producer attributed slowed demand for FEBs in part to the relative increase in FEB longevity overall. Tr. at 43 (Boyd) ("{B}locks are lasting longer in the field than they had in the past.").

[78] Tr. at 38 (Shirley). The price of stainless steel increased from $*** per short ton in January 2016 to $*** per short ton in September 2019. Demand indicators figures and data, EDIS Doc. 700958 (Jan. 18, 2020). The price of non-stainless alloy steel increased from $*** per short ton in January 2016 to $*** per short ton in September 2019. *Id. See also* Tr. at 45 (Shirley) ("{t}he material costs {are} the main cost difference between alloy and stainless").

producers show higher AUVs for SS FEBs than for NSS FEBs.[79]

Conclusion. Although the record in the preliminary phase of these investigations concerning the domestic like product factors is limited in several respects, given the overlap in physical characteristics and uses, manufacturing facilities and production processes, channels of distribution, and interchangeability, we find that there is not a clear dividing line between SS FEBs and NSS FEBs that warrants defining them as separate domestic like products. Consequently, we define a single domestic like product coextensive with the scope.

IV. Domestic Industry and Sufficient Production-Related Activities

The domestic industry is defined 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 the product."[80] 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.

In deciding whether a firm qualifies as a domestic producer of the domestic like product, the Commission generally analyzes the overall nature of a firm's U.S. production-related activities, although production-related activity at minimum levels could be insufficient to constitute domestic production.[81] These investigations raise the issue of whether the further processing of unfinished FEBs (finishing activities are heat treating, milling, contour machining, hole drilling or boring, hole threading, and/or painting, varnishing, or coating) is sufficient to constitute domestic production.[82] Petitioners Ellwood Group and Finkl Steel engage in these

[79] CR/PR at Table F-2. The available pricing data indicate that Pricing Product 1 (an NSS FEB) had the highest dollar per unit prices and that Pricing Product 4 (also an NSS FEB) had the lowest dollar per unit prices of the four FEB pricing products; the various pricing products, however, differ in specifications (including level of finishing) and use. *Id.* at Tables V-4 to V-7. For example, Pricing Product 4 is a mud pump FEB. *Id.* at V-6. *See also* Tr. at 45–46 (Levy) ("Obviously for the same level of finish, the major difference in raw material cost is going to be the steel chemistry. But obviously, as between two products, if there's a significant difference in the level of finish, that, too, could be a driver in terms of the difference in cost and the difference in price of the finished product.").

[80] 19 U.S.C. § 1677(4)(A).

[81] The Commission generally considers six factors: (1) source and extent of the firm's capital investment; (2) technical expertise involved in U.S. production activities; (3) value added to the product in the United States; (4) employment levels; (5) quantity and type of parts sourced in the United States; and (6) any other costs and activities in the United States directly leading to production of the like product. No single factor is determinative, and the Commission may consider any other factors it deems relevant in light of the specific facts of any investigation. *Crystalline Silica Photovoltaic Cells and Modules from China*, Inv. Nos. 701-TA-481 and 731-TA-1190 (Final), USITC Pub. 4360 (Nov. 2012) at 12–13.

[82] Petitioners state that these finishing operations are requested by purchasers. Tr. at 30–32 (Levy, Boyd).

activities as part of their production process, which begins with forging FEBs.[83] Two firms that submitted questionnaire responses, ***, perform FEB finishing operations only and on a tolling basis.[84]

A. Arguments of the Parties

Petitioners do not express a position on whether the Commission should include firms that perform finishing operations in the domestic industry, instead maintaining that the Commission should examine this issue in any final phase of these investigations. They indicate that they consider finishing operations to be necessary to the FEB production process.[85]

SWG argues that the definition of the domestic industry should include firms that provide finishing operations.[86] Bharat argues that finishing operations "reflect highly significant and technical engineering and processing," but does not specifically argue for inclusion of firms that provide finishing operations in the definition of the domestic industry.[87]

B. Analysis

Source and Extent of the Firms' Capital Investments. ***, the two firms that submitted questionnaire responses and that only perform finishing operations on a tolling basis, had combined capital expenditures of $*** in 2016, $*** in 2017, and $*** in 2018; they were $*** in January-September ("interim") 2018 and $*** in interim 2019.[88] These capital expenditures were comparable to the expenditures of *** in 2017 but lower than ***.[89] The

[83] Tr. at 20 (Saunders), 23 (Shirley).

[84] CR/PR at III-1 n.3, app. E.

[85] Petitioners Postconf. Br. at I-18 to I-19; Pets. Amdt. at 2–3 ("The most basic finishing operations beyond forging typically include heat treating and rough machining. Prior to sale to the end user, an FEB may also be subject to additional milling, contour machining, drilling, and/or threading, among other operations."); Tr. at 16 (Boyd), 20 (Saunders), 23 (Shirley), 30 (Levy), 35 (Saunders), 45–46 (Levy) ("{A}s between two products, if there's a significant difference in the level of finish, that, too, could be a driver in terms of the difference in cost and the difference in price of the finished product."). Petitioners argue that the principal value added to an FEB occurs during forging and heat treatment, while acknowledging that the additional value of further finishing operations may be dependent on specific customer requirements. Tr. at 33–34 (Boyd), 45–46 (Levy). Heat treatment is "necessarily" the first finishing operation performed. *Id.* at 31 (Boyd).

[86] SWG Postconf. Br. at 6–7.

[87] Bharat Postconf. Br. at 8. Related to its domestic like product argument, BGH summarily argues for six domestic industries—producers of unfinished, semifinished, and finished FEBs, divided further between stainless steel and non-stainless alloy steel—but does not provide support for its argument. BGH Postconf. Br. at 12.

[88] CR/PR at Table E-10.

[89] The capital expenditures of the *** were $*** in 2016, $*** in 2017, and $*** in 2018; they were $*** in interim 2018 and $*** in interim 2019. Derived from CR/PR at Table VI-5.

total net assets of ***, which ranged from $*** to $*** annually from 2016 to 2018, were considerably smaller than ***, each of which had annual assets ranging from $*** to $***.[90]

Technical Expertise. FEBs cannot be used as an FEM component without the application of a number of finishing operations once the metal form has been forged.[91] Some or all finishing operations may be performed by a vertically integrated FEB manufacturer, such as Ellwood Group and Finkl Steel.[92] Some or most finishing operations may otherwise be performed by third-party firms that perform finishing operations, including specialty finishing companies (such as ***) and purchasers (such as ST9 Gas + Oil).[93] One of the finishing processes, machining, can involve activities ranging from simple sawing and rough milling to complex milling, contour machining, and drilling/boring that require multiple steps and specialized machine tools.[94] Petitioners and Bharat characterized FEBs as "highly engineered" products.[95] *** similarly rated the finishing process as very complex.[96]

Value Added. There is no information on the record regarding the value added by ***. The AUVs of U.S. producers' U.S. shipments were $*** in 2016, $*** in 2017, and $*** in 2018; they were $*** in interim 2018 and $*** in interim 2019.[97] The AUVs of U.S. shipments of *** were higher—they were $*** in 2016, $*** in 2017, $*** in 2018, $*** in interim 2018, and $*** in interim 2019.[98] AUVs provide limited utility in this analysis, as they may be impacted by product mix issues. Moreover, the U.S. producers' AUVs likely also include the value added by some finishing operations, due to the nature of the industry. We will explore this factor further in any final phase of these investigations.

Employment Levels. The number of production-related workers ("PRWs") in FEB manufacturing, ***, was *** in 2016, *** in 2017, and *** in 2018; they were *** in interim 2018 and *** in interim 2019.[99] The number of PRWs in FEB finishing (***) was *** in 2016, *** in 2017, and *** in 2018; it was *** in interim 2018 and *** in interim 2019.[100]

Quantity and Type of Parts Sourced in the United States. The raw material for a finished FEB is an unfinished FEB. ***.[101]

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[90] CR/PR at Tables VI-6, E-9.

[91] CR/PR at I-12, I-13 n.31, I-14; Tr. at 53–54 (Saunders, Levy), 136 (Lowrey, Brower), 138 (Gilbert) ("Nobody gets an as-forged product.").

[92] CR/PR at I-14 and n.33; Tr. at 16 (Boyd), 92 (Powell).

[93] Tr. at 20 (Saunders), 23 (Shirley), 34–35 (Shirley, Saunders), 54–55 (Levy), 72 (Yang), 92–93 (Poradek).

[94] CR/PR at I-16.

[95] Tr. at 16 (Boyd), 79 (Powell). *See also* Tr. at 92 (Powell).

[96] CR/PR at Table E-3.

[97] CR/PR at Table III-6. It is likely that these data ***.

[98] CR/PR at Table E-4.

[99] CR/PR at Table III-8. ***. *Id.* at Table III-1 n.1.

[100] CR/PR at Table E-5.

[101] CR/PR at Table E-1.

Conclusion. The information available on the record indicates that substantial technical expertise is required to perform finishing operations for FEBs. The record also indicates that responding firms that perform finishing operations made appreciable capital investments and employed a number of personnel in these operations during the POI.[102] In light of these considerations, the limited record, and the lack of any party argument that firms that conduct finishing operations should not be included in the domestic industry, we conclude that firms that conduct finishing operations engage in sufficient production-related activities in the United States to qualify as domestic producers of FEBs for the purposes of the preliminary phase of these investigations. We consequently define the domestic industry to include all domestic producers of FEBs within the scope definition.

V. Cumulation[103]

For purposes of evaluating the volume and effects for a determination of reasonable indication of material injury by reason of subject imports, section 771(7)(G)(i) of the Tariff Act requires the Commission to cumulate subject imports from all countries as to which petitions were filed and/or investigations self-initiated by Commerce on the same day, if such imports compete with each other and with the domestic like product in the U.S. market. In assessing whether subject imports compete with each other and with the domestic like product, the Commission generally has considered four factors:

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[102] We observe that, because integrated producers perform finishing operations, their reported data for capital investments and employment would necessarily include data pertaining to such operations. Moreover, the current record contains little information about the value added by finishing operations performed by the petitioning firms or by tollers. We invite parties, in any final phase of the investigations, to make suggestions to the Commission on how to collect further data on value added and on the proper way to analyze the nature of integrated producers' finishing operations.

[103] Pursuant to Section 771(24) of the Tariff Act, imports from a subject country of merchandise corresponding to a domestic like product that account for less than 3 percent of all such merchandise imported into the United States during the most recent 12 months for which data are available preceding the filing of the petitions shall be deemed negligible. 19 U.S.C. §§ 1671b(a), 1673b(a), 1677(24)(A)(i), 1677(24)(B); *see also* 15 C.F.R. § 2013.1 (developing countries for purposes of 19 U.S.C. § 1677(36)). In the case of countervailing duty investigations involving developing countries (as designated by the United States Trade Representative ("USTR")), the statute indicates that the pertinent negligibility threshold is 4 percent rather than 3 percent. 19 U.S.C. § 1677(24)(B). The USTR has designated India to be a developing country subject to the 4 percent negligibility threshold for countervailing duty investigations. 15 C.F.R. § 2013.1.

Imports from each of the four subject countries are clearly above the pertinent statutory negligibility threshold. Specifically, questionnaire response data indicate that, from December 2018 through November 2019, which is the 12-month period preceding the filing of the petitions, subject imports from China accounted for *** percent of total imports, subject imports from Germany accounted for *** percent, subject imports from India accounted for *** percent, and subject imports from Italy accounted for *** percent. CR/PR at Table IV-3. Because imports from each subject country are clearly above negligible levels, we find that subject imports from China, Germany, India, and Italy are not negligible for purposes of the antidumping and countervailing duty investigations.

(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 geographic markets of subject 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 the subject imports are simultaneously present in the market.[104]

While no single factor is necessarily determinative, and the list of factors is not exclusive, these factors are intended to provide the Commission with a framework for determining whether the subject imports compete with each other and with the domestic like product.[105] Only a "reasonable overlap" of competition is required.[106]

Petitioners argue that subject imports should be cumulated in the preliminary phase of these investigations. They assert that imports from each subject country and the domestic like product are made of forged steel of certain specifications for use in FEMs for hydraulic pumps in the oil and gas industry.[107] They contend that all major firms in the subject countries and the United States can produce FEBs that meet customer specifications and that, once qualified, suppliers manufacture interchangeable FEBs.[108] Petitioners argue that there are no differences between subject imports and the domestic like product in terms of steel chemistry or level of finishing.[109] They assert that domestic and foreign producers sold FEBs to original equipment manufacturers of FEMs in overlapping U.S. regions and during each year of the POI.[110]

Bharat argues that subject imports from India should not be cumulated with other subject countries. It asserts that subject imports from India do not compete with other subject

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[104] *See Certain Cast-Iron Pipe Fittings from Brazil, the Republic of Korea, and Taiwan*, Inv. Nos. 731-TA-278–280 (Final), USITC Pub. 1845 (May 1986), *aff'd, Fundicao Tupy, S.A. v. United States*, 678 F. Supp. 898 (Ct. Int'l Trade), *aff'd*, 859 F.2d 915 (Fed. Cir. 1988).

[105] *See*, *e.g.*, *Wieland Werke, AG v. United States*, 718 F. Supp. 50 (Ct. Int'l Trade 1989).

[106] The Statement of Administrative Action (SAA) to the Uruguay Round Agreements Act (URAA), expressly states that "the new section will not affect current Commission practice under which the statutory requirement is satisfied if there is a reasonable overlap of competition." H.R. Rep. No. 103-316, Vol. I at 848 (1994) (*citing Fundicao Tupy*, 678 F. Supp. at 902); *see Goss Graphic Sys., Inc. v. United States*, 33 F. Supp. 2d 1082, 1087 (Ct. Int'l Trade 1998) ("cumulation does not require two products to be highly fungible"); *Wieland Werke, AG*, 718 F. Supp. at 52 ("Completely overlapping markets are not required.").

[107] Petitioners Postconf. Br. at I-28.

[108] Petitioners Postconf. Br. at I-28.

[109] Petitioners Postconf. Br. at I-29.

[110] Petitioners Postconf. Br. at I-30.

imports and the domestic like product because FEBs from India are "predominantly" finished NSS FEBs, while other subject imports and the domestic like product are not finished and subject imports from Germany and Italy and the domestic like product are "predominantly" SS FEBs.[111] Bharat contends that its FEBs are sold in a different channel of distribution than other subject imports and the domestic like product because it ***.[112]

SWG argues subject imports from Germany should not be cumulated with other subject imports. It asserts that subject imports from Germany do not compete with other subject imports because they are *** SS FEBs, unlike subject imports from China and India, and ***.[113]

The statutory threshold for cumulation is satisfied because petitioners filed the antidumping and/or countervailing duty petitions with respect to each of the four subject countries on the same day, December 19, 2019.[114] Further, as discussed below, we find a reasonable overlap of competition in the U.S. market among FEBs produced in China, Germany, India, Italy, and the United States.

Fungibility. All responding U.S. producers reported that the domestic like product and subject imports from each of the four subject countries are "always" interchangeable, while most responding U.S. importers reported that the domestic like product and subject imports from each of the four subject countries are "always" or "frequently" interchangeable.[115] In addition, all responding U.S. producers reported that imports from all four subject countries are "always" interchangeable with each other, while most responding U.S. importers reported that subject imports from all four subject countries are "always" or "frequently" interchangeable with each other.[116]

The record indicates that, in 2018, most U.S. shipments of the domestic like product and imports from each subject country except India were unfinished; nevertheless, contrary to Bharat's assertion, a substantial proportion of shipments of subject imports from India (*** percent) was unfinished.[117] In 2018, U.S. shipments of *** domestically produced FEBs, *** subject imports from Germany, *** subject imports from Italy, and an appreciable percentage of subject imports from China were SS FEBs.[118] Although the percentage of U.S. shipments of SS FEBs from India was ***, this does not appear to indicate lack of fungibility with FEBs from other sources, given the substantial percentage of U.S. shipments of the domestic like product and imports from each subject country other than Germany that were NSS FEBs,[119] and information on the record indicating that SS FEBs and NSS FEBs are generally

[111] Bharat Postconf. Br. at 11–12.

[112] Bharat Postconf. Br. at 12.

[113] SWG Postconf. Br. at 11–13.

[114] None of the statutory exceptions to cumulation applies. *See* 19 U.S.C. § 1677(7)(G)(ii).

[115] CR/PR at Table II-8.

[116] CR/PR at Table II-8.

[117] CR/PR at Table IV-4. For the reasons stated in section III, *supra*, we have treated FEBs classified as either unfinished or semifinished as unfinished FEBs.

[118] CR/PR at Table IV-5.

[119] CR/PR at Table IV-5.

interchangeable.[120] We also observe that at least one importer imported subject merchandise from all four subject countries.[121] We find that the record in the preliminary phase of these investigations indicates fungibility between subject imports from all four subject countries and between the domestic like product and imports from all four subject countries.

Channels of Distribution. U.S. producers and importers of subject merchandise from each subject country reported that all or almost all of their U.S. commercial shipments went to end users during the POI.[122]

Geographic Overlap. The domestic like product and imports from each of the four subject countries were sold in the Northeast, Midwest, and Central Southwest regions in the contiguous United States.[123] Imports from each of the four subject countries also were sold in the Southeast and Mountains regions.[124]

Simultaneous Presence in Market. During the 23-month period from January 2018 to November 2019, subject imports from India and Italy were present in the U.S. market each month, and subject imports from China and Germany were each present in 22 of 23 months.[125] The domestic like product was present during each year and interim period of the POI.[126]

Conclusion. The record indicates fungibility between the domestic like product and subject imports from each of the four subject countries. The domestic like product and subject imports from all four countries share overlapping channels of distribution because they are all sold almost entirely to end users and were simultaneously present in the U.S. market during the POI. As indicated above, the various respondent arguments against cumulation either are unsupported by the record or concern possible distinctions between product sources that do not appear to materially affect fungibility. Consequently, the record indicates that there is a reasonable overlap of competition between and among subject imports and the domestic like product. Accordingly, we analyze subject imports from China, Germany, India, and Italy on a cumulated basis for our analysis of whether there is a reasonable indication of material injury by reason of subject imports.

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[120] See the discussion in section III.C.2., *supra*.

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

[122] CR/PR at Table II-2. U.S. producers reported that between *** percent of their U.S. shipments went to end users during each full year or interim period of the POI. *Id.* Importers of subject merchandise from China, Germany, and India reported that *** of their U.S. shipments went to end users. *Id.* Importers of subject merchandise from Italy reported that between *** percent of their U.S. shipments went to end users during each full year or interim period during the POI. *Id.* Additionally, the record indicates that purchaser *** purchased *** during the POI. *Id.* at I-3 to I-4, Table V-12.

[123] CR/PR at Table II-3.

[124] CR/PR at Table II-3.

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

[126] *See* CR/PR at Tables III-6, V-4 to V-7.

VI. Reasonable Indication of Material Injury by Reason of Subject Imports

A. Legal Standard

In the preliminary phase of antidumping and countervailing duty investigations, the Commission determines whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of the imports under investigation.[127] In making this determination, the Commission must consider the volume of subject imports, their effect on prices for the domestic like product, and their impact on domestic producers of the domestic like product, but only in the context of U.S. production operations.[128] The statute defines "material injury" as "harm which is not inconsequential, immaterial, or unimportant."[129] In assessing whether there is a reasonable indication that the domestic industry is materially injured by reason of subject imports, we consider all relevant economic factors that bear on the state of the industry in the United States.[130] No single factor is dispositive, and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[131]

Although the statute requires the Commission to determine whether there is a reasonable indication that the domestic industry is "materially injured or threatened with material injury by reason of" unfairly traded imports,[132] it does not define the phrase "by reason of," indicating that this aspect of the injury analysis is left to the Commission's reasonable exercise of its discretion.[133] In identifying a causal link, if any, between subject imports and material injury to the domestic industry, the Commission examines the facts of record that relate to the significance of the volume and price effects of the subject imports and any impact of those imports on the condition of the domestic industry. This evaluation under the "by reason of" standard must ensure that subject imports are more than a minimal or

[127] 19 U.S.C. §§ 1671b(a), 1673b(a).

[128] 19 U.S.C. § 1677(7)(B). The Commission "may consider such other economic factors as are relevant to the determination" but shall "identify each {such} factor ... and explain in full its relevance to the determination." 19 U.S.C. § 1677(7)(B).

[129] 19 U.S.C. § 1677(7)(A).

[130] 19 U.S.C. § 1677(7)(C)(iii).

[131] 19 U.S.C. § 1677(7)(C)(iii).

[132] 19 U.S.C. §§ 1671b(a), 1673b(a).

[133] *Angus Chemical Co. v. United States*, 140 F.3d 1478, 1484–85 (Fed. Cir. 1998) ("{T}he statute does not 'compel the commissioners' to employ {a particular methodology}."), *aff'g,* 944 F. Supp. 943, 951 (Ct. Int'l Trade 1996).

tangential cause of injury and that there is a sufficient causal, not merely a temporal, nexus between subject imports and material injury.[134]

In many investigations, there are other economic factors at work, some or all of which may also be having adverse effects on the domestic industry. Such economic factors might include nonsubject imports; changes in technology, demand, or consumer tastes; competition among domestic producers; or management decisions by domestic producers. The legislative history explains that the Commission must examine factors other than subject imports to ensure that it is not attributing injury from other factors to the subject imports, thereby inflating an otherwise tangential cause of injury into one that satisfies the statutory material injury threshold.[135] In performing its examination, however, the Commission need not isolate

[134] The Federal Circuit, in addressing the causation standard of the statute, observed that "{a}s long as its effects are not merely incidental, tangential, or trivial, the foreign product sold at less than fair value meets the causation requirement." *Nippon Steel Corp. v. USITC*, 345 F.3d 1379, 1384 (Fed. Cir. 2003). This was further ratified in *Mittal Steel Point Lisas Ltd. v. United States*, 542 F.3d 867, 873 (Fed. Cir. 2008), where the Federal Circuit, quoting *Gerald Metals, Inc. v. United States*, 132 F.3d 716, 722 (Fed. Cir. 1997), stated that "this court requires evidence in the record 'to show that the harm occurred "by reason of" the LTFV imports, not by reason of a minimal or tangential contribution to material harm caused by LTFV goods.'" *See also Nippon Steel Corp. v. United States*, 458 F.3d 1345, 1357 (Fed. Cir. 2006); *Taiwan Semiconductor Industry Ass'n v. USITC*, 266 F.3d 1339, 1345 (Fed. Cir. 2001).

[135] SAA at 851–52 ("{T}he Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports."); S. Rep. 96-249 at 75 (1979) (the Commission "will consider information which indicates that harm is caused by factors other than less-than-fair-value imports."); H.R. Rep. 96-317 at 47 (1979) ("in examining the overall injury being experienced by a domestic industry, the ITC will take into account evidence presented to it which demonstrates that the harm attributed by the petitioner to the subsidized or dumped imports is attributable to such other factors;" those factors include "the volume and prices of nonsubsidized imports or imports sold at fair value, contraction in demand or changes in patterns of consumption, trade restrictive practices of and competition between the foreign and domestic producers, developments in technology and the export performance and productivity of the domestic industry"); *accord Mittal Steel*, 542 F.3d at 877.

the injury caused by other factors from injury caused by unfairly traded imports.[136] Nor does the "by reason of" standard require that unfairly traded imports be the "principal" cause of injury or contemplate that injury from unfairly traded imports be weighed against other factors, such as nonsubject imports, which may be contributing to overall injury to an industry.[137] It is clear that the existence of injury caused by other factors does not compel a negative determination.[138]

Assessment of whether material injury to the domestic industry is "by reason of" subject imports "does not require the Commission to address the causation issue in any particular way" as long as "the injury to the domestic industry can reasonably be attributed to the subject imports."[139] The Commission ensures that it has "evidence in the record" to "show that the harm occurred 'by reason of' the LTFV imports," and that it is "not attributing injury from other

[136] SAA at 851–52 ("{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports."); *Taiwan Semiconductor Industry Ass'n,* 266 F.3d at 1345 ("{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports ... . Rather, the Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports." (emphasis in original)); *Asociacion de Productores de Salmon y Trucha de Chile AG v. United States*, 180 F. Supp. 2d 1360, 1375 (Ct. Int'l Trade 2002) ("{t}he Commission is not required to isolate the effects of subject imports from other factors contributing to injury" or make "bright-line distinctions" between the effects of subject imports and other causes.); *see also Softwood Lumber from Canada*, Inv. Nos. 701-TA-414 and 731-TA-928 (Remand), USITC Pub. 3658 (Dec. 2003) at 100–01 (Commission recognized that "{i}f an alleged other factor is found not to have or threaten to have injurious effects to the domestic industry, *i.e.*, it is not an 'other causal factor,' then there is nothing to further examine regarding attribution to injury"), *citing Gerald Metals,* 132 F.3d at 722 (the statute "does not suggest that an importer of LTFV goods can escape countervailing duties by finding some tangential or minor cause unrelated to the LTFV goods that contributed to the harmful effects on domestic market prices.").

[137] S. Rep. 96-249 at 74–75; H.R. Rep. 96-317 at 47.

[138] *See Nippon Steel Corp*., 345 F.3d at 1381 ("an affirmative material-injury determination under the statute requires no more than a substantial-factor showing. That is, the 'dumping' need not be the sole or principal cause of injury.").

[139] *Mittal Steel*, 542 F.3d at 876, 878; *see also id.* at 873 ("While the Commission may not enter an affirmative determination unless it finds that a domestic industry is materially injured 'by reason of' subject imports, the Commission is not required to follow a single methodology for making that determination ... {and has} broad discretion with respect to its choice of methodology.") *citing United States Steel Group v. United States*, 96 F.3d 1352, 1362 (Fed. Cir. 1996) and S. Rep. 96-249 at 75. In its decision in *Swiff-Train v. United States*, 793 F.3d 1355 (Fed. Cir. 2015), the Federal Circuit affirmed the Commission's causation analysis as comporting with the Court's guidance in *Mittal*.

sources to the subject imports."[140] The Federal Circuit has examined and affirmed various Commission methodologies and has disavowed "rigid adherence to a specific formula."[141]

The question of whether the material injury threshold for subject imports is satisfied notwithstanding any injury from other factors is factual, subject to review under the substantial evidence standard.[142] Congress has delegated this factual finding to the Commission because of the agency's institutional expertise in resolving injury issues.[143]

B. Conditions of Competition and the Business Cycle

The following conditions of competition inform our analysis of whether there is a reasonable indication of material injury by reason of subject imports.

1. Demand Conditions

As previously described, each FEB is incorporated into an FEM, which itself is a component in pumps primarily used for drilling or hydraulic fracturing in the oil and gas industry.[144] Virtually all FEB purchases are made by end users, which are FEM manufacturers or FEM and hydraulic pump manufacturers.[145] Demand for pumps is driven by drilling activity in the oil and gas industry, which in turn is affected by oil and gas prices.[146] The average monthly count for oil and gas rigs and the prices for oil and gas increased irregularly during 2016-2018, then experienced declines in 2019.[147]

FEBs can require frequent replacement depending on end-use conditions, although petitioners argue that proper maintenance can extend the life span of NSS FEBs used in harsh

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[140] *Mittal Steel*, 542 F.3d at 873 (quoting from *Gerald Metals*, 132 F.3d at 722), 877–79. We note that one relevant "other factor" may involve the presence of significant volumes of price-competitive nonsubject imports in the U.S. market, particularly when a commodity product is at issue. In appropriate cases, the Commission collects information regarding nonsubject imports and producers in nonsubject countries in order to conduct its analysis.

[141] *Nucor Corp. v. United States*, 414 F.3d 1331, 1336, 1341 (Fed. Cir. 2005); *see also Mittal Steel*, 542 F.3d at 879 ("*Bratsk* did not read into the antidumping statute a Procrustean formula for determining whether a domestic injury was 'by reason' of subject imports.").

[142] We provide in our discussion below a full analysis of other factors alleged to have caused any material injury experienced by the domestic industry.

[143] *Mittal Steel*, 542 F.3d at 873; *Nippon Steel Corp.*, 458 F.3d at 1350, *citing U.S. Steel Group*, 96 F.3d at 1357; S. Rep. 96-249 at 75 ("The determination of the ITC with respect to causation is ... complex and difficult, and is a matter for the judgment of the ITC.").

[144] CR/PR at I-10, I-12.

[145] CR/PR at I-12.

[146] CR/PR at II-7 to II-9.

[147] The average monthly rig count and natural gas prices increased irregularly from 2016 to 2018, then steadily declined in 2019. CR/PR at Figures II-1, II-3. Oil prices increased irregularly from 2016 to mid-2018, then declined in late 2018 before fluctuating in 2019 at levels below the 2018 peak. *Id.* at Figure II-2.

environmental settings.[148] Demand for SS FEBs, which the parties agree generally have a longer life span than NSS FEBs, increased from 2016 to 2018 at a greater rate than demand for NSS FEBs.[149]

Most domestic producers and importers reported that U.S. demand for FEBs has decreased or fluctuated since 2016.[150] Apparent U.S. consumption of FEBs increased by *** percent from 2016 to 2018, and was *** percent lower in interim 2019 than in interim 2018.[151] Apparent U.S. consumption increased from *** units in 2016 to *** units in 2017 and declined to *** units in 2018; it was *** units in interim 2018 and *** units in interim 2019.[152]

2. Supply Conditions

The domestic industry supplied a large proportion of the U.S. market for FEBs, including both SS FEBs and NSS FEBs, during each year and interim period of the POI.[153] Petitioning firm Ellwood Group was the *** domestic producer, accounting for *** percent of reported domestic production in 2018.[154] Petitioning firm Finkl Steel was the *** domestic producer, accounting for *** percent of reported domestic production in 2018.[155] The domestic industry reported unused production capacity throughout the POI.[156] No U.S. producer reported production constraints, but other market participants did report difficulties in obtaining adequate supply from the domestic industry.[157] The domestic industry's share of apparent U.S. consumption declined steadily from *** percent in 2016 to *** percent in 2017 and to *** percent in 2018; it was *** percent in interim 2018 and lower, at *** percent, in interim 2019.[158]

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[148] CR/PR at I-13, II-11; Tr. at 18, 57–58 (Saunders), 104–105, 107–108 (Buckley).

[149] CR/PR at II-7, Tables V-13, F-2; Tr. at 127 (Poradek). From 2016 to 2018, U.S. producers' U.S. shipments increased *** percent for SS FEBs and *** percent for NSS FEBs. CR/PR at Table F-2. Over the same time period, U.S. shipments of subject imports increased *** percent for SS FEBs and *** percent for NSS FEBs. *Id.*

[150] CR/PR at Table II-5.

[151] CR/PR at Table C-1.

[152] CR/PR at Table IV-7.

[153] CR/PR at Tables IV-7, F-2.

[154] CR/PR at Table III-1.

[155] CR/PR at Table III-1.

[156] The domestic industry's capacity utilization rate was *** percent in 2016, *** percent in 2017, *** percent in 2018, *** percent in interim 2018, and *** percent in interim 2019. CR/PR at Table III-4. *** firms reported producing ***. *Id.* at III-5. FEB production as a percentage of total production on the machinery producing FEBs ranged from a high of *** percent in 2017 to a low of *** percent in interim 2019. *Id.* at Table III-5. We intend to examine further in any final phase of these investigations whether and to what extent the extensive production of products other than FEBs on the same equipment used to produce FEBs diminished the ability of domestic producers to supply FEBs, notwithstanding relatively low utilization of allocated capacity.

[157] CR/PR at II-7, Table V-13. U.S. importer/purchaser ***. *Id.* *See id.* at Table F-2.

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

Cumulated subject imports also supplied a large proportion of the U.S. market for FEBs, including both SS FEBs and NSS FEBs, during each year and interim period of the POI.[159] Cumulated subject imports' share of apparent U.S. consumption increased from *** percent in 2016 to *** percent in 2017 and *** percent in 2018; their market share was *** percent in interim 2018 and higher, at *** percent, in interim 2019.[160]

Nonsubject imports consistently accounted for a minimal share of the U.S. market during the POI.[161]

3. Substitutability and Other Conditions

The record indicates that the domestic like product and subject imports are highly substitutable when produced to given specifications, as FEBs are primarily produced to order.[162] All responding U.S. producers reported that the domestic like product and imports from each subject country are "always" interchangeable, while most responding U.S. importers reported that the domestic like product and imports from each subject country are "always" or "frequently" interchangeable.[163]

We find that price is an important factor in purchasing decisions for FEBs, although other considerations are important as well. Purchasers identified several factors as most important to their purchasing decisions for FEBs, with quality/performance/reliability being the most cited top-ranked factor.[164] Price/cost was the second-most cited factor overall.[165] Lead time/delivery was the top-ranked factor cited by three purchasers.[166]

Petitioners argue that FEBs are sold on the basis of price, and if the FEB supplier is qualified and the FEB meets purchaser-defined technical specifications as listed in a request for quotation ("RFQ"), purchasers typically purchase the lowest priced FEB.[167] Lucchini argues that an RFQ establishes only the minimum technical requirements and does not "force{} all suppliers to produce the 'same' product," resulting in qualitatively different FEBs.[168] Lucchini contends that it is "very rare" for a single supplier to be awarded the entire contract volume of an RFQ

[159] CR/PR at Tables IV-7, F-2.

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

[161] Nonsubject imports' share of apparent U.S. consumption was *** percent in 2016, *** percent in 2017, *** percent in 2018, *** percent in interim 2018, and *** percent in interim 2019. CR/PR at Table IV-8.

[162] CR/PR at II-11 to II-15; Tr. at 19–20 (Saunders).

[163] CR/PR at Table II-8.

[164] CR/PR at Table II-6.

[165] CR/PR at Table II-6.

[166] CR/PR at Table II-6. U.S. producers reported that *** of their commercial shipments were produced to order, with lead times averaging *** days. CR/PR at II-12. U.S. importers reported that *** of their commercial shipments were produced to order, with lead times averaging *** days. *Id.*

[167] Petitioners Postconf. Br. at I-25. *See also* Tr. at 20 (Saunders) ("{A}ll suppliers are bidding to supply to the same custom specification, and the purchasers are therefore in a position to make apples-to-apples comparisons among competing suppliers on the basis of price").

[168] Lucchini Postconf. Br. at 7–9.

and that considerations such as price, quality, and delivery times result in purchasers placing orders for FEBs with the same specifications with multiple suppliers.[169] We will explore the importance of such non-price factors further in any final phase of these investigations.

The primary input in producing FEBs is stainless steel or non-stainless alloy steel, which is determined by the specification.[170] The price of stainless steel increased from $*** per short ton in January 2016 to $*** per short ton in September 2019.[171] The price of non-stainless alloy steel increased from $*** per short ton in January 2016 to $*** per short ton in September 2019.[172] Raw material costs represent the largest component of the domestic industry's overall cost of goods sold ("COGS").[173]

Since July 2018, subject imports from China have been subject to additional duties ranging from 10 to 25 percent pursuant to section 301 of the Trade Act of 1974.[174] Imported FEBs are not subject to additional duties pursuant to section 232 of the Trade Expansion Act of 1962 ("section 232 tariffs"), although some raw materials used to produce FEBs are subject to such duties.[175]

C. Volume of Subject Imports

Section 771(7)(C)(i) of the Tariff Act provides that the "Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States, is significant."[176]

Cumulated subject import volumes increased from 2016 to 2018, maintaining a substantial presence in the U.S. market throughout the POI, including in 2018 and interim 2019 when apparent U.S. consumption was declining. The volume of cumulated subject imports rose from 2,878 units in 2016 to 10,860 units in 2017, then declined slightly to 10,568 units in 2018,

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[169] Lucchini Postconf. Br. at 9–10. *See also* Halliburton Postconf. Stmt. at 2 (Halliburton considers it critical to have multiple sources for FEBs around the world "to ensure both supply continuity as well as to mitigate any geo-political risks"); Tr. at 114 (Gilbert) (orders are rarely awarded to a single source), 115 (Lowrey) (purchasers are "not going to put all their eggs in one basket").

[170] CR/PR at I-11.

[171] Demand indicators figures and data, EDIS Doc. 700958 (Jan. 18, 2020). *See* CR/PR at Figure V-1.

[172] Demand indicators figures and data, EDIS Doc. 700958 (Jan. 18, 2020). *See* CR/PR at Figure V-1.

[173] CR/PR at Table VI-1. Raw materials accounted for between *** and *** percent of total COGS over the POI.

[174] 19 U.S.C. § 2411. *See generally* CR/PR at II-2. Most U.S. importers (eight of 15) reported that they did not know of any impact of section 301 tariffs in the U.S. market. *See* CR/PR at II-2.

[175] 19 U.S.C. § 1862. *See generally* CR/PR at D-3 to D-4. *** identified section 232 tariffs as a contributor to higher raw material costs. Petitioners Postconf. Br. at I-26. *** reported halting production and refusing to supply U.S. customers after the imposition of section 232 tariffs. CR/PR at II-6.

[176] 19 U.S.C. § 1677(7)(C)(i).

for an increase of 267 percent from 2016 to 2018.[177] Cumulated subject import volume was 8,161 units in interim 2018 and lower, at 4,640 units, in interim 2019.[178]

The market share of cumulated subject imports rose continuously throughout the POI. Subject imports accounted for *** percent of apparent U.S. consumption in 2016, *** percent in 2017, and *** percent in 2018; their market share was *** percent in interim 2018 and higher, at *** percent, in interim 2019.[179] Cumulated subject imports gained market share at the expense of the domestic industry during periods of increasing as well as declining demand.[180] From 2016 to 2018, cumulated subject imports gained *** percentage points of market share, and the domestic industry lost *** percentage points; cumulated subject imports' market share was *** percentage points higher in interim 2019 than interim 2018, and the domestic industry's market share was lower by *** percentage points.[181]

For purposes of these preliminary determinations, we find that the volume of subject imports is significant in absolute terms and that the volume and increase in volume of subject imports is significant relative to consumption.

D. Price Effects of the Subject Imports

Section 771(7)(C)(ii) of the Tariff Act provides that, in evaluating the price effects of subject imports, the Commission shall consider whether –

> (I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and
>
> (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.[182]

As explained above, the record indicates that the domestic like product and subject imports are highly substitutable and that price is an important consideration in purchasing decisions.[183]

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[177] CR/PR at Table IV-2.

[178] CR/PR at Table IV-2.

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

[180] The domestic industry's market share declined from *** percent in 2016 to *** percent in 2017 and to *** percent in 2018; it was *** percent in interim 2018 and lower, at *** percent, in interim 2019. CR/PR at Table IV-8.

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

[182] 19 U.S.C. § 1677(7)(C)(ii).

[183] *See* section VI.B.3., *supra*.

The Commission collected quarterly pricing data from U.S. producers and importers for four FEB products.[184] Two domestic producers and three importers provided usable pricing data, although not all firms reported pricing for all products for all quarters of the POI.[185] Pricing data reported by these firms for 2018 accounted for *** percent of U.S. producers' reported U.S. commercial shipments, *** percent of subject imports from Germany, *** percent of subject imports from India, and *** percent of subject imports from Italy.[186] For the four pricing products, subject imports undersold the domestic like product during the POI in *** percent of total subject merchandise quarterly comparisons and in *** percent of shipments by volume.[187]

[184] The pricing products are as follows:

Product 1 -- 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 7,300 and 7,550 lbs.
Product 2 -- 17-4 Solid Quint. Quintuplex fluid end block that has been rough machined but not drilled, made of forged stainless steel, with a chromium content between 14.50% and 18.00%, a nickel content between 2.90% and 5.10%, and a net weight between 8,900 and 9,300 lbs.
Product 3 -- 15-5 Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 6,950 and 7,250 lbs.
Product 4 -- 4330mod Drilled Mud Pump Block. Fluid end block that has been drilled with no more than one hole per face, rough machined, made of forged alloy steel, with a chromium content between 0.65% and 1.00%, a nickel content between 1.60% and 2.05%, and a net weight between 3,100 and 3,300 lbs.

CR/PR at V-5 to V-6.

[185] CR/PR at V-6. As discussed in greater detail below, the comparability of the domestic producers' and importers' pricing data reported for pricing products 1 and 4 is questionable.

[186] CR/PR at V-6. No pricing product data were reported for subject imports from China. *Id.* at V-6 n.6.

[187] Derived from CR/PR at Table V-10. There was underselling by subject imports in 15 quarterly comparisons involving *** units of cumulated subject imports. *Id*. There was overselling in 26 quarterly comparisons involving *** units of cumulated subject imports. *Id*.

The Commission also obtained data concerning landed duty-paid values and quantities for imports of Pricing Product 3 for firms' internal use. Although these purchase cost data represent a small volume of subject imports, the data indicate that purchase cost data for subject imports were below the prices charged by the domestic industry.[188]

The pricing product and purchase cost data collected during the preliminary phase of these investigations have several limitations. For three of the four domestically produced pricing products, pricing data were not provided for substantial portions of the POI.[189] This has limited the number of quarters for which pricing comparisons are available between the domestic like product and subject imports, as well as limited our ability to examine pricing trends.[190] For the one pricing product—Product 4—for which domestic producers reported pricing data throughout the POI, as well as for Pricing Product 1, the pricing data on subject imports from India (the only country for which pricing data on these two pricing products was

[188] Derived from CR/PR at Table V-8. These purchase cost data accounted in 2018 for *** percent of subject imports from China, *** percent of subject imports from Germany, *** percent of subject imports from India, and *** percent of subject imports from Italy. *Id.* at V-6. The record shows that the purchase costs of imports for internal use of FEBs from the subject countries were lower than the prices for the domestic like product in seven of 12 (58.3 percent) quarterly comparisons. *Id*. at Table V-9. In those instances where purchase costs were lower, the average differential between the import purchase costs and the price of the domestic like product was *** percent. *Id.* at Table V-11. We requested that importers that imported subject merchandise for internal use provide additional estimated costs that are not included in the landed duty paid values associated with their importing activities. *** reported logistical or supply costs of *** percent. *Id.* at V-18.

[189] *** CR/PR at Tables V-4 to V-6.

[190] The domestic industry, which recommended these pricing products for data collection in its petitions, reported data only in 35 of 60 possible quarterly comparisons (58.3 percent). CR/PR at Tables V-4 to V-7. *See* Petitions at 41. Data for subject imports were reported in 67 of 240 possible quarterly comparisons (27.9 percent). CR/PR at Tables V-4 to V-7. Consequently, quarterly comparisons were possible in only 17.1 percent (41 of 240) of possible quarterly comparisons. *Id.* In any final phase of these investigations, we ask parties in their comments on the draft questionnaires to suggest specific pricing product definitions that will permit us to collect more comprehensive data for comparable domestic and imported products.

reported for subject imports), on its face, appears to be ***.[191] As examined above, finishing operations can account for a substantial portion of the final value of a finished FEB.[192] These finishing operations performed on subject imports from India reported in pricing products 1 and 4 may account for ***.[193]

We observe that the pricing data for pricing products 2 and 3 show predominant underselling of the domestic like product by subject imports. When examining pricing products 2 and 3, there was underselling by subject imports in *** quarterly comparisons involving *** units of cumulated subject imports with an average margin of *** percent.[194] There was overselling in only two quarterly comparisons involving *** units of cumulated subject imports with an average margin of *** percent.[195]

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[191] The definition of Pricing Product 1 was

> **Product 1** -- 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 7,300 and 7,550 lbs.

CR/PR at V-5. The description of the product for which data were provided as a product "competitive" with Pricing Product 1 was

> more than rough machined + finish machining + pre-stressing + painting. wt range 4978 to 7192 lbs

CR/PR at Table V-4, second note. The definition of Pricing Product 4 was

> **Product 4** -- 4330mod Drilled Mud Pump Block. Fluid end block that has been drilled with no more than one hole per face, rough machined, made of forged alloy steel, with a chromium content between 0.65% and 1.00%, a nickel content between 1.60% and 2.05%, and a net weight between 3,100 and 3,300 lbs.

CR/PR at V-6. The description of the product for which data were provided as a product "competitive" with Pricing Product 4 was

> 3 holes per face + rough machined + finish machined + pre-stressing + painting + sleeving. wt. range 3055 to 3750 lbs

CR/PR at Table V-7, second note.

[192] *See* section III.C.1., *supra*.

[193] CR/PR at Tables V-4, V-7. There was overselling by subject imports in *** comparisons of pricing products 1 and 4. For Pricing Product 4, ***. *Id.* at Table V-10.

[194] CR/PR at Table V-10.

[195] CR/PR at Table V-10.

Furthermore, purchase cost data for Pricing Product 3, even though reflecting limited volumes, show that prices for subject imports are in some quarters higher and in other quarters lower than the prices of the domestic like product.[196]

We also examined the results of the preliminary phase lost sales/lost revenue survey. Twelve of 15 responding purchasers reported purchasing subject imports during the POI instead of the domestic like product.[197] Seven of 11 purchasers that purchased subject imports instead of the domestic like product reported that subject import prices were lower than domestically produced product.[198] Three of these seven purchasers reported that price was a primary reason for the decision to purchase imported product rather than domestically produced FEBs.[199] The volume of these purchases of subject imports was limited, totaling only *** units.[200]

In light of the foregoing and keeping in mind the limitations of the pricing product and purchase cost data, the record of the preliminary phase of these investigations supports finding significant underselling of the domestic like product by subject imports. Additionally, given that the domestic like product and subject imports are highly substitutable and that price is an important factor in purchasing decisions, the record in the preliminary phase of these investigations suggests that the availability of lower prices for cumulated subject imports contributed to their obtaining an increasing proportion of market share at the expense of the domestic industry during the POI.

We have also examined available data on pricing trends, which, as we acknowledge above, is limited in several respects. Between the first and last quarters for which pricing product data are available, prices for domestically produced pricing products 1, 2, and 4 decreased within a range of *** to *** percent, while the price of domestically produced Pricing Product 3 increased *** percent.[201] Prices for subject imports decreased within a range of *** to *** percent between the first and last quarters for which data are available.[202]

During the POI, the domestic industry's ratio of COGS to net sales increased from *** percent in 2016 to *** percent in 2017 and to *** percent in 2018; it was *** percent in interim 2018 and higher, at *** percent, in interim 2019.[203] During this period, raw material

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[196] CR/PR at Table V-9. In quarters for which comparisons were available, the price of subject imports was lower than the price of the domestic like product in *** of *** comparisons. *Id.*

[197] CR/PR at Table V-13.

[198] CR/PR at Table V-13. One purchaser that purchased subject imports did not answer that question. *Id.*

[199] CR/PR at Table V-13.

[200] CR/PR at Table V-13.

[201] CR/PR at V-18, Table V-9.

[202] CR/PR at V-18, Table V-9. Purchase cost data indicate a decrease in Pricing Product 3 imported from Germany, India, and Italy and an increase for Pricing Product 3 imported from China. *Id.* at Table V-9.

[203] CR/PR at Table VI-1.

costs were generally rising,[204] and apparent U.S. consumption increased from *** units in 2016 to *** units in 2018.[205] Accordingly, the record in the preliminary phase of these investigations indicates that subject imports, because of their increasing presence in the market and underselling, were a factor that contributed to the domestic industry's cost-price squeeze and thereby prevented price increases for the domestic like product that otherwise would have occurred to a significant degree.

Accordingly, based on the record in the preliminary phase of these investigations, we find that subject imports significantly undersold the domestic like product, which was a factor in subject imports gaining market share at the expense of the domestic industry. Moreover, we find that subject imports prevented price increases that otherwise would have occurred to a significant degree.

E. Impact of the Subject Imports[206]

Section 771(7)(C)(iii) of the Tariff Act provides that the Commission, in examining the impact of the subject imports on the domestic industry, "shall evaluate all relevant economic factors which have a bearing on the state of the industry." These factors include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, gross profits, net profits, operating profits, cash flow, return on investment, return on capital, ability to raise capital, ability to service debt, research and development, and factors affecting domestic prices. No single factor is dispositive and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[207]

From 2016 to 2018, while apparent U.S. consumption increased overall, the domestic industry's output and employment increased, but by less than the rate of apparent consumption.[208] The domestic industry's production and shipments deteriorated at a faster rate than the reduction in apparent U.S. consumption between 2017 and 2018 and between interim 2018 and interim 2019.[209] The domestic industry's financial indicators showed sharp

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[204] *See* CR/PR at V-1, Figure V-1. The price of stainless steel increased from $*** per short ton in January 2016 to $*** per short ton in September 2019. Demand indicators figures and data, EDIS Doc. 700958 (Jan. 18, 2020). The price of non-stainless alloy steel increased from $*** per short ton in January 2016 to $*** per short ton in September 2019. *Id.* Due to changes in the stainless and non-stainless alloy steel product mix for FEBs during the POI, comparing AUV data regarding the raw materials component of COGS from different years may not accurately reflect changes in raw material costs. *See* CR/PR at Tables V-15, VI-1. *See also id.* at VI-11 (no variance analysis due to product mix change during POI). *See generally* section VI.B.3., *supra*.

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

[206] In its notice initiating the antidumping duty investigations on FEBs from Germany, India, and Italy, Commerce reported estimated dumping margins of 83.37 percent for imports from Germany, 198.85 percent for imports from India, and 87.04 percent for imports from Italy. 85 Fed. Reg. at 2397.

[207] 19 U.S.C. § 1677(7)(C)(iii). This provision was amended by the Trade Preferences Extension Act of 2015, Pub. L. 114-27.

[208] CR/PR at Tables IV-7, C-1.

[209] CR/PR at Tables III-4, IV-7.

downturns after 2017. Moreover, throughout the POI, the domestic industry lost market share. Its share of apparent U.S. consumption declined steadily from *** percent in 2016 to *** percent in 2017 and *** percent in 2018; it was lower in interim 2019, at *** percent, than in interim 2018 (*** percent).[210]

The domestic industry's production capacity remained stable over the POI.[211] The domestic industry's production,[212] capacity utilization,[213] and U.S. shipments[214] each increased from 2016 to 2017; then all declined in 2018 to a level above that of 2016, and were lower in interim 2019 than in interim 2018. The domestic industry's ratio of end-of-period inventories to total shipments decreased steadily from 2016 to 2018 and was lower in interim 2019 than in interim 2018.[215]

Employment-related indicators for the domestic industry mostly improved from 2016 to 2017, then deteriorated in 2018 and were lower in interim 2019 than in interim 2018. In

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

[211] The domestic industry's production capacity was *** units in 2016 and 2017 and *** units in 2018; it was *** units in interim 2018 and interim 2019. CR/PR at Table III-4.

[212] The domestic industry's production increased from *** units in 2016 to *** units in 2017, then declined to *** units in 2018; it was *** units in interim 2018 and *** units in interim 2019. CR/PR at Table III-4. The increase in production from 2016 to 2018 was *** percent, as opposed to the *** percent increase in apparent U.S. consumption during that period. *Id.* at Table C-1. Production was lower by *** percent in interim 2019 than in interim 2018, while apparent U.S. consumption was lower by *** percent. *Id.*

[213] The domestic industry's capacity utilization increased from *** percent in 2016 to *** percent in 2017, then declined to *** percent in 2018; it was *** percent in interim 2018 and *** percent in interim 2019. CR/PR at Table III-4.

[214] The domestic industry's U.S. shipments increased from *** units in 2016 to *** units in 2017, then declined to *** units in 2018; they were *** units in interim 2018 and *** units in interim 2019. CR/PR at Table III-6. U.S. shipments were *** percent higher in 2018 than 2016 and *** percent lower in interim 2019 than in interim 2018. *Id.* at Table C-1.

[215] Inventories were *** units in 2016, *** units in 2017, *** units in 2019, *** units in interim 2018, and *** units in interim 2019. CR/PR at Table III-7. The ratio of end-of-period inventories to total shipments was *** percent in 2016, *** percent in 2017, *** percent in 2018, *** percent in interim 2018, and *** percent in interim 2019. *Id.* Petitioners argue that demand during the POI was influenced by inventory levels that increased during a period of increased drilling and fracking activity in 2017 and 2018 and that were high in late 2018 and 2019 when this activity slowed. Petitioners Postconf. Br. at I-20. Petitioners also argue, and respondents agree, that FEBs are "are custom produced to fit custom specifications for specific customers." Tr. at 19–20 (Saunders), 40–41 (Shirley), 92 (Powell). *See also id.* at 41 (Boyd) ("{T}here's no value in trying to produce to inventory."). We intend to explore the importance and composition of inventories in any final phase of these investigations.

particular, the figures for production-related workers ("PRWs"), total hours worked, wages paid, and productivity followed this pattern.[216]

The domestic industry's financial indicators deteriorated after 2017. Revenues,[217] gross profit,[218] operating income,[219] operating income ratio,[220] and net income[221] all declined from 2017 to 2018, and were lower in interim 2019 than in interim 2018. Domestic producers' capital expenditures declined steadily from 2016 to 2018.[222] *** also reported negative effects on investment and growth and development that *** attributed to subject imports.[223]

As discussed above, significant volumes of low priced subject imports that were highly substitutable with the domestic like product undersold the domestic like product. These subject imports also increased market share at the expense of the domestic industry and constrained the domestic industry's ability to raise prices commensurate with increased costs. Consequently, despite some improvements, the domestic industry's production, shipments, and revenues were lower than they would have been otherwise from 2016 to 2018, when

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[216] The domestic industry's number of PRWs increased from *** in 2016 to *** in 2017, then declined to *** in 2018; it was *** in interim 2018 and *** in interim 2019. CR/PR at Table III-8. The number of PRWs was *** percent higher in 2018 than in 2016 and *** percent lower in interim 2019 than in interim 2018. *Id.* at Table C-1.

Total hours worked increased from *** in 2016 to *** in 2017, then declined to *** in 2018; they were *** in interim 2018 and *** in interim 2019. *Id.* at Table III-8. Wages paid increased from $*** in 2016 to $*** in 2017, then declined to $*** in 2018; they were $*** in interim 2018 and $*** in interim 2019. *Id.* Productivity in units per thousand hours increased from *** in 2016 to *** in 2017, then declined to *** in 2018; it was *** in interim 2018 and *** in interim 2019. *Id.* Unit labor costs per unit decreased from $*** in 2016 to $*** in 2017, then increased to $*** in 2018; they were $*** in interim 2018 and higher, at $***, in interim 2019. *Id.* Hourly wages increased from $*** in 2016 to $*** in 2017 and to $*** in 2018; they were $*** in interim 2018 and higher, at $***, in interim 2019. *Id.*

[217] The domestic industry's net sales revenues increased from $*** in 2016 to $*** in 2017, then declined to $*** in 2018; they were $*** in interim 2018 and $*** in interim 2019. CR/PR at Table VI-1.

[218] The domestic industry's gross profit increased from $*** in 2016 to $*** in 2017, then declined to $*** in 2018; it was $*** in interim 2018 and $*** in interim 2019. CR/PR at Table VI-1.

[219] The domestic industry's operating income increased from $*** in 2016 to $*** in 2017, then declined to $*** in 2018; it was $*** in interim 2018 and *** in interim 2019. CR/PR at Table VI-1.

[220] The ratio of operating income to net sales was *** percent in 2016, *** percent in 2017, and *** percent in 2018; it was *** percent in interim 2018 and *** percent in interim 2019. CR/PR at Table VI-1.

[221] The domestic industry's net income increased from $*** in 2016 to $*** in 2017, then declined to $*** in 2018; it was $*** in interim 2018 and *** in interim 2019. CR/PR at Table VI-1.

[222] Capital expenditures for the domestic industry decreased from $*** in 2016 to $*** in 2017 and to $*** in 2018; they were $*** in interim 2018 and higher, at $***, in interim 2019. CR/PR at Table VI-5. Research and development expenses for the domestic industry increased steadily from 2016 to 2018. They were $*** in 2016, $*** in 2017, and $*** in 2018; they were $*** in interim 2018 and lower, at $***, in interim 2019. *Id.*

[223] CR/PR at Tables VI-7, VI-8.

apparent U.S. consumption increased. The increased market share of subject imports also exacerbated the difficulties of the domestic industry in interim 2019, when domestic producers' output, employment, and financial performance all declined.

We have considered whether there are other factors that may have had an impact on the domestic industry during the POI to ensure that we are not attributing injury from other factors to subject imports. Nonsubject imports cannot explain the domestic industry's decline in market share over the period.[224]

Market participants reported certain limitations on the domestic industry's ability to supply increased demand for SS FEBs in particular, notwithstanding that the domestic industry reported unused capacity and the absence of production constraints during the POI.[225] We observe that the domestic industry sold both SS FEBs and NSS FEBs throughout the POI.[226] The domestic industry contends that it can supply FEBs to customers faster than subject suppliers[227] and that its FEBs are the same quality as subject imports.[228] Respondents BGH, SWG, and Lucchini argue that the inadequate quality and technical capability of domestically produced SS FEBs forced U.S. purchasers to purchase subject imports, and that considerations such as delivery times resulted in purchasers obtaining product from multiple suppliers.[229] We intend to explore these issues further in any final phase of these investigations and issue questionnaires that will allow purchasers to report on quality and availability distinctions, if any, between subject imports and the domestic like product and the importance of any such distinctions in purchasing decisions.

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[224] Their share of apparent U.S. consumption was *** percent in 2016, *** percent in 2017, and *** percent in 2018; it was *** percent in interim 2018 and *** percent in interim 2019. CR/PR at Table IV-8.

[225] *See* CR/PR at II-7, Tables III-3 (domestic producers' upgraded and idled equipment), III-4 (domestic industry's capacity utilization rates), V-13 (purchaser-reported supply constraints), F-2 (increased demand for SS FEBs). The domestic industry's capacity utilization rate was *** percent in 2016, *** percent in 2017, and *** percent in 2018; it was *** percent in interim 2018 and *** percent in interim 2019. *Id.* at Table III-4.

[226] CR/PR at Tables IV-7, F-2. U.S. producers' U.S. shipments of SS FEBs increased over the POI as did the share of U.S. producers' U.S. shipments of SS FEBs relative to their U.S. shipments of NSS FEBs. *Id.*

[227] *See* Tr. at 66 (Boyd) (Ellwood Group has utilized facilities in Texas when customers there wanted FEBs close at hand). Fracking operations in the United States take place in and around Texas, the Appalachian region, and North Dakota. Tr. at 65–66 (Boyd, Shirley), 95 (Poradek).

[228] Petitioners Postconf. Br. at I-40 to I-41; Tr. at 10 (Beline) ("{E}veryone has a quality product"), 20 (Saunders) ("{A}ll of the major suppliers in the U.S. … are qualified and able to produce a quality product that meets customer specifications.").

[229] BGH Postconf. Br. at 7–10; SWG Postconf. Br. at 7–9 (highlighting safety considerations); Lucchini Postconf. Br. at 6–7, 9–10. *See also* Halliburton Postconf. Stmt. at 3–6 (***). *See* CR/PR at Table V-13 (purchaser-reported reasons for switching to subject imports include ***).

VII. Conclusion

For the reasons stated above, we determine that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of FEBs that are allegedly subsidized by the governments of China, Germany, India, and Italy and imports of the subject merchandise from Germany, India, and Italy that are allegedly sold at less than fair value.

Part I: Introduction

Background

These investigations result from petitions filed with the U.S. Department of Commerce ("Commerce") and the U.S. International Trade Commission ("USITC" or "Commission") by Ellwood City Forge Company, Ellwood Quality Steels Company, and Ellwood National Steel Company (collectively "Ellwood"), Ellwood City, Pennsylvania; A. Finkl & Sons ("Finkl"), Chicago, Illinois; and FEB Fair Trade Coalition (an ad hoc coalition whose members include the Forging Industry Association, Ellwood, and Finkl), Cleveland, Ohio, on December 19, 2019, alleging that an industry in the United States is materially injured and threatened with material injury by reason of subsidized imports of fluid end blocks[1] from China, Germany, India, and Italy, and less-than-fair-value ("LTFV") imports of fluid end blocks from Germany, India, and Italy. The following tabulation provides information relating to the background of these investigations.[2] [3]

Effective date	Action
December 19, 2019	Petitions filed with Commerce and the Commission; institution of Commission investigations (84 FR 71462, December 27, 2019)
January 8, 2020	Commerce's notice of initiation of countervailing duty investigations (85 FR 2385, January 15, 2020) and antidumping duty investigations (85 FR 2394, January 15, 2020)
January 9, 2020	Commission's conference
January 31, 2020	Commission's vote
February 3, 2020	Commission's determinations
February 10, 2020	Commission's views

[1] See the section entitled "The subject merchandise" in Part I of this report for a complete description of the merchandise subject in this proceeding.

[2] Pertinent *Federal Register* notices are referenced in appendix A, and may be found at the Commission's website (www.usitc.gov).

[3] Appendix B presents witnesses that appeared at the Commission's conference.

Statutory criteria

Section 771(7)(B) of the Tariff Act of 1930 (the "Act") (19 U.S.C. § 1677(7)(B)) provides that in making its determinations of injury to an industry in the United States, the Commission--

> *shall consider (I) the volume of imports of the subject merchandise, (II) the effect of imports of that merchandise on prices in the United States for domestic like products, and (III) the impact of imports of such merchandise on domestic producers of domestic like products, but only in the context of production operations within the United States; and. . . may consider such other economic factors as are relevant to the determination regarding whether there is material injury by reason of imports.*

Section 771(7)(C) of the Act (19 U.S.C. § 1677(7)(C)) further provides that--[4]

> *In evaluating the volume of imports of merchandise, the Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States is significant.. . .In evaluating the effect of imports of such merchandise on prices, the Commission shall consider whether. . .(I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.. . . In examining the impact required to be considered under subparagraph (B)(i)(III), the Commission shall evaluate (within the context of the business cycle and conditions of competition that are distinctive to the affected industry) all relevant economic factors which have a bearing on the state of the industry in the United States, including, but not limited to. . . (I) actual and potential decline in output, sales, market share, gross profits, operating profits, net profits, ability to service debt, productivity, return on investments, return on assets, and utilization of capacity, (II) factors affecting domestic prices, (III) actual and potential negative effects on cash flow, inventories, employment, wages, growth, ability to raise capital, and investment, (IV) actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product, and (V) in {an antidumping investigation}, the magnitude of the margin of dumping.*

[4] Amended by PL 114-27 (as signed, June 29, 2015), Trade Preferences Extension Act of 2015.

In addition, Section 771(7)(J) of the Act (19 U.S.C. § 1677(7)(J)) provides that—[5]

(J) EFFECT OF PROFITABILITY.—The Commission may not determine that there is no material injury or threat of material injury to an industry in the United States merely because that industry is profitable or because the performance of that industry has recently improved.

Organization of report

Part I of this report presents information on the subject merchandise, alleged subsidy/dumping margins, and domestic like product. Part II of this report presents information on conditions of competition and other relevant economic factors. Part III presents information on the condition of the U.S. industry, including data on capacity, production, shipments, inventories, and employment. Parts IV and V present the volume of subject imports and pricing of domestic and imported products, respectively. Part VI presents information on the financial experience of U.S. producers. Part VII presents the statutory requirements and information obtained for use in the Commission's consideration of the question of threat of material injury as well as information regarding nonsubject countries.

Market summary

Fluid end blocks generally are used in the manufacture or service of hydraulic pumps. The leading U.S. producers of fluid end blocks are Ellwood and Finkl, while leading producers of fluid end blocks outside the United States include *** of Germany, Bharat Forge Limited ("Bharat Forge")[6] of India, and *** of Italy.[7] The leading U.S. importers of fluid end blocks from China are ***, the leading U.S. importers of fluid end blocks from Germany are ***, the leading

[5] Amended by PL 114-27 (as signed, June 29, 2015), Trade Preferences Extension Act of 2015.

[6] Conference transcript, p. 10 (Powell).

[7] No foreign producer questionnaires were received from Chinese firms, but U.S. importers reported importing fluid end blocks from the following Chinese firms: ***.

U.S. importer of fluid end blocks from India is ***, and the leading U.S. importers of fluid end blocks from Italy are ***. Leading importers of fluid end blocks from nonsubject countries (primarily Mexico and the United Kingdom) include ***. U.S. purchasers of fluid end blocks are typically fluid pump manufacturers that either sell complete hydraulic pumps to oil and gas service companies or are vertically integrated oil and gas service companies that manufacture their own pumps using forged fluid end blocks. Leading purchasers include ***.

Apparent U.S. consumption of fluid end blocks totaled approximately *** fluid end blocks ($***) in 2018. Currently, eight firms are known to have produced fluid end blocks in the United States since 2016. U.S. producers' U.S. shipments of fluid end blocks totaled *** fluid end blocks ($***) in 2018 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. U.S. shipments of imports from subject sources totaled 8,640 fluid end blocks ($211.5 million) in 2018 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. U.S. shipments of imports from nonsubject sources totaled *** fluid end blocks ($***) in 2018 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value.

Summary data and data sources

A summary of data collected in these investigations is presented in appendix C, table C-1. Except as noted, U.S. industry data are based on questionnaire responses of *** firms that accounted for an estimated *** percent of U.S. production of fluid end blocks during 2018. U.S. import data are based on questionnaire responses from 16 U.S. importers that accounted for an estimated *** percent of fluid end blocks from subject sources.

Previous and related investigations

Fluid end blocks have not been the subject of prior countervailing and antidumping duty investigations in the United States.

Nature and extent of alleged subsidies and sales at LTFV

Alleged subsidies

On January 15, 2020, Commerce published a notice in the *Federal Register* of the initiation of its countervailing duty investigations on fluid end blocks from China, Germany, India, and Italy.[8]

Commerce identified the following 23 government programs in China:[9]

- Policy Loans to the Fluid End Blocks Industry
- Export Loans from Chinese State-Owned Banks
- Preferential Loans for State-Owned Enterprises (SOEs)
- Export Seller's Credit
- Export Buyer's Credit
- Exemptions for SOEs from Distributing Dividends
- Income Tax Reduction for High or New Technology Enterprises
- Income Tax Deductions for Research and Development (R&D) Expenses Under the Enterprise Income Tax Law
- Income Tax Concessions for Enterprises Engaged in Comprehensive Resource Utilization
- Income Tax Deductions/Credits for Purchase of Special Equipment
- Tax Incentives for Businesses in the China (Shanghai) Pilot Free Trade Zone
- Import Tariff and Value Added Tax (VAT) Exemptions on Imported Equipment for Encouraged Industries
- Value Added Tax (VAT) Rebates on Domestically-Produced Equipment
- Deed Tax Exemption for SOEs Undergoing Mergers or Restructuring
- GOC and Sub-Central Government Subsidies for the Development of Famous Brands and China World Top Brands
- The State Key Technology Project Fund
- Foreign Trade Development Fund Grants
- Grants for Energy Conservation and Emission Reduction
- Grants for the Retirement of Capacity
- The Provision of Land for LTAR

[8] 85 FR 2385, January 15, 2020.

[9] *Countervailing Duty Investigation Initiation Checklist, Fluid End Blocks from China, January 8, 2020.*

- Provision of Electricity for LTAR
- Provision of Steam Coal for LTAR
- Provision of Steel Ingot for LTAR

Commerce identified the following 16 government programs in Germany:[10]

- Federal Export Credit Guarantees
- KfW16 Entrepreneur Loans
- Section 9B of the Electricity Tax Act
- Section 37 of the Energy Tax Act
- Section 51 of the Energy Tax Act
- 2018 Special Compensation Scheme – Reduced EEG Charge
- Peak Equalization Scheme (Section 55 of the Energy Tax Act)
- European Union Emission Trading System Allowances (ETS)
- Section 53c of the EEG
- Section 53b of the EEG Electricity for LTAR
- StromNEV Section 19 Electricity for LTAR
- Research and Development (R&D) Grants
- DENA Waste Heat Subsidy
- Joint Federal Task for the Improvement of Regional Economic Structures (GRW) Grants
- Coal Financing Act (CFA)
- European Union Research Fund for Coal and Steel

Commerce identified the following 25 government programs in India:[11]

- Advance Authorization Program
- Duty Free Import Authorization Scheme
- Duty Drawback Program
- Export Promotion of Capital Goods Scheme
- Merchandise Exports from India Scheme
- Interest Equalization Scheme

[10] *Countervailing Duty Investigation Initiation Checklist, Fluid End Blocks from Germany*, January 8, 2020.

[11] *Countervailing Duty Investigation Initiation Checklist, Fluid End Blocks from India,* January 8, 2020.

- Status Holder Incentive Scheme
- Pre-Shipment and Post-Shipment Export Financing
- Market Development Assistance Scheme
- Market Access Initiative
- Focus Product Scheme
- Status Certificate Program
- Duty-Free Importation of Capital Goods and Raw Materials, Components, Consumables, Intermediates, Spare Parts, and Packing Material
- Exemption from Payments of CST on Purchases of Capital Goods and Raw Materials, Components, Consumables, Intermediates, Spare Parts, and Packing Material
- Exemption from Electricity Duty and Cess on Electricity Supplied to a SEZ Unit
- SEZ Income Tax Exemption
- Service Tax Exemption
- Exemption from Payment of Local Government Taxes and Duties, Such as Sales Tax and Stamp Duties
- Steel Development Fund Loans
- Incremental Exports Incentivization Scheme
- Income Tax Deductions for Research and Development Expenses
- Deduction under Section 32-AC of the Income Tax Act
- Provision of Steel Ingots by SAIL for LTAR
- Government of Maharashtra Subsidy Programs/Sales Tax
- Government of Maharashtra Subsidy Programs/Electricity Duty Exemptions

Commerce identified the following 18 government programs in Italy:[12]

- Industrial Exemptions for General Electricity Network Costs
- Energy Interruptibility Contracts
- Electricity Purchases Through the Interconnector Program
- Free Allocation of European Union Emissions Trading System Allowances
- Industrial Technological Innovation Grants Under Law 46/1982
- Industrial Technological Innovation Loans Under Law 46/1982

[12] *Countervailing Duty Investigation Initiation Checklist, Fluid End Blocks from India,* January 8, 2020.

- Industrial Development Grants Under Law 488/1992
- Patti Territoriali Grants Under Law 662/1996
- Contratti di Programma Grants Under Law 662/1996
- Industrial Revitalization Grants Under Law 181/1989
- Industrial Revitalization Loans Under Law 181/1989
- Preferential Financing Under Law 266/1997
- Income Tax Deferrals Under Article 42 of Law 78/2010
- Sgravi Benefits
- IRAP Tax Credits Under Article 1 of Law 296/2006
- Tax Credits Under Article 62 of Law 289/2002
- Export Credit Subsidies
- Grants for Continuous Training Under Article 118 of Law 388/2000

Alleged sales at LTFV

On January 15, 2020, Commerce published a notice in the *Federal Register* of the initiation of its antidumping duty investigations on fluid end blocks from Germany, India, and Italy.[13] Commerce has initiated antidumping duty investigations based on estimated dumping margins of 83.37 percent for fluid end blocks from Germany, 198.85 percent for fluid end blocks from India, and 87.04 percent for fluid end blocks from Italy.[14]

The subject merchandise

Commerce's scope

In the current proceeding, Commerce has defined the scope as follows:[15]

> *The products covered by these investigations are forged steel fluid end blocks (fluid end blocks), whether in finished or unfinished form, and which are typically used in the manufacture or service of hydraulic pumps.*
>
> *The term ''forged'' is an industry term used to describe the grain texture of steel resulting from the application of localized compressive force. Illustrative forging standards include, but are not limited to, American Society for Testing and Materials (ASTM) specifications A668 and A788.*

[13] 85 FR 2394, January 15, 2020.
[14] Ibid.
[15] 85 FR 2385, January 15, 2020.

For purposes of these investigations, the term ''steel'' denotes metal containing the following chemical elements, by weight: (i) Iron greater than or equal to 60 percent; (ii) nickel less than or equal to 8.5 percent; (iii) copper less than or equal to 6 percent; (iv) chromium greater than or equal to 0.4 percent, but less than or equal to 20 percent; and (v) molybdenum greater than or equal to 0.15 percent, but less than or equal to 3 percent. Illustrative steel standards include, but are not limited to, American Iron and Steel Institute (AISI) or Society of Automotive Engineers (SAE) grades 4130, 4135, 4140, 4320, 4330, 4340, 8630, 15–5, 17–4, F6NM, F22, F60, and XM25, as well as modified varieties of these grades.

The products covered by these investigations are: (1) Cut-to-length fluid end blocks with an actual height (measured from its highest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), an actual width (measured from its widest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), and an actual length (measured from its longest point) of 11 inches (279.4 mm) to 75 inches (1,905.0 mm); and (2) strings of fluid end blocks with an actual height (measured from its highest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), an actual width (measured from its widest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), and an actual length (measured from its longest point) up to 360 inches (9,144.0 mm).

The products included in the scope of these investigations have a tensile strength of at least 70 KSI (measured in accordance with ASTM A370) and a hardness of at least 140 HBW (measured in accordance with ASTM E10).

A fluid end block may be imported in finished condition (i.e., ready for incorporation into a pump fluid end assembly without further finishing operations) or unfinished condition (i.e., forged but still requiring one or more finishing operations before it is ready for incorporation into a pump fluid end assembly). Such finishing operations may include: (1) Heat treating; (2) milling one or more flat surfaces; (3) contour machining to custom shapes or dimensions; (4) drilling or boring holes; (5) threading holes; and/or (6) painting, varnishing, or coating.

Tariff treatment

Based upon the scope set forth by Commerce, information available to the Commission indicates that the merchandise subject to these investigations are provided for in the Harmonized Tariff Schedule of the United States ("HTS") subheadings 7218.91.00, 7218.99.00, 7224.90.00, 7326.19.00, 7326.90.86, or 8413.91.90, and are imported under statistical

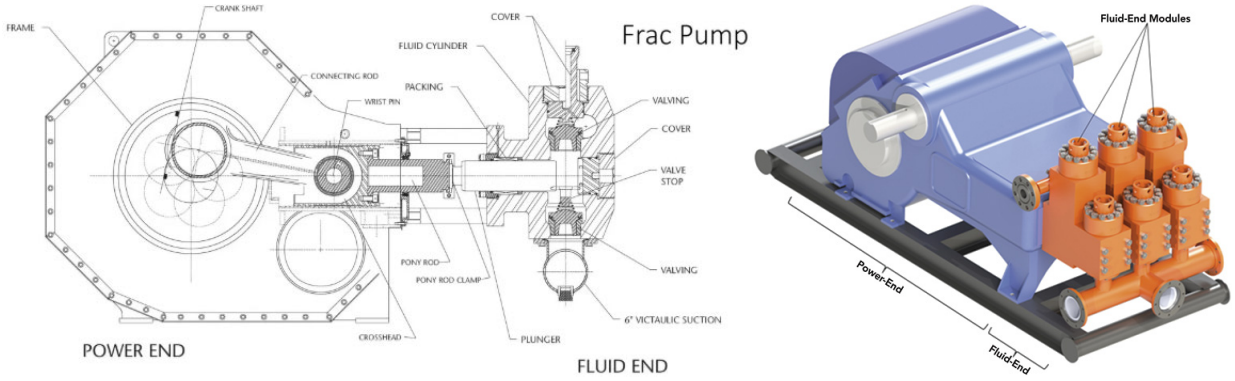
reporting numbers 7218.91.0030, 7218.99.0030, 7224.90.0015, 7224.90.0045, 7326.19.0010, 7326.90.8688, or 8413.91.9055.[16] The general rate of duty for HTS subheadings 7218.91.00, 7218.99.00, 7224.90.00, and 8413.91.90 is free. The general duty rate for HTS subheading 7326.19.00 is 2.9 percent *ad valorem*. Decisions on the tariff classification and treatment of imported goods are within the authority of U.S. Customs and Border Protection.

The product

Description and applications

Fluid end blocks are steel forgings of a particular chemistry and certain dimensional ranges that are an essential part of a well service pump. Fluid end blocks are used in well stimulation processes and are responsible for pressurizing the pumped fluid into the well. A typical well service pump consists of a power end that connects to a fluid end with stay rods (figure I-1). The pump's fluid end produces the pumping process with valves, pistons, and liners, while the power end converts the rotation of the drive shaft to the reciprocating motion of the pistons.[17]

Figure I-1
Fluid end blocks: Well service pump system design



Sources: Fluidendpumpparts; Upstream Pumping.

[16] Prior to 2019, subject goods were imported under statistical reporting numbers 7218.91.0030, 7218.99.0030, 7224.90.0015, 7224.90.0045, 7326.19.0010, 7326.90.8688. These statistical reporting numbers include products other than fluid end blocks. Effective as of January 1, 2019, fluid end blocks comprising parts of pumps are separately enumerated and are imported under statistical reporting number 8413.91.9055.

[17] Petitions, p. 10.

In the United States and subject countries, most fluid end blocks are made from stainless or non-stainless alloy steels. Historically, carbon steel has been used but is now less prevalent in the production of fluid end blocks due to its corrosive qualities. To reduce corrosion, stainless steel fluid end blocks were introduced in 2011 to 2012.[18] Today, most fluid end blocks used in pumps are made from forgings of a variety of grades of stainless or non-stainless alloy steel, although the most common are 15-5PH and 17-4PH.[19] [20] Many fluid end block manufacturers experiment with different steel chemistries in an effort to improve the fluid end block's properties, including hardness, toughness, strength, and machinability.[21] The high pressures involved at the fluid end dictate the use of forging technology as well as particular steel specifications. Depending upon the application, pumps can generate pressures as high as 20,000 PSI with flow rates above 100 barrels per minute.[22]

Due to the many pump applications for fluid end blocks, manufacturers produce design variations that meet the specifications, applications, and designs required by the pump manufacturer. Pumps are commonly triplex or quintuplex in design, meaning that they have either three or five sets of piston-and-valve bores in each fluid end block, although fluid ends can have a different number of piston-and-valve bores depending upon the particular application or the proprietary design of the pump manufacturer (figure I-2).[23]

[18] Pumps & Systems website, https://www.pumpsandsystems.com/fluid-end-material-geometry-updates, retrieved January 17, 2020.

[19] Ibid.

[20] The petitions list several steel grades used in the manufacturing of fluid end blocks. Steel standards include, but are not limited to, American Iron and Steel Institute ("AISI") or Society of Automotive Engineers ("SAE") grades 4130, 4135, 4140, 4320, 4330, 4340, 8630, 15-5, 17-4, F6NM, F22, F60, and XM25, as well as modified variety of these grades. Petitions Amendment Part 1, p. 57.

[21] Pumps & Systems website, https://www.pumpsandsystems.com/fluid-end-material-geometry-updates, retrieved January 17, 2020.

[22] Petitions, p. 10.

[23] Petitions, p. 10.

Figure I-2
Fluid end blocks: Examples of fluid end blocks, including triplex, multiplex and quintuplex fluid end blocks and modules.

Sources: Upstream Pumping; Hymac; Kerr Pumps.

Fluid end blocks produced in the United States and those imported from subject countries typically are sold to original equipment manufacturers ("OEMs") of hydraulic pumps or fluid end module manufacturers. These manufacturers may perform further machining and finishing processes and incorporate the fluid end block into a fluid end module or hydraulic pump, which is then sold to third parties involved in oil and gas exploration and production. Fluid end blocks are also sold directly to vertically integrated pump manufacturers that are engaged in drilling and recovery.[24] [25]

Most pumps produced by manufacturers are used for drilling or hydraulic fracturing in the oil and gas industry. Depending upon the application, pumps can generate pressures as high

[24] Conference transcript, p. 19 (Saunders) and p. 137 (Poradek).

[25] Pump manufacturers in the United States include FTS International, Gardner Denver, Halliburton, and Schlumberger. Petitions, p. 10.

as 20,000 PSI with flow rates above 100 barrels per minute.[26] Some fluid end blocks are used for mud pumps, which generate lower pressures while pumping water or a mud mix.[27]

The life cycle of the fluid end blocks also depends on several factors, including the application for which they are used.[28] The fluid end blocks used in hydraulic pumps, for example, have limited product lifecycles because of fatigue cracking and abrasions which may cause a pump to fail after only a few hundred hours of service.[29] [30] Once this occurs, pump producers and operators purchase replacement fluid end blocks to service a particular pump model.

Manufacturing processes

Fluid end blocks are produced to the specification of each individual OEM or pump manufacturer, and each OEM or pump manufacturer has multiple fluid end designs. The pump model and characteristics of the project site dictate which fluid end block design will be used in a particular pump.

Fluid end block forgings, or unfinished fluid end blocks, are hot forged using an open-die or closed-die forging method, and are then either machined by the forgers or are sold to OEMs who undertake several manufacturing operations, including machining and heat treating.[31] [32]

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[26] Petitions, p. 10.

[27] Conference transcript, p. 101 (Gilbert).

[28] There are several variables that determine the performance and life of a fluid end block, including the pressure under which it is operated; the shale plate or geography of where it is operated; the makeup of the fluid that is being utilized; the quantity and makeup of the sand and chemicals used; and the work crew that operates and maintains the pump. Conference transcript, p. 57 (Saunders).

[29] Petitions, p. 10.

[30] Fluid end blocks manufactured using carbon steel typically has a life of 250 to 450 hours. In general, fluid end blocks used in the fracking industry can fail in as little as 100 to 500 pumping hours due to extreme environments such as 100 mesh frac sands, ever-increasing pressure, recycled water, and advanced chemicals and slickwater. VP Sales & Manufacturing, a fluid end manufacturer, claims that its Hercules 2 fluid end block has demonstrated a service life of over 1,000 pumping hours and in some cases over 2,000 pumping hours. Pumps & Systems website, https://www.pumpsandsystems.com/fluid-end-material-geometry-updates, retrieved January 17, 2020; Upstream Pumping website, https://www.upstreampumping.com/article/well-completion-stimulation/2016/5-failures-fluid-ends, retrieved January 17, 2020; World Oil website, https://www.worldoil.com/techtalk/vp-sales-manufacturing/new-fluid-end-design-increases-packing-life-decreases-cost-per-pumping-hour, retrieved January 17, 2020.

[31] Conference transcript, pp. 138-139 (Gilbert, Lowrey, Poradek).

[32] "Finished" and "Unfinished" are not established industry standards, but within the context of these investigations the following definitions are applied: A finished fluid end block is a fluid end block that is ready for incorporation into a pump fluid end module without further finishing operations. An

(continued...)

Once these essential operations are performed, the fluid end block is dedicated for eventual use in the fluid end module of a pump. The difference between a finished and unfinished fluid end block is determined by the extent to which the forger, OEM, or pump manufacturer elects to perform finishing functions.[33]

Depending on a company's level of vertical integration, a fluid end block manufacturer's capabilities may include steel making, forging, secondary processing and finishing functions, and/or testing.[34] Fluid end blocks are produced from stainless or non-stainless alloy steel, but the steel grade used is ultimately determined by the specifications and chemistries provided by the OEM and/or pump manufacturer. The steel specification may reflect a standard grade, a modified standard grade in which the permissible range of one or more alloying elements (e.g. nickel) deviates from the standard, or a custom grade delineated in the customer's specification. The exact grade formulation may be proprietary to the producer or customer.[35] In some cases, fluid end block producers that are vertically integrated in steel making produce ingots that meet the specified grade and necessary dimensions. Producers who are not vertically integrated in steel making acquire the required grade and size ingot from a steel maker or supplier.

The next step in the production phase is the forging process. Fluid end blocks in the United States and in subject countries typically are hot forged using open-die forging presses.[36]

(…continued)

unfinished fluid end block is a forged fluid end block that still requires at least one more finishing operation before it is ready for incorporation into a pump fluid end module. Finishing operations may include: (1) heat treating; (2) milling one or more flat surfaces; (3) contour machining to custom shapes or dimensions; (4) drilling or boring holes; (5) threading holes; and/or (6) painting, varnishing, or coating. "Semi-finished" fluid end blocks may be defined as fluid end blocks that have undergone some of these finishing operations but generally are not ready for incorporation into a fluid end module. Petitions amendment Part 1, p. 57

[33] Petitions amendment Part 1, p. 6.

[34] Finkl is a vertically integrated fluid end block domestic producer. Finkl has its own melt shop for producing ingots, open-die forging presses, furnaces for heat treatment, and machining and finishing lines. It produces steel alloy and stainless steel ingots, as well as a proprietary stainless steel grade called "HVX." To meet customer requirements and specifications, Finkl has purchased different grades of stainless steel ingots that it does not produce itself. Conference transcript, p. 23 (Shirley).

[35] Petitions, p. 11.

[36] Bharat Forge, the largest producer and exporter of fluid end blocks from India, uses both open-die and closed-die forging presses to produce fluid end blocks. Respondents from Bharat Forge stated that Bharat Forge filed a patent for its closed die manufacturing process in 2016, which is pending in the United States, Europe, and China. Respondents reported that Bharat Forge opened a closed-die production facility during the data collection period. In its postconference brief, Bharat Forge stated (continued...)

After the ingot is heated, it is then forged. During open-die forging, the hot ingot is repeatedly pressed between two separate dies using a hydraulic press until it is manipulated into the appropriate shape. The hot steel is altered until its properties are improved, such that it has (1) improved microstructure, (2) greater strength and ductility, (3) finer grain size, (4) continuous grain flow, and (5) higher fatigue resistance. At this point of the process, a forger that is vertically integrated in heat treating, machining, and other finishing capabilities may continue to develop the fluid end block. In other cases, the forger may elect to do some basic machining before selling it to an OEM or vertically integrated pump manufacturer, which then continue to apply finishing functions.[37] Due to specifications, such as certain chemistries and configurations, once a fluid end block is forged, it is fully dedicated to becoming a fluid end block.[38]

Following the forging process, the fluid end block usually requires heat treatment using heat treating furnaces. Heat treatment is applied to the fluid end block to austenitize, normalize, anneal, solution anneal, temper, age, or quench.[39] Prior to heat treatment, rough

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(…continued)

that almost *** percent of its open-die forging assets and *** percent of its closed die assets were dedicated to the relationship with Halliburton. Conference transcript, p. 52 (Levy); Conference transcript, pp. 79-81, 142 (Powell); Respondent Bharat Forge's postconference brief, p. 3.

[37] According to respondents, most fluid end block forgings undergo some machining before being sold to OEMs or fluid end manufacturers. Conference transcript, p. 138 (Gilbert).

[38] Conference transcript, p. 53 (Shirley, Saunders).

[39] "Austenitized" – Steel that has been heated above the temperature at which it changes crystal structure from ferrite to austenite is called austenized steel.

"Normalized" – Steel that has been heated above its upper critical temperature and then cooled in standing air is called normalized steel. Normalizing is used to undo previous heat treating results so as to achieve a uniform grain structure.

"Annealed" – Steel that has been heated above its recrystallization temperature, maintained at a suitable temperature for a suitable amount of time, and then cooled in a controlled manner, has been annealed.

"Solution annealed" – Steel that has been heated to a temperature at which a particular constituent will enter into solid solution followed by cooling at a rate fast enough to prevent the dissolved constituent from precipitating is known as a solution annealed steel.

"Tempered" – Quenched steel that has been heated to a temperature below the critical point, and then allowed to cool, has been tempered. The martensite resulting from quenching makes the steel hard but brittle. Excessive hardness is reduced by the tempering process.

"Age hardened" – (also known as precipitation hardening and particle hardening) Steel that is subject to prolonged low temperature heat treatment allowing the controlled release of constituent to form precipitate clusters is called age hardened steel. The "PH" for 17-4PH or 15-5PH steel refers to "precipitation hardening" stainless steels.

(continued...)

milling may be required, and following the heat treatment the fluid end block may be grit blasted to remove the heat treatment scale.[40]

Since open-die forging cannot shape the steel to precise dimensions, the fluid end block must undergo machining to achieve the dimensions required by the purchaser. The machining process can range from simple sawing and rough milling to complex milling, contour machining, and drilling/boring that require multiple steps and specialized machine tools.[41] Testing is the final step before a fluid end block is delivered to a customer. Customer specifications usually require certain dimensions, as well as chemical and mechanical properties of the forging.[42] Extensive quality control procedures using specialized laboratory inspection and testing equipment are undertaken to ensure that the fluid end block meets the customer's specifications and requirements.[43]

Domestic like product issues

The Commission's decision regarding the appropriate domestic product(s) that are "like" the subject imported product is based on a number of factors including: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) common manufacturing facilities, production processes, and production employees; (5) customer and producer perceptions; and (6) price. In a semi-finished product analysis, the Commission examines: (1) whether the upstream article is dedicated to the production of the downstream article or has independent uses; (2) whether there are perceived to be separate markets for the upstream and downstream articles; (3) differences in the physical characteristics and functions of the upstream and downstream articles; (4) differences in the costs or value of the vertically differentiated articles; and (5) significance and extent of the processes used to transform the upstream into the downstream articles.

(…continued)

"Quenched" – Steel that has been heated above the pearlite eutectoid transition temperature and then rapidly cooled such that some of the crystal structure is transformed into martensite has been quenched. Petitions, pp.12-13.

[40] Petitions, p. 13.

[41] Petitions, p. 13.

[42] Mechanical properties include yield strength, elongation, and tensile strength, and are typically designated by testing standards and protocols established by the American Society for Testing and Materials.

[43] Petitions, p. 13.

Petitioners propose a domestic like product coextensive with the scope of these investigations, observing that fluid end blocks constitute a single family of products that use common manufacturing facilities, production processes, and employees to produce forged steel blocks used as a key component in fluid end modules for oil and gas applications.[44] Petitioners state that once a supplier is qualified, all sources of supply are interchangeable, and all fluid end blocks made for a given customer specification are suitable for the same applications.[45] Petitioners observe that fluid end blocks are sold through similar channels of distribution to manufacturers of fluid end modules.[46] Petitioners assert that, while purchasers may have different preferences in steel types, purchasers and producers perceive the full continuum of forged fluid end blocks to be uniquely suited for the production of fluid end modules used in hydraulic pumps for the oil and gas sector.[47]

Bharat Forge stated in the staff conference that, for the purposes of the preliminary investigations, there is one domestic like product coextensive with the scope of these investigations.[48] In its postconference brief, in the context of cumulation, Bharat Forge argued that finished fluid end blocks and unfinished or semifinished fluid end blocks are not interchangeable and are "distinct" fluid end blocks.[49] Respondent BGH proposes unfinished, semi-finished and finished FEBs each represent separate like products, which are each further divided into stainless and non-stainless alloy steel separate like products, citing separate industries and different customers.[50] Respondent SWG proposes stainless alloy steel fluid end blocks be considered separate like products from non-stainless alloy steel fluid end blocks, stating that customers do not view the two products as interchangeable because stainless alloy steel fluid end blocks have different physical characteristics and mechanical properties, resulting in better performance and commanding a higher price than non-stainless alloy steel fluid end blocks.[51] Respondent SWG observes that stainless alloy steel fluid end blocks have higher raw material costs and undergo different manufacturing processes, including longer forging and melting processes.[52] Respondent Lucchini Mamè proposes that fluid end blocks

[44] Petitioners' postconference brief, pp. I-8 and I-9.
[45] Ibid, p. I-9.
[46] Ibid, pp. I-9 and I-10.
[47] Ibid., p. I-10.
[48] Conference transcript, p. 94 (Powell).
[49] Respondent Bharat Forge's postconference brief, p. 8.
[50] Respondent BGH's postconference brief, p. 12.
[51] Respondent SWG's postconference brief, pp. 3-6.
[52] Ibid, pp. 3-6.

used for fracking applications should be considered a separate like product from fluid end blocks used for mud-pump applications, citing differences in size, raw materials, mechanical characteristics, heat treatment processes, skill level of labor required, and the level of machinery sophistication required.[53]

[53] Respondent Lucchini Mamè's postconference brief, pp. 12-14.

Part II: Conditions of competition in the U.S. market

U.S. market characteristics

Fluid end blocks are forged steel blocks that form part of fluid end modules. Fluid end modules are used in the oil and gas sector in hydrofracking and drilling applications.[1] Fluid end blocks may have undergone finishing operations (including milling and machining, etc.). Fluid end blocks are subject to extreme pressures and surface corrosion and therefore require frequent replacement.[2] Fluid end blocks can be made of stainless or non-stainless alloy steel with a large variety of chemical compositions. They are typically produced by open-die forging, but may also be produced through closed-die forging (considered by certain U.S. importers to provide superior compaction but by Petitioners to add additional time, money, and inventory).[3] Several parts of the production process may be patented, including steel chemistries and forging processes.[4]

Apparent U.S. consumption of fluid end blocks increased substantially during the period for which data were collected. Overall, apparent U.S. consumption tripled between 2016 and 2017, but was lower in 2018 and lower in January-September 2019 compared to January-September 2018.

Impact of Section 301 tariffs on products from China[5]

In June 2018, USTR announced a section 301 investigation in response to Chinese trade practices. Effective July 2018, September 2018, and September 2019, fluid end blocks imported from China were included in lists of products subject to additional duties ranging from 10 to 25 percent.[6] Table II-1 presents the assessments of U.S. producers and importers of the impact of Section 301 tariffs that cover Chinese-origin raw material inputs of fluid end blocks.

All three U.S. producers reported no change in the supply of U.S.-produced fluid end blocks, overall demand for fluid end blocks, or raw material costs as a result of Section 301 tariffs. The majority of U.S. producers (2 of 3) reported that in the supply of fluid end blocks imported from China and the price of fluid end blocks decreased as a result of section 301

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[1] Petitioner's postconference brief, I-1.
[2] Conference transcript, p. 57 (Boyd).
[3] Conference transcript, p. 52 (Boyd).
[4] Conference transcript, p. 80 (Powell).
[5] For additional information on Section 301 of the *Trade Act of 1974*, please refer to Appendix D.
[6] Petitions, p. 6.

tariffs. The majority of U.S. producers (2 of 3) reported an increase in the supply of fluid end blocks imported from other countries as a result of section 301 tariffs.

Most U.S. importers (8 of 15) reported that they did not know of any impact of section 301 tariffs in the market. Of the four importers that reported an impact, three U.S. importers reported that raw material costs for fluid end blocks increased as a result of section 301 tariffs. An equal number of U.S. importers (two each) reported that section 301 tariffs had increased or not changed the supply of U.S.-produced fluid end blocks or prices for fluid end blocks. The majority of U.S. importers reported a decrease in the supply of fluid end blocks imported from China and overall demand in the market decreased as a result of section 301 tariffs. Most U.S. importers reported section 301 tariffs had no change on the supply of fluid end blocks imported from other countries.

Table II-1
Fluid end blocks: Impact of 301 investigation

Item	U.S. producers				U.S. importers			
	Increase	No change	Decrease	Fluctuate	Increase	No change	Decrease	Fluctuate
Domestic supply in market	---	3	---	---	2	2	---	---
China supply in market	---	1	2	---	---	1	3	---
Other than China supply in market	2	1	---	---	1	3	---	---
Prices of scope merchandise	---	1	2	---	2	2	1	---
Overall demand in market	---	3	---	---	---	1	3	---
Raw material costs of scope merchandise	---	3	---	---	3	1	---	---

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

Channels of distribution

Fluid end blocks are typically sold to end users. U.S. producers and importers sold primarily to end users, regardless of the source of the imports.

Table II-2
Fluid end blocks: U.S. producers' and importers' U.S. shipments, by sources and channels of distribution, 2016-18, January to September 2018, and January to September 2019

* * * * * * *

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

Geographic distribution

All U.S. producers and importers of fluid end blocks from subject countries reported serving the Central Southwest region, and none reported serving the Pacific Coast (table II-3). U.S. producers also reported selling to the Northwest and Midwest. The oil and gas industry is concentrated in the Appalachian region, Texas, and North Dakota, while contract machining houses are concentrated in the Great Lakes region.[7] Importers also reported selling to the Northeast, Midwest, Southeast, and Mountain regions. For U.S. producers, *** percent of sales were within 100 miles of their production facility, *** percent were between 101 and

[7] Conference transcript, pp. 66-67 (Boyd).

1,000 miles, and *** percent were over 1,000 miles. Importers sold *** percent within 100 miles of their U.S. point of shipment, *** percent between 101 and 1,000 miles, and *** percent over 1,000 miles.

Table II-3
Fluid end blocks: Geographic market areas in the United States served by U.S. producers and importers

Region	U.S. producers	Subject U.S. importers				
		China	Germany	India	Italy	Subject
Northeast	1	2	4	2	4	5
Midwest	2	2	2	2	5	5
Southeast	---	1	1	1	2	2
Central Southwest	5	5	4	4	7	12
Mountains	---	1	2	1	3	3
Pacific Coast	---	---	---	---	---	---
Other[1]	1	---	---	---	---	---
Reporting firms	5	5	4	4	7	12

Note: All other U.S. markets, including AK, HI, PR, and VI.

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

Supply and demand considerations

U.S. supply

Table II-4 provides a summary of the supply factors regarding fluid end blocks from U.S. producers and from subject countries. Domestic producers' capacity was nine times the capacity of German producers, quadruple the capacity of producers in India, and nearly triple the capacity of Italian producers. However, capacity utilization rates in Germany, India, and Italy increased substantially between 2016 and 2018, while capacity utilization for the domestic industry increased at a slower rate during the same time frame. Despite this increase, U.S. capacity utilization remains relatively low. Foreign producers' inventories in Germany, India, and Italy were less than one percent in 2018 while U.S. producers' inventories were more than 10 percent of total shipments.

Table II-4
Fluid end blocks: Supply factors that affect the ability to increase shipments to the U.S. market

Item	2016	2018	2016	2018	2016	2018	Shipments by market in 2018 (percent)		Able to shift to alternate products
	Capacity (units)		Capacity utilization (percent)		Inventories as a ratio to total shipments (percent)		Home market shipments	Exports to non-U.S. markets	No. of firms reporting "yes"
United States	***	***	***	***	***	***	***	***	5 of 5
China	***	***	***	***	***	***	***	***	0 of 0
Germany	***	***	***	***	***	***	***	***	2 of 2
India	***	***	***	***	***	***	***	***	1 of 2
Italy	***	***	***	***	***	***	***	***	7 of 7

Note: For additional data on the number of responding firms and their share of U.S. production and of U.S. imports from each subject country, please refer to Part I, "Summary Data and Data Sources."

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

Domestic production

Based on available information, U.S. producers of fluid end blocks have the ability to respond to changes in demand with large changes in the quantity of shipments of U.S.-produced fluid end blocks to the U.S. market. The main contributing factors to this degree of responsiveness of supply are the availability of large amounts of unused capacity, and the ability to shift production to or from alternate products). Most firms reported being able to shift to alternate products.

Although the Middle East, Latin America, and East Asia are developing hydraulic fracturing production, North America is the predominant location for hydraulic fracturing activity.[8] U.S. producers reported *** export shipments in 2018. Other products that U.S. producers reportedly can produce on the same equipment as fluid end blocks are large oil/gas equipment forgings, petrochemical and industrial forgings, open-die forgings, and other/custom forgings (die blocks, landing gear preforms, etc.). Factors affecting U.S. producers' ability to shift production include existing capital investments into the production of fluid end blocks.

[8] Conference transcript, p. 95 (Lowrey).

Subject imports from China

Limited information was available on the ability of producers of fluid end blocks from China to respond to changes in demand with changes in the quantity of shipments of fluid end blocks to the U.S. market. ***.

Subject imports from Germany

Based on available information, producers of fluid end blocks from Germany have the ability to respond to changes in demand with small-to-moderate changes in the quantity of shipments of fluid end blocks to the U.S. market. Factors affecting foreign producers' ability to respond to changes in demand include ability to shift from alternate products, "melt shop" capacity, and existing capacity utilization. German producers' increased both capacity and production during 2016-18, increasing capacity utilization nearly ***. German producers did *** inventories and primarily shipped their fluid end blocks to the United States. Foreign importer and producer *** reported halting production and refusing to supply U.S. customers after the imposition of section 232 tariffs.

Subject imports from India

Based on available information, producers of fluid end blocks from India have the ability to respond to changes in demand with moderate changes in the quantity of shipments of fluid end blocks to the U.S. market. The main contributing factors to this degree of responsiveness of supply are the ability to increase capacity quickly and some ability to shift production to other products. Factors mitigating responsiveness of supply include limited availability of unused capacity, inventories, and shipments to other markets. Indian producer Bharat Forge ***, leading to *** capacity utilization in 2018. Bharat Forge reported *** during 2016-18.[9]

Subject imports from Italy

Based on available information, producers of fluid end blocks from Italy have the ability to respond to changes in demand with moderate changes in the quantity of shipments of fluid end blocks to the U.S. market. The main contributing factor to this degree of responsiveness of

[9] Conference, pp. 52, 80, and 150.

supply is the availability of unused capacity and the ability to shift production to or from alternate products. Factors mitigating responsiveness include limited inventories and shipments to markets other than the United States. Capacity utilization for fluid end blocks produced in Italy increased markedly during 2016-18, as production increases outpaced increases in capacity. Inventories declined from less than five percent of total shipments to less than one percent. All seven Italian producers reported that they can shift production to or from other products on the same equipment. Most reported being able to shift to open die forgings, and products included square-shaped, tool steel, turbine shafts, discs; industrial forgings (subsea, power generation, energy, defense, commercial, nuclear, food presses); shafts, blocks turbine shafts, rings, and crankshafts; and steel bars.

Imports from nonsubject sources

U.S. imports of fluid end blocks from nonsubject sources accounted for less than one percent of total U.S. imports in 2018. The largest nonsubject sources of imports in 2018 were Mexico and Canada.

Supply constraints

No U.S. producers reported experiencing supply constraints; however, U.S. importer/purchaser *** reported U.S. producer Finkl was unable to provide adequate supply of stainless steel fluid end blocks when the market transitioned from non-stainless alloy steel to stainless steel. Eleven of fifteen U.S. importers reported they did not experience supply constraints. Foreign producer/importer *** reported supply constraints due to the imposition of section 232 tariffs and *** reported that the availability of stainless steel and capacity to meet lead times/fluctuation of demand was a constraint.

U.S. demand

Based on available information, the overall demand for fluid end blocks is likely to experience small changes in response to changes in price. The main contributing factors are the lack of substitute products, replacement schedules, and the small cost share of fluid end blocks in most of its end-use applications.

End uses and cost share

U.S. demand for fluid end blocks depends on oil and gas market trends. Fluid end blocks are used in fracturing pumps and mud pumps. Fluid end blocks account for a small share of the cost of the end-use products in which they are used, although they require frequent

replacement. Reported cost shares for fluid end blocks ranged from 13.0 to 15.0 percent, and firms reported a cost share of 10 percent. However, cost shares can vary based on fluid end blocks materials and the level of finishing.

As seen in Figures II-1 to II-3, natural gas prices increased irregularly during 2016-2018 and declined in 2019. However, natural gas prices are forecast to remain relatively stable through 2021. Oil prices increased steadily since 2016 and are forecast to continue doing so through 2021. The oil rig count increased by 43 percent between January 2016 and September 2019, while the gas rig count increased by 13.3 percent during the same time.

Business cycles

All five responding U.S. producers and ten of fifteen responding U.S. importers reported that the market was subject to business cycles or conditions of competition. Most of these firms reported being subject to price cycles in the oil and gas market and noted the change in the conditions of competition to using stainless steel fluid end blocks rather than carbon and alloy fluid end blocks, which have a longer product lifecycle. Firms also reported that the fluid end block market was subject to customers' capital spending availability and any political prioritization of energy independence in the United States.

Demand trends

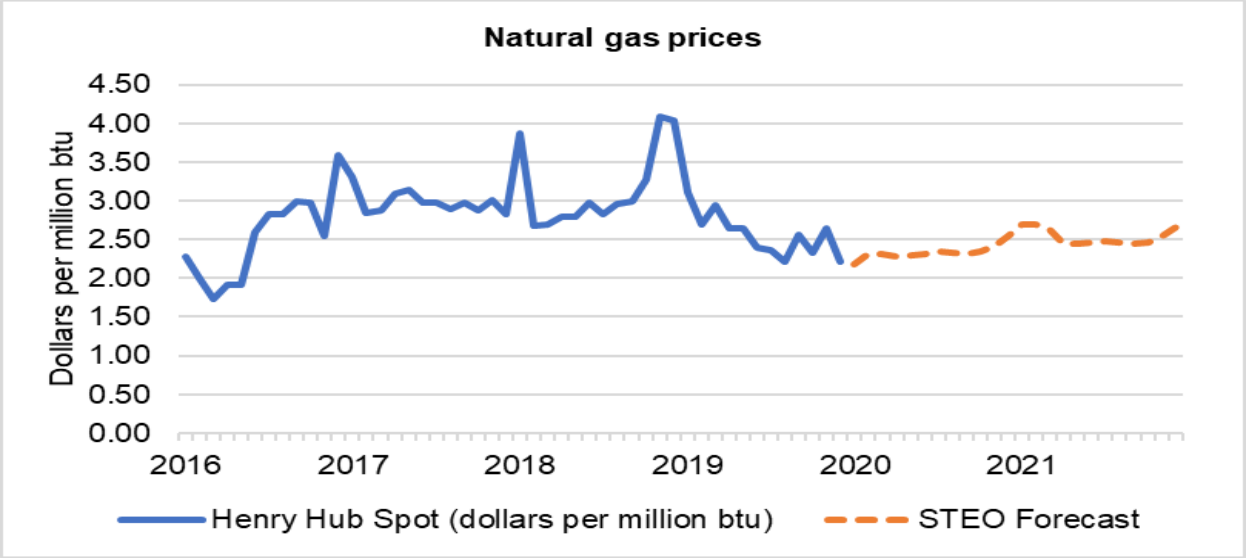
U.S. demand for fluid end blocks depends on oil and gas market trends. As seen in Figures II-1-II-2, natural gas prices declined in 2019 after rising irregularly in 2016. However, natural gas prices are forecast to remain relatively stable through 2021. Oil prices also fluctuated after in 2016, but have remained at higher levels since, and are forecast to continue doing so through 2021.

With respect to rotary rig counts, Figure II-3 demonstrates a recovery beginning in the second half of 2016 through 2018, followed by declining activity in 2019. Figure II-4 provides a longer-term perspective, illustrating that the 2016-18 recovery is still well below activity levels in 2014-15.

Three U.S. producers and six importers reported a decrease in U.S. demand for fluid end blocks since January 1, 2016 (table II-5), while two U.S. producers and seven importers reported

fluctuating demand in the United States. Producer Ellwood *** reported a market downturn since the beginning of 2019.[10]

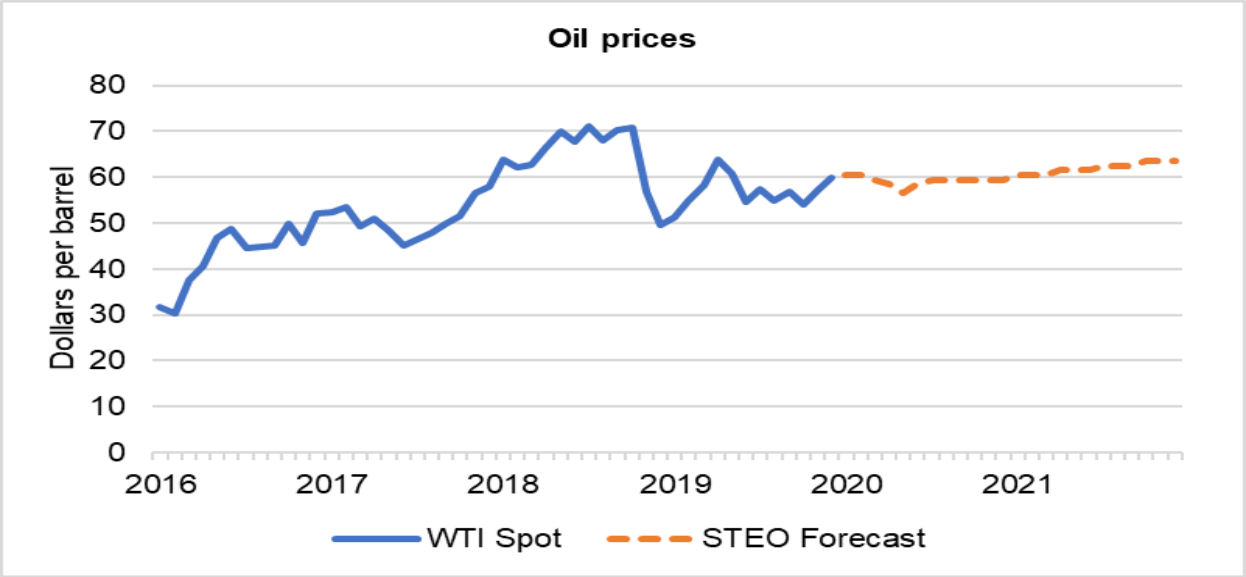
Figure II-1
Natural gas: Short term actual and predicted monthly Henry Hub spot prices of natural gas, January 2016-December 2021



Source: U.S. EIA, http://tonto.eia.gov/dnav/ng/hist/rngwhhdm.htm, retrieved January 18, 2020.

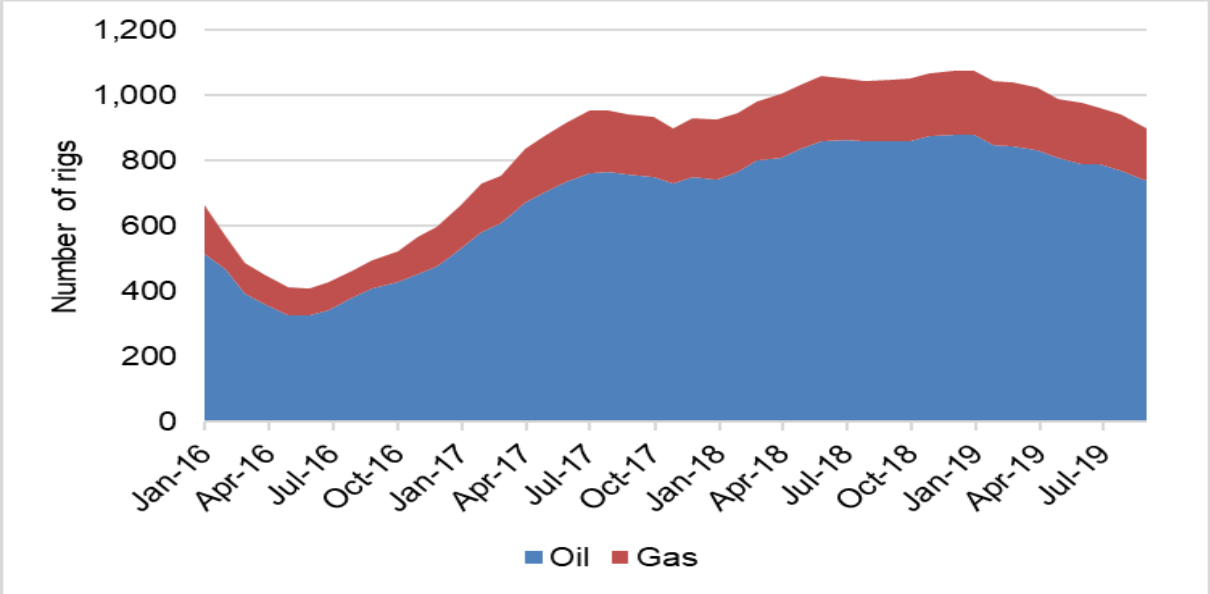
[10] Conference transcript, p. 9 (Beline), p. 43 (Boyd).

Figure II-2
Oil: Short term actual and predicted monthly West Texas crude oil prices, January 2016-December 2021



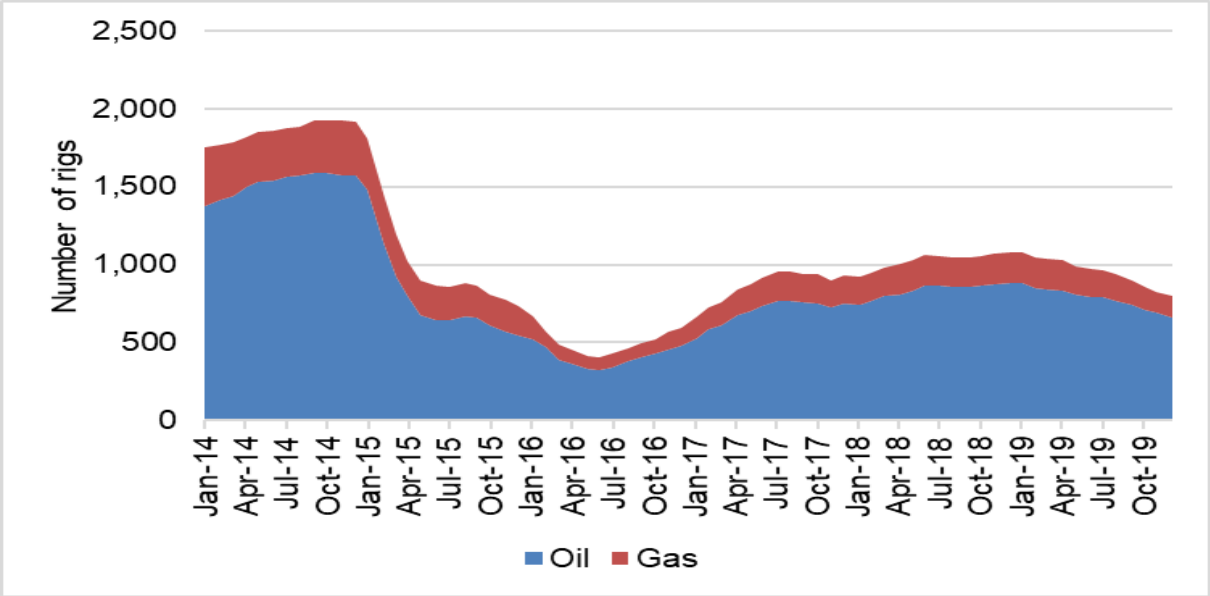
Source: U.S. EIA, http://tonto.eia.gov/dnav/ng/hist/rngwhhdm.htm, retrieved January 18, 2020.

Figure II-3
Rotary rig count: Average monthly rig counts, January 2016-September 2019



Source: Hughes Incorporated, https://rigcount.bakerhughes.com/static-files/cb71d33f-d330-4019-a3cc-0e35f161db0e, retrieved January 22, 2020.

Figure II-4
Rotary rig count: Average monthly rig counts, January 2014-December 2019



Source: Hughes Incorporated, https://rigcount.bakerhughes.com/static-files/cb71d33f-d330-4019-a3cc-0e35f161db0e, retrieved January 22, 2020.

Table II-5
Fluid end blocks: Firms' responses regarding U.S. demand and demand outside the United States

Item	Number of firms reporting			
	Increase	No change	Decrease	Fluctuate
Demand inside the United States: U.S. producers	---	---	3	2
Importers	2	---	6	7
Demand outside the United States: U.S. producers	---	---	---	---
Importers	3	4	1	---

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

Substitute products

Because fluid end blocks are made to specification, substitutes do not exist. All U.S. producers and importers reported that there were no substitutes. Moreover, fluid end blocks need frequent replacement.

Substitutability issues

The degree of substitution between domestic and imported fluid end blocks depends upon such factors as relative prices, quality (e.g., grade standards, defect rates, etc.), and conditions of sale (e.g., price discounts/rebates, lead times between order and delivery dates, reliability of supply, product services, etc.). Based on available data, staff believes that there is a

high degree of substitutability between domestically produced fluid end blocks and fluid end blocks imported from subject sources.

Lead times

Fluid end blocks are primarily produced-to-order. Finkl reported that orders are placed after a thirty-day request for quotation, after which delivery would take between eight to twelve weeks, or longer for imports.[11] U.S. producers reported that *** of their commercial shipments were produced-to-order, with lead times averaging *** days. U.S. importers reported that *** of their commercial shipments were produced to order, while *** were U.S. inventories and *** were foreign inventories, with lead times averaging ***.

Importer Galtway Industries *** indicated that, if purchases are made on a small volume spot buy, lead time can be critical; these types of purchases can be part of a firm's supply diversification.[12] Lead times/delivery was the second highest-ranked factor reported by U.S. purchasers in their purchasing decisions. ***.

Factors affecting purchasing decisions

Purchasers responding to lost sales lost revenue allegations[13] were asked to identify the main purchasing factors their firm considered in their purchasing decisions for fluid end blocks. The top-ranked purchasing factors identified by firms include quality, performance, and reliability (nine firms); lead time and delivery (three firms); and availability and supply (one firm). Quality, performance, and reliability was also the second-ranked most reported factor (six firms), while price was the most-reported third-ranked factor (six firms).

[11] Conference transcript, p. 48 (Shirley).

[12] Conference, pp. 114 and 140 (Gilbert).

[13] This information is compiled from responses by purchasers identified by Petitioners to the lost sales lost revenue allegations. See Part V for additional information.

Table II-6

Fluid end blocks: Ranking of factors used in purchasing decisions as reported by U.S. purchasers, by factor

Item	1st	2nd	3rd	Total
	Number of firms (number)			
Quality/ Performance/ Reliability	9	6	1	12
Price / Cost	---	4	6	10
Lead time/ Delivery	3	2	1	6
Availability / Supply	1	---	1	2
All other factors	3	2	4	NA

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

Table II-7

Fluid end blocks: Changes in purchase patterns from U.S., subject, and nonsubject countries

Source of purchases	Did not purchase	Decreased	Increased	Constant	Fluctuated
United States	1	2	2	3	5
China	7	2	---	3	1
Germany	7	2	1	1	1
India	8	2	1	1	---
Italy	3	1	3	1	5
All other sources	6	2	1	1	3
Sources unknown	9	---	---	1	---

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

Comparison of U.S.-produced and imported fluid end blocks

In order to determine whether U.S.-produced fluid end blocks can generally be used in the same applications as the subject countries, U.S. producers and importers were asked whether the products can always, frequently, sometimes, or never be used interchangeably. As shown in table II-8, most U.S. producers and importers reported that fluid end blocks are always interchangeable between all countries.

Importer/purchaser *** reported that product interchangeability depended on meeting quality standards. However, U.S. importer *** reported that India produces non-stainless alloy steel product, which can have limited application for operators. Importer ***, which imports from China, reported that some foreign suppliers have more flexibility for pairing by dual certifying material for both 15-5 and 17-4 material due to higher quality control.

Table II-8

Fluid end blocks: Interchangeability between fluid end blocks produced in the United States and in other countries, by country pair

Country pair	U.S. producers				U.S. importers			
	A	F	S	N	A	F	S	N
United States vs. China	5	---	---	---	5	3	---	1
United States vs. Germany	5	---	---	---	5	---	1	---
United States vs. India	5	---	---	---	4	1	1	---
United States vs. Italy	5	---	---	---	6	3	---	---
China vs. Germany	4	---	---	---	4	---	---	1
China vs. India	4	---	---	---	4	---	1	---
China vs. Italy	4	---	---	---	5	2	1	---
Germany vs. India	4	---	---	---	4	---	1	1
Germany vs. Italy	4	---	---	---	6	2	---	---
India vs. Italy	4	---	---	---	5	1	---	---
United States vs. Other	5	---	---	---	4	1	---	---
China vs. Other	4	---	---	---	4	---	---	---
Germany vs. Other	4	---	---	---	4	---	---	---
India vs. Other	4	---	---	---	4	1	---	---
Italy vs. Other	4	---	---	---	4	---	---	---

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

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

In addition, U.S. producers and importers were asked to assess how often differences other than price were significant in sales of fluid end blocks from the United States, subject, or nonsubject countries. As seen in table II-9, all U.S. producers reported differences other than price were sometimes or never significant in sales of fluid end blocks from all countries. The majority of U.S. importers reported differences other than price were always or frequently significant for China and Germany, frequently for India, and sometimes for Italy. Importer *** reported that, based on customer feedback, the quality and delivery performance for fluid end blocks from Germany were “more stable” than fluid end block produced in other subject countries.

Table II-9

Fluid end blocks: Significance of differences other than price between fluid end blocks produced in the United States and in other countries, by country pair

Country pair	U.S. producers				U.S. importers			
	A	F	S	N	A	F	S	N
United States vs. China	---	---	2	3	3	2	1	---
United States vs. Germany	---	---	1	4	2	1	1	1
United States vs. India	---	---	2	3	1	2	---	---
United States vs. Italy	---	---	1	4	1	1	3	1
China vs. Germany	---	---	1	2	2	1	---	---
China vs. India	---	---	1	2	1	1	---	---
China vs. Italy	---	---	1	2	1	1	1	1
Germany vs. India	---	---	1	2	2	1	---	---
Germany vs. Italy	---	---	1	2	2	1	1	1
India vs. Italy	---	---	1	2	1	1	1	---
United States vs. Other	---	---	2	3	1	---	---	---
China vs. Other	---	---	1	2	1	---	---	---
Germany vs. Other	---	---	1	2	1	---	---	---
India vs. Other	---	---	1	2	1	---	---	---
Italy vs. Other	---	---	1	2	1	---	---	---

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

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

Part III: U.S. producers' production, shipments, and employment

The Commission analyzes a number of factors in making injury determinations (see 19 U.S.C. §§ 1677(7)(B) and 1677(7)(C)). Information on the subsidies and dumping margins was presented in *Part I* of this report and information on the volume and pricing of imports of the subject merchandise is presented in *Part IV* and *Part V*. Information on the other factors specified is presented in this section and/or *Part VI* and (except as noted) is based on the questionnaire responses of *** firms that accounted for *** percent of U.S. production of fluid end blocks during 2018.

U.S. producers

The Commission issued a U.S. producer questionnaire to eleven firms based on information contained in the petitions and publicly available sources. *** firms provided usable questionnaire responses[1] on their productive operations and *** firms confirmed that they had produced fluid end blocks during the period for which data were collected, but provided limited production and capacity data.[2] [3] Staff believes that the *** usable questionnaire responses and the *** firms that provided limited data represent the vast majority of U.S. production of fluid end blocks.

Table III-1 lists U.S. producers of fluid end blocks, their production locations, positions on the petitions, and shares of total production.

[1] Of these *** questionnaire responses, *** firms' financial data, ***, were not used in Part VI on the financial experience of U.S. producers.

[2] These *** firms include ***.

[3] Two firms, ***, completed Parts I and V of the questionnaire, as these firms only perform finishing operations on fluid end blocks on a tolling basis. Their data are in Appendix E. *** not produced or performed finishing operations on fluid end blocks since January 1, 2016. Email from ***.

Table III-1
Fluid end blocks: U.S. producers of fluid end blocks, their position on the petitions, production locations, and shares of reported production, 2018

Firm	Position on petitions	Production location(s)	Share of production (percent)
Eastham	***	Beaumont, TX	***
Ellwood	Petitioner	Ellwood City, PA New Castle, PA Irvine, PA	***
Finkl	Petitioner	Chicago, IL	***
Forged Products	***	Houston, TX	***
Scot Forge	***	Spring Grove, IL Clinton, WI	***
Anderson Shumaker	***	Chicago, IL	***
Union Electric Steel Corporation	***	Carnegie, PA	***
Great Lakes Forge	***	Traverse City, MI	***
Total			***

[1] ***.
[2] ***.

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

Table III-2 presents information on U.S. producers' ownership. No related or affiliated firms were reported.

Table III-2
Fluid end blocks: U.S. producers' ownership

Item / Firm	Firm Name	Affiliated/Ownership
Ownership:		
***	***	***
***	***	***

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

Table III-3 presents U.S. producers' reported changes in operations since January 1, 2016. Four firms reported production curtailments due to decreased business, two firms reported expansions in capacity, one firm reported a reduction in employment, and one firm reported delayed or cancelled expansions. During the staff conference, Finkl reported that it upgraded its melt shop "in 2017, carrying into 2018" to produce stainless steel, including a newly patented stainless steel grade called "HVX." Prior to this, they had to purchase stainless steel ingots to produce stainless steel fluid end blocks.[4]

Table III-3
Fluid end blocks: U.S. producers' reported changes in operations, since January 1, 2016

Item / Firm	Reported changed in operations
Expansions:	
***	***[5]
***	***
Prolonged shutdowns or curtailments:	
***	***
***	***
***	***
***	***
Other:	
***	***
***	***
***	***

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

[4] Conference transcript, p. 67 (Shirley).
[5] ***.

U.S. production, capacity, and capacity utilization

Table III-4 and figure III-1 present U.S. producers' production, capacity, and capacity utilization. Capacity decreased by *** percent from 2016 to 2018 and was the same in interim 2018 and interim 2019. Production increased by *** percent from 2016 to 2017, then decreased by *** percent from 2017 to 2018, for an overall increase of *** percent from 2016 to 2018. Production was *** percent lower in interim 2019 than in interim 2018. Given that capacity was relatively unchanged, changes in capacity utilization mirrored production changes. Capacity utilization increased by *** percentage points from 2016 to 2017, then decreased by *** percentage points from 2017 to 2018, for an overall increase of *** percentage points from 2016 to 2018. Capacity utilization was *** percentage points lower in interim 2019 than in interim 2018.

Table III-4
Fluid end blocks: U.S. producers' capacity, production, and capacity utilization, 2016-18, January to September 2018, and January to September 2019

* * * * * * *

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

Figure III-1
Fluid end blocks: U.S. producers' capacity, production, and capacity utilization, 2016-18, January to September 2018, and January to September 2019

* * * * * * *

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

Alternative products

Table III-5 presents data on U.S. producers' capacity and production of alternative products using the same equipment as fluid end blocks. The majority of production on the machinery used to produce fluid end blocks is of alternative products. The percentage of fluid end block production to total production ranged from a low of *** percent in interim 2019 to a high of *** percent in 2017. *** firms reported producing ***.[6] Producers cited market conditions and prices as factors affecting their ability to shift production.

[6] All responding U.S. producers are forgers. U.S. Producers' Questionnaire, question II-3c. Petitioners *** stating that all fluid end block producers are forgers. In addition to being forgers, Ellwood and Finkl have in-house finishing capacity. They also have the option to contract out these

(*continued*...)

Table III-5
Fluid end blocks: U.S. producers' overall capacity and production on the same equipment as subject production, 2016-18, January to September 2018, and January to September 2019

* * * * * * *

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

(…*continued*)

finishing operations, but report that utilization of this option has been minimal in recent years. Petitioners' postconference brief, p. I-14. *** U.S. producers appear to also perform some finishing operations, as *** reported U.S. shipments of semi-finished fluid end blocks and did not have tolling agreements to contract out finishing operations. U.S. Producers' questionnaire, questions II-9 and II-5.

U.S. producers' U.S. shipments and exports

Table III-6 presents U.S. producers' U.S. shipments, export shipments, and total shipments. *** U.S. shipments were commercial shipments, as U.S. producers reported *** internal consumption or transfers to related firms. Export shipments of *** fluid end blocks to *** were reported by *** in interim 2019.

U.S. shipments increased from 2016 to 2017, by *** percent in terms of quantity and by *** percent in terms of value, then decreased from 2017 to 2018, by *** percent in terms of quantity and by *** percent in terms of value, for an overall increase of *** percent in terms of quantity and *** percent in terms of value from 2016 to 2018. Unit values decreased by *** percent from 2016 to 2017 and increased by *** percent from 2017 to 2018, for an overall increase of *** percent from 2016 to 2018. Unit values were *** percent higher in interim 2019 than in interim 2018. The higher average unit values occurred as the quantity and share of U.S. producers' U.S. shipments of stainless steel (versus non-stainless alloy steel) fluid end blocks increased, as shown in Appendix F, Table F-2.

Table III-6
Fluid end blocks: U.S. producers' U.S. shipments, export shipments, and total shipments, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. shipments	***	***	***	***	***
Export shipments	***	***	***	***	***
Total shipments	***	***	***	***	***
	Value (1,000 dollars)				
U.S. shipments	***	***	***	***	***
Export shipments	***	***	***	***	***
Total shipments	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. shipments	***	***	***	***	***
Export shipments	***	***	***	***	***
Total shipments	***	***	***	***	***
	Share of quantity (percent)				
U.S. shipments	***	***	***	***	***
Export shipments	***	***	***	***	***
Total shipments	***	***	***	***	***
	Share of value (percent)				
U.S. shipments	***	***	***	***	***
Export shipments	***	***	***	***	***
Total shipments	***	***	***	***	***

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

U.S. producers' inventories

Table III-7 presents U.S. producers' end-of-period inventories and the ratio of these inventories to U.S. producers' production, U.S. shipments, and total shipments**.** *** was the only U.S. producer to report any end-of-period inventories.[7] End-of-period inventories increased *** percent from 2016 to 2017, then decreased *** percent from 2017 to 2018, for an overall *** percent decrease from 2016 to 2018. End-of-period inventories were *** percent lower in interim 2019 than in interim 2018. The ratio of inventories to U.S. shipments ranged from *** percent in interim 2019 to *** percent in 2016.

Table III-7
Fluid end blocks: U.S. producers' inventories, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. producers' end-of-period inventories	***	***	***	***	***
	Ratio (percent)				
Ratio of inventories to.-- U.S. production	***	***	***	***	***
U.S. shipments	***	***	***	***	***
Total shipments	***	***	***	***	***

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

U.S. producers' imports and purchases

U.S. producers reported no imports or purchases of fluid end blocks.

[7] Fluid end blocks are produced to each purchaser's custom specifications, so fluid end blocks are typically produced to order and not produced to inventory. Conference transcript, pp. 40-41 (Shirley, Boyd).

U.S. employment, wages, and productivity

Table III-8 shows U.S. producers' employment-related data. The number of production and related workers increased *** percent from 2016 to 2017, then decreased *** percent from 2017 to 2018, for an overall *** percent increase between 2016 and 2018. The number of workers was *** percent lower in interim 2019 than in interim 2018. Hours worked increased *** percent from 2016 to 2017, then decreased *** percent from 2017 to 2018, for an overall increase of *** percent. The number of hours worked were *** percent lower in interim 2019 than in interim 2018. The *** U.S. producer, *** reported no changes in its number of workers throughout the data collection period, despite fluctuating production. ***.

Hourly wages increased *** percent between 2016 to 2018 and were *** percent lower in interim 2019 than in interim 2018. Unit labor costs decreased by *** percent from 2016 to 2017, but have steadily increased in subsequent periods, reaching the highest cost per unit during January to September 2019.

Table III-8
Fluid end blocks: U.S. producers' employment related data, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
Production and related workers (PRWs) (number)	***	***	***	***	***
Total hours worked (1,000 hours)	***	***	***	***	***
Hours worked per PRW (hours)	***	***	***	***	***
Wages paid ($1,000)	***	***	***	***	***
Hourly wages (dollars per hour)	***	***	***	***	***
Productivity (units per 1,000 hours)	***	***	***	***	***
Unit labor costs (dollars per unit)	***	***	***	***	***

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

Part IV: U.S. imports, apparent U.S. consumption, and market shares

U.S. importers

The Commission issued importer questionnaires to 82 potential importers of fluid end blocks from subject and nonsubject sources, as well as to all U.S. producers of fluid end blocks.[1] Usable questionnaire responses were received from 16 companies, representing an estimated *** percent of imports from subject sources, including *** percent of U.S. imports from China,[2] *** percent of U.S. imports from Germany, *** U.S. imports from India,[3] and *** percent of U.S. imports from Italy in 2018.[4] Table IV-1 lists all responding U.S. importers of fluid end blocks from China, Germany, India, Italy, and other sources, their locations, and their shares of U.S. imports, in 2018. As shown in Table IV-1, six of the 16 companies are foreign-domiciled importers.

[1] The Commission issued questionnaires to those firms identified in the petitions, along with firms that, based on a review of data provided by U.S. Customs and Border Protection ("Customs"), accounted for more than one percent of total imports under HTS statistical reporting numbers 7218.91.0030, 7218.99.0030, 7224.90.0015, 7224.90.0045, 7326.19.0010, 7326.90.8688, or 8413.91.9055 in 2018.

[2] Petitioners estimate *** fluid end blocks were imported from China in 2018, which would make importer questionnaire responses account for *** percent of U.S. imports from China. Petitions, Exh. GEN-2.

[3] ***.

[4] Because the HTS subheadings under which fluid end blocks are imported contain substantial amounts of out-of-scope product, and greater quantities of U.S. exports were reported in foreign producer questionnaires than U.S. imports in U.S. importer questionnaires from Germany and Italy, coverage calculations for imports from Germany and Italy were based on the quantities and coverage estimates of U.S. exports reported in foreign producer questionnaires.

Table IV-1
Fluid end blocks: U.S. importers by source, 2018

Firm	Headquarters	Share of imports by source (percent)						
		China	Germany	India	Italy	Subject sources	Non-subject sources	All import sources
Bharat Forge	Pune, India	***	***	***	***	***	***	***
BGH Edelstahl	Siegen, Germany	***	***	***	***	***	***	***
Boss Oilwell	Houston, TX	***	***	***	***	***	***	***
Cogne	Fairfield, NJ	***	***	***	***	***	***	***
FMC	Stephenville, TX	***	***	***	***	***	***	***
Firstex	Grand Prairie, TX	***	***	***	***	***	***	***
Forum US	Houston, TX	***	***	***	***	***	***	***
Frisa Forjados	Santa Catarina, Mexico	***	***	***	***	***	***	***
Gardner Denver	Quincy, IL	***	***	***	***	***	***	***
Halliburton	Houston, TX	***	***	***	***	***	***	***
Jason O&G	Houston, TX	***	***	***	***	***	***	***
Lucchini	Cividate Camuno, Italy	***	***	***	***	***	***	***
Ofar	Visano, Italy	***	***	***	***	***	***	***
Schmiedewerke	Gröditz, Germany	***	***	***	***	***	***	***
Varco	Houston, TX	***	***	***	***	***	***	***
Weir	Fort Worth, TX	***	***	***	***	***	***	***
Total		***	***	***	***	***	***	***

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

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

U.S. imports

Table IV-2 presents data for U.S. imports of fluid end blocks from China, Germany, India, Italy, and all other sources. U.S. imports from subject sources increased from 2016 to 2017 by 277.3 percent in quantity and 209.4 percent in value, then decreased 2.7 percent in quantity and increased 8.8 percent in value from 2017 to 2018, for an overall increase in quantity of 267.2 percent and increase in value of 236.7 percent from 2016 to 2018. U.S. imports from subject sources were 43.1 percent lower in quantity and 39.6 percent lower in value in interim 2019 than in interim 2018. The U.S. imports from subject sources accounted for the vast majority of fluid end block imports throughout the period for which data were collected.

Imports from India had the highest unit values,[5] followed by *** (with the exception of 2017, when *** had the second highest unit values). Unit values of imports from Germany, India, and Italy decreased from 2016 to 2017, then increased from 2017 to 2018. Unit values were higher in interim 2019 than in interim 2018 for imports from Germany and India, while unit values were lower in interim 2019 than in interim 2018 for China and Italy.

In 2016, *** percent of imports by quantity, and *** percent by value, were from India, making it the largest source of imports at that time. In 2017, the share of imports from Italy increased from *** percent to *** percent, making it the largest source of imports, by quantity. India, however, remained the largest source of imports by value in 2017 and 2018, given its relatively higher unit values.

The ratio of subject imports to U.S. production increased by *** percentage points from 2016 to 2017 and increased by *** percentage points from 2017 to 2018, with U.S. imports surpassing U.S. production in both 2018 and 2019.

[5] Unlike fluid end blocks produced by the domestic industry and imported from other subject sources, fluid end block imports from India are predominantly finished. See conference transcript, p. 12 (Powell), and Table IV-4.

Table IV-2
Fluid end blocks: U.S. imports by source, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. imports from.-- China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	2,878	10,860	10,568	8,161	4,640
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
	Value (1,000 dollars)				
U.S. imports from.-- China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	76,148	235,600	256,404	200,168	120,852
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. imports from.-- China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	26,459	21,694	24,262	24,527	26,046
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***

Table continued on next page.

Table IV-2 – Continued
Fluid end blocks: U.S. imports by source, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Share of quantity (percent)				
U.S. imports from.-- China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
	Share of value (percent)				
U.S. imports from.-- China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
	Ratio to U.S. production				
U.S. imports from.-- China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***

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

Figure IV-1
Fluid end blocks: U.S. import quantity and average unit value ("AUV"), 2016-18, January to September 2018, and January to September 2019

* * * * * * *

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

Negligibility

The statute requires that an investigation be terminated without an injury determination if imports of the subject merchandise are found to be negligible.[6] Negligible imports are generally defined in the Act, as amended, as imports from a country of merchandise corresponding to a domestic like product where such imports account for less than 3 percent of the volume of all such merchandise imported into the United States in the most recent 12-month period for which data are available that precedes the filing of the petitions or the initiation of the investigation. However, if there are imports of such merchandise from a number of countries subject to investigations initiated on the same day that individually account for less than 3 percent of the total volume of the subject merchandise, and if the imports from those countries collectively account for more than 7 percent of the

[6] Sections 703(a)(1), 705(b)(1), 733(a)(1), and 735(b)(1) of the Act (19 U.S.C. §§ 1671b(a)(1), 1671d(b)(1), 1673b(a)(1), and 1673d(b)(1)).

volume of all such merchandise imported into the United States during the applicable 12-month period, then imports from such countries are deemed not to be negligible.[7] Imports from China accounted for *** percent of total imports, Germany accounted for *** percent of total imports, India accounted for *** percent of total imports, and Italy accounted for *** percent of total imports of fluid end blocks by quantity during December 2018 through November 2019.

Table IV-3
Fluid end blocks: U.S. imports in the twelve-month period preceding the filing of the petitions, December 2018 through November 2019

Item	December 2018 through November 2019	
	Quantity (units)	Share quantity (percent)
U.S. imports from.--		
China	***	***
Germany	***	***
India	***	***
Italy	***	***
Subject sources	6,141	***
Nonsubject sources	***	***
All import sources	***	100.0

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

[7] Section 771 (24) of the Act (19 U.S.C § 1677(24)).

Cumulation considerations

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. Information regarding channels of distribution, market areas, and interchangeability appear in Part II. Additional information concerning fungibility, geographical markets, and simultaneous presence in the market is presented below.

Fungibility

Table IV-4 and figure IV-2 present U.S. producers' U.S. shipments and U.S. importers' U.S. imports, by level of finishing, in 2018.[8] [9] U.S. importers reported U.S. shipments of all three finishing levels (unfinished, semi-finished, and finished) and U.S. producers reported U.S. shipments of two finishing levels (semi-finished and finished). The majority of imports from Germany were unfinished,[10] while the majority of imports from India were finished.[11] The majority (*** percent) of U.S. producers' U.S. shipments were classified as semi-finished fluid end blocks.[12]

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[8] Time series data by level of processing can be found in Appendix F.

[9] Questionnaires defined "unfinished" as a fluid end block that has not advanced beyond forging, heat treating, and rough machining, "semi-finished" as a fluid end block that has been subject to some machining operations (e.g., milling a surface to make it smooth, drilling, or contour machining), and "finished" as a fluid end block that is ready for incorporation into a pump fluid end assembly without further manufacturing operations.

[10] In the past few years, German producer SWG supplied only unfinished stainless alloy steel fluid end blocks to the U.S. market. SWG's customers further process the fluid end blocks to make finished fluid ends for the aftermarket or to manufacturer hydraulic power pumps. Conference transcript, p. 72 (Yang).

[11] Bharat Forge, the largest Indian producer and exporter of fluid end blocks, reported that it has steadily shifted from producing unfinished fluid end blocks to finished fluid end blocks that its U.S. customer requires. Conference transcript, p. 10 and p. 81 (Powell).

[12] Petitioners stated that nearly all fluid end blocks sold in the U.S. merchant market are unfinished insofar as the pump manufacturer commonly performs at least some of the finishing operations (e.g., threading) after purchasing the fluid end block from the producer. *Amendment of Petitions and Response to Commerce's Supplemental Questions*, p. 3.

Table IV-4
Fluid end blocks: U.S. producers' U.S. shipments and U.S. importers' U.S. imports, by level of processing, 2018

Item	Unfinished	Semi-finished	Finished	All levels of processing
	Quantity (units)			
U.S. producers' U.S. shipments	***	***	***	***
U.S. importers' U.S. shipments from.--China	***	***	***	***
Germany	***	***	***	***
India	***	***	***	***
Italy	***	***	***	***
Subject sources	***	***	***	***
Nonsubject sources	***	***	***	***
All import sources	***	***	***	***
U.S. producers and U.S. importers, combined	***	***	***	***
	Share across (percent)			
U.S. producers' U.S. shipments	***	***	***	***
U.S. importers' U.S. shipments from.--China	***	***	***	***
Germany	***	***	***	***
India	***	***	***	***
Italy	***	***	***	***
Subject sources	***	***	***	***
Nonsubject sources	***	***	***	***
All import sources	***	***	***	***
U.S. producers and U.S. importers, combined	***	***	***	***
	Share down (percent)			
U.S. producers' U.S. shipments	***	***	***	***
U.S. importers' U.S. shipments from.--China	***	***	***	***
Germany	***	***	***	***
India	***	***	***	***
Italy	***	***	***	***
Subject sources	***	***	***	***
Nonsubject sources	***	***	***	***
All import sources	***	***	***	***
U.S. producers and U.S. importers, combined	***	***	***	***

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

Figure IV-2
Fluid end blocks: U.S. producers' U.S. shipments and U.S. importers' U.S. imports, by level of processing, 2018

* * * * * * *

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

Table IV-5, figure IV-3, and figure IV-4 present U.S. producers' U.S. shipments and U.S. importers' U.S. shipments, by steel type, in 2018. U.S. producer shipments and U.S. importer's U.S. shipments from China, India, and Italy included both stainless and non-stainless alloy steel fluid end blocks. *** U.S. importers' U.S. shipments from Germany were stainless alloy steel fluid end blocks, while *** percent) of U.S. importers' U.S. shipments from India were non-stainless alloy steel fluid end blocks.[13]

[13] Several witnesses at the conference reported a shift in demand from non-stainless to stainless alloy steel fluid end blocks because they are believed to last longer. Conference transcript, p. 38 (Shirley), p. 108 (Poradek), and p. 150 (Powell). However, Halliburton, ***, is an exception. Because of its proprietary specifications and design, it continues to use low alloy fluid end blocks. Written Statement of information by Halliburton Energy Services, Inc. pp. 3-4.

Table IV-5
Fluid end blocks: U.S. producers' U.S. shipments and U.S. importers' U.S. imports, by steel type, 2018

Item	Stainless	Non-stainless	All steel types
	Quantity (units)		
U.S. producers' U.S. shipments	***	***	***
U.S. importers' U.S. shipments from.--			
China	***	***	***
Germany	***	***	***
India	***	***	***
Italy	***	***	***
Subject sources	***	***	***
Nonsubject sources	***	***	***
All import sources	***	***	***
U.S. producers and U.S. importers, combined	***	***	***
	Share across (percent)		
U.S. producers' U.S. shipments	***	***	***
U.S. importers' U.S. shipments from.--			
China	***	***	***
Germany	***	***	***
India	***	***	***
Italy	***	***	***
Subject sources	***	***	***
Nonsubject sources	***	***	***
All import sources	***	***	***
U.S. producers and U.S. importers, combined	***	***	***
	Share down (percent)		
U.S. producers' U.S. shipments	***	***	***
U.S. importers' U.S. shipments from.--			
China	***	***	***
Germany	***	***	***
India	***	***	***
Italy	***	***	***
Subject sources	***	***	***
Nonsubject sources	***	***	***
All import sources	***	***	***
U.S. producers and U.S. importers, combined	***	***	***

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

Figure IV-3
Fluid end blocks: U.S. producers' U.S. shipments and U.S. importers' U.S. imports, by steel type, 2018

* * * * * * *

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

Figure IV-4
Fluid end blocks: U.S. producers' U.S. shipments and U.S. importers' U.S. imports, by steel type, 2018

* * * * * * *

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

Presence in the market

As shown in table IV-6, imports from each subject country were present from January 2018 through November 2019, with the exception of imports from Germany in September 2019 and imports from China in November 2019.

Table IV-6
Fluid end blocks: U.S. producers' U.S. shipments and U.S. importers' U.S. imports, by steel type, 2018

Month	China	Germany	India	Italy	Subject sources	Nonsubject Sources	All Import sources
	Quantity (units)						
2018: January	***	***	***	***	***	***	***
2018: February	***	***	***	***	***	***	***
2018: March	***	***	***	***	***	***	***
2018: April	***	***	***	***	***	***	***
2018: May	***	***	***	***	***	***	***
2018: June	***	***	***	***	***	***	***
2018: July	***	***	***	***	***	***	***
2018: August	***	***	***	***	***	***	***
2018: September	***	***	***	***	***	***	***
2018: October	***	***	***	***	***	***	***
2018: November	***	***	***	***	***	***	***
2018: December	***	***	***	***	***	***	***
2019: January	***	***	***	***	***	***	***
2019: February	***	***	***	***	***	***	***
2019: March	***	***	***	***	***	***	***
2019: April	***	***	***	***	***	***	***
2019: May	***	***	***	***	***	***	***
2019: June	***	***	***	***	***	***	***
2019: July	***	***	***	***	***	***	***
2019: August	***	***	***	***	***	***	***
2019: September	***	***	***	***	***	***	***
2019: October	***	***	***	***	***	***	***
2019: November	***	***	***	***	***	***	***

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

Apparent U.S. consumption

Table IV-7 and figure IV-7 present data on apparent U.S. consumption for fluid end blocks. Apparent consumption increased by *** percent in quantity and by *** percent in value from 2016 to 2017, then decreased by *** percent in quantity and by *** percent in value from 2017 to 2018, for an overall *** percent increase in quantity and *** percent increase in value from 2016 to 2018. Apparent consumption was *** percent lower in quantity and *** percent lower in value in interim 2019 than in interim 2018.

Both U.S. producers' U.S. shipment and U.S. importers' U.S. shipment quantities demonstrated the same directional trends, but U.S. importers' U.S. shipment quantities had larger increases and smaller decreases. U.S. importers' U.S. shipment quantities from all sources increased by *** percent from 2016 to 2017, compared to a *** percent increase in U.S. producers' U.S. shipment quantities. U.S. importers' U.S. shipment quantities from all sources decreased by *** percent from 2017 to 2018, compared to a *** percent decrease in U.S. producers' U.S. shipment quantities. U.S. importers' U.S. shipment quantities from all sources were *** percent lower in interim 2019 than in interim 2018, while U.S. producers' U.S. shipment quantities were *** percent lower in interim 2019 than in interim 2018.

Table IV-7
Fluid end blocks: Apparent U.S. consumption, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. importers' U.S. shipments from.--China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	2,656	9,534	8,640	6,985	4,906
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Apparent U.S. consumption	***	***	***	***	***
	Value (1,000 dollars)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. importers' U.S. shipments from.--China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	70,371	214,753	211,491	175,598	128,731
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Apparent U.S. consumption	***	***	***	***	***

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

Figure IV-5
Fluid end blocks: Apparent U.S. consumption, 2016-18, January to September 2018, and January to September 2019

* * * * * * *

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

U.S. market shares

U.S. market share data are presented in table IV-8. The share in quantity of U.S. producers' U.S. shipments has decreased by *** percentage points, while the share in quantity of subject U.S. imports have increased by *** percentage points. U.S. producers' U.S. shipments had a greater share of the market than total and subject imports in 2016 and 2017. By 2018, subject and total imports had a greater share than U.S. producers' U.S. shipments, and their share continued to increase from 2018 to interim 2019. Italy gained the largest increase in market share from 2016 to interim 2019, increasing by *** percentage points.

Table IV-8
Fluid end blocks: Market shares, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
Apparent U.S. consumption	***	***	***	***	***
	Share of quantity (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. importers' U.S. shipments from.--China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
	Value (1,000 dollars)				
Apparent U.S. consumption	***	***	***	***	***
	Share of value (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. importers' U.S. shipments from.--China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***

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

Part V: Pricing data

Factors affecting prices

Raw material costs

Fluid end blocks are produced in a variety of steel chemistries, combining such inputs as iron, nickel, copper, chromium, molybdenum, and can be proprietary or made to purchaser specifications. Fluid end blocks can be made from stainless steel or non-stainless alloy steel. Stainless steel fluid end blocks were introduced more recently, and have become increasingly common. Stainless steel fluid end blocks can have a longer product lifecycle, while non-stainless alloy steel fluid end blocks are cheaper to produce. Two purchasers reported that U.S. producers did not have stainless steel grades available until 2019.

Both U.S. producers and importers reported that raw material prices have increased since 2016. As demonstrated in Figure V-1, steel prices for grades for which data were available increased overall from January 2016 until December 2019, by *** percent for stainless steel bar and by *** percent for alloy steel bar. Non-stainless alloy steel bar prices peaked in November 2018 and have declined through December 2019 while stainless steel bar prices peaked in November 2019.

Figure V-1
Stainless steel and alloy steel cold-finished bar: Indexed average prices, by month, January 2016-December 2019

* * * * * * *

Impact of Section 232 tariffs[1]

In April 2017, the U.S. Department of Commerce announced a section 232 investigation on imports of steel, and in March 2018, the President announced additional import duties for steel mill articles. Table V-1 presents the assessments of U.S. producers and importers on the impact of section 232 tariffs that cover raw material costs for fluid end blocks. The majority of U.S. producers and importers reported no change in raw material costs as a result of the section 232 tariffs. However, ten importers and five U.S. producers reported an increase in the price of FEBs as a result of section 232 tariffs. One U.S. importer reported ***.

[1] For additional information on Section 232 of the *Trade Expansion Act of 1962*, please refer to Appendix D.

Table V-1
Fluid end blocks: Impact of 232 on raw material costs and FEBs

Item	U.S. producers				U.S. importers			
	Increase	No change	Decrease	Fluctuate	Increase	No change	Decrease	Fluctuate
Raw material costs	1	4	---	---	4	7	1	2
Prices of FEBs	5	---	---	---	10	2	1	---

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

Transportation costs to the U.S. market

Transportation costs for fluid end blocks shipped from subject countries to the United States averaged 19.7 percent for China, 9.8 percent for Germany, 22.9 percent for India, and 7.9 percent for Italy during 2018. These estimates were derived from official import data and represent the transportation and other charges on imports.[2]

U.S. inland transportation costs

Two of five responding U.S. producers and nine of twelve responding importers reported that they typically arrange transportation to their customers. However, three U.S. producers and three importers reported that their customers arrange transportation. U.S. producers reported that their U.S. inland transportation costs ranged from 2.0 to 4.5 percent. Information on inland transportation costs for subject imports was limited; however, one importer reported *** percent for imports from China. Information was not available for inland transportation costs for internally consumed imports.

Pricing practices

Pricing methods

Most U.S. producers and importers reported using transaction-by-transaction negotiations (table V-1). U.S. importers also reported using contracts, set price lists, and other methods to set prices.

[2] The estimated transportation costs were obtained by subtracting the customs value from the c.i.f. value of the imports for 2018 and then dividing by the customs value based on the HTS subheadings 7218.91.0030, 7218.99.0030, 7224.90.0015, 7224.90.0045, 7326.19.0010, 7326.90.8688, or 8413.91.9055.

Table V-2
Fluid end blocks: U.S. producers' and importers' reported price setting methods, by number of responding firms

Method	U.S. producers	U.S. importers
Transaction-by-transaction	5	9
Contract	---	6
Set price list	---	3
Other	1	3
Responding firms	5	14

Note: 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.

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

As shown in table V-2, U.S. producers and importers reported their 2018 U.S. commercial shipments of fluid end blocks by type of sale. The number of U.S. producers reporting spot sales was more than the number reporting short-term contracts, but responding contract firms were larger U.S. producers of fluid end blocks. U.S. importers reported selling the vast majority fluid end blocks under short-term contracts.

Table V-3
Fluid end blocks: U.S. producers' and importers' shares of U.S. commercial shipments by type of sale, 2018

* * * * * * *

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

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

Purchasers of fluid end blocks typically issue a quarterly request for quotation to invite several manufacturers to bid. This request turns into an order in about thirty days.[3] U.S. producers reported a 90-day contract duration for short-term contracts, while U.S. importers reported an average contract duration of 150 days for short-term contracts. All responding U.S. producers reported fixing to both price and quantity for short-term contracts, while most

[3] Conference transcript, p. 48 (Shirley).

responding U.S. importers reported fixing to both price and quantity and not indexing to raw materials for short-term contracts. A purchaser will request a first article to test before qualifying a manufacturer to fulfill fluid end blocks in commercial quantities.[4] One producer and one importer reported a price renegotiation mechanism and fixing to price for one-year contracts.

Sales terms and discounts

The majority of U.S. producers quote prices on an f.o.b. basis, while the majority of U.S. importers quote prices on a delivered basis. All responding U.S. producers reported offering no discount policy. An equal number of U.S. importers reported offering discounts based on quantity or no discount policy (six each), while two reported offering total volume discounts.

In responding to the lost sales lost revenue survey, purchasers were asked if their firms contract with a machine shop to provide finishing operations on the fluid end blocks it purchases prior to final delivery to customers or incorporation in its end product. Nine purchasers reported contracting out with other firms for finishing operations, six firms reported conducting its own finishing operations, and four firms reported neither.

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 fluid end blocks products shipped to unrelated U.S. customers during January 2016-September 2019.[5]

> **Product 1 --** 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 7,300 and 7,550 lbs.
>
> **Product 2 --** 17-4 Solid Quint. Quintuplex fluid end block that has been rough machined but not drilled, made of forged stainless steel, with a chromium content between 14.50% and 18.00%, a nickel content between 2.90% and 5.10%, and a net weight between 8,900 and 9,300 lbs.

[4] Conference, p. 20 (Saunders).

[5] Petitioners recommended the four pricing products on an FOB point-of-shipment basis. Petition, p. 40.

Product 3 -- 15-5 Drilled Quint**.** Quintuplex fluid end block that has been drilled and rough machined, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 6,950 and 7,250 lbs.

Product 4 -- 4330mod Drilled Mud Pump Block. Fluid end block that has been drilled with no more than one hole per face, rough machined, made of forged alloy steel, with a chromium content between 0.65% and 1.00%, a nickel content between 1.60% and 2.05%, and a net weight between 3,100 and 3,300 lbs.

Two U.S. producers and three importers provided usable pricing data for sales of the requested products, although not all firms reported pricing for all products for all quarters.[6] Pricing data reported by these firms accounted for approximately *** percent of U.S. producers' commercial shipments of fluid end blocks, *** percent of reported imports from Germany, *** percent from India, and *** percent from Italy in 2018.

In addition to price data, the Commission also requested that importers provide landed duty-paid values and quantities for imports of product 3 for firms' internal use. Reported purchase cost data accounted for approximately *** percent of reported imports from China, *** percent of reported imports from Germany, *** percent of reported imports from India, and *** percent of reported imports from Italy in 2018. Price data for products 1-4 are presented in tables V-4 to V-7 and figures V-2 to V-5. Landed duty paid purchase cost data for imports from China, Germany, India, and Italy are also included in table V-8 and figure V-6.

[6] ***.

Table V-4
Fluid end blocks: Weighted-average f.o.b. prices and quantities of domestic and imported product 1 and margins of underselling/(overselling), by quarter, January 2016-September 2019

* * * * * * *

Note: Product 1: 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 7,300 and 7,550 lbs.

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

Table V-5
Fluid end blocks: Weighted-average f.o.b. prices and quantities of domestic and imported product 2 and margins of underselling/(overselling), by quarter, January 2016-September 2019

* * * * * * *

Note: Product 2: 17-4 Solid Quint. Quintuplex fluid end block that has been rough machined but not drilled, made of forged stainless steel, with a chromium content between 14.50% and 18.00%, a nickel content between 2.90% and 5.10%, and a net weight between 8,900 and 9,300 lbs.

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

Table V-6
Fluid end blocks: Weighted-average f.o.b. prices and quantities of domestic and imported product 3 and margins of underselling/(overselling), by quarter, January 2016-September 2019

* * * * * * *

Note: Product 3: 15-5 Drilled Quint**.** Quintuplex fluid end block that has been drilled and rough machined, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 6,950 and 7,250 lbs.

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

Table V-7
Fluid end blocks: Weighted-average f.o.b. prices and quantities of domestic and imported product 4 and margins of underselling/(overselling), by quarter, January 2016-September 2019

* * * * * * *

Note: Product 4 : 4330mod Drilled Mud Pump Block. Fluid end block that has been drilled with no more than one hole per face, rough machined, made of forged alloy steel, with a chromium content between 0.65% and 1.00%, a nickel content between 1.60% and 2.05%, and a net weight between 3,100 and 3,300 lbs.

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

Figure V-2
Fluid end blocks: Weighted-average prices and quantities of domestic and imported product 1, by quarter, January 2016-September 2019

* * * * * * *

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

Figure V-3
Fluid end blocks: Weighted-average prices and quantities of domestic and imported product 2, by quarter, January 2016-September 2019

* * * * * * *

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

Figure V-4
Fluid end blocks: Weighted-average prices and quantities of domestic and imported product 3, by quarter, January 2016-September 2019

* * * * * * *

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

Figure V-5
Fluid end blocks: Weighted-average prices and quantities of domestic and imported product 4, by quarter, January 2016-September 2019

* * * * * * *

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

Table V-8
Fluid end Blocks: Purchase costs. Weighted-average f.o.b. prices of domestic product 3 sold to end users and landed duty-paid costs and quantities of imported product 3, by quarter, January 2016-September 2019

* * * * * * *

Table continued on next page.

Table V-8 (continued)
Fluid end Blocks: Purchase costs. Weighted-average f.o.b. prices of domestic product 3 sold to end users and landed duty-paid costs and quantities of imported product 3, by quarter, January 2016-September 2019

* * * * * * *

Note: Product 3: 15-5 Drilled Quint**.** Quintuplex fluid end block that has been drilled and rough machined, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 6,950 and 7,250 lbs.

Note: U.S. f.o.b. price data is the same as the data for prices to end users presented in table V-3-V-6 and figures V-1-V-4.

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

Figure V-6
Fluid End Blocks: Purchase costs. Weighted-average f.o.b. prices of domestic product 3 sold to end users and landed duty-paid costs and quantities of imported product 3, by quarter, January 2016-September 2019

* * * * * * *

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

Import purchase cost data

Importers reporting import purchase cost data were asked to provide additional information regarding the costs and benefits of directly importing fluid end blocks. ***.

Price and import purchase cost trends

In general, prices decreased slightly during January 2016-September 2019. Table V-9 summarizes the price trends, by country and by product. As shown in the table, domestic price decreases for products 1, 2, and 4 ranged from *** to *** percent during January 2016-September 2019 while the domestic price of product 3 increased *** percent. Import price decreases ranged from *** to *** percent. Import purchase costs decreased for product 3 imported from Germany, India, and Italy, while they increased for China.

Table V-9
Fluid end blocks: Summary of weighted-average f.o.b. prices and LDP costs for products 1-4 from the United States and China, Germany, India, and Italy

* * * * * * *

Note: Percentage change from the first quarter in which data were available to the last quarter in which price data were available.

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

Price comparisons

As shown in table V-10, prices for product imported from Germany were below those for U.S.-produced product in *** of *** instances (*** units); margins of underselling ranged from *** to *** percent.

Prices for product imported from India were *** below those for U.S.-produced product in all *** instances (*** units), margins of overselling ranged from *** to *** percent.[7]

Prices for product imported from Italy were below those for U.S.-produced product in *** instances (*** units); margins of underselling ranged from *** percent. In the remaining *** instances (*** units), prices for product from Italy were between *** and *** percent above prices for the domestic product.

There were no price data reported for imports from China.

[7] ***.

Table V-10

Fluid end blocks: Instances of underselling/overselling and the range and average of margins, by country, January 2016-September 2019

Source	Underselling				
	Number of quarters	Quantity (units)	Average margin (percent)	Margin range (percent)	
				Min	Max
Product 1	***	***	***	***	***
Product 2	***	***	***	***	***
Product 3	***	***	***	***	***
Product 4	***	***	***	***	***
Total, underselling	***	***	***	***	***
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Total, underselling	15	***	27.5	5.4	46.2
Source	**(Overselling)**				
	Number of quarters	**Quantity (units)**	**Average margin (percent)**	**Margin range (percent)**	
				Min	**Max**
Product 1	***	***	***	***	***
Product 2	***	***	***	***	***
Product 3	***	***	***	***	***
Product 4	***	***	***	***	***
Total, overselling	***	***	***	***	***
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Total, overselling	26	***	(151.0)	(1.9)	(317.7)

Note: These data include only quarters in which there is a comparison between the U.S. and subject product. ***.

Note: ***.

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

Table V-11
Fluid end blocks: Comparisons of import purchase costs and U.S.-producer sales prices, by product and by country, January 2016 through September 2019

Source	Higher price to cost				
	Number of quarters	Quantity (units)	Average price cost differential (percent)	Differential Range (percent)	
				Min	Max
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Total, higher	7	***	9.5	2.9	16.2
Source	**(Lower price to cost)**				
	Number of quarters	**Quantity (units)**	**Average price cost differential (percent)**	**Differential Range (percent)**	
				Min	**Max**
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Total, lower	5	***	(23.4)	(10.1)	(34.0)

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

Lost sales and lost revenue

The Commission requested that U.S. producers of fluid end blocks report purchasers with which they experienced instances of lost sales or revenue due to competition from imports of fluid end blocks from China, Germany, Italy, or India since January 2016. Two U.S. producers submitted lost sales and lost revenue allegations. Both U.S. producers identified 23 firms with which they lost sales or revenue (10 consisting lost sales allegations, 1 consisting of lost revenue allegations, and 10 consisting of both types of allegations.

Staff contacted 23 purchasers and received usable responses from 15 purchasers. Responding purchasers reported imports and purchases of *** fluid end blocks during 2016 to 2018 (table V-12).

12 responding purchasers reported purchasing domestic fluid end blocks, and 12 reported purchasing fluid end blocks from subject countries. Purchasers were asked about changes in their purchasing patterns from different sources since January 1, 2016. Of the responding purchasers, two reported decreasing purchases from domestic producers and two

reported increasing purchases from domestic producers. Five purchasers reported that purchases from the United States and Italy fluctuated. The majority of purchasers reported that they had not purchased fluid end blocks from China, Germany, or India since January 1, 2016.[8] Explanations for decreasing purchases of domestic product included unstable pricing and higher performing material for similar cost. Firms reporting fluctuating purchases indicated fluctuation with the fracking market, downstream price pressure for finished fluid end blocks, and issues with quality, safety, performance, and material specifications.

Of the fifteen responding purchasers, twelve reported that, since 2016, they had purchased imported fluid end blocks from China, Germany, India, or Italy instead of U.S.-produced product. Seven of these purchasers reported that subject import prices were lower than U.S.-produced product, and three of these purchasers reported that price was a primary reason for the decision to purchase imported product rather than U.S.-produced product. Four purchasers estimated the quantity of subject imports of fluid end blocks purchased instead of domestic product; quantities ranged from *** units to *** units (tables V-13). Purchasers identified supply chain diversification, delivery, quality/engineering specifications, product performance, steel and stainless steel availability, logistics, and technical support as non-price reasons for purchasing imported rather than U.S.-produced product.

Of the fifteen responding purchasers, two reported that U.S. producers had reduced prices in order to compete with lower-priced imports from China, Germany, India, and Italy; nine reported that they did not know (table V-15). The reported estimated price reduction ranged from *** percent. In describing the price reductions, one purchaser indicated that ***.

[8] Of the 15 responding purchasers, no purchasers indicated that they did not know the source of the fluid end blocks they purchased.

Table V-12
Fluid end blocks: Purchasers' responses to purchasing patterns

* * * * * * *

Note: "All other" includes all other sources and unknown sources.

Note: Percentage points (pp) change: Change in the share of the firm's total purchases of domestic and/or subject country imports between first and last years.

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

Table V-13
Fluid end blocks: Purchasers' responses to purchasing subject imports instead of domestic product

* * * * * * *

Table continued on next page.

Table V-13 (continued)
Fluid end blocks: Purchasers' responses to purchasing subject imports instead of domestic product

Purchaser	Subject imports purchased instead of domestic (Y/N)	Imports priced lower (Y/N)	If purchased subject imports instead of domestic, was price a primary reason		
			Y/N	If Yes, quantity (units)	If No, non-price reason
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
Total	Yes--12; No--3	Yes--7; No--4	Yes--3; No--9	***	

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

Table V-14
Fluid end blocks: Purchasers' responses to purchasing subject instead of domestic, by country

Source	Count of purchasers reporting subject instead of domestic	Count of purchasers reported that imports were priced lower	Count of purchasers reporting that price was a primary reason for shift	Quantity subject purchased (units)
China	3	3	2	***
Germany	3	2	---	***
India	3	2	1	***
Italy	10	4	---	***
Any subject source	12	7	3	***

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

Table V-15
Fluid end blocks: Purchasers' responses to U.S. producer price reductions, by firm

Purchaser	Producers reduced price (Y/N)	If reduced prices:	
		Estimated U.S. price reduction (percent)	Additional information, if available
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
Total / average	Yes--2; No--4	7.0	

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

Table V-16
Fluid end blocks: Purchasers' responses to U.S. producer price reductions, by country

Source	Count of purchasers reporting U.S. producers reduced prices	Simple average of estimated U.S. price reduction (percent)	Range of estimated U.S. price reductions (percent)
China	***	***	***
Germany	***	***	***
India	***	***	***
Italy	***	***	***
Any subject source	2	7.0	***

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

Part VI: Financial experience of U.S. producers

Background

The financial results of three U.S. producers of fluid end blocks are presented in this section of the report. [1] [2] With the exception of ***, which reported on the basis of International Financial Reporting Standards ("IFRS"), the responding U.S. producers reported their financial results on the basis of Generally Accepted Accounting Principles ("GAAP"). All firms reported their financial results on a calendar-year basis.

Operations on Fluid end blocks

Table VI-1 presents aggregated data on U.S. producers' operations with respect to fluid end blocks in 2016-2018 and January to September 2018-2019. Table VI-2 presents changes in average unit value ("AUV") data between periods and table VI-3 presents selected company-specific financial data.

[1] ***. Email response, ***.

*** provided a partial response but did not report usable financial data. Based on reported data, *** represented *** and *** percent of total net sales quantity and net sales value in 2018, respectively.

[2] Two firms that provide tolling services reported limited trade and financial data to staff. These data are included in Appendix E of the report. For 2018, tollers reported tolling quantities at ***, total tolling fees at $***, gross profit at $*** and operating income at $***.

Table VI-1
Fluid end blocks: Results of operations of U.S. producers, 2016-18, January to September 2018, and January to September 2019

* * * * * * *

Table VI-1--Continued
Fluid end blocks: Results of operations of U.S. producers, 2016-18, January to September 2018, and January to September 2019

* * * * * * *

Table VI-2
Fluid end blocks: Changes in AUVs, between calendar years and between partial year periods

* * * * * * *

Table VI-3
Fluid end blocks: Select results of operations of U.S. producers, by company, 2016-18, January to September 2018, and January to September 2019

* * * * * * *

Table VI-3--Continued
Fluid end blocks: Select results of operations of U.S. producers, by company, 2016-18, January to September 2018, and January to September 2019

* * * * * * *

Table VI-3--Continued
Fluid end blocks: Select results of operations of U.S. producers, by company, 2016-18, January to September 2018, and January to September 2019

* * * * * * *

Table VI-3—Continued
Fluid end blocks: Select results of operations of U.S. producers, by company, 2016-18, January to September 2018, and January to September 2019

* * * * * * *

Net sales quantity and value

Net sales of fluid end blocks are shown in table VI-1.[3] From 2016 to 2018, net sales quantity increased by *** percent and net sales value increased by *** percent. Net sales quantity and value were both lower in January to September 2019 (*** and *** percent, respectively) when compared to January to September 2018. The average net sales unit value (dollars per unit) increased from 2016 to 2018, from $*** in 2016 to $*** in 2018, and was higher in January to September 2019 at $*** than in January to September 2018 at ***. [4] On a company-specific basis, *** reported higher net sales AUVs in 2018 than in 2016, and both *** reported higher net sales AUVs in January to September 2019 than in January to September 2016.[5]

[3] ***. Email from ***.

[4] ***. Email from ***.

[5] *** reported a decline in net sales AUVs from 2016 (at $***) to 2018 (at $***).

Costs of goods sold and gross profit or (loss)

Raw material costs represent the largest component of overall COGS. The total cost of raw materials as a share of COGS ranged from *** percent (January to September 2019) to *** percent (2017). On a unit basis (dollars per unit), raw material costs increased from $*** in 2016 to $*** in 2018, and it was higher in January to September 2019 at $*** than in January to September 2018 at $***. *** reported higher per unit raw material costs in 2018 compared to both 2017 and 2016, but only *** reported higher per unit raw material costs in January to September 2019 compared to January to September 2018.[6] As shown in table VI-4, raw materials were largely composed of stainless alloy steel and non-stainless alloy steel. Share values of internally produced stainless alloy steel and non-stainless alloy steel were *** and *** percent, respectively, of total 2018 raw material costs.

The second largest component of COGS during the period for which data were collected was other factory costs, which represented between *** percent (2016) and *** percent (January to September 2019) of overall COGS. On a per unit basis, other factory costs increased from $*** in 2016 to $*** in 2018, and from $*** in January to September 2018 to $*** in January to September 2019.[7] With respect to their U.S. operations, *** reported contracting with a machine shop to provide finishing operations on a toll basis for a limited portion of fluid end blocks sales.[8]

[6] ***. Email from ***.
[7] ***. Email from ***. ***.
[8] ***.

Direct labor, the last component of COGS, accounted for between *** percent (January to September 2018) and *** percent (2016) of overall COGS. On a per unit basis, direct labor increased from $*** in 2016 to $*** in 2018, and from $*** in January to September 2018 to $*** in January to September 2019. *** consistently had increased per unit direct labor costs throughout both the full years and partial years.

On an overall basis, the fluid end block industry's gross profit increased from $*** in 2016 to $*** in 2017 before decreasing to $*** in 2018. Gross profit was lower in January to September 2019 at $*** compared to January to September 2018 at $***.

Table VI-4
Fluid end blocks: Raw material costs, unit value, and share of value, by type, 2018

* * * * * * *

SG&A expenses and operating income

As shown in table VI-1, the industry's SG&A expense ratio (i.e., total SG&A expenses divided by total revenue) decreased, from *** percent in 2016 to *** percent in 2018, but it was higher in January to September 2019 at *** percent than in January to September 2018 at *** percent. Table VI-3 shows that from 2016 to 2018 the pattern of company-specific SG&A expense ratios were somewhat similar in terms of directional trend, with *** reporting a declining SG&A expense ratio throughout the calendar years, and *** reporting an irregular decline during the period). *** reported a higher SG&A expense ratio in January-September 2019 compared to January-September 2018.[9]

Operating income followed the same trend as gross profit. It increased from an operating profit of $*** in 2016 to $*** in 2017, and then decreased to $***

[9] ***. Email from ***.

in 2018. The industry reported an operating loss in January to September 2019 of $*** compared to an operating profit in January to September 2018 of $***. [10]

Other expenses and net income

Classified below the operating income level are interest expense, other expenses, and other income, which are usually allocated to the product line from high levels in the corporation. Interest expense increased from $*** in 2016 to $*** in 2018, and it was higher in January to September 2019 at $*** than in January to September 2018 at $***. Other expenses were not reported by U.S. producers. Finally, all other income increased irregularly from $*** in 2016 to $*** in 2018, and it was lower in January to September 2019 at $*** than in January to September 2018 at $***.

Overall, net income followed a similar trend to gross profit and operating income and increased from $*** in 2016 to $*** in 2017 before decreasing to $*** in 2018, and it was lower in January to September 2019 (a net loss of $***) than in January to September 2018 (a net profit of $***).[11]

Variance analysis

Due to changes in the stainless and non-stainless alloy steel product mix during the period for which data were collected, a variance analysis is not presented in this report.

[10] ***.

[11] ***.

Capital expenditures and research and development expenses

Table VI-5 presents capital expenditures and research and development ("R&D") expenses by firm. *** firms provided capital expenditure data, and *** firms provided data on R&D expenses. *** accounted for the largest company-specific amounts of capital expenditures during the period for which data were collected.[12] Total reported capital expenditures for the industry decreased from $*** in 2016 to $*** in 2018, and it was higher in January to September 2019 at $*** than in January to September 2018 at $***.[13] *** accounted for the *** of R&D expenses.[14] [15] The aggregate data trends largely reflect the data of ***.

Table VI-5
Fluid end blocks: Capital expenditures and research and development expenses for U.S. producers, by firm, 2016-18, January to September 2018, and January to September 2019

* * * * * * *

[12] ***. U.S. producers' questionnaire, section III-13.
[13] ***. Email from ***.
[14] *** described its R&D expenses as ***. U.S. producers' questionnaire, section III-13.
[15] ***. Email from ***.

Assets and return on assets

Table VI-6 presents data on the U.S. producers' total assets and their return on assets ("ROA").[16] Total net assets for the fluid end blocks industry increased irregularly from $*** in 2016 to $*** in 2018, and the ROA increased irregularly from *** percent to *** percent during this time.

Table VI-6
Fluid end blocks: Value of assets used in production, warehousing, and sales, and return on assets for U.S. producers by firm, 2016-18

* * * * * * *

[16] With respect to a company's overall operations, staff notes that a total asset value (i.e., the bottom-line number on the asset side of a company's balance sheet) reflects an aggregation of several assets which are generally not product specific. Accordingly, high-level allocation factors may have been required in order to report a total asset value for fluid end blocks.

Capital and investment

The Commission requested U.S. producers of fluid end blocks to describe any actual or potential negative effects of imports of fluid end blocks from China, Germany, India, and Italy on their firms' growth, investment, ability to raise capital, development and production efforts, or the scale of capital investments. Table VI-7 presents the number of firms reporting an impact in each category and table VI-8 provides the U.S. producers' narrative responses.

Table VI-7
Fluid end blocks: Actual and anticipated negative effects of imports on investment and growth and development

* * * * * * *

Table VI-8
Fluid end blocks: Narratives relating to actual and anticipated negative effects of imports on investment and growth and development, since January 1, 2016

* * * * * * *

Part VII: Threat considerations and information on nonsubject countries

In determining whether an industry in the United States is threatened with material injury by reason of imports (or sales for importation) of the subject merchandise, the Commission shall consider, among other relevant economic factors[1]*--*

(I) if a countervailable subsidy is involved, such information as may be presented to it by the administering authority as to the nature of the subsidy (particularly as to whether the countervailable subsidy is a subsidy described in Article 3 or 6.1 of the Subsidies Agreement), and whether imports of the subject merchandise are likely to increase,

(II) any existing unused production capacity or imminent, substantial increase in production capacity in the exporting country indicating the likelihood of substantially increased imports of the subject merchandise into the United States, taking into account the availability of other export markets to absorb any additional exports,

(III) a significant rate of increase of the volume or market penetration of imports of the subject merchandise indicating the likelihood of substantially increased imports,

(IV) whether imports of the subject merchandise are entering at prices that are likely to have a significant depressing or suppressing effect on domestic prices, and are likely to increase demand for further imports,

(V) inventories of the subject merchandise,

---

[1] Section 771(7)(F)(ii) of the Act (19 U.S.C. § 1677(7)(F)(ii)) provides that "The Commission shall consider {these factors} . . . as a whole in making a determination of whether further dumped or subsidized imports are imminent and whether material injury by reason of imports would occur unless an order is issued or a suspension agreement is accepted under this title. The presence or absence of any factor which the Commission is required to consider . . . shall not necessarily give decisive guidance with respect to the determination. Such a determination may not be made on the basis of mere conjecture or supposition."

(VI) 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,

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

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

(IX) any other demonstrable adverse trends that indicate the probability that there is likely to be material injury by reason of imports (or sale for importation) of the subject merchandise (whether or not it is actually being imported at the time).[2]

Information on the nature of the alleged subsidies was presented earlier in this report; information on the volume and pricing of imports of the subject merchandise is presented in *Parts IV* and *V*; and information on the effects of imports of the subject merchandise on U.S. producers' existing development and production efforts is presented in *Part VI*. Information on inventories of the subject merchandise; foreign producers' operations, including the potential for "product-shifting;" any other threat indicators, if applicable; and any dumping in third-country markets, follows. Also presented in this section of the report is information obtained for consideration by the Commission on nonsubject countries. [3]

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

[3] Information on exports for each subject country are not presented, as GTA data include a substantial amount of out of scope merchandise. The United States is the only major market for fluid end blocks known to Petitioners. Petitioners' postconference brief, p. II-11. U.S. purchaser ST9 similarly stated that "the majority of the market" for fluid end blocks is in the United States and most OEMs are in the United States. Conference transcript, p. 136 (Poradek).

The industry in China

The Commission issued foreign producers' or exporters' questionnaires to 34 firms believed to produce and/or export fluid end blocks from China.[4] *** usable questionnaire responses to the Commission's questionnaire were received.[5] Petitioners estimate *** fluid end blocks were exported from China to the United States in 2018.[6] Petitioners listed 38 producers and exporters of fluid end blocks in China.[7] However, staff could not confirm each producer's fluid end block production and capacity. The majority of these firms are metal forgers with the abilities to produce castings and forgings of non-stainless alloy, stainless alloy, and carbon steel.[8] Chinese fluid end block supplier, Haimo Technologies Group Corporation, is a multinational company listed on the Shenzhen GEM stock exchange specializing in oilfield equipment and instruments. Its website states that it is the major manufacturer of frac pump fluid end modules in China, providing products to domestic and international oilfield service companies. Haimo employs approximately 1,000 employees and manufacturers alloy steel fluid end modules, including fluid end blocks, that comply with SAE 4330V material standards.[9]

[4] These firms were identified through a review of information submitted in the petitions.

[5] Two firms, ***, certified that they have not produced or exported fluid end blocks into the United States since January 1, 2016.

[6] Petitions, Exh. GEN-2.

[7] Petitions, Section IV pp. 13-17.

[8] Petitioners argue that ***, but publicly available information indicates that Chinese fluid end block producers have existing unused capacity. Petitioners point to the government of China's announcement that it suffers from "severe excessive capacity in the industries of steel." Petitioners' postconference brief, p. I-45.

[9] Haimo Technologies, http://www.haimotech.com/Products-and-Services/Fracturing-Equipment-and-Services/Fluid-End-Assembly-Accessories.html, retrieved January 17, 2020.

The industry in Germany

The Commission issued foreign producers' or exporters' questionnaires to five firms believed to produce and/or export fluid end blocks from Germany.[10] Usable responses to the Commission's questionnaire were received from *** firms: ***.[11] According to estimates requested of the responding German producers, the production of fluid end blocks in Germany reported in questionnaires accounts for approximately *** percent of overall production of fluid end blocks in Germany. Because the United States is believed to be the biggest market for fluid end blocks, these *** questionnaire responses likely account for a similar percentage of 2018 fluid end block exports from Germany to the United States.[12] Table VII-1 presents information on the fluid end block operations of the responding producers and exporters in Germany.

Table VII-1
Fluid end blocks: Summary data for producers in Germany, 2018

* * * * * * *

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

Changes in operations

No responding producer in Germany reported any changes in operations since January 1, 2016.

[10] These firms were identified through a review of information submitted in the petitions.

[11] One firm, *** certified that it has not produced or exported fluid end blocks into the United States since January 1, 2016.

[12] Foreign producers' questionnaire responses reported *** fluid end block exports from Germany to the United States in 2018, compared to *** fluid end block imports from Germany reported in importer questionnaire responses.

Operations on fluid end blocks

Table VII-2 presents information on the fluid end block operations of the responding producers and exporters in Germany. Capacity increased by *** percent from 2016 to 2018, but was *** percent lower in interim 2019 than in interim 2018. ***.[13] Production increased by *** percent from 2016 to 2017 and increased by an additional *** percent from 2017 to 2018, but was *** percent lower in interim 2019 than in interim 2018. Given the greater percentage increase in production relative to capacity, capacity utilization increased by *** percentage points from 2016 to 2017, and by *** percentage points from 2017 to 2018. Capacity utilization was *** percentage points lower in interim 2019 than in interim 2018. No inventories, internal consumption, or transfers to related firms were reported.[14]

The *** of German producers' total shipments were exports to the United States, ranging from a low of *** percent in 2016 to a high of *** percent in 2017. German producers' home market shipments ranged from a low of *** percent of total shipments in 2018, to a high of *** percent in 2016. Exports to other markets (***) ranged from *** percent throughout the data collection period.

German producers project that production and capacity will increase in 2020. The share of U.S. export shipments to total shipments are projected to decrease by *** percentage points from 2019 to 2020, while the share of shipments to other export markets and home commercial market shipments are projected to increase, by *** and *** percentage points, respectively.

[13] Foreign producers' questionnaire response, question II-3c.

[14] ***. Foreign producers' questionnaire response, question II-12.

Table VII-2
Fluid end blocks: Data for producers in Germany, 2016-18, January to September 2018, and January to September 2019 and projection calendar years 2019 and 2020

Item	Actual experience					Projections	
	Calendar year			January to September		Calendar year	
	2016	2017	2018	2018	2019	2019	2020
	Quantity (units)						
Capacity	***	***	***	***	***	***	***
Production	***	***	***	***	***	***	***
End-of-period inventories	***	***	***	***	***	***	***
Shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***
	Ratios and shares (percent)						
Capacity utilization[1]	***	***	***	***	***	***	***
Inventories/production	***	***	***	***	***	***	***
Inventories/total shipments	***	***	***	***	***	***	***
Share of shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***

[1] ***.

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

Alternative products

As shown in table VII-3, responding German firms produced other products on the same equipment and machinery used to produce fluid end blocks. Overall capacity utilization was higher than *** percent throughout the period for which data were collected, and the majority of production consisted of other products, ranging from *** to *** percent of total production. Other products produced on the same machinery as fluid end blocks consisted of ***.

Table VII-3
Fluid end blocks: German producers' overall capacity and production on the same equipment as subject production, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (1000 pounds)				
Overall capacity	***	***	***	***	***
Production:					
Fluid end block	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Shares (percent)				
Overall capacity utilization	***	***	***	***	***
Share of production:					
Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Ratio (pounds per unit)				
Ratio of FEB production (pounds per unit)	***	***	***	***	***

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

The industry in India

The Commission issued foreign producers' or exporters' questionnaires to two firms believed to produce and/or export fluid end blocks from India.[15] A usable response to the Commission's questionnaire was received from Bharat Forge.[16] While Bharat ***, it reported that it is the largest producer and exporter of fluid end blocks from India,[17] and estimated that its fluid end block exports to the United States account for *** percent of fluid end block exports from India.[18] Table VII-4 presents information on the fluid end block operations of Bharat.

Table VII-4
Fluid end blocks: Summary data for Bharat, 2018

Firm	Production (units)	Share of reported production (percent)	Exports to the United States (units)	Share of reported exports to the United States (percent)	Total shipments (units)	Share of firm's total shipments exported to the United States (percent)
Bharat	***	***	***	***	***	***
Total	***	***	***	***	***	***

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

[15] These firms were identified through a review of information submitted in the petitions.
[16] ***.
[17] Conference transcript, p. 10 (Powell).
[18] Foreign producers' questionnaire response, question II-6b.

Changes in operations

Table VII-5 presents Bharat's operational and organizational changes since January 1, 2016.

Table VII-5
Fluid end blocks: Indian producer Bharat's reported changes in operations, since January 1, 2016

Item / Firm	Reported changed in operations
Expansions:	
***	***
Other:	
***	***

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

Operations on fluid end blocks

Table VII-6 presents information on the fluid end block operations of Bharat. Capacity increased by *** percent from 2016 to 2018 and was *** percent higher in interim 2019 than in interim 2018. Production increased by *** percent from 2016 to 2018, but was *** percent lower in interim 2019 than in interim 2018. Given the greater percentage increase in production relative to capacity, capacity utilization increased by *** percentage points from 2016 to 2018, but was *** percentage points lower in interim 2019 than in interim 2018.

*** shipments reported were exports to the United States and *** were reported. Export shipments to the United States increased by *** percent from 2016 to 2017 and decreased by *** percent from 2017 to 2018. Export shipments to the United States were *** percent lower in interim 2019 than in interim 2018 and are projected to decrease by *** percent from 2019 to 2020.

Table VII-6
Fluid end blocks: Data for Indian producer Bharat, 2016-18, January to September 2018, and January to September 2019 and projection calendar years 2019 and 2020

Item	Actual experience					Projections	
	Calendar year			January to September		Calendar year	
	2016	2017	2018	2018	2019	2019	2020
	Quantity (units)						
Capacity	***	***	***	***	***	***	***
Production	***	***	***	***	***	***	***
End-of-period inventories	***	***	***	***	***	***	***
Shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***
	Ratios and shares (percent)						
Capacity utilization	***	***	***	***	***	***	***
Inventories/production	***	***	***	***	***	***	***
Inventories/total shipments	***	***	***	***	***	***	***
Share of shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***

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

Alternative products

As shown in table VII-7, Bharat produced other products on the same equipment and machinery used to produce fluid end blocks. Overall capacity *** from 2016 to 2018 and was *** percent higher in interim 2019 than in interim 2018. Overall capacity utilization increased by *** percentage points from 2017 to 2018 and increased by another *** percentage points from 2017 to 2018. Capacity utilization was *** percentage points lower in interim 2019 than in interim 2018. The share of production that consisted of out-of-scope production ranged from *** percent in 2018 to *** percent in 2016. Other products produced on the same machinery as fluid end blocks included ***.

Table VII-7
Fluid end blocks: Indian producer Bharat's overall capacity and production on the same equipment as subject production, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (pounds)				
Overall capacity	***	***	***	***	***
Production:					
Fluid end block	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Shares (percent)				
Overall capacity utilization	***	***	***	***	***
Share of production:					
Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Ratio (pounds per unit)				
Ratio of FEB production (pounds per unit)	***	***	***	***	***

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

The industry in Italy

The Commission issued foreign producers' or exporters' questionnaires to 17 firms believed to produce and/or export fluid end blocks from Italy.[19] Usable responses to the Commission's questionnaire were received from *** firms: ***.[20] Staff estimate that, ***, questionnaire responses from these firms account for *** of Italian production of fluid end blocks and *** of fluid end block exports from Italy to the United States.[21] Table VII-8 presents information on the fluid end block operations of the responding producers and exporters in Italy.

[19] These firms were identified through a review of information submitted in the petitions.

[20] Five firms, *** certified that they have not produced or exported fluid end blocks into the United States since January 1, 2016. One firm ***. None of the *** nonresponsive firms were mentioned in importer questionnaire responses as sources of imports.

[21] Respondents estimated that they accounted for *** percent of 2018 Italian production of fluid end blocks and *** percent of fluid end block exports from Italy to the United States. However, respondent estimates were inconsistent with their associated 2018 production and U.S. exports, and are, thus, unreliable. Foreign producers' questionnaires reported *** fluid end blocks exported to the United States in 2018, compared to *** fluid end blocks reported in importer questionnaires. Petitioners estimated that *** fluid end blocks were exported from Italy to the United States in 2018 (see Petitioners, Exh. Gen-2). Given this information and the fact that ***out of the 17 firms identified as potential Italian producers in the petitions either submitted a questionnaire or submitted a certification of non-production/exportation, staff believe foreign producers' questionnaire responses account for *** Italian fluid end block production and exports to the United States, with the exception of any U.S. exports or production from ***.

Table VII-8
Fluid end blocks: Summary data for producers in Italy, 2018

* * * * * * *

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

Changes in operations

Table VII-9 presents operational and organizational changes since January 1, 2016, reported by producers in Italy, including an expansion, an acquisition, and a consolidation.

Table VII-9
Fluid end blocks: Italian producers' reported changes in operations, since January 1, 2016

Item / Firm	Reported changed in operations
Expansions:	
***	***
Acquisitions:	
***	***
Consolidations:	
***	***

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

Operations on fluid end blocks

Table VII-10 presents information on the fluid end block operations of the responding producers and exporters in Italy. Capacity increased by *** percent from 2016 to 2017, then decreased by *** percent, for an overall increase of *** percent from 2016 to 2018. Production increased by *** percent from 2016 to 2017 and increased by *** percent from 2017 to 2018. Production was *** percent lower in interim 2019 than in interim 2018 and is projected to decrease by *** percent from 2019 to 2020.

From 2016 to 2018, *** shipments were exports to the United States. Similar to production, export shipments to the United States increased by *** percent from 2016 to 2017 and increased by *** percent from 2017 to 2018. Export shipments to the United States were *** percent lower in interim 2019 than in interim 2018 and are projected to decrease by *** percent from 2019 to 2020.

Home market shipments of *** fluid end blocks were reported by *** in interim 2019, and ***. *** projected commercial home market shipments of *** fluid end blocks in 2020, but ***.

Inventories were reported by *** firms, ***. Inventories as a share of total shipments ranged from *** percent in interim 2018 to *** percent in 2016.

Table VII-10
Fluid end blocks: Data for producers in Italy, 2016-18, January to September 2018, and January to September 2019 and projection calendar years 2019 and 2020

Item	Actual experience					Projections	
	Calendar year			January to September		Calendar year	
	2016	2017	2018	2018	2019	2019	2020
	Quantity (units)						
Capacity	***	***	***	***	***	***	***
Production	***	***	***	***	***	***	***
End-of-period inventories	***	***	***	***	***	***	***
Shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***
	Ratios and shares (percent)						
Capacity utilization[1]	***	***	***	***	***	***	***
Inventories/production	***	***	***	***	***	***	***
Inventories/total shipments	***	***	***	***	***	***	***
Share of shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***

[1]***.

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

Alternative products

As shown in table VII-11, responding Italian firms produced other products on the same equipment and machinery used to produce fluid end blocks. Overall capacity increased *** percent from 2016 to 2018 and was *** percent higher in interim 2019 than in interim 2018. Overall capacity utilization increased by *** percentage points from 2016 to 2018. Capacity utilization was *** percentage points lower in interim 2019 than in interim 2018. The majority of overall production was out-of-scope production, which ranged from *** percent in 2017 to *** percent in 2016. Other products produced on the same machinery as fluid end blocks included ***.

Table VII-11
Fluid end blocks: Italian producers' overall capacity and production on the same equipment as subject production, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (1,000 pounds)				
Overall capacity	***	***	***	***	***
Production:					
Fluid end block	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Shares (percent)				
Overall capacity utilization	***	***	***	***	***
Share of production:					
Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Ratio (pounds per unit)				
Ratio of FEB production (pounds per unit)	***	***	***	***	***

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

Subject countries combined

Table VII-12 presents summary data on fluid end block operations of the reporting subject producers in the subject countries.

Table VII-12
Fluid end blocks: Data on the industry in subject countries, 2016-18, January to September 2018, and January to September 2019 and projection calendar years 2019 and 2020

Item	Actual experience					Projections	
	Calendar year			January to September		Calendar year	
	2016	2017	2018	2018	2019	2019	2020
	Quantity (units)						
Capacity	9,266	14,118	13,633	10,729	9,953	11,465	11,588
Production	1,747	10,053	10,390	7,724	5,175	6,501	5,739
End-of-period inventories	***	***	***	***	***	***	***
Shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	1,661	9,888	10,193	7,586	5,012	6,046	4,506
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***
	Ratios and shares (percent)						
Capacity utilization	18.9	71.2	76.2	72.0	52.0	56.7	49.5
Inventories/production	***	***	***	***	***	***	***
Inventories/total shipments	***	***	***	***	***	***	***
Share of shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***

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

U.S. inventories of imported merchandise

Table VII-12 presents data on U.S. importers' reported inventories of fluid end blocks. The ratio of inventories to U.S. imports and to U.S. shipments of imports did not change significantly from 2016 to 2017 because, while inventories increased significantly during this time, so did U.S. shipments of imports. From 2017 to 2018, U.S. shipments of imports from each of the subject countries decreased, while inventories of imports from each of the subject countries increased, resulting in significant increases in the ratios of inventories to U.S. imports and U.S. shipments of imports from each of the subject countries.

Table VII-12
Fluid end blocks: U.S. importers' inventories, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Inventories (units); Ratios (percent)				
Imports from China: Inventories	***	***	***	***	***
Ratio to U.S. imports	***	***	***	***	***
Ratio to U.S. shipments of imports	***	***	***	***	***
Ratio to total shipments of imports	***	***	***	***	***
Imports from Germany: Inventories	***	***	***	***	***
Ratio to U.S. imports	***	***	***	***	***
Ratio to U.S. shipments of imports	***	***	***	***	***
Ratio to total shipments of imports	***	***	***	***	***
Imports from India: Inventories	***	***	***	***	***
Ratio to U.S. imports	***	***	***	***	***
Ratio to U.S. shipments of imports	***	***	***	***	***
Ratio to total shipments of imports	***	***	***	***	***
Imports from Italy: Inventories	***	***	***	***	***
Ratio to U.S. imports	***	***	***	***	***
Ratio to U.S. shipments of imports	***	***	***	***	***
Ratio to total shipments of imports	***	***	***	***	***
Imports from subject sources: Inventories	315	1,249	2,956	2,293	2,744
Ratio to U.S. imports	10.9	11.5	28.0	21.1	44.4
Ratio to U.S. shipments of imports	11.9	13.1	34.2	24.6	41.9
Ratio to total shipments of imports	11.7	12.9	33.4	24.2	41.1
Imports from nonsubject sources: Inventories	***	***	***	***	***
Ratio to U.S. imports	***	***	***	***	***
Ratio to U.S. shipments of imports	***	***	***	***	***
Ratio to total shipments of imports	***	***	***	***	***
Imports from all import sources: Inventories	***	***	***	***	***
Ratio to U.S. imports	***	***	***	***	***
Ratio to U.S. shipments of imports	***	***	***	***	***
Ratio to total shipments of imports	***	***	***	***	***

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

U.S. importers' outstanding orders

The Commission requested importers to indicate whether they imported or arranged for the importation of fluid end blocks from China, Germany, India, and Italy after September 30, 2019. These data are presented in table VII-13. Six of the 16 U.S. importers reported arranged imports from subject sources and one U.S. importer reported arranged imports from nonsubject sources.

Table VII-13
Fluid end blocks: U.S. importers' end-of-period inventories of imports by source, 2016-18, January to September 2018, and January to September 2019

Item	Period				
	Oct-Dec 2019	Jan-Mar 2020	Apr-Jun 2020	Jul-Sept 2020	Total
	Quantity (units)				
Arranged U.S. imports from.--					
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	***	***	***	***	888
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***

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

Antidumping or countervailing duty orders in third-country markets

There are no known antidumping or countervailing duty orders on fluid end blocks in third-country markets.

Information on nonsubject countries

Petitioners argued that nonsubject imports had a minimal presence in the United States during the period of investigation, with nonsubject imports gaining approximately *** percentage points of market share from 2016 to 2018, and *** in market share across the interim periods.[22] Overall, petitioners stated that nonsubject imports comprised less than 4 percent of apparent domestic consumption.[23] According to petitioners, the largest nonsubject import sources were South Korea, and Romania, but petitioners believe that there may also be

[22] Petitions, p. 38.
[23] Petitioners' postconference brief, p. II-11.

some imported volumes from Mexico and France.[24] [25] While the quantities reported were very small, nonsubject import sources included Canada, Mexico, and the United Kingdom.[26] According to petitioners, the United States is the only major market for fluid end blocks.[27]

[24] Conference transcript, pp. 41-42 (Levy).

[25] Petitioners' postconference brief, II-11.

[26] Importers' questionnaire responses.

[27] Fluid end block exports to markets other than the U.S. domestic market constituted *** in 2016 and *** in 2018. Petitioners' postconference brief, Table 5.

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
84 FR 71462, December 27, 2019	*Fluid End Blocks From China, Germany, India, and Italy; Institution of Anti-Dumping and Countervailing Duty Investigations and Scheduling of Preliminary Phase Investigations*	https://www.govinfo.gov/content/pkg/FR-2019-12-27/pdf/2019-27881.pdf
85 FR 2385, January 15, 2020	*Forged Steel Fluid End Blocks From the Federal Republic of Germany, India, Italy and the People's Republic of China: Initiation of Countervailing Duty Investigations*	https://www.govinfo.gov/content/pkg/FR-2020-01-15/pdf/2020-00490.pdf
85 FR 2394, January 15, 2020	*Forged Steel Fluid End Blocks From the Federal Republic of Germany, India, and Italy: Initiation of Less-Than-Fair-Value Investigations*	https://www.govinfo.gov/content/pkg/FR-2020-01-15/pdf/2020-00493.pdf

APPENDIX B

LIST OF STAFF CONFERENCE WITNESSES

CALENDAR OF PUBLIC PRELIMINARY CONFERENCE

Those listed below appeared as witnesses at the United States International Trade Commission's preliminary conference:

Subject: Fluid End Blocks from China, Germany, India, and Italy

Inv. Nos.: 701-TA-632-635 and 731-TA-1466-1468 (Preliminary)

Date and Time: January 9, 2020 - 9:30 a.m.

Sessions were held in connection with these preliminary phase investigations in the Main Hearing Room (Room 101), 500 E Street, SW., Washington, DC.

OPENING REMARKS:

In Support of Imposition (**Thomas M. Beline**, Cassidy Levy Kent (USA) LLP)
In Opposition to Imposition (**Brittney R. Powell**, Fox Rothschild LLP)

In Support of the Imposition of Antidumping and Countervailing Duty Orders:

Cassidy Levy Kent (USA) LLP
Washington, DC
on behalf of

FEB Fair Trade Coalition
Ellwood Group
Finkl Steel

Scott Boyd, President, Ellwood City Forge

Kathy Saunders, Director of Marketing, Ellwood City Forge

Mark Shirley, Chief Executive Officer, Finkl Steel

Thomas M. Beline)
Jack A. Levy)
) – OF COUNSEL
Mary Jane Alves)
Myles S. Getlan)

In Opposition to the Imposition of
Antidumping and Countervailing Duty Orders:

Alston & Bird LLP
Washington, DC
on behalf of

Schmiedewerke Gröditz GmbH ("Schmiedewerke")
Gröditz Steel North America ("GSNA")

Layne Brower, Director of Sales, GSNA North America

Lian Yang) – OF COUNSEL

Fox Rothschild LLP
Washington, DC
on behalf of

Bharat Forge Limited

Brittney R. Powell)
) – OF COUNSEL
Ronald M. Wisla)

deKieffer & Horgan, PLLC
Washington, DC
on behalf of

BGH Edelstahl Siegen GmbH

Kevin Horgan) – OF COUNSEL

Additional Interested Parties in Opposition to the Imposition of Antidumping and Countervailing Duty Orders:

Galtway Industries
Houston, TX

Josh Lowrey, President

Greg Gilbert, Vice President

ST9 Gas + Oil
Magnolia, TX

Nick Poradek, Vice President, Finance
Chris Buckley, President & Founder

REBUTTAL/CLOSING REMARKS:

In Support of Imposition (**Myles S. Getlan**, Cassidy Levy Kent (USA) LLP)
In Opposition to Imposition (**Brittney R. Powell**, Fox Rothschild LLP; and
Lian Yang, Austin & Bird LLP)

-END-

APPENDIX C

SUMMARY DATA

Table C-1
Fluid end blocks: Summary data concerning the U.S. market, 2016-18, January to September 2018, and January to September 2019
(Quantity=units; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per unit; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Calendar year			Jan-Sep
	2016	2017	2018	2018	2019	2016-18	2016-17	2017-18	2018-19
U.S. consumption quantity:									
Amount	***	***	***	***	***	▲***	▲***	▼***	▼***
Producers' share (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***
Importers' share (fn1):									
China	***	***	***	***	***	▼***	▼***	▼***	▼***
Germany	***	***	***	***	***	▲***	▲***	▲***	▼***
India	***	***	***	***	***	▼***	▼***	▲***	▲***
Italy	***	***	***	***	***	▲***	▲***	▼***	▲***
Subject sources	***	***	***	***	***	▲***	▲***	▲***	▲***
Nonsubject sources	***	***	***	***	***	▲***	▼***	▲***	▲***
All import sources	***	***	***	***	***	▲***	▲***	▲***	▲***
U.S. consumption value:									
Amount	***	***	***	***	***	▲***	▲***	▼***	▼***
Producers' share (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***
Importers' share (fn1):									
China	***	***	***	***	***	▼***	▲***	▼***	▼***
Germany	***	***	***	***	***	▲***	▲***	▲***	▼***
India	***	***	***	***	***	▼***	▼***	▲***	▲***
Italy	***	***	***	***	***	▲***	▲***	▲***	▼***
Subject sources	***	***	***	***	***	▲***	▲***	▲***	▲***
Nonsubject sources	***	***	***	***	***	▼***	▼***	▲***	▲***
All import sources	***	***	***	***	***	▲***	▲***	▲***	▲***
U.S. importers' U.S. shipments of imports from:									
China:									
Quantity	***	***	***	***	***	▲***	▲***	▼***	▼***
Value	***	***	***	***	***	▲***	▲***	▼***	▼***
Unit value	***	***	***	***	***	▲***	▲***	▼***	▼***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
Germany:									
Quantity	***	***	***	***	***	▲***	▲***	▼***	▼***
Value	***	***	***	***	***	▲***	▲***	▼***	▼***
Unit value	***	***	***	***	***	▲***	▼***	▲***	▼***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
India:									
Quantity	***	***	***	***	***	▲***	▲***	▲***	▼***
Value	***	***	***	***	***	▲***	▲***	▲***	▼***
Unit value	***	***	***	***	***	▼***	▼***	▲***	▲***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
Italy:									
Quantity	***	***	***	***	***	▲***	▲***	▼***	▼***
Value	***	***	***	***	***	▲***	▲***	▼***	▼***
Unit value	***	***	***	***	***	▼***	▼***	▲***	▼***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▼***
Subject sources:									
Quantity	2,656	9,534	8,640	6,985	4,906	▲225.3	▲259.0	▼(9.4)	▼(29.8)
Value	70,371	214,753	211,491	175,598	128,731	▲200.5	▲205.2	▼(1.5)	▼(26.7)
Unit value	26,495	22,525	24,478	25,139	26,240	▼(7.6)	▼(15.0)	▲8.7	▲4.4
Ending inventory quantity	315	1,249	2,956	2,293	2,744	▲838.4	▲296.5	▲136.7	▲19.7
Nonsubject sources:									
Quantity	***	***	***	***	***	▲***	▼***	▲***	▼***
Value	***	***	***	***	***	▲***	▼***	▲***	▼***
Unit value	***	***	***	***	***	▼***	▼***	▲***	▼***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
All import sources:									
Quantity	***	***	***	***	***	▲***	▲***	▼***	▼***
Value	***	***	***	***	***	▲***	▲***	▼***	▼***
Unit value	***	***	***	***	***	▼***	▼***	▲***	▲***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***

Table continued on next page.

Table C-1--Continued
Fluid end blocks: Summary data concerning the U.S. market, 2016-18, January to September 2018, and January to September 2019
(Quantity=units; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per unit; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Calendar year			Jan-Sep
	2016	2017	2018	2018	2019	2016-18	2016-17	2017-18	2018-19
U.S. producers':									
Average capacity quantity	***	***	***	***	***	▼***	***	▼***	***
Production quantity	***	***	***	***	***	▲***	▲***	▼***	▼***
Capacity utilization (fn1)	***	***	***	***	***	▲***	▲***	▼***	▼***
U.S. shipments:									
Quantity	***	***	***	***	***	▲***	▲***	▼***	▼***
Value	***	***	***	***	***	▲***	▲***	▼***	▼***
Unit value	***	***	***	***	***	▲***	▼***	▲***	▲***
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 (dollars per hour)	***	***	***	***	***	▲***	▲***	▲***	▲***
Productivity (units per 1,000 hours)	***	***	***	***	***	▲***	▲***	▼***	▼***
Unit labor costs	***	***	***	***	***	▼***	▼***	▲***	▲***
Net sales: (fn2)									
Quantity	***	***	***	***	***	▲***	▲***	▼***	▼***
Value	***	***	***	***	***	▲***	▲***	▼***	▼***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▲***
Cost of goods sold (COGS)	***	***	***	***	***	▲***	▲***	▼***	▼***
Gross profit or (loss) (fn3)	***	***	***	***	***	▲***	▲***	▼***	▼***
SG&A expenses	***	***	***	***	***	▲***	▲***	▲***	▼***
Operating income or (loss) (fn3)	***	***	***	***	***	▲***	▲***	▼***	▼***
Net income or (loss) (fn3)	***	***	***	***	***	▲***	▲***	▼***	▼***
Capital expenditures	***	***	***	***	***	▼***	▼***	▼***	▲***
Unit COGS	***	***	***	***	***	▲***	▲***	▲***	▲***
Unit SG&A expenses	***	***	***	***	***	▼***	▼***	▲***	▲***
Unit operating income or (loss) (fn3)	***	***	***	***	***	▼***	▲***	▼***	▼***
Unit net income or (loss) (fn3)	***	***	***	***	***	▼***	▲***	▼***	▼***
COGS/sales (fn1)	***	***	***	***	***	▲***	▲***	▲***	▲***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▲***	▼***	▼***
Net income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▲***	▼***	▼***

Notes:

Note.--Shares and ratios shown as "0.0" percent represent non-zero values less than "0.05" percent (if positive) and greater than "(0.05)" percent (if negative). Zeroes, null values, and undefined calculations are suppressed and shown as "---". Period changes preceded by a "▲" represent an increase, while period changes preceded by a "▼" represent a decrease.

fn1.--Reported data are in percent and period changes are in percentage points. Financial data incorporates U.S. producers' questionnaire responses from ***.
fn2.--U.S. producers' production and trade data incorporate U.S. producers' questionnaire responses from ***. Financial data incorporate U.S. producers' questionnaire respon
fn3.--Percent changes only calculated when both comparison values represent profits; The directional change in profitability provided when one or both comparison values represent a loss.

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

APPENDIX D

SECTION 232 AND SECTION 301 PROCEEDINGS

Section 232 investigations (Commerce)

Steel

HTS subheadings 7218.91.00 and 7218.99.00 were included in the enumeration of iron and steel provisions that are subject to the additional 25-percent *ad valorem* duties under Section 232 of the *Trade Expansion Act of 1962*, as amended.[1] [2] [3] The products included in these two HTS subheadings are raw materials for producing fluid end blocks.[4] Table D-1 presents a summary of Section 232 tariffs on U.S. imports of steel, by country.

---

[1] *Proclamation on Adjusting Imports of Steel into the United States*, Presidential Proclamation 9705, May 19, 2019, https://www.whitehouse.gov/presidential-actions/proclamation-adjusting-imports-steel-united-states-2/.

[2] HTS subheadings 7326.19.00, 7326.90.86, and 8413.91.90 were not included in the enumeration of iron and steel provisions that are subject to the additional 25-percent *ad valorem* duties under Section 232 of the *Trade Expansion Act of 1962*, as amended. HTS statistical reporting numbers 7224.90.0015 and 7224.90.0045 were specifically excluded in the enumeration of iron and steel provisions that are subject to the additional 25-percent *ad valorem* duties under Section 232.

[3] HTS subheading 9903.80.39 covers "Blooms, billets and slabs of stainless steel and other products, provided for in subheading 7218.91.00 and 7218.99.00." HTS subheading 9903.80.56 covers "Products of tool steel and other products, provided for in subheading 7224.10.00 (except for statistical reporting number 7224.10.0005 and 7224.10.0075), 7224.90.00 (except for statistical reporting numbers 7224.90.0005, 7224.90.0045, 7224.90.0055, 7224.90.0065 and 7224.90.0075), 7225.30.11, 7225.30.51, 7225.40.11, 7225.40.51, 7225.50.11, 7226.20.00, 7226.91.05, 7226.91.15, 7226.91.25, 7226.92.10, 7226.92.30, 7227.10.00, 7227.90.10, 7227.90.20, 7228.10.00, 7228.30.20, 7228.30.40, 7228.30.60, 7228.50.10, 7228.60.10 or 7229.90.05)." HTS subheading 9903.80.57 covers "Blooms, billets and slabs, semi-finished, provided for in subheading 7207.11.00, 7207.12.00, 7207.19.00, 7207.20.00 or 7224.90.00 (except for statistical reporting numbers 7224.90.0015, 7224.90.0025, and 7224.90.0035)."

[4] Producer *** identified Section 232 duties on steel products as a contributor to higher raw material costs. *** stated that it purchased stainless steel ingots for production of fluid end blocks, and the 232 action increased such ingot costs. Petitioners' postconference brief, p. I-26. *** producer questionnaire, IV-20.

Table D-1
Steel: Section 232 tariffs summary

Country	Effective date	Ad valorem duty rate	Absolute quotas
Argentina	May 31, 2018	Exempt	2.4 metric tons
Australia	May 31, 2018	Exempt	Exempt
Brazil	May 31, 2018	Exempt	683 metric tons
Canada	May 20, 2019	Exempt	Exempt
European Union	May 31, 2018	25%	N/A
Korea	April 30, 2018	Exempt	185,000 metric tons
Mexico	May 20, 2019	Exempt	Exempt
Turkey	May 21, 2019	25%	N/A
All other countries	March 8, 2018	25%	N/A

Source: U.S. Customs and Border Patrol website: https://www.cbp.gov/trade/programs-administration/entry-summary/232-tariffs-aluminum-and-steel, updated on September 3, 2019.

Aluminum

HTS subheadings 7218.91.00, 7218.99.00, 7224.90.00, 7326.19.00, 7326.90.86, and 8413.91.90 were not included in the enumeration of aluminum provisions that are subject to the additional 25-percent *ad valorem* national-security duties under Section 232 of the *Trade Expansion Act of 1962*, as amended.[5]

[5] *Presidential Proclamation on Adjusting Imports of Aluminum Into the United States*, Presidential Proclamation 9704, May 19, 2019, https://www.whitehouse.gov/presidential-actions/proclamation-adjusting-imports-aluminum-united-states/.

Section 301 proceeding

Fluid end blocks imported from China provided for in HTS subheadings 7218.91.00, 7218.99.00, 7224.90.00, 7326.19.00, 7326.90.86, and 8413.91.90 are subject to additional *ad valorem* duties under Section 301 of the *Trade Act of 1974.* Table D-2 presents a summary of Section 301 tariffs on U.S. imports of fluid end blocks from China, by HTS subheading.[6]

Table D-2
Section 301 tariffs summary

HTS Subheading	List	Ad valorem duty rate	Effective Date
7218.91.00	Tranche 4	15%; 7.5%	September 1, 2019; February 14, 2020
7218.99.00	Tranche 4	10%; 7.5%	September 1, 2019; February 14, 2020
7224.90.00	Tranche 4	10%; 7.5%	September 1, 2019; February 14, 2020
7326.19.00	Tranche 3	10%; 25%	September 1, 2018; June 15, 2019
7326.90.86	Tranche 3	10%; 25%	September 1, 2018; June 15, 2019
8413.91.90	Tranche 1	25%	July 9, 2018

Source: U.S. Customs and Border Patrol website: https://www.cbp.gov/trade/remedies/301-certain-products-china, updated on January 2, 2020.

[6] *Notice of Modification of Section 301 Action: China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation*, Office of the United States Trade Representative, https://ustr.gov/sites/default/files/enforcement/301Investigations/Notice_of_Modification-January_2020.pdf, retrieved January 17, 2020.

APPENDIX E

TOLLING DATA

Table E-1
Fluid end blocks: Tolling/dispersion only activities

Item	Narrative
Capital investments	
***	***
***	***
Technical expertise	
***	***
***	***
Value added	
***	***
***	***
Employment	
***	***
***	***
Quantity, type, and source of parts	
***	***
***	***
Costs and activities	
***	***
***	***

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

Table E-2
Fluid end blocks: U.S. tollers' finishing operations

Item	Number of firms reporting
Milling of one or more flat surfaces	***
Contour machining to custom shapes or dimensions	***
Drilling or boring holes	***
Heat treating	***
Painting, varnishing, or coating	***
Threading	***
Attachment of flanges, valves, seals, or connectors	***
Other	***

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

Table E-3
Fluid end blocks: Tolling/dispersion only complexity and importance

Level of complexity	1	2	3	4	5
Number of firms reporting	***	***	***	***	***

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

Table E-4
Fluid end blocks: Data on industry for U.S. tollers, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
Capacity	***	***	***	***	***
Production	***	***	***	***	***
U.S. shipments: Returned to tollee (Quantity)	***	***	***	***	***
Returned to tollee (Value)	***	***	***	***	***
Returned to tollee (Unit value)	***	***	***	***	***
	Ratios and shares (percent)				
Capacity utilization	***	***	***	***	***

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

Table E-5
Fluid end blocks: U.S. tollers' employment related data, 2016-18, January to September 2018, and January to September 2019

Item	Fiscal year			January to September	
	2016	2017	2018	2018	2019
Production and related workers (PRWs) (number)	***	***	***	***	***
Hours worked by PRW (1,000 hours)	***	***	***	***	***
Wages paid ($1,000)	***	***	***	***	***
PRW average wages (dollars per hour)	***	***	***	***	***
Productivity (units per 1,000 hours)	***	***	***	***	***
Unit labor costs (dollars per unit)	***	***	***	***	***
Hours worked/PRW	***	***	***	***	***

Note: ***.

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

Table E-6
Fluid end blocks: Combined U.S. producer/toller employment related data, 2016-18, January to September 2018, and January to September 2019

Item	Fiscal year			January to September	
	2016	2017	2018	2018	2019
Production and related workers (PRWs)	***	***	***	***	***
Hours worked by PRW (1,000 hours)	***	***	***	***	***
Wages paid ($1,000)	***	***	***	***	***
PRW average wages (dollars per hour)	***	***	***	***	***

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

Table E-7
Fluid end blocks: U.S. tollers' results of operations, 2016-18, January to September 2018, and January to September 2019

Item	Fiscal year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
Net tolling quantities	***	***	***	***	***
	Value (1,000 dollars)				
Net tolling revenues	***	***	***	***	***
Cost of goods sold:-- Raw materials	***	***	***	***	***
Direct labor cost	***	***	***	***	***
Other factory costs	***	***	***	***	***
Total COGS	***	***	***	***	***
Gross profit or (loss)	***	***	***	***	***
Selling expenses	***	***	***	***	***
General & admin expenses	***	***	***	***	***
Total SG&A expenses	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***
Interest expense	***	***	***	***	***
All other expenses	***	***	***	***	***
All other income	***	***	***	***	***
Other expense / (income), net	***	***	***	***	***
Net income or (loss)	***	***	***	***	***
Depreciation/ amortization	***	***	***	***	***
Cash flow	***	***	***	***	***
	Ratio to net tolling revenue (percent)				
Cost of goods sold.-- Raw materials	***	***	***	***	***
Direct labor cost	***	***	***	***	***
Other factory costs	***	***	***	***	***
Total COGS	***	***	***	***	***
Gross profit (loss) margin	***	***	***	***	***
Selling expenses as share of revenue	***	***	***	***	***
General & admin expenses as share of revenue	***	***	***	***	***
Total SG&A expenses as share of revenue	***	***	***	***	***
Operating profit (loss) margin	***	***	***	***	***
Net profit (loss) margin	***	***	***	***	***
	Ratio to total COGS (percent)				
Cost of goods sold.-- Raw materials	***	***	***	***	***
Direct labor cost	***	***	***	***	***
Other factory costs	***	***	***	***	***

Table continued on next page.

Table E-7 – Continued
Fluid end blocks: U.S. tollers' results of operations, 2016-18, January to September 2018, and January to September 2019

Item	Fiscal year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
Net tolling quantities	***	***	***	***	***
	Unit value (dollars per unit)				
Net sales	***	***	***	***	***
Cost of goods sold.--					
Raw materials	***	***	***	***	***
Direct labor cost	***	***	***	***	***
Other factory costs	***	***	***	***	***
Total COGS	***	***	***	***	***
Gross profit (loss) margin	***	***	***	***	***
Unit selling expenses	***	***	***	***	***
Unit general & admin expenses	***	***	***	***	***
Unit total SG&A expenses	***	***	***	***	***
Unit operating income or (loss)	***	***	***	***	***
Net profit (loss) margin	***	***	***	***	***

Note.--Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

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

Table E-8
Fluid end blocks: Combined U.S. producer and toller results of operations, 2016-18, January to September 2018, and January to September 2019

Item	Fiscal year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
Net sales or tolling Quantity	***	***	***	***	***
	Value ($1,000)				
Net sales or tolling revenue	***	***	***	***	***
Gross profit or (loss).--					
Value (1,000 dollars)	***	***	***	***	***
Average unit value (dollars per unit)	***	***	***	***	***
Ratio to net sales value (percent)	***	***	***	***	***
Operating income or (loss).--					
Value (1,000 dollars)	***	***	***	***	***
Average unit value (dollars per unit)	***	***	***	***	***
Ratio to net sales value (percent)	***	***	***	***	***
Net income or (loss).--					
Value (1,000 dollars)	***	***	***	***	***
Average unit value (dollars per unit)	***	***	***	***	***
Ratio to net sales value (percent)	***	***	***	***	***

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

Table E-9
Fluid end blocks: U.S. tollers' asset data by firm, 2016-18

Item	Fiscal year		
	2016	2017	2018
	Net assets ($1,000 dollars)		
***	***	***	***
***	***	***	***
	Operating ROA (percent)		
***	***	***	***
***	***	***	***

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

Table E-10
Fluid end blocks: Capital expenditures and research and development expenses for U.S. tollers 2016-18, January to September 2018, and January to September 2019

Item	Fiscal year			January to September	
	2016	2017	2018	2018	2019
	Value (1,000 dollars)				
Capital expenditures	***	***	***	***	***
Research and development expenses	***	***	***	***	***

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

APPENDIX F

U.S. SHIPMENTS BY LEVEL OF PROCESSING AND STEEL TYPE

Table F-1: U.S. producers' and U.S. importers' U.S. shipments, by level of processing F-3
Table F-2: U.S. producers' and U.S. importers' U.S. shipments, by steel type F-11

Table F-1
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by level of processing, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. producers' U.S. shipments.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Value (1,000 dollars)				
U.S. producers' U.S. shipments.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. producers' U.S. shipments.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of quantity (percent)				
U.S. producers' U.S. shipments.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of value (percent)				
U.S. producers' U.S. shipments.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***

Table continued on next page.

Table F-1 – Continued
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by level of processing, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S.imports: China.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S.imports: China.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S.imports: China.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S.imports: China.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S.imports: China.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***

Table continued on next page.

Table F-1 – Continued
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by level of processing, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S.imports: Germany.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S.imports: Germany.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S.imports: Germany.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S.imports: Germany.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S.imports: Germany.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***

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Table F-1 – Continued
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by level of processing, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S.imports: India.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S.imports: India.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S.imports: India.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S.imports: India.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S.imports: India.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***

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Table F-1 – Continued
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by level of processing, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S.imports: Italy.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S.imports: Italy.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S.imports: Italy.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S.imports: Italy.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S.imports: Italy.--Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***

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Table F-1 – Continued
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by level of processing, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S.imports: Subject sources.-- Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S.imports: Subject sources.-- Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S.imports: Subject sources.-- Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S.imports: Subject sources.-- Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S.imports: Subject sources.-- Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***

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Table F-1 – Continued
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by level of processing, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S.imports: Nonsubject sources.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S.imports: Nonsubject sources.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S.imports: Nonsubject sources.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S.imports: Nonsubject sources.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S.imports: Nonsubject sources.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***

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Table F-1 – Continued
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by level of processing, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S.imports: All import sources.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S.imports: All import sources.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S.imports: All import sources.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S.imports: All import sources.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S.imports: All import sources.--					
Unfinished	***	***	***	***	***
Semi-finished	***	***	***	***	***
Finished	***	***	***	***	***
All levels of processing	***	***	***	***	***

Note.--Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

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

Table F-2
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by steel type, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. producers' U.S. shipments.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. producers' U.S. shipments.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. producers' U.S. shipments.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of quantity (percent)				
U.S. producers' U.S. shipments.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of value (percent)				
U.S. producers' U.S. shipments.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***

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Table F-2 – Continued
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by steel type, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S. imports: China.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S. imports: China.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S. imports: China.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S. imports: China.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S. imports: China.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***

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Table F-2 – Continued
Fluid end blocks:U.S. producers' and U.S. importers' U.S. shipments, by steel type, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S. imports: Germany.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S. imports: Germany.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S. imports: Germany.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S. imports: Germany.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S. imports: Germany.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***

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Table F-2 – Continued
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by steel type, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S. imports: India.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S. imports: India.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S. imports: India.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S. imports: India.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S. imports: India.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***

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Table F-2 – Continued
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by steel type, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S. imports: Italy.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S. imports: Italy.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S. imports: Italy.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S. imports: Italy.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S. imports: Italy.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***

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Table F-2 – Continued
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by steel type, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S. imports: Subject sources.--					
Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S. imports: Subject sources.--					
Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S. imports: Subject sources.--					
Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S. imports: Subject sources.--					
Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S. imports: Subject sources.--					
Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***

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Table F-2 – Continued
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by steel type, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S. imports: Nonsubject sources.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S. imports: Nonsubject sources.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S. imports: Nonsubject sources.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S. imports: Nonsubject sources.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S. imports: Nonsubject sources.--Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***

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Table F-2 – Continued
Fluid end blocks: U.S. producers' and U.S. importers' U.S. shipments, by steel type, 2016-18, January to September 2018, and January to September 2019

Item	Calendar year			January to September	
	2016	2017	2018	2018	2019
	Quantity (units)				
U.S. importers' U.S. imports: All import sources.--					
Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' U.S. imports: All import sources.--					
Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' U.S. imports: All import sources.--					
Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' U.S. imports: All import sources.--					
Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' U.S. imports: All import sources.--					
Stainless	***	***	***	***	***
Non-stainless	***	***	***	***	***
All steel types	***	***	***	***	***

Note.--Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

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