Uranium From Kazakhstan

Investigation No. 731-TA-539-A (Final)

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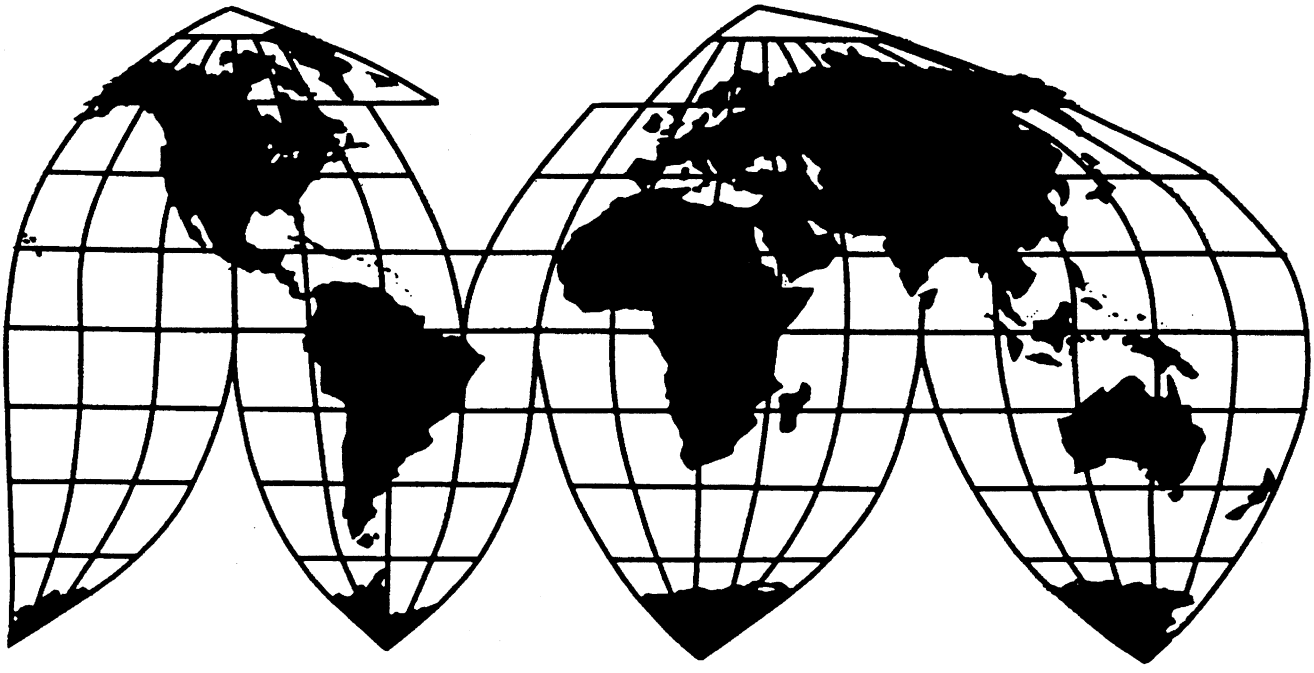

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Glossary of Abbreviations

AVLIS	Advanced vapor laser isotope separation
BNFL	British National Fuel Ltd.
Cameco	Cameco Corp.
Census	Bureau of Census, U.S. Department of Commerce
CIS	Commonwealth of Independent States
COGEMA	COGEMA, S.A.
COGS	Cost of goods sold
Commerce	U.S. Department of Commerce
Commission	U.S. International Trade Commission
COMPAS	Commercial Policy Analysis System
Cotter	Cotter Corp.
DOE	U.S. Department of Energy
EIA	Energy Information Administration
ERA	Energy Resources of Australia
EUP	Enriched uranium product
FR	Federal Register
GDP	Gross domestic product
HEU	Highly enriched uranium
HTS	Harmonized Tariff Schedule of the United States
International Uranium (USA)	International Uranium (USA) Corp.
ISL	*In situ* leaching
LEU-DO	Low enriched uranium dioxide (low enriched UO_2)
LEU-HF	Low enriched uranium hexafluoride (low enriched UF_6)
LTFV	Less than fair value
Minatom	Ministry of Atomic Energy of the Russian Federation
MOX	Mixed uranium oxide
Nukem	Nukem, Inc.
R&D	Research and development
Rio Algom	Rio Algom Mining Corp.
Power Resources	Power Resources, Inc.
SG&A expenses	Selling, general, and administrative expenses
SWU	Separative work units
TENEX	Techsnabexport
TIB	Temporary importation under bond
TR	Transcript of the Commission's hearing
U_3O_8	Natural uranium concentrate
Uranium Resources	Uranium Resources Inc.
USEC	United States Enrichment Corporation
USSR	Union of Soviet Socialist Republics

UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation No. 731-TA-539-A (Final)

URANIUM FROM KAZAKHSTAN

DETERMINATION

On the basis of the record[2] developed in the subject investigation, the United States International Trade Commission determines, pursuant to section 735(b) of the Tariff Act of 1930 (19 U.S.C. § 1673d(b)) (the Act), that an industry in the United States is not materially injured or threatened with material injury, and the establishment of an industry in the United States is not materially retarded, by reason of imports from Kazakhstan of uranium, provided for in subheadings 2612.10.10, 2844.10.10, 2844.10.20, 2844.10.50, and 2844.20.00 of the Harmonized Tariff Schedule of the United States, that have been found by the Department of Commerce to be sold in the United States at less than fair value (LTFV).

BACKGROUND

The Commission instituted this investigation effective November 8, 1991, following receipt of a petition filed with the Commission and the Department of Commerce by the Ad Hoc Committee of Domestic Uranium Producers and the Oil, Chemical and Atomic Workers International Union (which has since become the Paper, Allied-Industrial-Chemical Union (PACE)). The Commission's investigation was suspended on October 21, 1992, following Commerce's notification that it was entering into a suspension agreement with Kazakhstan. The final phase of the investigation was continued on January 15, 1999, when Commerce notified the Commission that it was resuming its antidumping investigation with respect to Kazakhstan as a result of the Government of Kazakhstan's termination of its suspension agreement. Notice of the scheduling of the Commission's investigation and of a public hearing to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the *Federal Register* of March 3, 1999 (64 FR 10317). The hearing was held in Washington, DC, on June 9, 1999, and all persons who requested the opportunity were permitted to appear in person or by counsel.

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

VIEWS OF THE COMMISSION

Based on the record in this investigation, we find that an industry in the United States is not materially injured or threatened with material injury by reason of imports of uranium from Kazakhstan that have been found by the Department of Commerce ("Commerce") to be sold at less than fair value ("LTFV").

I. PROCEDURAL BACKGROUND

This antidumping investigation began with the filing of a petition against LTFV imports of uranium from the Soviet Union on November 8, 1991.[1] The Commission issued an affirmative preliminary determination on December 23, 1991.[2] Two days later, the Soviet Union dissolved into separate republics. Commerce and the Commission continued their respective investigations, with the 12 independent countries that occupied the territory of the former Soviet Union becoming the respondents in 12 separate investigations.[3] Commerce issued preliminary determinations against the newly independent countries in June 1992.[4] On October 16, 1992, Commerce entered into suspension agreements with the six Soviet successor countries that produced uranium. These countries (Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Ukraine, and Uzbekistan) accepted quotas on their shipments of uranium to the United States.[5] Ten days later, on October 26, 1992, Commerce terminated the investigations against the remaining countries that did not produce uranium on the grounds that there were no LTFV sales from those countries.[6]

In early 1993, Tajikistan and Ukraine requested the termination of their suspension agreements. Accordingly, Commerce reopened the investigations of those countries in April 1993, and issued final

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[1] 56 Fed. Reg. 63711 (Dec. 5, 1991). The petition was filed before January 1, 1995, and therefore, is not subject to the Uruguay Round Agreements Act ("URAA"). See URAA, § 291 (a) and (b); 19 U.S.C. § 1675(6)(C)(iii). Consequently, this investigation is conducted pursuant to the law as it existed prior to the URAA. All references to the statute in this determination are to the statute as it existed prior to the URAA, unless otherwise indicated.

In some of the early investigations commenced under the pre-URAA statute but completed after the effective date of the URAA, the Commission stated that investigations were to be "conducted pursuant to the . . . procedural rules of the law as it existed prior to the URAA." See, e.g., Pineapple From Thailand, Inv. No. 731-TA-706 (Final), USITC Pub. 2907 at I-5, n. 1 (July 1995). However, the Commission amended its Rules of Practice and Procedure in July 1996 "to implement the new requirements of the URAA" and "to improve generally the efficiency and effectiveness of the Commission's investigative process." See 61 Fed. Reg. 37818, 37819 (July 22, 1996). These revisions to the rules took effect on August 21, 1996, and were not restricted to investigations governed by the URAA. Therefore, the Commission has applied the current regulations to all procedural aspects of this investigation.

[2] Uranium From the U.S.S.R., Inv. No. 731-TA-539 (Preliminary), USITC Pub. 2471 (Dec. 1991) ("Soviet Uranium").

[3] 57 Fed. Reg. 11064 (Apr. 1, 1992).

[4] 57 Fed. Reg. 23380 (June 3, 1992).

[5] See, e.g., Agreement Suspending the Antidumping Investigation on Uranium from Kazakhstan (Oct. 16, 1992) ("Kazakh Suspension Agreement"), in 57 Fed. Reg. 49222 (Oct. 30, 1992).

[6] 57 Fed. Reg. 48505 (Oct. 26, 1992).

affirmative determinations as to both of them.[7] The Commission resumed its final investigations under the name Uranium from Tajikistan and Ukraine, and issued a negative determination with respect to Tajikistan and an affirmative determination with respect to Ukraine in August 1993.[8]

The suspension agreements against Kazakhstan, Kyrgyzstan, Russia, and Uzbekistan remained in effect, but were subject to a series of amendments that broadened the range of products subject to the agreement and gave the subject countries a larger quota for U.S. imports.[9] Subsequently, Kazakhstan sought a further amendment, but was unable to reach agreement with Commerce. Kazakhstan notified Commerce on November 10, 1998 of its intent to terminate the agreement, and the termination became effective on January 11, 1999. As a result of the termination, Commerce and the Commission resumed their investigations.[10]

The suspension agreements with Kyrgyzstan, Russia, and Uzbekistan and the antidumping order against Ukraine are still in effect.

II. LIKE PRODUCT AND DOMESTIC INDUSTRY

A. Background and Product Description

To determine whether an industry in the United States is materially injured or threatened with material injury by reason of the subject imports, the Commission must first define the "like product" and the "domestic industry."[11] Section 771(4)(A) of the Tariff Act of 1930 ("the Act") defines the relevant industry as the "domestic producers as a whole of a like product, or those producers whose collective output of the like product constitutes a major proportion of the total domestic production of that product. . . ."[12] In turn, the statute defines "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 . . . ."[13] The Commission's decision regarding the appropriate like product(s) in an investigation is a factual determination, and the

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[7] Uranium From Ukraine and Tajikistan, 58 Fed. Reg. 36640 (July 8, 1993) (final) ("Final LTFV Determination – Ukraine").

[8] Uranium From Tajikistan and Ukraine, Inv. Nos. 731-TA-539D-539E (Final), USITC Pub. 2669 (Aug. 1993) ("Uranium From Ukraine"). Vice Chairman Watson and Commissioner Nuzum dissented from the majority's like product determination in Uranium From Ukraine, deciding instead that there were two like products, consisting of high enriched uranium ("HEU") and uranium other than HEU. They voted in the negative with regard to HEU and in the affirmative with regard to low enriched uranium ("LEU"). Of the Commissioners who found a single like product covering all uranium, two voted in the affirmative, and two in the negative. Therefore, the final affirmative determination applied only to uranium other than HEU. Uranium From Ukraine at 35-39 (separate views of Vice Chairman Watson and Commissioner Nuzum).

[9] See, e.g., 60 Fed. Reg. 25692 (May 12, 1995) (dropping price thresholds for Kazakh quota and extending coverage to Kazakh uranium ore enriched in third countries).

[10] Uranium From Kazakhstan, 64 Fed. Reg. 10317 (Mar. 3, 1999) (notice of continuation of review); Uranium From the Republic of Kazakhstan, 64 Fed. Reg. 31179 (June 10, 1999) ("Final LTFV Determination – Kazakhstan").

[11] 19 U.S.C. § 1677(4)(A).

[12] 19 U.S.C. § 1677(4)(A).

[13] 19 U.S.C. § 1677(10).

Commission has applied the statutory standard of "like" or "most similar in characteristics and uses" on a case-by-case basis.[14] Although the Commission must accept the determination of Commerce as to the scope of the imported merchandise found to be subsidized and/or sold at less than fair value, the Commission determines what domestic product is like the imported articles Commerce has identified.[15]

In its final determination, Commerce defined the imported merchandise within the scope of its investigation as follows:

> natural uranium in the form of uranium ores and concentrates; natural uranium metal and natural uranium compounds; alloys, dispersions (including cermets), ceramic products and mixtures containing natural uranium or natural uranium compounds; uranium enriched in U^{235} and its compounds; alloys, dispersions (including cermets), ceramic products, and mixtures containing uranium enriched in U^{235} or compounds of uranium enriched in U^{235}. Both low enriched uranium ("LEU") and HEU are included within the scope of this investigation. LEU is uranium enriched in U^{235} to a level of up to 20 percent, while HEU is uranium enriched in U^{235} to a level of 20 percent or more. . . . HEU is also included in the scope of this investigation. "Milling" or "conversion" performed in a third country does not confer origin for purposes of this investigation. Milling consists of processing uranium ore into uranium concentrate. Conversion consists of transforming uranium concentrate into natural uranium hexafluoride (UF_6). Since milling or conversion does not confer origin, uranium ore or concentrate of Kazakhstan origin that is subsequently milled and/or converted in a third country will be considered of Kazakhstan origin. The Department continues to regard enrichment as conferring origin.[16]

The subject merchandise is a radioactive metal used principally as fuel in nuclear reactors.[17] It is sold in four different forms, which correspond to the four stages of the preparation of uranium as fuel in a nuclear reactor. In the first stage, "concentrators" mine uranium ore and process it to increase the level of

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[14] See, e.g., Nippon Steel Corp. v. United States, 19 CIT 450, 455 (1995); Torrington Co. v. United States, 747 F. Supp. 744, 749 n.3 (CIT 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: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) common manufacturing facilities, production processes and production employees; (5) customer or producer perceptions; and, where appropriate, (6) price. See Timken Co. v. United States, 913 F. Supp. 580, 584 (CIT 1996). No single factor is dispositive, and the Commission may consider other factors relevant to a particular investigation. The Commission looks for clear dividing lines among possible like products, and disregards minor variations. See, e.g., S. Rep. No. 96-249, at 90-91 (1979); Torrington, 747 F. Supp. at 748-49.

[15] Hosiden Corp. v. Advanced Display Mfrs., 85 F.3d 1561, 1568 (Fed. Cir. 1996) (Commission may find single like product corresponding to several different classes or kinds defined by Commerce); Torrington, 747 F. Supp. at 748-52 (affirming Commission determination of six like products in investigations where Commerce found five classes or kinds).

[16] Final LTFV Determination – Kazakhstan, 64 Fed. Reg. at 31180.

[17] Confidential Staff Report ("CR") at I-5, Public Staff Report ("PR") at I-3 - I-4.

uranium oxide (U_3O_8), resulting in a product known as "uranium concentrate."[18] In the second stage, "converters" transform the U_3O_8 into natural uranium hexafluoride (UF_6), which is a powder at room temperature but becomes a gas with relatively little addition of energy. At this point, the uranium consists of several isotopes, which are forms of the uranium molecule that contain different numbers of neutrons. In the third stage, the "enricher" vaporizes the natural UF_6 and processes it to increase the percentage of U^{235} (the only naturally occurring uranium isotope that is easily fissionable), thereby producing enriched UF_6. In the fourth and final stage, "fabricators" convert the "enriched UF_6" into uranium dioxide (UO_2),[19] which they then pelletize and encase in fuel assembly rods to meet the needs of specific nuclear power plants.[20] The UO_2 in powder or pellet form, in addition to the previous uranium forms, is part of the subject merchandise, but the fuel assembly rods are not.[21] The entire process of transforming U_3O_8 into enriched UO_2 is known as the "uranium fuel cycle."

B. Like Product Issues in This Investigation

The Commission must base its like product determination on the record in this investigation and is not bound by prior determinations concerning the same imported products.[22] In the 1991 preliminary determination in this investigation and the 1993 determination in Uranium From Ukraine, the majority of the Commissioners found that the five-factor semifinished product analysis[23] dictated a single like product

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[18] For the purposes of these views, we use the terms "uranium concentrate" and "U_3O_8" interchangeably.

[19] Fabricators may also convert enriched UF_6 into a uranium nitrate, metal, or ceramic product. CR at I-8, PR at I-5. For the sake of simplicity, we refer to all of the fabricated forms of enriched uranium as UO_2.

[20] CR at I-5 - I-8, PR at I-4 - I-5.

[21] See supra note 16.

[22] Nippon Steel, at 11; Citrosuco Paulista, S.A. v. United States, 704 F. Supp. 1075, 1088 (CIT 1988). However, in the event that the Commission finds a different like product or products than it has in prior investigations, it should provide a reasoned explanation of its decision. Id.

[23] The Commission currently considers the following factors in its domestic like product analysis for semifinished merchandise: (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. Cattle From Canada and Mexico, Invs. Nos. 731-TA-812-813 and 701-TA-386 (Preliminary), USITC Pub. 3155 at 6, n. 21 (Feb. 1999). At the time of Uranium From Ukraine, the test was articulated somewhat differently. It did not include the third factor from the preceding list (differences in physical characteristics and functions) and included two factors that are no longer considered: the interchangeability of articles at different stages of production and whether the article at an earlier stage of production embodies or imparts to the finished article an essential characteristic or function. Compare Uranium From Ukraine, Pub. 2669 at 10, n. 24 with Cattle, Pub. 3155 at 6, n.21. Since the URAA did not change the substance of the Commission's determination of the products subject to an injury determination, we apply the post-URAA version of the five-factor semifinished product analysis in this investigation.

encompassing all four forms of uranium.[24] We have been presented with no new arguments or new evidence to change that finding in this final phase of the investigation. Accordingly, we determine that there is one domestic like product in this investigation, consisting of all forms of uranium.

Petitioners have raised an additional like product issue by asking the Commission to exclude fuel assemblies from the like product.[25] In Uranium From Ukraine, the Commission defined the like product as "coextensive with the articles subject to investigation,"[26] which, as in this investigation, included uranium but not the mechanisms or materials used to encapsulate uranium for use in nuclear power plants.[27] Thus, Petitioners' like product argument is, in essence, a request that the Commission not expand the like product to include fuel assemblies.[28] [29]

The Commission's current five-factor semifinished product analysis supports Petitioners' request. The differences in physical characteristics between a fuel assembly rod and the uranium in the fuel assembly rod draw a bright line that does not exist between the earlier stages of the uranium fuel cycle. The uranium in a fuel assembly is merely one part of a mechanism custom-designed to deliver uranium to a particular utility.[30] In contrast, at the other stages of production, the uranium is, by weight, the primary element of a commodity chemical or metal.[31] In addition, the processing of enriched UO_2 pellets into fuel assemblies represents between 40 and 45 percent of the cost of the finished fuel assembly.[32] The record

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[24] Soviet Uranium, Pub. 2471 at 8-9, Uranium From Ukraine, Pub. 2669 at 12. Application of the current semifinished product analysis does not change our conclusion. One of the factors added by the new test, differences in the physical characteristics and functions of the upstream and downstream articles, supports a single like product. Although there are certainly physical differences among the forms of uranium, such as varying levels of U^{235} and ease of vaporization, all uranium is alike in containing significant quantities of U^{235}, and shares a single function – the production of enriched UO_2 for use in nuclear power plants. CR at II-1, PR at II-1. The cost and value added by further processing and the significance of further processing, which are two factors under the current semifinished products analysis, might be seen as supporting separate like products. See CR & PR, Tables III-1 - III-4 & VI-1 - VI-3 & VI-5; CR at VI-10, PR at VI-6. However, as in Uranium From Ukraine, we conclude that the factors favoring a single like product, especially the similarity of functions and the lack of independent markets among the forms of uranium, outweigh the factors suggesting multiple like products.

[25] Petitioners' Prehearing Brief, App. A at 8-10.

[26] Uranium From Ukraine, Pub. 2669 at 12.

[27] See Final LTFV Determination – Ukraine, 58 Fed. Reg. at 36641; Final LTFV Determination – Kazakhstan, 64 Fed. Reg. at 31180.

[28] The questionnaires in this investigation defined the "uranium" for which data were requested as coextensive with the scope. General Information, Instructions, And Definitions For Commission Questionnaires: Uranium from Kazakhstan at 3. Although some of the fabricators could not segregate data on UO_2 processing from data on the remainder of their fuel assembly rod production, none of the parties disagreed with the exclusion of fuel assembly rods from the like product. See, e.g., Respondents' Posthearing Brief, Tab 7 at 5-7.

[29] Commissioner Crawford has given Petitioners the benefit of the doubt and not included fuel assemblies in the like product. Therefore, she does not join the following discussion.

[30] CR at I-8, PR at I-5.

[31] CR at I-8, PR at I-5.

[32] CR at III-9.

contains limited information on the fabricators' manufacturing processes, but the fact that the assemblies are custom-made suggests that the processing is significant.[33] We believe that these considerations outweigh the elements of the semifinished product analysis that suggest a single like product. We place particular importance on the fact that the various forms of uranium are dedicated to the production of fuel assemblies and have no market separate from the uranium fuel cycle.[34] In addition, we note that the Commission generally does not expand the like product to include downstream domestic articles, such as fuel assemblies, when the scope does not encompass a corresponding downstream imported product.[35] Therefore, we find that the like product does not include fuel assemblies.

C. Domestic Industry and Related Parties

Section 771(4) of the Act defines the relevant industry as the "domestic producers as a whole of a like product, or those producers whose collective output of the like product constitutes a major proportion of the total domestic production of that product."[36] 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, provided that adequate production-related activity is conducted in the United States.[37] The Commission bases its analysis on a firm's production-related activities in the United States.[38]

Given our like product analysis, we included concentrators, the converter, and the enricher in the domestic industry. We also include fabricators, which are essentially toll producers that make subject

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[33] CR at I-8.

[34] Indeed, since fabricators make UO_2 primarily for internal use, the market for UO_2 is quite small.

[35] See, e.g., Creatine Monohydrate From the People's Republic of China, Inv. No. 731-TA-814 (Preliminary), USITC Pub. 3177 at 5 (Apr. 1999) Beryllium Metal and High-Beryllium Alloys from Kazakstan, Inv. No. 731-TA-746 (Final), USITC Pub. 3019 at 5 (Feb. 1997); Manganese Metal from the People's Republic of China, Inv. No. 731-TA-724 (Preliminary), USITC Pub. 2844 at 9 (Dec. 1994); Fresh Garlic from the People's Republic of China, Inv. No. 731-TA-683 (Final), USITC Pub. 2825 at I-14 & n. 65 (Nov. 1994).

[36] 19 U.S.C. § 1677(4)(A).

[37] See, e.g., Manganese Sulfate from the People's Republic of China, Inv. No. 731-TA-725 (Final), USITC Pub. 2932, at 5 & n.10 (Nov. 1995) ("the Commission has generally included toll producers that engage in sufficient production-related activity to be part of the domestic industry"). See generally, e.g., Oil Country Tubular Goods from Argentina, Austria, Italy, Japan, Korea, Mexico, and Spain, Inv. Nos. 701-TA-363-364 (Final) and Inv. Nos. 731-TA-711-717 (Final), USITC Pub. 2911 (Aug. 1995) (not including threaders in the casing and tubing industry because of "limited levels of capital investment, lower levels of expertise, and lower levels of employment").

[38] The Commission typically considers six factors to evaluate whether a firm should be included in the domestic industry: (1) the extent and source of a firm's capital investment; (2) the technical expertise involved in United States production activity; (3) the value added to the product in the United States; (4) employment levels; (5) the quantities and types of parts sourced in the United States; and (6) any other costs and activities in the United States leading to production of the like product, including where production decisions are made. See Oil Country Tubular Goods, USITC Pub. 2911 at I-11, n. 37, accord Stainless Steel Wire Rod from India, Inv. No. 731-TA-638 (Final), USITC Pub. 2704 at I-9 - I-10, n. 33 (Nov. 1993).

merchandise (UO_2) for captive consumption in their production of fuel assemblies. A comparison between the converter, which is clearly a member of the domestic industry, and the fabricators is instructive. The fabricators' production of UO_2 pellets adds *** value to the uranium than does conversion of U_3O_8 into UF_6,[39] and fabricators also employ *** more workers.[40] The record does not contain evidence relevant to the remaining factors normally considered in the Commission's domestic industry analysis.[41] Therefore, based on the available information, we include the fabricators in the domestic industry because their costs of converting UF_6 into UO_2 pellets are at least as significant as the converter's cost of making UF_6. However, fabricators' manufacturing operations for fuel assemblies, which are not part of the domestic like product, are excluded from the domestic industry.[42]

We also considered whether two domestic concentrators, Cogema, Inc. and Power Resources, Inc. ("PRI"), are related parties because their parent corporations, Cogema S.A. and Cameco Corp., are involved in the production and trading of Kazakh uranium.[43] If the Commission determines that a domestic producer is a related party, the Commission must then determine whether appropriate circumstances exist to exclude the related party from the domestic industry.[44] Neither Cogema, Inc. nor PRI is related to the exporters or importers of LTFV merchandise, or is itself an importer of that subject merchandise. Although Cogema S.A. and Cameco Corp. are both involved in uranium mining ventures in Kazakhstan, neither of these projects produced any ore during the investigation period.[45] Therefore, neither company is

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[39] The Final Report indicates that uranium processing by the fabricators represents between 16.5 and 18 percent of the total finished cost of fuel assemblies, while conversion represents 3 percent. CR at I-6, I-8, and III-9. Even Petitioners' figures indicate that conversion and uranium fabricators' uranium processing *** to the uranium fuel cycle. See Petitioners' Prehearing Brief at 24.

[40] Compare Table III-2 with Table III-4.

[41] The parties' comments do not advance this analysis. Petitioners' comparison of fabricators' production costs for UO_2 with finished fuel assemblies does not answer the relevant question of whether the conversion of UF_6 into UO_2 is a significant part of the production of the like product, UO_2. Respondents similarly focus on the finished fuel assemblies and disregard the like product.

[42] We note that *** fabricators were unable to exclude their manufacturing of fuel assemblies from the data they reported to the Commission. CR at III-9 & VI-10, PR at III-4 & VI-6. Pursuant to section 771(4)(D) of the Act, we have assessed injury to those *** fabricators in terms of the reported data, which is "the narrowest group or range of products, which include a like product, for which the necessary information can be provided."

[43] Section 771(4)(B) of the statute states that "[w]hen some producers are related to the exporters or importers, or are themselves importers of the allegedly subsidized or dumped merchandise, the term 'industry' may be applied in appropriate circumstances by excluding such producers from those included in that industry." The Commission's questionnaires show that ***. CR at IV-4. In addition, Petitioners allege that Cogema S.A., owns a uranium ore deposit in Kazakhstan and that Cameco Corp. owns a majority interest in an in situ leaching ("ISL") uranium mining project in Kazakhstan and has a long-term agreement to market uncommitted Kazakh uranium production. Petitioners' Prehearing Brief at 24-26.

[44] See, e.g., Certain Carbon Steel Butt-Weld Pipe Fittings from China and Thailand, Inv. Nos. 731-TA-520-521 (Final), USITC Pub. 2528 at 7-8 (June 1992), 19 U.S.C. § 1677(4)(B).

[45] Testimony of S. Melbye, Hearing Tr. at 148. For Cogema, Inc., the interest is the ownership of uranium deposits in Kazakhstan.

an exporter or producer of the subject merchandise.[46] Consequently, neither Cogema, Inc. nor PRI is a related party.[47] Accordingly, we define the domestic industry to include concentrators, the converter, the enricher, and fabricators.

III. CUMULATION

A. In General

In determining whether there is material injury by reason of LTFV imports, the pre-URAA cumulation provision that governs this investigation requires the Commission to assess cumulatively the volume and effects of imports from two or more countries of articles "subject to investigation" if such imports compete with each other and with the like product in the United States market.[48] Although the URAA did not change the competition criteria, it did make an important change by removing the "subject to investigation" criterion and requiring the cumulation only of imports subject to investigations that result from petitions filed on the same day.[49]

B. Analysis

Section 771(7)(C)(iv) of the pre-URAA Act provides that "the Commission shall cumulatively assess the volume and effect of imports from two or more countries of like products subject to investigation if such imports compete with each other and with like products of the domestic industry in the United States market." The question posed is whether imports from Kyrgyzstan, Russia, and Uzbekistan are "imports subject to investigation," and thus meet the threshold requirement for cumulation.

The Commission bases its cumulation analysis on the state of the industry on "vote day," the date the Commissioners make their determinations available to the public.[50] In this case, imports from Russia, Kyrgyzstan, and Uzbekistan are under suspension agreements, and are not currently subject to ongoing investigations at Commerce or the Commission.[51] Therefore, we determine that the imports covered by suspension agreements are not "subject to investigation" and, thus, do not meet the threshold requirement

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[46] Cogema Inc. apparently did import Kazakh uranium that had been enriched in a third country, but under Commerce's scope definition, that merchandise was not within the scope of this investigation. Final LTFV Determination – Kazakhstan, 64 Fed. Reg. at 31181 ("The Department continues to regard enrichment of uranium as conferring origin."). There is no evidence of other importations by Cameco or Cogema, so neither they nor their United States affiliates are importers of the subject merchandise.

[47] Since we determine that neither Cogema nor PRI is a related party, we do not reach the issue of appropriate circumstances.

[48] 19 U.S.C. § 1677(7)(C)(iv); Chaparral Steel Co. v. United States, 901 F.2d 1097, 1105 (Fed. Cir. 1990).

[49] See 19 U.S.C. § 1677(7)(G) (1998).

[50] Chaparral, 901 F.2d at 1105 ("We cannot say that the ITC was unreasonable in evaluating candidates for cumulation on the basis of their unfair trading or the effects of proven unfair trading as of vote day.").

[51] See Certain Fresh Cut Flowers From Canada, Chile, . . . and the Netherlands, Inv. Nos. 701-TA-275-278 (Final); 731-TA-327-331 (Final), USITC Pub. 1956 at 19, n. 19 (Mar. 1987).

for cumulation.[52]

III. NO MATERIAL INJURY BY REASON OF LTFV IMPORTS

In antidumping duty investigations, the Commission determines whether an industry in the United States is materially injured by reason of the subject imports under investigation.[53] [54] In making these

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[52] We also evaluated whether the "recent order exception" would justify cumulation in this investigation. Under the exception, merchandise imported prior to the issuance of an antidumping or countervailing duty order may be eligible for cumulation in a later investigation of the same merchandise from another country if the merchandise has a "continuing impact as of vote day" in the later investigation and meets the remaining statutory criteria. Chaparral Steel Co. v. United States, 901 F.2d 1097, 1104 (Fed. Cir. 1990); see also Asociacion Colombiana de Exportadores v. United States, 693 F. Supp. 1165, 1172 (CIT 1988) (although cumulation is not mandatory for threat of injury, the Commission has the discretion to cumulate when appropriate); Sulfanilic Acid from The Republic of Hungary, Inv. No. 731-TA-560, USITC Pub. 2835 at 6-7 (Nov. 1994). Imports from Kyrgyzstan, Russia, and Uzbekistan do not meet the requirements of the recent order exception. The suspension agreements are not recent, having been in effect now for six years. Further, we do not find that the imports subject to the investigations six years ago have continuing effects today.

[53] 19 U.S.C. § 1673d(b).

[54] Commissioner Crawford notes that the statute requires that the Commission determine whether a domestic industry is materially injured "by reason of" LTFV imports. She finds that the clear meaning of the statute is to require a determination of whether the domestic industry is materially injured by reason of unfairly traded imports, not by reason of the unfairly traded imports among other things. Many, if not most, domestic industries are subject to injury from more than one economic factor. Of these factors, there may be more than one that independently are causing material injury to the domestic industry. It is assumed in the legislative history that the "ITC will consider information which indicates that harm is caused by factors other than the less-than-fair-value imports." S. Rep. No. 96-249, at 75 (1979). However, the legislative history makes it clear that the Commission is not to weigh or prioritize the factors that are independently causing material injury. Id. at 74; H.R. Rep. No. 96-317 at 46-47 (1979). The Commission is not to determine if the unfairly traded imports are "the principal, a substantial or a significant cause of material injury." S. Rep. No. 96-249 at 74. Rather, it is to determine whether any injury "by reason of" the unfairly traded imports is material. That is, the Commission must determine if the subject imports are causing material injury to the domestic industry. "When determining the effect of imports on the domestic industry, the Commission must consider all relevant factors that can demonstrate if unfairly traded imports are materially injuring the domestic industry." S. Rep. No. 100-71 at 116 (1987) (emphasis added); Gerald Metals v. United States, 132 F.3d 716 (Fed. Cir. 1997) (rehearing denied).

For a detailed description and application of Commissioner Crawford's analytical framework, see Certain Steel Wire Rod from Canada, Germany, Trinidad & Tobago, and Venezuela, Inv. Nos. 731-TA-763-766 (Final), USITC Pub. 3087 at 29 (March 1998) and Steel Concrete Reinforcing Bars from Turkey, Inv. No. 731-TA-745 (Final), USITC Pub. 3034 at 35 (April 1997). Both the Court of International Trade and the United States Court of Appeals for the Federal Circuit have held that the "statutory language fits very well" with Commissioner Crawford's mode of analysis, expressly holding that her mode of analysis comports with the statutory requirements for reaching a determination of material injury by reason of the subject imports. United States Steel Group v. United States, 96 F.3d 1352, 1361 (Fed. Cir. 1996), aff'g 873 F. Supp. 673, 694-95 (CIT 1994).

determinations, the Commission must consider the volume of the 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.[55] The statute defines "material injury" as "harm which is not inconsequential, immaterial, or unimportant."[56] In assessing whether 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.[57] 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."[58]

We also considered whether the existence of the suspension agreement necessitates a conclusion that the subject imports were fairly traded or noninjurious. The Kazakh Suspension Agreement ("Agreement") was accepted pursuant to section 734(l) of the Act, which authorizes Commerce to suspend an investigation when a nonmarket economy ("NME") country agrees to restrict the volume of its imports to a level that will "prevent the suppression or undercutting of price levels of domestic products by imports of the merchandise under investigation."[59] Commerce determined that the suspension agreement would achieve the statutory goal of preventing imports of Kazakh uranium from undercutting and suppressing domestic prices.[60]

Commerce's finding and the text of the Agreement provide no basis for us to conclude that subject imports from Kazakhstan were or were not sold at LTFV prices, or were or were not injurious.[61] Indeed, section 734 contains two separate provisions for agreements designed to eliminate dumping and injury, sections 734(b) and (c), which suggests that agreements with NME countries under subsection (l) were not

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[55] 19 U.S.C. § 1677(7)(B)(i) The Commission "may consider such other economic factors as are relevant to the determination," but shall "identify each [such] factor . . . and explain in full its relevance to the determination." 19 U.S.C. § 1677(7)(B) (ii).

[56] 19 U.S.C. § 1677(7)(A).

[57] 19 U.S.C. § 1677(7)(C)(iii).

[58] 19 U.S.C. § 1677(7)(C)(iii).

[59] In this regard, the Agreement placed a quota on direct and indirect exports of Kazakh uranium to the United States, with the amount of the quota dependent on U.S. market prices. Kazakh Suspension Agreement, sections IV.A and IV.C. Exports pursuant to contracts entered prior to March 5, 1992, or shipped for processing in the United States followed by reexport to another country were exempt from the quota. Kazakh Suspension Agreement, paras. IV.H and IV.K.

[60] Kazakh Suspension Agreement, 57 Fed. Reg. at 49222. The Assistant Secretary for Import Administration issued a declaration stating that the Agreement met the statutory requirements. 57 Fed. Reg. at 49221.

[61] We also note that Respondents stated that LTFV sales could continue under the agreement. Respondents' Posthearing Brief, Tab 2 at 1. The Commission has determined in the past that the existence of a quota does not by itself eliminate injury. See Shop Towels from Bangladesh, Inv. No. 731-TA-514 (Final), USITC Pub. 2487 at 20 (Mar. 1992) ("the existence of an import quota does not preclude the Commission from making an affirmative determination."); Sweaters Wholly or in Chief Weight of Manmade Fibers from Hong Kong, the Republic of Korea, and Taiwan, Invs. Nos. 731-TA-448-450 (Final), USITC Pub. 2312 at 40-41 (Sept. 1990).

intended to achieve these goals.[62] [63] Nor does the Agreement necessitate a conclusion that imports from Kazakhstan have no price effects. Although Commerce found that the Agreement "prevent[s] suppression or undercutting of price levels" with respect to imported Kazakh uranium,[64] the statute gives the Commission a broader mandate – to evaluate any effect of subject imports "on prices in the United States for like products."[65] Moreover, it is recognized that Commerce and the Commission are permitted to reach different conclusions in implementing the same statutory language.[66] Therefore, the price undercutting and suppression finding in the agreement does not preclude a finding by the Commission that the subject imports had a negative effect on U.S. prices.

However, for the reasons discussed below, we determine that the domestic uranium industry is not materially injured by reason of LTFV imports from Kazakhstan.

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[62] It is true that suspension agreements with NME countries under section 734(l) and agreements to eliminate the injurious effect of imports under section 734(c) share some characteristics, notably in requiring a finding that the agreement both prevents the suppression and undercutting of domestic prices and is in the public interest. However, section 734(c) requires an additional finding, absent from section 734(l), that "the agreement will eliminate completely the injurious effect of exports to the United States of that merchandise." The inclusion of injurious effect as a separate factor in section 734(c) shows a Congressional understanding that the prevention of price undercutting and advancement of the public interest do not by themselves eliminate injurious effects.

[63] Commissioner Askey notes that the reason Congress enacted a "special rule" for nonmarket economy countries was that such agreements often could not meet the requirements of suspension agreements entered into under section 734(b), which requires the elimination of dumping, or under section 734(c), which requires the complete elimination of all injurious effect, which is calculated on the basis of the amount by which foreign market value exceeds U.S. price. 19 U.S.C. § 1673c(c)(1). Calculating effective dumping margins proved difficult, if not impossible, for nonmarket economy countries, as did calculating an accurate foreign market value. Nevertheless, agreements under section 734(l) must presumably eliminate most, if not all, of the injurious effect of the subject imports in order to be in the public interest, even if they do not meet the technical requirements of section 734(c).

[64] See Uranium from Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Ukraine, and Uzbekistan: Suspension of Investigations and Amendment of Preliminary Determinations, 57 Fed. Reg. 49220, 49221 (Oct. 30, 1992).

[65] 19 U.S.C. § 1677(7)(B)(i)(II). These effects include price underselling, suppression, and depression. 19 U.S.C. § 1677(7)(C)(ii).

[66] As the CIT noted in holding that Commerce's like product determination for standing purposes is not binding on the Commission's like product determination for the injury determination, possibilities for inconsistencies between Commerce and the Commission

> are built into the law. The very fact of separation of the two parts of the decisions required by the unfair trade laws may lead to superficial inconsistencies. As long as the inconsistencies resulting from the plain language of the statute do not lead to results which Congress could not have intended, they should be tolerated.

Hosiden Corp. v. United States, 810 F. Supp. 322, 332 (CIT 1992), quoting Algoma Steel Corp. v. United States, 688 F. Supp. 639 (CIT 1988), aff'd, 865 F.2d 240, cert. denied, 492 U.S. 919 (1989).

A. Conditions of Competition

The following conditions of competition in the uranium industry are relevant to our determination. First, the various forms of uranium – U_3O_8, natural UF_6, enriched UF_6, and UO_2 – are commodity products. Uranium of any form is, for the most part, substitutable with uranium of the same form produced elsewhere in the world.[67] All forms of uranium except UO_2 are traded on a worldwide basis.[68] There is also some competition among the different forms of uranium.[69] Uranium concentrate (U_3O_8) can be substituted for enrichment services to a limited degree,[70] and utilities may buy pre-existing enriched UF_6 in another company's inventory as a substitute for purchasing U_3O_8 or natural UF_6 and paying for conversion and/or enrichment.[71]

Second, trade restrictions and intergovernmental agreements affect exports of uranium from the successor countries to the former Soviet Union, known collectively as the Newly Independent States ("NIS"). Suspension agreements between Commerce and Kyrgyzstan, Russia, Uzbekistan, and, until recently, Kazakhstan, limited the volume of uranium these countries could sell into the United States. For Russia, the limitation took the form of a tied sales arrangement, whereby utilities could purchase Russian uranium only if the utilities bought an equivalent quantity of domestically produced uranium.[72] The other suspension agreements imposed numerical quotas, with the quota being increased if the price of uranium in the United States increased.[73] Uranium from Ukraine has been subject to a United States antidumping duty order since 1993, and there were almost no imports from that country during the investigation period.[74] In addition, the European Atomic Energy Community ("EURATOM") countries limit imports of uranium from the NIS.[75] Collectively, these restrictions have resulted in a two-tiered pricing structure. Uranium eligible for sale in the United States and EURATOM countries (known as "restricted market uranium") bears a higher price than uranium that can only be sold in countries without import restrictions (known as

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[67] CR at II-39, PR at II-22. Nonsubject enriched UF_6 and UO_2 that currently is located in Kazakhstan is an exception to this general observation, as it is of questionable quality compared to forms of uranium that are sold in the United States. CR at VII-4, PR at VII-2.

[68] CR & PR at II-1; CR at I-8, PR at I-5.

[69] CR at II-10, PR at II-6.

[70] The volume of enrichment services is measured in "separative work units" ("SWU"), which measure the effort expended in the enrichment process. CR at I-7, PR at I-4. An enricher may decrease the number of SWU necessary to achieve a given concentration of U^{235} by increasing the quantity of UF_6 input into the production process. See Petitioners' Prehearing Brief at 38, n. 112.

[71] CR at II-2, PR at II-1 - II-2.

[72] As with the other countries subject to suspension agreements, Russia's quota was originally based on the prevailing market price. See Agreement Suspending the Antidumping Investigation on Uranium From the Russian Federation, App. A., 57 Fed. Reg. 49220, 49241 (Oct. 30, 1992). A subsequent amendment replaced this system with the matched sales arrangement. See Amendment to the Agreement Suspending the Antidumping Investigation on Uranium From the Russian Federation, 59 Fed. Reg. 15373, 15374 (Apr. 1, 1994).

[73] See, e.g., Amendment to the Agreement Suspending the Antidumping Investigation on Uranium From Kazakhstan, As Amended, 60 Fed. Reg. 25692, 25693 (May 12, 1995).

[74] See CR at I-3, PR at I-2 & App. D.

[75] CR at II-4, PR at II-3.

"unrestricted market uranium").[76]

Uranium imports from Russia also are affected by the Russian HEU Agreement, under which the United States has committed to buying low-enriched UF_6 produced in Russia from high enriched uranium that was part of the Soviet military stockpile. Petitioner U.S. Enrichment Corp. ("USEC"), as executive agent of the U.S. Government, is responsible for implementing this agreement.[77] For part of the investigation period, the United States Government bought the enriched UF_6 in its entirety. However, the agreement currently allows USEC to pay Russia in kind for the natural uranium contained in the enriched UF_6 (by swapping an equivalent quantity of unenriched UF_6) and to pay in cash only for the value of enrichment.[78] USEC is committed to purchasing 5.5 million SWU[79] per year from Russia for the 1999-2014 period, which represents *** of the company's U.S. enrichment sales.[80] USEC's aggregate sales of enrichment services and enriched uranium decreased over the investigation period, so the company had to reduce production in its U.S. facilities to accommodate the continuing flow of Russian enriched uranium under the HEU Agreement. As a result, USEC lost economies of scale, which increased unit costs and decreased profits.[81]

Third, although the NIS account for a significant portion of the world uranium supply, numerous other countries also supply nonsubject uranium. During the investigation period, Canada and Australia each have shipped more U_3O_8 to the United States (while presumably maintaining other export markets) than ***.[82] There were also substantial volumes of nonsubject U_3O_8 imports from South Africa and Namibia during the investigation period.[83] Taken together, U.S. imports of nonsubject U_3O_8 from countries other than the NIS were more than *** Kazakhstan's likely U_3O_8 production capacity for 1999.[84]

Fourth, an overhang of natural and enriched UF_6 inventories in the United States and throughout the world represents another source of uranium supply. USEC alone held an inventory of natural UF_6 at

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[76] CR at II-4 - II-5, PR at II-3.

[77] CR at II-2, PR at II-1 - II-2.

[78] CR at III-6, PR at III-6. Russia is currently keeping the in-kind transfers of natural UF_6 in inventory, but is allowed to release more of the inventory into the market every year. See 42 U.S.C. §2297h-10(b)(5).

[79] See supra, note 70 for a definition of "SWU."

[80] CR at II-2, PR at II-1. We also note that SWU purchased under the Russian HEU Agreement represent *** of U.S. electric utilities' current and projected requirements for enrichment. CR at II-33, PR at II-18.

[81] CR at III-7 - III-8, and Table VI-4. See also Testimony of P. Sewell, Hearing Tr. at 33 ("USEC is obligated to purchase large quantities of Russian SWU, which in turn displace USEC's own production, as a result, despite vigorous cost cutting, USEC's average production costs have gone up."); Testimony of D. Culp, Hearing Tr. at 171 ("USEC's competitive position and profitability have been adversely affected by . . . it's [sic] mandatory purchase of the SWU of the Russian HEU program.").

[82] Compare CR & PR, Tables VII-1 and D-3.

[83] See CR & PR, App. D.

[84] See CR & PR at D-1. We measured Kazakh capacity as described in the discussion of capacity in section IV.B.

the end of the first quarter of 1999 that is ***.[85] The U.S. Department of Energy has a separate large stockpile of natural UF_6. However, the United States Government's commitment in March 1999 to withhold this material from the marketplace may lessen its future effect on prices.[86]

Fifth, these inventories, which are typically held by producers and owned by utilities,[87] allow the producers and utilities to engage in a variety of non-cash transactions. Companies holding uranium in different locations may swap equivalent quantities to avoid transportation costs or government restrictions.[88] ***.[89] Such alternative transactions can result in the disaggregation of an advanced stage of uranium (such as natural or enriched UF_6) into the raw material (U_3O_8 or natural UF_6) and processing (conversion or enrichment) used to make it.[90] This process creates separate, but interrelated, markets for the uranium and enrichment components of enriched UF_6. Consequently, a given quantity of uranium may change ownership a number of times before its consumption in a nuclear power plant.

Sixth, the U.S. uranium market also is being altered by deregulation of electrical utilities, which effectively puts nuclear power plants in competition with other sources of electricity.[91] Since the cost of fuel assembly rods represents a significant portion of a nuclear power plant's operating expenses, utilities that own nuclear facilities face increasing pressure to cut costs by obtaining price reductions from traditional uranium suppliers. Utilities also might bypass the uranium fuel cycle through direct purchases of enriched UF_6. Finally, we note that U.S. demand for uranium, as measured by reactor requirements, is projected to remain fairly steady or decrease slightly, in the imminent future.[92]

B. Volume of the Subject Imports

1. In General

Section 771(7)(B)(i)(I) of the Act provides that the Commission "shall consider the volume of imports of the merchandise which is the subject of the investigation." Section 771(7)(C)(i) requires that we evaluate "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."[93]

As an initial matter, we find that the merchandise subject to investigation does not include enriched UF_6 and UO_2 currently located in Kazakhstan (the "Kazakh Stockpile"). Section 735(b) of the Act authorizes the Commission to make a final determination exclusively with regard to "merchandise with

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[85] CR at II-33, PR at II-18, & Tables III-1 & III-3. USEC is statutorily mandated to conduct its business in a manner that will not disrupt the uranium market. CR at III-6, PR at III-3.

[86] CR at II-3 - II-4, PR at 2.

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

[88] CR & PR at V-1.

[89] CR & PR at V-1.

[90] CR at II-8, PR at II-5. For example, a company that owned a supply of natural UF_6 and needed enriched UF_6 might exchange its unenriched material for enriched UF_6 owned by another company and then pay money for the value added by enrichment, thus obtaining enrichment without a direct payment to USEC.

[91] CR at I-12, PR at I-7 - I-8.

[92] CR at II-33, PR at II-18.

[93] 19 U.S.C. § 1677(7)(C)(i).

respect to which the administering authority has made an affirmative [final] determination . . . ." In defining the merchandise subject to its determination, Commerce stated that "[t]he Department continues to regard enrichment of uranium as conferring origin."[94] Kazakhstan has no capacity for producing natural UF_6 or enriching UF_6.[95] The record shows that the uranium in the Kazakh Stockpile was enriched in the territory now controlled by the Russian Federation and shipped to Kazakhstan prior to the dissolution of the Soviet Union.[96] Therefore, under Commerce's scope definition, the uranium in the Kazakh Stockpile is not a product of Kazakhstan for the purposes of this determination.[97] [98]

2. Application of section 734(j)

A majority of the Commission concluded that section 734(j) of the Act ("the Special Rule") applies to this investigation.[99] We acknowledge that the applicability of the Special Rule in this investigation is unclear. We note, in particular, that the Special Rule explicitly applies only to agreements under subsections (b) and (c) ("LTFV sales agreements" and "injurious impact agreements," respectively). Nevertheless, we conclude that it should be interpreted as applying equally to agreements with NME countries, like Kazakhstan, that are entered under subsection (l) ("NME agreements"). We reach this conclusion because section 734 contains two additional provisions, subsection (e) ("Procedures Provision")

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[94] Final LTFV Determination – Kazakhstan, 64 Fed. Reg. at 31181.

[95] CR at VII-3, PR at VII-2.

[96] Memorandum from John D. Greenwald to R. Michael Gadbaw at 2 in Kazakhstan Prehearing Brief, Appendix 6, CR at VII-3; Petitioners' Prehearing Brief at 59.

[97] We considered the parties' arguments on this issue made before the Commission and Commerce and found that they did not identify any ambiguity that would allow us to go beyond the plain meaning of Commerce's scope definition. We note further that the Commission does not have the authority to grant Petitioners' request that we "treat the Kazakh . . . stockpiles as Kazakh-origin material" in spite of the fact that they "are uranium of Russian origin subject to the Russian suspension agreement (because they consist of [uranium] enriched in the territory of the Russian Federation). . . ." Petitioners' Prehearing Brief at 59. See Cambridge Lee Industries, Inc. v. United States, 728 F. Supp. 748, 750 (CIT 1989) ("In its investigation, the Commission may not modify the class or kind of imported merchandise examined by Commerce."); A.N. Deringer, Inc. v. United States, 723 F. Supp. 816, 819 (CIT 1989) ("Commerce possesses the exclusive authority to clarify and delineate the scope of an antidumping finding."), aff'd, 904 F.2d 46 (Fed. Cir. 1990); Algoma Steel Corp. v. United States, 688 F. Supp. 639, 644 (CIT 1988), aff'd, 865 F.2d 240 (Fed. Cir. 1989), cert. denied, 109 S.Ct. 3244 (1989). We also note that Commerce's scope definition does not indicate that conversion of U_3O_8 or UF_6 into UO_2 in Kazakhstan would confer origin.

[98] Chairman Bragg and Commissioner Askey find that the inclusion of the Kazakh Stockpile as subject merchandise would not have changed their determinations. The record shows that only a small portion of the uranium in the stockpile meets U.S. specifications. Uncertainty about the level of impurities in the remainder of the stockpile and the necessity for further processing make that material uncompetitive with domestic uranium, and prevent it from having any imminent injurious impact. See Testimony of Tony Schillmoller, Hearing Tr. at 163-166, Respondents' Posthearing Brief, Tab 14. Therefore, Chairman Bragg and Commissioner Askey conclude that the stockpile uranium and the subject merchandise together do not have and are not likely to have an effect on the domestic industry that is materially different from the effect of the subject merchandise by itself, as described in the remainder of these views.

[99] Commissioners Crawford and Askey do not join in this conclusion.

and subsection (f) (the "Effects Provision") that explicitly apply only to LTFV sales agreements and injurious impact agreements. If such references are interpreted as excluding NME agreements, then the Special Rule, the Procedural Provision, and the Effects Provision do not apply to NME agreements. In that case, the powers delegated by the Effects Provision, such as the ability to suspend an investigation and to terminate the suspension of liquidation implemented by a preliminary LTFV sales determination, would be unavailable when Commerce accepts an NME agreement. We do not believe that Congress intended such a result. We also note that Congress's application of the Special Rule to any "case in which the administering authority has terminated a suspension of investigation under subsection (i)(1)" appears to assume the Special Rule would apply to all such agreements, including NME agreements.

There are differing views on the application of subsection (j). Chairman Bragg and Vice Chairman Miller conclude that this provision requires the Commission to evaluate the effect of the Agreement that covered the subject merchandise, and to disregard that effect in our analysis of the subject merchandise. Specifically, since the Kazakh Suspension Agreement was designed to "prevent the suppression or undercutting of price levels of domestic products," through the imposition of quotas, the Commission must consider the effect of the agreement in its evaluation of the price and volume effects of the subject merchandise. During the investigation period, Kazakhstan's price-based quota allowed sales to U.S. customers in excess of one million pounds of U_3O_8 per year in 1996 and 1997 in addition to shipments pursuant to contracts entered prior to the effective date of the Agreement.[100] Even so, average annual imports of Kazakh uranium were below the quota levels in 1996 and 1997.[101] Thus, the Agreement does not appear to have restrained the volume of imports from Kazakhstan in 1996 and 1997. In 1998, the allowed level of imports was reduced to zero because of the decline in prevailing U.S. prices, and, therefore, the Agreement did restrain the volume of imports from Kazakhstan in 1998.[102] As discussed below, however, the decline in prices in 1998 was the result of other market factors. Thus, based on the 1996 and 1997 experience, we conclude that the Agreement had little or no effect on the volume of imports during the investigation period.[103]

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[100] See Kazakh Suspension Agreement, sec. IV.C.1, 57 Fed. Reg. at 49223; Amendment to the Agreement Suspending the Antidumping Investigation on Uranium From Kazakhstan, as Amended, 60 Fed. Reg. 25692 (May 12, 1995); 60 Fed. Reg. 52368 (Oct. 6, 1995); 61 Fed. Reg. 15468 (Apr. 8, 1996); 61 Fed. Reg. 52407 (Oct. 7, 1996); 62 Fed. Reg. 53807 (Oct. 16, 1997); 63 Fed. Reg. (Apr. 7, 1998); Kazakhstan Prehearing Brief at 11, n. 7.

[101] Testimony of D. Sloan, Hearing Tr. at 146; Declaration of T. McGraw & B. Frame at 1, in Nukem Prehearing Brief, Exh. 9. See also Tables IV-2 and IV-3. Based on unit values and on data from importers indicating that Kazakhstan exported only U_3O_8 and UO_2, we conclude that "other uranium" consisted of misclassified uranium concentrate. To compare the data accurately, we determined the quantity of U_3O_8 in the ore based on an 82.5 percent concentration. CR at I-6, PR at I-4. We then converted the quantity of U_3O_8 into pounds using a factor of 2.2046 lbs./kg. Imports of UO_2 were converted to U_3O_8 equivalent using a ratio of 2.60 lbs. U_3O_8 per kgU. We note that these figures may be overstated by the inclusion of UO_2 that was later reexported. CR at II-22, PR at II-12.

[102] 63 Fed. Reg. 16973 (Apr. 7, 1998); 63 Fed. Reg. 53644 (Oct. 6, 1998).

[103] Chairman Bragg and Vice Chairman Miller note that imports from Kazakhstan rose from 1996 to 1997 and then fell in 1998, the year that the quota fell to zero. However, the volume of subject imports in the first quarter of 1998 was less than one quarter of annual subject import volume for 1997, which suggests that any increase in subject imports leveled off and began decreasing prior to the institution of the zero quota level. See CR & PR, Table IV-2. Thus, the effect of the zero quota, if any, was minor during the investigation period, and whether it was disregarded in accordance with the Special Rule does not effect

Commissioners Hillman and Koplan conclude that the Special Rule requires the Commission to make its assessment of material injury and threat without regard to the effect of the Agreement. Thus, they assume that the agreement did not eliminate LTFV sales, injurious effects, or price suppression and undercutting on the part of subject imports and consider all of the imports as unfairly traded and potentially injurious. Commissioners Hillman and Koplan agree with Petitioners that in this context, an analysis of whether there would have been material injury by reason of subject imports at the present time in the absence of the Kazakh Suspension Agreement is not appropriate.[104] They do not interpret the statute as providing for such an analysis. Moreover, the immense changes in the uranium industry and the absence of any reliable data on exports of uranium from Kazakhstan prior to the filing of the petition would make any such projection highly speculative.

Commissioners Crawford and Askey note that the statute authorizes three types of suspension agreements: 1) an agreement to eliminate the dumping or to cease exports under section 734(b); 2) an agreement to eliminate the injurious effect of the imports under section 734(c); and 3) an agreement to restrict the volume of the imports under section 734(l). Suspension agreements under subsections (b) and (c) are agreements between Commerce and exporters of the merchandise, while a suspension agreement under subsection (l) is an agreement between Commerce and a sovereign, nonmarket country. They further note that section 734(j) provides the Commission specific guidance with respect to suspension agreements under subsections (b) and (c).

Commissioners Crawford and Askey have considered the parties' arguments concerning whether section 734(j) "applies" to the subsection (l) suspension agreement with Kazakhstan. In essence, the parties interpret section 734(j) as requiring the Commission to consider the fact that a suspension agreement covering imports from market economies has been in effect and to incorporate the effects of the suspension agreement into the Commission's injury analysis. Based on this interpretation, the parties then argue whether the Commission similarly is required to consider a suspension agreement covering imports from a nonmarket economy country. Regardless of how one interprets the statute, section 734(j) does not "apply" to suspension agreements under subsection (l). On its face, section 734(j) refers only to suspension agreements with exporters from market economies; it does not refer to suspension agreements with nonmarket economy countries. Assertions that this omission is inadvertent do not withstand scrutiny. Section 734(j) was enacted in 1979. Subsequently, in 1988 subsection (l) was added to provide a "special rule" for nonmarket economy countries.[105] Both section 734(l)(1)(A) and section 734(l)(2) include specific cross references to other subsections of section 734, that is, to subsections (d) and (i), respectively. However, there is no cross reference to subsection (j). Given that subsection (l): was enacted nearly a decade after subsection (j); is a "special rule" for suspension agreements with sovereign countries (as opposed to exporting firms); and contains cross references to certain subsections of section 734 but contains no cross reference to subsection (j), in their view the best, even compelling, reading of the statute is that Congress' failure to refer to suspension agreements with nonmarket economy countries in section 734(j) was not an inadvertent omission. Consequently, Commissioners Crawford and Askey conclude that section 734(j) does not "apply" to suspension agreements with nonmarket economy countries.

In Commissioner Crawford's view, the parties' arguments are based on an incorrect interpretation of the statute. Section 734(j) provides specific guidance to the Commission in situations where the underlying antidumping investigation is resumed or continued after a suspension agreement under subsections (b) or (c) has been entered into. The statute states that the Commission "shall consider all of

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the outcome of our analysis.

[104] See Petitioners' Posthearing Brief, Tab 2 at 5.

[105] H.R. Rep. No. 100-576 at 593-594 (1988).

the subject merchandise, without regard to the effect of any suspension agreement under subsection (b) or (c)." (Emphasis added.) On its face, the object of section 734(j) is to address the volume of the imports the Commission must consider in its injury determination. Absent subsection (j) the Commission could conclude that imports are fairly traded if they are covered by a suspension agreement that eliminates the dumping under subsection (b) or if the imports are covered by a suspension agreement that eliminates the injurious effect under subsection (c). The Commission could then exclude these fairly traded imports from the volume of the subject imports that it considers. Subsection (j) prevents the Commission from doing so. Specifically, the statute requires the Commission to consider all of the imports covered by either of these types of suspension agreements as unfairly traded imports, even if the agreements eliminated the dumping or the injurious effect. Quite simply, section 734(j) defines the volume of unfairly traded imports that the Commission must consider in its injury determination. The possibility that the Commission might conclude that imports are fairly traded when covered by a suspension agreement with a nonmarket economy country under section 734(l) does not arise. Such a suspension agreement eliminates neither the dumping nor the injurious effect of the imports, and thus there is no basis for the Commission to conclude that the imports are fairly traded, i.e., not being dumped and causing injury. Therefore, a statutory provision preventing the Commission from reaching such a conclusion is not necessary. Consequently, the Commission can only conclude that imports covered by a suspension agreement under subsection (l) continue to be subject imports and must be considered as such when evaluating the volume of subject imports in the injury analysis. Based on this interpretation of the statute, whether section 734(j) "applies" to a suspension agreement with a nonmarket economy country is not a meaningful question.

3. Volume of the subject imports

There are several ways to measure sales volume in the uranium industry: in terms of the value of total sales during a given period, the volume sold within each sector, and the volume of uranium required by U.S. utilities each year. The total sales value of imported Kazakh uranium was $12.8 million in 1996. Sales value fell to $12.2 million in 1997, and fell again to $7.8 million in 1998. Imports were valued at $3.7 million in the first quarter of 1998, and there were no imports in the first quarter of 1999.[106] These quantities represented U.S. market shares of 0.4 percent in 1996 and 1997, 0.3 percent in 1998, 0.6 percent in the first quarter of 1998, and 0 percent in the first quarter of 1999.[107] In terms of volume, the imports of U_3O_8 from Kazakhstan amounted to 893,000 pounds in 1996, 979,000 pounds in 1997, 614,000 pounds in 1998, 361,000 pounds in the first quarter of 1998, and 0 pounds in the first quarter of 1999. These volumes represented 2.0 percent of U.S. utilities' reactor requirements in 1996, 2.0 percent in 1997, and 1.3 percent in 1998.[108] Kazakh U_3O_8 also represented a relatively small share of total U.S. U_3O_8 sales during the investigation period.[109]

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[106] CR & PR, Table IV-3. We have excluded the value of nonsubject merchandise from the totals reported in these tables.

[107] Id.

[108] See CR at II-33, PR at II-18. Expressing imports as a percentage of utilities' deliveries of uranium for enrichment yields similar results, with market shares of 1.8 percent in 1996, 2.4 percent in 1997, and 1.5 percent in 1998. Id.

[109] Expressed as the sum of domestic U_3O_8 sales and total U_3O_8 imports, the total volume of U_3O_8 sales in the United States was 37.6 million pounds in 1996, 37.5 million pounds in 1997, and 27.8 million pounds in 1998, of which imports from Kazakhstan represented 2.4 percent in 1996, 3.0 percent in 1997, and 2.4 percent in 1998. We note that this calculation probably overstates Kazakh market shares, as

The volume and market penetration of nonsubject imports were between 10 and 90 times greater than the volume and market share of imports from Kazakhstan, regardless of the measurement used.[110] We find that neither the volume of subject imports nor the change in the volume of subject imports is significant.[111]

C. Price Effects of the Subject Imports

> Section 771(C)(ii) of the Act provides that, in evaluating the price effects of the 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.[112]

U.S. purchasers typically buy U_3O_8 and conversion, enrichment, and fabrication services pursuant to long-term contracts that last for three to five years.[113] Spot market sales are most prevalent for U_3O_8, representing between 10 and 20 percent of total sales. The existence of these long-term contracts, many of which are at prices more favorable than those currently prevalent in the market, has limited any effect that the subject merchandise has had on the prices for the domestic like product.[114] Moreover, the volume of subject imports is so small, both in relation to total domestic consumption of uranium and in relation to the various market segments, that we cannot conclude that any underselling, price suppression, or price depression by subject imports was significant.[115] [116]

"other uranium" imported from nonsubject countries may have included U_3O_8.

[110] See CR & PR at D-3 & Tables IV-2 & IV-4. Measured in terms of value, subject imports from Kazakhstan peaked in 1996 at $12.8 million, when imports from all other sources were $1,175 million. Measured in terms of volume of U_3O_8, subject imports of Kazakh uranium peaked in 1997 at 979,000 pounds, when imports from all other countries combined were 16.8 million pounds.

[111] Commissioner Crawford joins only in the factual, numerical discussion of the volume of imports here. She does not rely on any analysis of trends in the market share of subject imports or other factors in her determination of material injury by reason of the subject imports. She makes her finding of the significance of volume in the context of the price effects and impact of the subject imports. For the reasons discussed below, she finds that the volume of subject imports is not significant in light of its lack of price effects and impact.

[112] 19 U.S.C. § 1677(7)(C)(ii).

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

[114] CR at II-4 - II-6, CR at II-3 - II-4.

[115] Given Chairman Bragg and Vice Chairman Miller's conclusion that the Agreement, which has as its object preventing the undercutting and suppression of domestic prices, had little or no effect on the volume of subject imports during the investigation period, they conclude that it did not place a significant limitation on the effect that subject imports had on domestic producers' prices.

[116] Commissioner Crawford concurs that the subject imports are not having significant effects on domestic prices. She has given Petitioners the benefit of the doubt and assumed that none of the subject imports would have been sold in the U.S. market at fairly traded prices, and that all of the demand for the subject imports would have shifted to domestic uranium. However, given the small volume of the subject

The record shows that Kazakh merchandise was rarely, if ever, sold in direct competition with U.S. merchandise during the investigation period. There were no contemporaneous sales of subject imports and domestic uranium on comparable terms, no specific lost revenue allegations, and no specific lost sales allegations.[117] Nor were there any lost sales or lost revenue allegations that might suggest direct competition between subject imports and domestic merchandise.[118] Although Petitioners note that the two-tier pricing structure, which reflects world market prices, would normally result in Kazakh uranium being sold for less than domestic merchandise, there is no record evidence suggesting that the subject merchandise actually undersold domestic merchandise, or suppressed or depressed domestic prices.

Accordingly, we find that the subject imports did not adversely affect prices for the domestic like product.

D. Impact of the Subject Imports on the Domestic Industry

Section 771(7)(C)(iii) 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, profits, cash flow, return on investment, ability to raise capital, and research and development. No single factor is dispositive and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[119]

In Uranium From Ukraine, the Commission segmented its analysis based on the four stages of the uranium fuel cycle, considering U_3O_8 imports in the context of the concentrators, natural UF_6 imports with the converter, and so on.[120] However, the uranium market has changed substantially since 1993. The same analysis would be less useful in this investigation, and might even be misleading. Most important, the Russian HEU agreement resulted in the entry of 9,800 SWU in Russian enriched UF_6 into the U.S. market during the investigation period,[121] allowing utilities to bypass the first three steps of the traditional uranium fuel cycle by buying enriched uranium directly. Depending on the structure of the transaction, USEC's sale of the Russian material might compete with its own sales of enrichment services, domestic concentrators' sales of U_3O_8, or both.[122] The ready availability of enriched UF_6 has led to the accumulation of large inventories of U_3O_8 and natural UF_6 in the United States,[123] which would likely suppress demand and prices for these forms of uranium.

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imports, the increase in demand for domestic uranium would have been so small that the domestic industry would not have been able to increase its prices.

[117] CR at V-11 & V-15, PR at V-4 & V-6.

[118] CR at V-15, PR at V-6.

[119] 19 U.S.C. § 1677(7)(C)(iii).

[120] See Uranium from Ukraine, Pub. 2669 at 32 (majority views) & 43 (dissenting views of Commissioners Brunsdale & Crawford).

[121] In 1998, Russian SWU represented 38 percent of USEC's total enrichment sales. CR at VI-7, PR at VI-5.

[122] CR at II-9 - II-10.

[123] CR at II-3 - II-4, PR at II-2.

Attempting to assign complex transactions involving multiple forms of uranium to one market segment would be arbitrary. Furthermore, strict segmentation would ignore the impact that sales of one form of uranium have on the others. Therefore, we have analyzed the impact of the full volume of the subject merchandise on the entirety of the domestic like product and industry.[124] We do recognize, however, that some degree of disaggregated analysis is unavoidable, since it is impossible to combine the financial performance of domestic producers at different stages of the uranium fuel cycle.

We conclude that the volume of subject imports was simply too small during the investigation period to have had a material effect. Regardless of the measurements used for volume and size of the market, Kazakh uranium held a minuscule share of the total U.S. market during the investigation period.[125] Therefore, we find that the small volume of subject merchandise did not have a material impact on the domestic industry as a whole.[126]

Also, domestic producers showed disparate financial results during the investigation period, with some performing quite well and others quite poorly. We conclude that the subject imports are not responsible for the losses or declining profitability that occurred. In the aggregate, concentrators registered operating losses throughout the investigation period, with gross losses highest in 1997.[127] One concentrator closed its facility in 1999, and another is in the process of doing so.[128] However, we conclude that these conditions are the result of factors discussed in the volume section – the large volume of nonsubject U_3O_8 imports and uranium inventories in the United States, which prevented price increases, and the growing volume of the natural UF_6 component imported under the Russian HEU Agreement, which depressed prices. We find that subject imports did not have a material effect on the concentrators.

We recognize that sales of U_3O_8 could affect the demand for USEC's enrichment services. However, the record does not indicate that subject imports had such effects to a significant degree during the investigation period.[129] Although the unit value for the company's enrichment services did not change

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[124] Moreover, the statute does not require us to engage in a segmented analysis. See Copperweld Corp. v. United States, 682 F. Supp. 552, 566 (CIT 1988) ("neither the governing statute nor its legislative history require the ITC to adopt any particular analysis when the market consists of several segments.").

[125] Kazakh market share peaked at 0.6 percent of the value of U.S. consumption in the first quarter of 1998, 2.9 percent of reactor requirements in 1997, and 3.5 percent of total U_3O_8 equivalent delivered by U.S. utilities for enrichment in 1997.

[126] Commissioner Crawford concurs that the subject imports are not having a significant impact on the domestic industry. As noted previously, she has assumed that all of the demand for the subject imports would have shifted to domestic uranium had the subject imports been fairly traded. However, given the small volume of the subject imports, the increase in demand for domestic uranium would have been so small that the domestic industry would not have been able to increase its output, sales, or revenues significantly. Therefore, the domestic industry would not have been materially better off if the subject imports had not been dumped.

[127] CR & PR, Tables VI-1 & VI-2. Operating losses were $3.3 million in 1996, $26.1 million in 1997, $*** million in 1998, $2.5 million in the first quarter of 1998, and $4.9 million in the first quarter of 1999.

[128] CR & PR at III-1.

[129] Commissioner Askey notes that the decline in USEC's profitability appears to be predominantly due to the Russian HEU Agreement. CR at VI-8, PR at VI-5, and Table VI-4. USEC's profits decreased steadily over the investigation period: $300.2 million in 1996, $242.2 million in 1997, $141.1 million in 1998, $136.7 million in the first quarter of 1998, and $98.2 million in the first quarter of

substantially over the investigation period, its unit costs increased substantially when it reduced production levels in response to increased sales of Russian enriched UF_6, thereby sacrificing economies of scale.[130] Imports of U_3O_8 from Kazakhstan, which varied between 761,000 and 1,408,000 pounds per year during the investigation period, were too small to have a material effect on USEC's much larger consumption of U_3O_8.[131]

ConverDyn, the sole U.S. converter, cannot have been adversely affected by subject imports, as its profitability *** during the investigation period.[132] Fabricators' operating income improved during the investigation, showing ***, although they ***.[133] Again, we conclude that the volume of subject imports was too small to have had a material effect on this uranium producing segment.[134] Moreover, the fabricators generally indicated that they had not been injured by subject imports.[135]

For the foregoing reasons, we determine that the domestic industry producing uranium is not materially injured by reason of dumped imports from Kazakhstan.

1999.

[130] CR at VI-8, PR at VI-5, and Table VI-4. USEC's unit value for U.S. sales was *** in 1996, *** in 1997, *** in 1998, *** in the first quarter of 1998, and *** in the first quarter of 1999. Total production fell steadily over the period, from *** SWU in 1996 to *** SWU in 1997, and *** SWU in 1998. Enrichment levels in the first quarter of 1999 were somewhat larger than in the same period in the previous year. CR & PR, Table III-3. The unit cost of goods sold increased from *** in 1996, to *** in 1997, *** in 1998, *** in the first quarter of 1998, and *** in the first quarter of 1999.

[131] USEC estimated that it uses between 7.4 and 10.1 kilograms of natural UF_6 to produce one kilogram of enriched UF_6 with an assay typical in the U.S. market. This suggests a likely consumption of between 9 and 18 million kilograms of uranium each year during the investigation period, which represents between 31 and 47 million pounds of U_3O_8. See Petitioners' Prehearing Brief at 38, n. 112, CR at II-1, n. 2.

[132] CR & PR, Table VI-3. ConverDyn's operating income margin *** percent in 1996 to *** percent in 1997, and *** percent in 1998. Profits in the interim period of 1999 were *** than in the interim period of the previous year.

[133] CR & PR, Table VI-6. Operating income was ***. The fabricators had an operating *** in the first quarter of 1999.

[134] Chairman Bragg and Commissioner Askey note that Kazakh U_3O_8 imports that did not cause a material injury to concentrators would not have had any greater effect on the processor three steps along the production process.

[135] CR at III-8, PR at III-4. We placed limited weight on this information, since the fabricators' position may have been motivated by their desire to have access to subject merchandise from Kazakhstan.

IV. NO THREAT OF MATERIAL INJURY BY REASON OF LTFV IMPORTS[136]

Section 771(7)(F) of the Act directs the Commission to determine whether a U.S. industry is threatened with material injury by reason of imports "on the basis of evidence that the threat of material injury is real and that actual injury is imminent." The Commission is not to make such a determination "on the basis of mere conjecture or supposition."[137] We have considered all the statutory factors that are relevant to this investigation.[138]

Kazakhstan does not have the capacity to produce natural UF_6 or to enrich natural UF_6 purchased

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[136] In assessing whether a domestic industry is threatened with material injury by reason of imports from two or more countries, the Commission has discretion to cumulate the volume and price effects of such imports if they compete with each other and the domestic like product and are subject to investigation. 19 U.S.C. § 1677(7)(F)(iv). However, no other imports were subject to investigation as of the date of our determination and, thus, cumulation is not an issue.

[137] 19 U.S.C. § 1677(7)(F)(ii). An affirmative determination must be based upon "positive evidence tending to show an intention to increase the levels of importation." Metallverken Nederland, B.V. v. United States, 744 F. Supp. 281, 287 (CIT 1990), citing American Spring Wire Corp. v. United States, 590 F. Supp. 1273, 1280 (CIT 1984), aff'd sub nom., Armco, Inc. v. United States, 760 F.2d 249 (Fed. Cir. 1985). See supra, section II.B.

[138] The statute lists ten factors:

> (I) information . . . as to the nature of the subsidy,
> (II) any increase in production capacity or existing unused capacity in the exporting country . . . ,
> (III) any rapid increase in U.S. market penetration and the likelihood that the penetration will increase to an injurious level,
> (IV) the probability that imports of the merchandise will enter the United States at prices that will have a depressing or suppressing effect on domestic prices of the merchandise,
> (V) any substantial increase in inventories of the merchandise in the United States,
> (VI) the presence of underutilized capacity for producing the merchandise in the exporting country,
> (VII) any other demonstrable adverse trends that indicate the probability that the importation (or sale for importation) of the merchandise . . . will be the cause of actual injury;
> (VIII) the potential for product shifting . . .,
> (IX) in any investigation . . . which involves imports of both a raw agricultural product . . . and any product processed from such raw agricultural product, the likelihood that there will be increased imports, by reason of product shifting . . .
> (X) the actual and potential negative effects on the existing development and production efforts of the domestic industry . . .

19 U.S.C. § 1677(7)(F)(i)(I)-(X). In addition, the Commission must consider whether dumping findings or antidumping remedies in markets of foreign countries against the same class or kind of merchandise suggest a threat of material injury to the domestic industry. 19 U.S.C. § 1677(7)(F)(iii)(I). There is no evidence of any third-country antidumping findings or remedies against subject imports of uranium. The Commission does not need to analyze factors (I) or (IX) because this investigation does not involve subsidized merchandise or imports of agricultural products.

elsewhere.[139] Although there is a Kazakh facility that produces UO_2, there is no evidence that it is capable of meeting U.S. standards.[140] Therefore, U_3O_8 production is the only capacity relevant to this investigation. Since unconcentrated uranium ore falls within the scope of investigation, we based our capacity analysis on Kazakhstan's reported *** million pound capacity to mine U_3O_8,[141] rather than its more limited capacity to mill ore into concentrate.[142] If output continued in the future at 1998 levels, capacity utilization would be *** percent. Therefore, Kazakhstan has unused capacity to produce U_3O_8 that could be available for export to the United States.[143]

For the reasons discussed below, we find that the price for Kazakh uranium is likely to rise in the imminent future. Such an increase is likely to spur the Kazakh producer to operate at or near its full capacity.[144] Respondents claim that the additional production will not be directed to the United States because most Kazakh production already is committed to sales to other countries in 1999 and 2000.[145] However, Kazakhstan historically has exported a large portion of its uranium output to the United States, and the United States currently represents a substantial portion of the world uranium demand that is not covered by an existing contract.[146] Based on these facts, we find that a portion, but not all, of the increase in Kazakh output is likely to be sold in the United States.

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[139] CR at VII-3, PR at VII-2.

[140] CR at VII-4 - VII-5, PR at VII-2. In addition, because natural UF_6 must be enriched prior to production of UO_2 for consumption in the United States and Kazakhstan has no enrichment facility, any UO_2 produced in Kazakhstan would not fall within Commerce's definition of the subject merchandise.

[141] Government of Kazakhstan Revised Foreign Producer Questionnaire at 6-7. We noted Petitioners' allegation that Kazakh mining capacity will increase by 260,000 pounds in 2000. However, ***. CR at VII-2, n. 4, PR at VII-1, n. 4.

[142] We did not include the *** in our capacity calculation, as there is no record evidence to contradict the Government of Kazakhstan's statement that ***. See CR at VII-2, PR at VII-1.

[143] Kazakhstan does not have a home market for U_3O_8.

[144] In accordance with section 734(j) of the Act, we disregarded the effect of the suspension agreement in determining the likely volume and market penetration in our threat of material injury analysis. Indeed, Kazakhstan has exercised its option to terminate the agreement. Commissioners Crawford and Askey do not join this footnote.

[145] CR at II-23 - II-24, PR at II-12; Testimony of D. Sloan, Hearing Tr. at 147. Nukem provided additional evidence on this point in the form of an affidavit appended to the final comments on information that it submitted on July 8, 1999. That affidavit repeated evidence already on the record and identified ***. The *** and the fact that an individual who had not previously testified before the Commission corroborated evidence already on the record were new information. The staff had mistakenly instructed Nukem that it could file this information with the final comments. Petitioners objected in a telephone call to the staff, and were informed that, pursuant to 19 C.F.R. § 207.30(b), any comments containing new information would be disregarded by the Commission. However, the affidavit was mistakenly circulated to the Commission without an appropriate warning that it contained new information and was included in the record along with other evidence. We find that the information contained in the affidavit was largely repetitive of information already on the record, and the new information was not sufficiently detailed to lend additional weight to the previously submitted information. Therefore, we find that the mistaken inclusion in the record of the Nukem affidavit did not affect the outcome of the determination.

[146] CR at VII-2, PR at VII-1; Testimony of R.M. Stout, Hearing Tr. at 24.

However, even if Kazakhstan exported 100 percent of its production to the U.S. market, the volume of subject imports would still not rise to a significant or injurious level. Assuming that prices for Kazakh uranium rose to the current restricted market price, the *** million pounds of Kazakh U_3O_8 would represent only *** percent of the total value of U.S. uranium consumption.[147] Further, as measured by volume, Kazakh U_3O_8 would represent approximately *** percent of U.S. utilities' projected reactor requirements in 2000 and 2001.[148] [149] We find that either volume is not likely to be injurious.[150] Furthermore, as discussed below, subject imports are not likely to have a significant effect on domestic prices. These considerations lead us to conclude that importation of total Kazakh U_3O_8 output would not result in material injury to the portion of the domestic industry consisting of the concentrators.[151] Therefore, subject imports are not likely to have a material effect on the converter, the enricher, or the fabricators, which are less directly affected by U_3O_8 sales.[152]

We find there is little probability that the subject imports will enter the United States at prices that will have a suppressive or depressive effect on prices of the domestic merchandise. As noted above, the subject imports currently are not having a significant effect on domestic prices.[153] Further, the negative effect of imports of uranium under the Russian HEU Agreement will continue into the future and is likely to increase as the quantity of natural uranium that the Agreement allows into the U.S. market increases.[154] In addition, the termination of the Kazakh Suspension Agreement will eliminate a major distinction between Kazakh uranium and restricted market uranium, which should cause the Kazakh price to rise closer to the restricted market price.[155] In any event, the gap between restricted and unrestricted prices has narrowed

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[147] See EIA, Uranium Industry Annual 1998 at 21, Table 12 (Apr. 1999), CR & PR, Table IV-4.

[148] CR at II-33, PR at II-18. Measured against utilities' total anticipated purchases, imports from Kazakhstan would represent *** percent in 2000 and *** percent in 2001. Id.

[149] We note that for 2000 and 2001, 86 and 61 percent, respectively, of U.S. utilities anticipated total market requirements are already under contract. CR at II-33, PR at II-18.

[150] Commissioners Crawford and Askey note that during the investigation period, nonsubject imports responded much more quickly, and to a greater degree, to shifts in supply than did sales of the domestic merchandise. Levels of U_3O_8 imports from nonsubject countries fluctuated by a much greater degree during the investigation period than did domestic shipments. Compare CR & PR at D-3 & Table III-1. This suggests that any increase in subject imports is likely to displace nonsubject imports instead of domestic production.

[151] Commissioner Crawford's determination is based on the domestic industry as a whole, and thus she does not join this statement.

[152] No party has alleged that there is a potential for product shifting. We note that ***. ***.

[153] Commissioners Crawford and Askey conclude that the primary determinant of U.S. prices at the current time and in the foreseeable future is the prevailing world market price. CR at II-5, n. 16, PR at II-3, n. 16. All parties cited data on world market prices as an authoritative measurement of price levels in the U.S. market. In addition, all segments of the U.S. industry export 20 percent or more of their total production, which indicates that they are subject to world market forces. See CR & PR, Tables III-1 - III-IV.

[154] See 42 U.S.C. § 2297h-10(b)(5).

[155] Prices for Ukrainian uranium underwent a similar increase after termination of the suspension agreement with that country. Testimony of T. Wilner, Hearing Tr. at 254.

since the implementation of the suspension agreements.[156] Therefore, we find that differences between the average price levels of subject merchandise and the domestic like product are unlikely to result in significant underselling if the volume of subject imports increases. Finally, even if we were to speculate that the full volume of Kazakh production would be exported to the United States, that amount would not be large enough to have any significant effect on prices.

The industry's aggregate research and development expenses increased from 1996 to 1997, then stayed relatively flat from 1997 to 1998. These expenses were *** percent lower in the first quarter of 1998 than in the same period in 1997. ***.[157] Therefore, while industry R&D levels are likely to decrease in the imminent future, subject imports will have no effect on this development. Finally, U.S. inventories of subject merchandise, which are the final statutory threat factor, do not threaten the domestic industry because the importer does not hold inventories of subject merchandise in the United States.[158]

For the reasons discussed above, we find that the domestic industry producing uranium is not threatened with material injury by reason of the subject imports from Kazakhstan.

CONCLUSION

For the foregoing reasons, we determine that the domestic industry producing uranium is not materially injured or threatened with material injury by reason of LTFV imports of uranium from Kazakhstan.

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[156] See Petitioners' Posthearing Brief, Tab. 6.A.

[157] CR at II-18, PR at II-10.

[158] CR at VII-5, PR at VII-2 & Table VII-1.

PART I: INTRODUCTION

BACKGROUND

This investigation results from a petition filed with the Commission and Commerce by counsel on behalf of the Ad Hoc Committee of Domestic Uranium Producers and the Oil, Chemical and Atomic Workers International Union on November 8, 1991,[1] alleging that an industry in the United States is materially injured and threatened with material injury by reason of LTFV imports of uranium[2] from the USSR including each republic of the USSR. In response the Commission instituted investigation No. 731-TA-539 (Preliminary) under section 733 of the Tariff Act of 1930 (the Act) (19 U.S.C. 1673b(a)) and, on December 23, 1991, determined that there was a reasonable indication of such material injury. Commerce then continued its investigation into the existence and extent of LTFV sales. On December 25, 1991, the USSR dissolved, and shortly thereafter the United States recognized the former republics of the USSR as independent countries. Commerce investigated each in turn and determined that imports of uranium from Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Ukraine, and Uzbekistan were being, or were likely to be, sold in the United States at LTFV (57 FR 23380, June 3, 1992). Accordingly, the Commission instituted final investigations Nos. 731-TA-539-A through F under section 735(b) of the Act (19 U.S.C. 1673d(b)).

On October 20, 1992, before the Commission reached determinations on the subject countries, Commerce notified the Commission that it was entering into suspension agreements with all of the subject countries and was therefore suspending its investigations (57 FR 49220, October 30, 1992). The Commission suspended its final investigations immediately thereafter.

The suspension remained in effect for all six subject countries until April 1993, when Commerce notified the Commission that its agreements with Tajikistan and Ukraine were terminated and its corresponding investigations were resumed (58 FR 21144, April 19, 1993; and 58 FR 29197, May 19, 1993). The Commission thereupon continued investigations Nos. 731-TA-539-D (Tajikistan) and 539-E (Ukraine), and on August 6, 1993, determined negatively with respect to Tajikistan and affirmatively with respect to Ukraine (*Uranium From Tajikistan and Ukraine, Investigations Nos. 731-TA-539-D and 539-E (Final)*, USITC Pub. 2669, August 1993). Commerce's final antidumping margin for Ukraine was 129.29

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[1] At the time of filing, the petitioners included Ferret Exploration Co., Inc., Denver, CO; First Holding Co., Denver, CO; Geomex Minerals, Inc., Denver, CO; IMC Fertilizer, Inc., Northbrook, IL; Malapai Resources Co., Houston, TX; Pathfinder Mines Corp., Bethesda, MD; Power Resources, Denver, CO; Rio Algom, Oklahoma City, OK; Solution Mining Corp., Laramie, WY; Total Minerals Corp., Houston, TX; Umetco Minerals Corp., Danbury, CT; and Uranium Resources, Inc., Dallas, TX. Since 1991, however, several plant closings and consolidations have taken place in the industry. The remaining petitioners are Rio Algom and Uranium Resources. Because of a recent merger with paper workers, the Oil, Chemical and Atomic Workers International Union has changed its name to the Paper, Allied-Industrial-Chemical Union (PACE). For the final phase of the investigation, USEC, Inc., and its subsidiary, USEC, Bethesda, MD, have entered a separate appearance in support of the petition.

[2] For purposes of this investigation, uranium includes natural uranium in the form of uranium ores and concentrates; natural uranium metal and natural uranium compounds; alloys, dispersions (including cermets), ceramic products and mixtures containing natural uranium or natural uranium compounds; uranium enriched in U^{235} (including highly-enriched uranium) and its compounds; alloys, dispersions (including cermets), ceramic products, and mixtures containing uranium enriched in U^{235} or compounds or uranium enriched in U^{235}. These imports are classified in subheadings 2612.10.00, 2844.10.10, 2844.10.20, 2844.10.50, and 2844.20.00 of the HTS. Imports of uranium under HTS subheadings 2612.10.00 (uranium ores and concentrated ores), 2844.10.20 (natural uranium oxide (concentrate), natural uranium hexafluoride, and natural uranium compounds other than uranium oxide and uranium hexafluoride), and 2844.20.00 (enriched uranium) are free of duty regardless of origin. Imports of uranium under subheadings 2844.10.10 (natural uranium metal) and 2844.10.50 (natural uranium other than compounds) are subject to a column-1 general duty rate of 5 percent *ad valorem*, applicable to Kazakhstan.

percent.

Commission activity on the remaining investigations remained suspended until January of this year when Commerce notified the Commission that it was resuming its antidumping investigation on Kazakhstan (64 FR 2877, January 19, 1999) as a result of the Government of Kazakhstan's termination of its suspension agreement on uranium. The agreement was in effect from October 16, 1992, to January 11, 1999. Kyrgyzstan, Russia, and Uzbekistan remain under suspension agreements, and Ukraine remains under an antidumping duty order.

Commerce's and the Commission's *Federal Register* notices for the resumption of the present investigation are shown in appendix A. Key dates relating to the background of the investigation are summarized below:

Date	*Action*
November 8, 1991. .	Petition filed with Commerce and the Commission against the USSR
December 23, 1991 .	Commission's preliminary determination
December 25, 1991 .	USSR dissolves into separate republics
June 3, 1992	Commerce's determinations on separate republics
October 20, 1992 ...	Commerce enters into suspension agreements with countries under investigation (Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Ukraine, and Uzbekistan), and the Commission suspends its final investigations
April 19, 1993	Commerce notifies the Commission that it is resuming its investigations on Tajikistan and Ukraine as a result of these countries' termination of their suspension agreements, and the Commission continues its investigations of these countries accordingly
August 6, 1993	Commission determines negatively with respect to Tajikistan and affirmatively with respect to Ukraine
January 19, 1999 ...	Commerce notifies the Commission that it is resuming its investigation on Kazakhstan as a result of Kazakhstan's termination of its suspension agreement, and the Commission resumes the subject investigation
June 9, 1999	Commission's hearing[3] and Commerce's final antidumping determination
July 13, 1999	Commission's vote
July 23, 1999	Commission's determination transmitted to Commerce

The Commission has instituted one other investigation regarding uranium. On September 25, 1991, it instituted investigation No. 332-315, Uranium and Uranium Enrichment Services: The Impact on the Domestic Industry of Imports into the United States from Nonmarket Economy Countries, under section 332(g) of the Act in response to a request from the Committee on Finance of the U.S. Senate; however, the Commission terminated the investigation less than 3 months later in compliance with the Committee's request. The five-year reviews on uranium from Kyrgyzstan, Russia, Ukraine, and Uzbekistan will begin in August 1999.

LTFV SALES

For lack of sufficient and verifiable data for its period of investigation (June 1 through November 30, 1991), Commerce resorted to the "best information available" provided by the petitioners and determined a final LTFV margin of 115.82 percent. Commerce determined that the Kazakh Government

[3] A list of witnesses appearing at the Commission's hearing is presented in app. B.

sufficiently cooperated in the investigation, so that the final margin is based on a simple average of the margins provided by petitioners and not the highest margin, which Commerce would have applied if it determined that Kazakhstan had not sufficiently cooperated. For U.S. prices the petitioners used an estimated weighted average f.o.b. import price taken from Census statistics on imports of natural and enriched uranium from the former USSR from January 1990 through August 1991. For a foreign market value, the petitioners used a constructed value based on factors of production in surrogate countries.

SUMMARY DATA

A summary of data for the combined forms of uranium subject to this investigation is presented in appendix C, table C-1; however, the table does not include some of the data commonly presented in antidumping investigations and the data therein are subject to many qualifications presented in the text of this report. The nature of the product combined with the current nature of the industry and market complicate the analysis of uranium both in the particular and in the aggregate. On the one hand, the various forms of uranium are mutually competitive in today's market–trade in one form can have an immediate impact on trade in another, which limits a segmented analysis for causal effects (see part IV's section on consumption for a further discussion of the weaknesses of this approach). On the other hand, they are all intermediate products for the same end product, each successively contained in the other, which limits combined analysis. Inherent analytic challenges notwithstanding, the data include nearly all known U.S. producers during the period for which the data were collected (January 1996-March 1999). Data for U.S. imports are based on questionnaire responses and/or official statistics of Commerce. Unless otherwise noted, the remaining data and points of fact are based on or excerpted from official publications of the EIA. As used throughout this report, "uranium" refers to both the products containing uranium that are the subject of this investigation and to the element itself.

THE PRODUCT

Uranium is one of over 100 basic chemical elements, or types of atoms, known to occur in nature and is used worldwide primarily as a fuel to generate electricity in nuclear power plants and secondarily as a fuel to propel naval vessels and as an active ingredient in atomic weaponry. Each element is defined by the number of its atoms' protons, one of the atom's 3 building blocks along with electrons and neutrons. The uranium atom has 92 protons and thus ranks 92 among the elements. Although the number of protons and electrons in the element's atoms is consistent, the number of neutrons can vary, resulting in different "isotopes" of the same element, each with different properties. Uranium has 3 principal isotopes, U^{238}, U^{235}, and U^{234}, which constitute 99.285 percent, 0.71 percent, and 0.005 percent, respectively, of the element's weight in its elemental state. It is the properties of its U^{235} isotope that are important for uranium's principal uses.

Uranium, like many elements, is neither found nor primarily used in its elemental state. It is generally found in molecular combination with another element, oxygen, embedded in various concentrations in rock formations, known as uranium ores, throughout the world. To bring uranium to usable form, several successive processes are required, each resulting in a different uranium product and each accomplished by specialized and, for the most part, independent producers. The processes include first mining and concentrating the uranium into the molecular form U_3O_8 (3 atoms of uranium combined with 8 atoms of oxygen), then converting the U_3O_8 into UF_6 (natural uranium hexafluoride), and next enriching the UF_6 by increasing the proportion of U^{235} in its constituent uranium (enriched uranium hexafluoride). Finally, in a process known as "fabrication," the uranium is readied for use by transforming the enriched UF_6 into enriched oxides (primarily enriched UO_2), nitrates, and metals, converting this material into ceramic pellets, encapsulating the pellets into fuel rods, and assembling the fuel rods to meet

the needs of specific nuclear power plants. There are hundreds of such plants throughout the world, most owned by electric utility companies that generate electricity by a variety of means and distribute it throughout defined regions. About 20 percent of the United States' electricity is generated by nuclear fuel.

Natural Uranium Concentrate (Concentrated U_3O_8)

The first step in transforming uranium ore into a usable form is to recover or "mine" it from the earth and extract the uranium in a concentrated form of U_3O_8. For the ore to be mined at all, it historically has had a natural U_3O_8 concentration of at least 0.1 percent, by weight; however, variations in production processes and conditions allow lower concentrations to be mined. The highest natural concentrations known to exist are about 15 percent. Conventional mining operations entail the actual excavation of the ore from the ground, either by means of large earth moving equipment for open pit operations, or standard mining equipment for underground operations, after which it is crushed and ground (milled) before being concentrated. A more cost-effective method widely used in the United States, called "*in situ* (in place) leaching" or ISL, recovers the U_3O_8 by leaching the ore in place with specialized liquid solutions from which the concentrate is precipitated. Not all deposits, however, lend themselves to this method of extraction. Most uranium mined in Canada and Australia, the world's two largest producers, continues to be extracted by conventional means. Uranium concentrates are also produced as a by-product of phosphoric acid production, and from gold, copper, and other mineral mining.

Most uranium concentrates, otherwise known as "yellowcake," contain a minimum of 75 percent, and usually 80-85 percent, U_3O_8. The concentrate accounts for about 25 percent of total nuclear fuel costs.[4] The majority of uranium mining and concentrating sites today are in Canada, Australia, South Africa, Niger, Namibia, the United States, and some of the former republics of the USSR, particularly Russia, Ukraine, Kazakhstan, and Uzbekistan. The largest producers are COGEMA, France; Cameco, Saskatoon, Canada; and ERA, Australia. COGEMA and Cameco own mining and concentrating assets throughout the world, including the United States.

Natural Uranium Hexafluoride (Natural UF_6)

The next step in the process is converting the concentrate into a compound that can be readily turned into a gas, in this case natural uranium hexafluoride, to facilitate the enrichment process that follows. Conversion accounts for about 3 percent of total nuclear fuel costs. There are only a handful of converters worldwide, including ConverDyn in the United States, Cameco in Canada, BNFL in England, Comurhex in France, and Minatom in Russia.

Enriched (and Highly-Enriched) Uranium Hexafluoride (LEU and HEU)

Before uranium in any form can be used as a fuel in most nuclear power plants, the proportion of its U^{235} isotope must be increased relative to that of its other isotopes.[5] This process, which starts by vaporizing natural UF_6, uses units of effort called "separative work units" (SWUs) to increase the proportion of U^{235} in the uranium from 0.71 percent to 3-5 percent by weight (low-enriched uranium or

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[4] *WISE Uranium Project,* "Nuclear fuel cost calculator," *http://antenna.nl/wise/uranium/nfcc.html,* Apr. 10, 1999. The shares of nuclear fuel cost accounted for by the forms of uranium herein discussed are all derived from the indicated source and conform closely to estimates from other sources.

[5] Most of the world's and all of the United States' nuclear power plants are so-called "light-water" reactors and require enriched uranium for fuel; however, there are a small number of others, known as "heavy-water" reactors, that are capable of using natural uranium.

LEU) for use in generating electricity, or to 20 percent or more (highly-enriched uranium or HEU) for use in nuclear weapons and nuclear propulsion.[6] The process also produces a waste stream, or "tails," which is depleted in U^{235}. (This product, depleted in its natural concentration of U^{235}, is outside the scope of this investigation and has separate applications, like armor-piercing ordnance; however, as indicated below, it can also be reconstituted with U^{235} and recycled into nuclear fuel). The quantity of SWUs used in the production process is a key negotiating factor for the enricher and the enrichee, and trade for enriched UF_6 is normally in units thereof.[7] (If the purchaser is buying uranium that has already been enriched, it is commonly referred to as "enriched uranium product" or EUP). LEU can also be produced by de-enriching surplus HEU, i.e., diluting its concentration of U^{235} to LEU levels, and/or enriching the tails left over from the production process, resulting in what is known as "stripped" or "reconstituted" uranium. Though minimally used to date, the latter alternative is potentially a large source of enriched UF_6. Enrichment represents about 42 percent of total nuclear fuel costs. The bulk of the world's enrichment capacity, over 95 percent, is controlled by 4 firms: USEC in the United States;[8] Minatom in Russia; COGEMA in France; and Urenco with facilities in Germany, the Netherlands, and the United Kingdom.

Enriched Uranium Oxides, Nitrates, and Metals

The final process in producing nuclear fuel for electricity generation, fabrication, involves converting the enriched UF_6 to enriched uranium oxides (primarily UO_2), nitrates, and metals; pelletizing this material; encapsulating the pellets into protective metal sheaths, called "fuel rods," and then assembling the rods into the specific configuration the nuclear power facility requires. The entire process represents about 30 percent of the cost of producing nuclear fuel, although only the converting and pelletizing processes are within the scope of this investigation. Several fabricators are located throughout the world, with five in the United States alone.[9]

Although the uranium compounds used in the fabrication process are to some extent tailored to specific nuclear power plants, there are no proprietary processes that make one fabricator or another more suitable for this process. The forms of uranium produced prior to fabrication, both natural and enriched, are made to standard specifications worldwide and are generally considered world commodities. All forms of uranium subject to this investigation are widely traded and imported into the United States. They have no major use or marketable value other than nuclear fuel, and the equipment and production workers used

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[6] The production of HEU requires additional processing and special considerations. Although the actual details of HEU production are classified for national security reasons, it is believed to involve the processing of LEU through hundreds, or even thousands, of additional cycles. Additionally, the production of HEU requires extra security measures, precautions against increased levels of radiation, and, because the product is more unstable than LEU, precautions against premature fission reactions. U.S. stockpiles of HEU are currently sufficient to meet defense needs for some time to come, and HEU has neither been produced nor imported during the period of investigation.

[7] For a given quantity of enriched uranium product, the SWUs expended during the enrichment process are inversely related to the quantity of natural uranium consumed (feed stock) and the proportion of U^{235} remaining in the tails, or tails "assay." This means that the same output can be produced by either increasing the SWUs and decreasing the feed stock and tails assay or by decreasing the SWUs and increasing the feed stock and tails assay. Since both feed stock and SWUs are subject to variable prices, there will always be a most cost-effective combination for the enricher and the enrichee.

[8] USEC was created in 1992 as a step in the U.S. Government's privatization of its enrichment activities then under the control of DOE. It was independently operated but government owned until July 1998, when it was allowed to become a privately owned, albeit statutorily controlled, corporation.

[9] One fabricator's operations is limited to encapsulation and assembly.

to produce them are specific to the subject product.

Alternative Products

As indicated previously, the waste product of the enrichment process, depleted uranium, can be re-enriched for use in nuclear power plants. Stockpiles of this material have been accumulating, and, although they are yet to be exploited commercially to any significant degree because of economic considerations, they remain a potential source of natural uranium.

An alternative fuel for uranium in some nuclear power plants is MOX, consisting of a mixture of depleted uranium oxides and weapons grade plutonium. However, partly out of national security concerns to limit the proliferation of plutonium (from which nuclear weapons can more readily be made than from uranium), it is not produced in the United States. To date it has had limited commercial use in Europe and at least potential use in Canada, pending discussions between the U.S., Russian, and Canadian governments on possible means of disposing of excess plutonium inventories.

Nuclear power plants, however, are not the only means of generating electricity. The bulk of electricity generation in the United States, about 70 percent, results from burning fossil fuels, particularly coal. While the share of electricity generated by fossil fuels has increased since 1991, that generated by nuclear fuel has declined somewhat. Although burning cleaner than fossil fuel plants, uranium power plants present singular health risks for the society at large (despite considerable safeguards) and produce a highly radioactive waste product that necessitates special means of disposal. For these reasons uranium has gained less public acceptance as a commercial fuel than other sources of energy. Other factors, more economic in nature, have deterred large-scale investment in nuclear power plants.

INDUSTRY AND MARKET OVERVIEW

Traditionally, electric utilities operating nuclear power plants have contracted with concentrate producers or uranium brokers for quantities of natural U_3O_8, which they then have consigned successively to a converter, enricher, and fabricator for the requisite processing, paying a fee for each of these services. This basic arrangement still accounts for much of the uranium produced and used throughout the world, but the primary producers and utilities have been joined by many other active participants in the market, and purchasing options have increased considerably. In fact, the buying, selling, and distribution of uranium products has become increasingly complex and reflects fundamental changes in the industry and market since 1991.

At least four major events are associated with broad changes in the world uranium industry and market in the 1990's:

(1) The dissolution of the USSR and the end of the cold war;
(2) The development of high-grade, low-cost resources in Canada and Australia;
(3) Deregulation of the electric utilities in the United States; and
(4) The Asian economic crisis.

The net effect of these changes has been a stagnation in demand and a rapid increase in the available supply of uranium, resulting in declining prices, an emphasis on cost-cutting measures, a rising spot market (or at least contracts tied to the spot market), a general integration and contraction of users and producers, and active participation in the market (buying and selling) by a host of different entities.

The end of the cold war in 1991, following the breakup of the USSR into independent republics, had great consequences for the supply of uranium. In the previous decades the United States and the USSR had stockpiled large quantities of both LEU and HEU for potential use in both propulsion and weaponry.

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Russia inherited the stockpiles of the former USSR. In response to bilateral and unilateral defense downsizing after 1991, large quantities of these inventories were officially declared excess and were potentially available for commercial use. To aid Russia financially and keep weapons grade uranium off the world market, the U.S. Government agreed in February 1993 to purchase large quantities of Russian LEU blended down from HEU over a 20-year period (the Russian HEU Agreement). This material is not subject to the Russian Suspension Agreement. The actual purchase and distribution of this material, in addition to U.S. Government surpluses, is charged to USEC under The USEC Privatization Act, signed into law on April 26, 1996.[10] Although USEC is under statutory guidelines to minimize market disruption by controlling the timing and quantity of such stockpiles' release, there remains a considerable degree of uncertainty in the market as to the ultimate disposal of surplus government material.

The breakup of the USSR brought to market more than just its surplus defense inventories. Production facilities and resources existed in several of its former republics–notably, Kazakhstan, Russia, Ukraine, and Uzbekistan. These resources, formerly under the control of the USSR, were now in the hands of these countries' governments and available to the world market. Although an antidumping duty order affects imports from Ukraine, and suspension agreements still restrict direct and indirect[11] imports from Russia, Kyrgystan, and Uzbekistan, a substantial quantity of uranium originating in these countries is sold throughout the world.

Further adding to the worldwide abundance of uranium has been the development of relatively high-grade, low-cost resources in Canada and Australia. In the late 1970's the United States ranked number one in the quantity of uranium mined worldwide, about 35 million pounds per year. Canada ranked second with about half that total. Today, producing over 30 million pounds annually, Canada ranks first, Australia ranks second, and the United States, with less than 5 million pounds annually, ranks fifth. Together, Canada and Australia have about 40 percent of the world's known recoverable resources,[12] and Canada is the largest single source of imports into the United States.

Affecting the demand of uranium has been the recent and ongoing deregulation of the utilities' transmission of electricity, while the regulations on their use of uranium have remained relatively stringent. Uranium is used in a heavily regulated environment. Overseeing this regulation are the Nuclear Regulatory Commission, the Federal Energy Regulatory Commission, the Environmental Protection Agency, and numerous regulating bodies in the individual States. Compliance with these regulations translates into additional cost for utilities' nuclear power plants, costs which only add to the relatively high cost of the plant's construction. But while the regulations associated with nuclear fuel use have remained in place, regulations on the utilities' distribution of electricity have relaxed. States, for example, have moved to

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[10] Under the Russian HEU Agreement, USEC buys LEU (enriched UF_6) blended down in Russia from HEU and sells it directly to utilities. USEC pays Russia in cash for the enriched component of this material (i.e., for the SWUs Russia expends in the blend-down) and in kind for the feed component (i.e., for the natural UF_6 that went into the making of the original HEU). The utilities pay USEC in like fashion, so that it need only transfer the utilities' natural UF_6 to Russian ownership. The latter, known as "Russian feed," has been accumulating in the United States for some time due to restrictions on its disposal under the USEC Privatization Act. The United States agreed to purchase $325 million worth of this material in late March 1999, although both countries have agreed to keep large quantities of uranium off the market in an effort to stabilize prices.

[11] Indirect imports, known as "by-pass uranium," are original Kazakh, Kyrgyz, Russian, and Uzbek material processed and exported from third countries. Typically, certain quantities of natural uranium from these countries are enriched in Europe before being imported into the United States. Even though for customs' purposes the country of origin is the country where the last processing took place, the importation of such uranium into the United States is controlled by specific by-pass provisions in each suspension agreement beginning in 1996.

[12] "The Uranium Mining Climate in Australia," 1998, Ian Hore-Lacy, General Manager, Uranium Information Center, presented at the NEI International Uranium Fuel Seminar 98.

allow electric customers to choose their suppliers, effectively putting the utilities in price competition with one another. This competitive environment has pressured the utilities to operate as cost effectively and efficiently as possible. Because fuel costs are about a third of their electric generation costs and sunk costs in nuclear power plants are considerable, they have shown a much keener interest in finding the lowest cost uranium in whatever form, helping give rise to an active spot market and to non-traditional buyers and sellers. As an additional cost-cutting measure, the utilities have reduced their inventories of uranium by selling or trading it on the open market, adding to the number of suppliers and the already excess supplies. Some utilities have merged. Others have simply divested themselves of their nuclear power plants and/or shut down the more inefficient plants altogether.[13] In the meantime, alternative sources of electric energy have remained competitive.

Demand has also been slowed by the Asian economic crisis. Throughout the 1990's suppliers expected most of the world's new growth in demand to come from China, Japan, Korea, and southeast Asia and planned accordingly. With the sudden downturn of these countries' economies in 1998, nuclear power plant production was forestalled, and the anticipated market for uranium has not materialized. Aside from these events, there are a host of safety, environmental, economic, and political concerns that have caused a reduction in the projected growth of commercial nuclear power.

The increase in the sources and availability of uranium combined with a cost-conscious and fixed, if not weakened, demand has increased the market and financial risk for the industry and intensified competitive pressures throughout. Marginal producers, broker/traders, and users have either dropped out of the market or have been absorbed by others. Some with larger resources, like COGEMA, Cameco, and Nukem GmbH, a large trader based in Germany, have sought to better place themselves in this environment by expanding their uranium activities both horizontally and vertically. Consolidation notwithstanding, with so many continuing uncertainties in the global supply and demand for uranium, there is no single segment of the industry that controls the market.

[13] Since 1978, at least 11 nuclear power plants in the United States have been closed and no new plants have been constructed. Moreover, all nuclear plants ordered in the United States since 1973 have either been cancelled or face rejection from State governments.

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

CHARACTERISTICS OF THE U.S. AND GLOBAL INDUSTRY

Uranium is consumed commercially throughout the world primarily in its low-enriched state as fuel for nuclear reactors producing electricity;[1] enrichment for this use ranges from 3 to 5 percent in the U^{235} isotope.[2] The traditional production stages required to produce LEU are typically called the uranium fuel cycle and involve the following 4 successive distinct products, which are each produced with their unique production equipment and processes: (1) uranium concentrates (typically produced as the U_3O_8 compound) are natural uranium powder produced from the mined/leached uranium ore, (2) natural uranium hexafluoride (UF_6) is converted from the U_3O_8 compound or its equivalent, (3) low-enriched uranium hexafluoride (UF_6), or LEU-HF, is enriched from the natural UF_6,[3] and (4) low-enriched uranium dioxide (UO_2), or LEU-DO, is a low-enriched uranium powder converted from LEU-HF and then pelletized for insertion into fuel rods. Electric utilities have typically purchased the U_3O_8, contracted with converters and enrichers to toll-produce the natural UF_6 and LEU-HF, and then contracted with fabricators both to toll-produce the LEU-DO and to construct the fuel assemblies. As indicated in Part I, enrichment accounts for about 42 percent of the total value of the finished uranium product, while combined production and processing at the natural uranium stages of the fuel cycle account for less than 30 percent of the final product value.[4]

Although the LEU fuel cycle remains the dominant process by which electric utilities obtain LEU, an emerging significant alternative source of supply is LEU-HF produced directly by blending down HEU. Blended-down LEU-HF in the U.S. market derives largely from the Russian HEU Agreement with the United States;[5] ***.[6] In the future, USEC is committed to purchasing 5.5 million SWUs annually during 1999-2014 pursuant to the Russian HEU Agreement and an additional, but smaller, amount of Russian

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[1] In Canada, natural uranium is used as fuel in heavy water reactors to produce electricity (U.S. utilities use LEU as their reactor fuel). In addition, some electric utilities in Japan and several European countries use a hybrid nuclear reactor fuel called MOX, which is a combination of depleted or natural uranium and reprocessed or weapons-grade plutonium. In the United States, MOX is under consideration for future use as a method for destruction of weapons-grade plutonium.

[2] In the United States the enrichment level is typically between *** percent.

[3] The natural UF_6 and the LEU-HF are produced as a gas, but when stored in cylinders they turn to a solid as the material cools. Both compounds become a gas when their temperature reaches 134°F at 1 atmosphere of pressure; they are stored in the cylinders at slightly more than 1 atmosphere.

[4] These figures include the value of the uranium and fuel assemblies. Based on the value of uranium only, enrichment accounts for about 53 percent of the total enriched uranium costs, while the U_3O_8 accounts for about 32 percent, natural conversion accounts for almost 5 percent, and enriched conversion (and pelletizing) accounts for about 10 percent of total uranium costs. Both sets of figures are based on a 3.6 percent product assay and a 0.3 percent tails assay.

[5] In 1994, the U.S. Government (with USEC as its executive agent) and the Russian Government (with TENEX as its executive agent) agreed that by 2014 the United States would buy 500 metric tons of bomb-grade Russian HEU (from dismantled nuclear weapons) that were blended-down to LEU-HF in Russia. Under the agreement, acceptable LEU-HF enrichment assays are 4.0, 4.4, or 4.5 percent, which most closely match requirements of USEC's customers. As a rule of thumb, 1 unit of 90 percent HEU equals about 30 units of 4.4 to 4.9 percent LEU-HF (assumes a blend-stock assay of 1.5 percent and tails assay of 0.3 percent); ***.

[6] Based on annual U.S. reactor requirements for LEU-HF that range from 8 to 10 million SWUs, the Russian LEU-HF sold to U.S. electric utilities during 1996-98 accounted for *** percent of total U.S. reactor requirements during this period.

SWUs through 2003 pursuant to matched sales provisions under the Russian Suspension Agreement. Electric utilities will purchase LEU-HF, or any of the other processed uranium products, when the total price is less than the costs of obtaining uranium via the fuel cycle.[7] In addition, it is easier to purchase processed products, such as LEU-HF, than purchasing uranium concentrates and arranging for multiple toll-processing contracts via the fuel cycle to obtain the processed products.

Large worldwide inventories of uranium are principally held as uranium concentrates and natural UF_6; the latter product is also a potential source of processed uranium that could be sold and, thereby, act to bypass a portion of the uranium fuel cycle. These inventories are stored at producers/processors' locations worldwide and are owned by electric utilities, uranium producers/processors, and traders.[8] Many electric utilities, particularly in Western Europe and Asia, have typically maintained strategic inventories of uranium to cover their reactor requirements, sometimes up to 3 years or more, and excess (smaller) inventories for an additional margin of safety. Nukem reported that 1997 year-end natural uranium inventories held by electric utilities throughout the world amounted to 69,000 metric tons U of strategic inventories and 44,000 metric tons U of excess inventories.[9] Increased worldwide availability of uranium in processed form and substantial uranium mining/recovery operations may have led some electric utilities, particularly a few in the United States, to sell, or make available for sale, a portion of their uranium inventories.[10] Huge inventories of natural UF_6 held by the U.S. and Russian governments, which have been significantly augmented by USEC purchases under the Russian HEU Agreement and by U.S. LEU-HF imports under matched sales provisions, may have dampened market prices as both governments recently announced that they would each withhold 58 million pounds U as natural UF_6 from the world market for 10 years.[11] Market supply

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[7] ***. These price data are based on USEC's questionnaire responses and are discussed more fully in Part V of the questionnaire.

[8] Safety and political concerns (nuclear proliferation) have led most governments, including the U.S. Government, to license commercial firms in their countries to produce, store, or use uranium. In the United States, the miners/concentrators, converter, enricher, and fabricators are essentially the only firms licensed to store the uranium products; the electric utilities are licensed to use the uranium. Regardless of ownership title, inventories of uranium concentrates are usually held by converters (some are also held by the concentrators), inventories of natural UF_6 are usually held by enrichers, and inventories of LEU-HF and LEU-DO are usually held by fabricators. Concentrators may also hold inventories of mined uranium ore. This inventory pattern is worldwide and facilitates the use of swaps and loans that minimize the physical movement of uranium once it is at the various inventory locations. In addition, because uranium inventories are located primarily at downstream processing locations, shipments (deliveries) often involve a book transfer of ownership title rather than the physical movement of uranium.

[9] *Nukem Market Report*, "The End of Mining?," Nukem, Nov. 1998, p. 6.

[10] In addition, deregulation of electricity production and distribution, most recently in the United States and earlier in several European countries, may also have led some electric utilities to reduce their inventories. Under historical regulation, electric utilities were able to pass their inventory costs on to consumers. In the developing competitive market, producers of electricity should face more cost constraints and may likely continue to reduce their inventory holdings (*Nukem Market Report*, "The End of Mining?," Nukem, Nov. 1998).

[11] *Wall Street Journal*, "U.S. and Russia Forge $325 Million Accord to Stockpile Uranium," Mar. 25, 1999. However, the USEC Privatization Act allows deliveries in 1998 to U.S. electric utilities of up to 2 million pounds of the natural uranium feed obtained by Russia through sales of the blended-down HEU; the allowable amount increases in increments of 2 million pounds each year through 2009, when the annual limit will be 20 million pounds. Each year thereafter, up to 20 million pounds of the Russian natural uranium feed may be delivered to end users in the U.S. market. To the extent any of this Russian natural uranium feed is sold under a matched sales provision pursuant to the Russian Suspension Agreement, it will not be counted in the annual limits enumerated

(continued...)

uncertainties continue, however, as cutbacks in uranium mining/recovery production and postponements in bringing on new production facilities have recently occurred in Australia, Canada, and the United States.

Worldwide prices of uranium concentrates were generally robust during the first half of 1996, but began to fall in the second half of 1996, continued falling in 1997 and 1998, and remained soft during the first 3 months of 1999.[12] Falling prices suggest that supply exceeded both current and expected future demand, but announced cutbacks in uranium supply,[13] if substantial enough, will likely cause prices to stabilize and then rise. The responsiveness of uranium supply to price changes suggests, however, that eventual price increases may be modest due to the large potential supply of uranium, both in the ground and in inventories.

During 1996-98 the United States and the European Union had programs in place that restricted imports of uranium from countries of the former USSR.[14] Publicly reported spot market prices of uranium concentrates on a monthly basis showed that during 1996-98 prices of uranium concentrates in the restricted markets, including the United States, significantly exceeded prices of uranium concentrates in the unrestricted markets. Percentage price differences between the restricted and unrestricted markets ranged from 2.0 percent to 27.7 percent.[15] Despite the apparent positive effects of import restrictions, U.S. uranium concentrate producers, as well as ***, reported in their producer questionnaire responses that ***. Abundant worldwide supplies of uranium apparently blunted the effects of import restrictions in the U.S. market.[16]

A majority of electric utilities' purchases of uranium and uranium processing are based on long-term contracts and, in the United States, these contracts run 3 to 7 years or longer with primary producers and processors.[17] Long-term contracts provide for a secure future supply of uranium and reportedly reflect the need to accommodate long lead times in the fuel cycle and a concern to maintain reactor operations.[18]

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[11] (...continued)
here, which are subject to the Privatization Act.

[12] Prices for conversion and enrichment followed similar trends during this period, as did long-term contract prices for uranium concentrates negotiated during this period (*Nukem Market Report*, Apr. 1999, pp. 21-24).

[13] Uranium supply cutbacks included reductions in both production and availability of inventory.

[14] The United States used suspension agreements (including various amendments to the original agreements) and the Russian HEU Agreement, as well as antidumping duty orders on imports of uranium from Ukraine, to control the price and volume of uranium imports from these countries. Europe reportedly imposed import quotas on uranium from these countries.

[15] *Nukem Market Report*, "Northeast Utilities: Back from the Brink," Nukem, Apr. 1999. Purchaser questionnaire responses of U.S. electric utilities indicated that the uranium products subject to the suspension agreements, including those from Kazakhstan, were generally priced lower than unrestricted sources of uranium due to paperwork and approvals required by Commerce, prohibitions on its use in swaps and loans, and the uncertainty whether what is purchased today can legally be delivered and used when needed several months later. As a result, many U.S. electric utilities reported that they generally avoided purchasing uranium that was subject to the suspension agreements. ***.

[16] Because of extensive world trade in uranium and substantial U.S. imports of uranium through the enrichment stage, the U.S. uranium price is pretty much subject to the world price. The only exception is the restricted uranium in the U.S. market, which generally was priced below uranium from unrestricted sources. This two-tiered price structure began shortly after the start of the suspension agreements. The influence of world demand and supply in the U.S. market affects U.S. uranium producers' prices for both their domestic sales and ***.

[17] Based on questionnaire responses of U.S. uranium concentrators, the converter, the enricher, and fabricators.

[18] ***.

Spot purchases make up the balance of a utility's total uranium purchases.[19] Spot-market uranium purchases in the United States reportedly account for between 10 to 20 percent of total uranium purchases made by all market participants, including U.S. utilities, producers, and traders.[20] The share of spot purchases is least when uranium prices are high and greatest when uranium prices are low.[21] Electric utilities typically make spot purchases to meet current or near-term requirements that are not covered by long-term contracts.[22] Producers and processors generally make spot purchases to supply at least some of their maturing contract requirements, especially when spot prices are lower than their costs of production.

Reliance on long-term contracts to meet the majority of reactor requirements suggests that purchases in the current period are largely for consumption in the long-term future and to a lesser degree for consumption in the current period or near-term future.[23] Future reactor demand for uranium is divided between covered demand and uncovered demand.[24] Uncovered future demand up to about 2 years is generally considered spot-market demand in the uranium market, while uncovered future demand beyond 2 years is considered long-term demand.[25]

BUSINESS/MARKET CYCLES

Uranium consumption is highly dependent on the number of operating nuclear reactors producing electricity and on the level at which each utility is operating.[26] Demand for electricity, in turn, depends on economic growth, particularly in developing countries,[27] and on population growth. Utility operating levels

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[19] Although electric utilities generally contract for conversion and enrichment on a long-term basis, their spot purchases of a completed uranium product, such as natural UF_6 or LEU-HF, often involve both a transfer of the physical equivalent of the natural uranium component of the purchased product from the utility to the seller and a separate payment for the conversion or enrichment service component of the purchased product. This payment for conversion or enrichment constitutes a spot purchase of the service.

[20] ***.

[21] ***.

[22] Spot purchases of uranium at low prices enable utilities to obtain at least some of their uranium requirements at least cost. If uranium prices were high, utilities would likely use more of their substantial inventories to cover current uranium needs that were not met by long-term supply agreements instead of making spot purchases.

[23] Conversely, prices of the majority of uranium and uranium services consumed in the current period were based on past decisions that involved expectations about current market conditions. As a result, prices currently paid for previously contracted material/services may be substantially different from spot and long-term prices negotiated in the current period.

[24] Expected future reactor requirements that are to be filled by long-term contracts and planned inventory drawdowns are considered covered demand; the remaining future reactor requirements are uncovered demand.

[25] *The Uranium Institute Market Report 1998*, "The Global Nuclear Fuel Market: Supply and Demand, 1998-2020," The Uranium Institute, 1998, p. 31.

[26] Uranium consumption is also affected by the length of the reload cycle (the length of time between refuelings of nuclear reactors, typically 18 or 24 months in the United States).

[27] As developed economies continue to switch from manufacturing to services, they tend to use less electricity per dollar of GDP; on the other hand, growth in developing countries tends to be accompanied by an increase in manufacturing and they use more electricity per dollar of GDP as this growth continues (*The Uranium Institute Market Report 1998*, "The Global Nuclear Fuel Market: Supply and Demand, 1998-2020," The Uranium Institute, 1998, p. 22).

and, hence, uranium consumption are subject somewhat to business cycles.[28] In addition, U.S. electric utilities operating nuclear reactors replace about one-third of their fuel rods on a regular schedule called a reload cycle; 18 and 24 months are the most popular reload cycles in the United States. Technical operating considerations and the level of reactor operations reportedly are the key factors that determine the length of the reload cycle.

MARKET SEGMENTS/CHANNELS OF DISTRIBUTION

As mentioned earlier, the traditional uranium fuel cycle is still the primary way in which U.S. produced uranium is sold in the U.S. market. Except for the producers of uranium concentrates, the uranium producers at the other stages in the uranium cycle have, until recently, provided only toll-services to further process uranium. The converter prices its toll-services based on the number of kilograms of uranium in the converted uranium, while USEC prices its toll-service based on the units of work, called SWUs, required to enrich the natural uranium.[29] On the other hand, the fabricators toll-process uranium into LEU-DO as part of the total contract agreement to produce fuel-rod assemblies; U.S.-produced LEU-DO or its toll-conversion is generally not sold separately by U.S. uranium producers. USEC now also sells, or has available for sale, natural and low-enriched UF_6; however, most of the LEU-HF available for direct sale is imported by USEC through the Russian HEU Agreement and the matched sales provisions of the Russian Suspension Agreement. Imports of the individual uranium products, including uranium concentrates from Kazakhstan,[30] are sold principally to U.S. electric utilities but also to U.S. producers/processors and U.S. traders. Sales of natural or low-enriched UF_6 products, either produced in the United States or imported, can involve the entire product, such as EUP, or just the conversion or enrichment component; in the latter case the purchaser transfers to the seller the equivalent natural uranium feed component of the product and pays a separate price for the conversion or enrichment component of the product.[31] These latter types of transactions, called de-conversion and de-enrichment, explain how foreign conversion and enrichment services are effectively exported to the United States.

Uranium may also be obtained through swaps and loans, which involve both physical uranium products and conversion and enrichment services. Swaps and loans generally permit greater efficiency in the transfer and consumption of uranium, but they could also be used to facilitate the export of restricted uranium by changing the uranium's country of origin designation through flag swaps.[32] The effect of swaps and loans on the distribution of uranium is difficult to measure as they are reportedly not monitored as

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[28] Annual real GDP in the United States grew continuously during 1992-98. World real GDP also grew during this period, but slowed markedly beginning in 1997 as the economic downturn in Asia also began in 1997; economic turmoil in Russia beginning in August 1998 and in Brazil in early 1999 have contributed to the continued softness in world GDP.

[29] ***. The number of SWUs required to enrich uranium varies by the product and tails assays and the amount of LEU-HF required. Higher product assays and/or lower tails assays require more SWUs.

[30] Some low-enriched uranium was imported from Kazakhstan during 1996-98, but it was likely enriched in Russia. U.S. fabricators reportedly processed the LEU-DO imported from Kazakhstan under the U.S. re-export program during this period. Imports subject to re-export provisions are generally not considered imports for consumption. The country of enrichment usually confers country of origin to the enriched uranium for purposes of antidumping investigations, but Commerce has not ruled on the country of origin of low-enriched uranium stockpiled in Kazakhstan; there is no enrichment plant in Kazakhstan.

[31] Prices of just the conversion or enrichment are negotiated between the buyer and seller; they both likely refer to published price data for these processing services in negotiating a price.

[32] The suspension agreements prohibit swaps and loans of the restricted uranium.

closely as the other uranium transactions.[33]

SUPPLY AND DEMAND CONSIDERATIONS

Both supply and demand are frequently measured by the weight of uranium and the number of SWUs, which reflect the stages in the uranium fuel cycle.[34] The multiple measures for supply and demand are difficult to estimate, especially for future supply and demand. Long supply lead times are required at each stage of the fuel cycle and are accompanied by long-term purchase contracts; large uranium inventories, particularly of natural UF_6, have accumulated over the last few years; and production of LEU-HF blended down from HEU has increased. These factors have complicated efforts to estimate supply and demand, especially as the last two factors have led to disruption of the traditional fuel cycle and market uncertainty on the part of uranium suppliers, particularly the uranium concentrate producers and enrichers, and the purchasing electric utilities. Further complicating estimates of uranium demand is the use of two alternative concepts: nuclear reactor uranium requirements and the volume of uranium purchases. Due to long-term purchase contracts, purchased quantities of uranium can be very different from reactor requirement quantities during a particular period.

The changes in the U.S. uranium industry noted above have disrupted traditional demand and supply relationships along the stages of the nuclear fuel cycle. In the past, there was limited substitution between uranium concentrates and toll-enrichment services and no substitution for the natural conversion and toll-processing of uranium (the latter at the fabrication stage). Today, the availability of significant volumes of natural UF_6 and LEU-HF act as substitutes for uranium concentrates, natural conversion, and enrichment services, and affect the prices, demand, and supply of these latter products/toll-services. The strength of such substitution is not clearly known and may still be developing.

The technology to produce uranium varies among producing countries and by the type of uranium product.[35] Production of uranium concentrates in the United States is based primarily on ISL recovery of uranium, whereas production in Canada and Australia, the major world producers of uranium concentrates, is based primarily on conventional mining (underground and open-pit).[36] Ore deposits in Canada are particularly rich, while deposits in the United States are considered to be of a much lower quality. The methods used to convert uranium concentrates to natural UF_6 generally do not impart a significant advantage to one producer over another; the principal converters are located in Canada, France, Russia, and the United States. Enrichment processes, however, differ significantly. The gaseous diffusion process of

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[33] Swaps and loans are discussed in detail in Part V.

[34] The quantity of uranium concentrates is expressed in pounds of U_3O_8 or kgs/metric tons of U in the U_3O_8, conversion to produce natural UF_6 is frequently expressed in kgs/metric tons of U, and conversion to produce natural UO_2 and low-enriched UO_2 is expressed in metric tons of U of heavy metal (tHM), the weight of uranium in the natural or low-enriched uranium compound. Sometimes, however, a collective measure of all the uranium products is reported in pounds of equivalent U_3O_8 or kgs/metric tons of equivalent U as natural uranium. Enrichment services are expressed in units of SWUs.

[35] World uranium production, even at the uranium concentrates level, involves relatively few firms, but supply of the various products and toll-production services remain competitive. Abundant supplies, comparable uranium quality and specifications worldwide, and generally large-scale operations requiring high output levels have helped ensure competitive markets. Trade restrictions on uranium, however, could easily lead to supplier-dominated markets due to the large-scale supply operations of relatively few producers.

[36] ISL recovery of uranium allows greater flexibility to adjust production levels of uranium concentrates than conventional mining, which is geared to much greater volumes. In addition, the ISL recovery method requires less capital investment and can be installed more quickly.

enriching uranium is used in China, France, and the United States, while the centrifuge process is used in China, Germany, Japan, Russia, the Netherlands, and the United Kingdom. The gaseous diffusion process uses more energy than the centrifuge process, while capital costs of a centrifuge plant are greater than for a gaseous diffusion facility. The gaseous diffusion process allows for larger-scale production that can be changed relatively easily to allow for changing market conditions, but such changes may involve higher unit production costs.[37] On the other hand, high investment costs and relatively low operating costs of a centrifuge plant provide little incentive to operate at less than full capacity. Processes to produce LEU-DO, particularly the ability to handle different low-enriched feed compounds, may favor one fabricator over another;[38] the principal world fabrication facilities are located in Canada, France, Japan, Russia, and the United States.

Production or toll-processing of uranium at each stage of the traditional fuel cycle requires substantial capital investment and use of energy. Uranium producers that enjoy ready access to low-priced electricity have a significant advantage over producers that do not; proximity to utilities, however, does not confer an advantage, as uranium has a high value-to-weight ratio and swaps, loans, and book transfers frequently occur, minimizing the physical movement of uranium.

There are essentially no substitutes for uranium at the reactor stage in the U.S. market, although MOX is used by several electric utilities in Europe and Japan. Processed uranium can substitute for at least some of the product and processing stages in the traditional LEU fuel cycle.[39] This substitution may continue to increase in significance because worldwide inventories of uranium, particularly in the natural UF_6 form, are reportedly large. In addition, re-enriched uranium tails, which are produced in Russia, substitute for natural UF_6 produced via the mining/concentrate and conversion stages in the fuel cycle. Continuing production of LEU-HF blended down from Russian HEU and, to a lesser extent, from U.S. HEU bypasses much of the traditional fuel cycle and could provide a more direct and simpler way for electric utilities to obtain their uranium requirements.[40] Eleven U.S. electric utilities indicated in their questionnaire responses that during 1996-98 they began purchasing directly or increased their direct purchases of natural UF_6 and LEU-HF because these processed products were becoming increasingly available and were priced lower than if they obtained the products through the fuel cycle process.[41] One of these responding utilities, ***.[42]

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[37] ***.

[38] U.S. fabricators assert that they are the most efficient in the world.

[39] Based on total 1998 deliveries of U.S. electric utility purchases of uranium, 17.2 percent were direct purchases of natural UF_6 and 9.3 percent were direct purchases of LEU; most, if not all, of the latter product was likely LEU-HF (*April 1999 Uranium Industry Annual*, EIA, table 13, p. 22). The combined direct purchases of natural UF_6 and LEU of 26.5 percent of total deliveries in 1998 was substantially higher than the 17.4 percent share in 1996 (*April 1996 Uranium Industry Annual*, EIA, table 13, p. 22).

[40] Most enriched uranium purchased by U.S. electric utilities is transacted by paying for the SWU content and transferring the natural feed component. ***.

[41] On the other hand, 24 U.S. electric utilities indicated in their questionnaire responses that they have either not directly purchased processed uranium or not increased their purchases of such products during 1996-98. Most of these utilities noted that they already had contracts in place to buy uranium concentrates and to obtain the conversion, enrichment, and fabrication services.

[42] This purchase agreement would allow the utility to bypass the natural uranium level of the fuel cycle.

U.S. Supply

Based on the available information, U.S. producers in the uranium fuel cycle, except for the converter of natural uranium, have a *** ability to change their supply quantities in response to changes in demand for uranium. This is based largely on excess capacity and significant uranium inventories, particularly natural UF_6. Inventories of natural UF_6 held by DOE and USEC alone reportedly provide for *** of U.S. nuclear reactor uranium requirements. In addition, U.S. electric utilities may sell some of their uranium inventories as deregulation of U.S. electricity production and distribution continues.

U.S. enrichers and fabricators have sufficient total capacity to supply total annual U.S. nuclear reactor requirements at their respective stages in the fuel cycle.[43] In addition, USEC imports LEU-HF under the Russian HEU Agreement and ***, enabling it to be a supplier of EUP as well as enrichment services.[44] The imported LEU-HF reportedly led to *** and likely reduced sales opportunities for U.S. concentrators and the U.S. converter.[45] U.S. electric utility demand for EUP may increase in the future as a result of continuing U.S. deregulation of electricity generation and distribution. Purchases of EUP can bypass the uranium concentrates, conversion, and enrichment stages of the traditional fuel cycle and could provide nuclear power generating companies with greater flexibility in supplying fuel for nuclear reactors and enable them to operate with less inventory.[46]

Domestic uranium production will be discussed below by the four main product stages in the nuclear fuel cycle: uranium concentrates, natural uranium hexafluoride, low-enriched uranium hexafluoride, and low-enriched uranium dioxide.

Domestic Production[47]

U.S. Concentrate Producers

Six firms produced uranium concentrates in the United States during January 1996-March 1999:[48] COGEMA, IMC Global, International Uranium (USA), Power Resources, Rio Algom, and Uranium Resources. IMC Global produced uranium concentrates as a by-product of its phosphoric acid production,

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[43] Total capacity of U.S. concentrate producers equals about *** percent of U.S. reactor demand and total capacity of the U.S. converter equals about *** percent of U.S. reactor demand. These figures are based on capacity for 1998 reported in purchaser questionnaires and U.S. 1998 reactor requirements of 19,008 metric tons U (49.4 million pounds U_3O_8) reported by the Uranium Institute.

[44] USEC imports additional LEU-HF from Russia under provisions of the Russian Suspension Agreement. Because it also has large inventories if natural UF_6, it can also act as a supplier of this product as well.

[45] As noted earlier, U.S. electric utilities have purchased directly the LEU-HF generally by a book transfer of their natural UF_6 as the feed component and paid for the SWU component. This type of transaction displaces not only some current SWU production but also displaces some future U_3O_8 production and conversion as the natural UF_6 was transferred from an electric utility's inventory for use to a trader's inventory for sale. Hence, sales of LEU-HF blended down from HEU also act to increase the supply of the natural feed component.

[46] *EIA, DOE*, "Commercial Nuclear Fuel from U.S. and Russian Surplus Defense Inventories: Materials, Policies, and Market Effects," May 1998, pp. 69-70.

[47] Data and information on U.S. production, capacity, capacity utilization, inventories, and exports of uranium are shown in detail in Part III.

[48] A seventh firm, Kennecott, owns assets in the United States to produce uranium concentrates but did not produce during this period.

while International Uranium (USA) toll-produced uranium concentrates.

Industry capacity--Average annual U.S. capacity to produce uranium concentrates rose steadily during 1996-98 but capacity declined somewhat in January-March 1999,[49] while production fell steadily throughout the entire period. As a result, average capacity utilization fell steadily from 59.8 percent in 1996 to 39.7 percent in 1998; capacity utilization was 44.7 percent during January-March 1999 compared to 47.6 percent during January-March 1998 (table III-1). U.S. producers' expansion of capacity, despite declining production, was likely based on optimistic expectations of future demand and high prices for uranium. Declining uranium concentrate prices since about mid-year 1996 may have led to revisions of expectations about future demand; IMC Global closed its concentrate producing facilities in January of this year, and Uranium Resources is currently in the process of closing its concentrate-producing facilities.

Expansion of capacity to produce uranium concentrates is expensive and typically would take more than 1 year to complete. ***.

Inventory levels--U.S. concentrators generally produce uranium concentrates to meet their sales commitments, such that the bulk of their inventories as reported in Part III are not likely to be available as additional supply.

Export markets--U.S. producers' exports of uranium concentrates averaged 20.8 percent of their total sales during 1996-98 and January-March 1999. U.S. producers reported in their questionnaire responses that ***.[50]

U.S. Converter

ConverDyn, the sole U.S. converter, processes U_3O_8 into natural UF_6 on a toll basis. U.S. utilities typically have their uranium concentrates converted to natural UF_6 by ConverDyn or by Cameco in Canada.

Industry capacity--***.

Expansion of natural uranium conversion capacity is very expensive and would take more than 1 year to complete. ***.

Inventory levels--ConverDyn produces natural UF_6 on a toll basis only, such that its inventories of this product reported in Part III meet its toll-service commitments. As a result, these inventories would not be a source of additional supply.

Export markets--ConverDyn's exports of its toll-converted natural UF_6 averaged *** percent of its total toll-conversion sales quantities of this product during January 1996-March 1999. ConverDyn indicated in its questionnaire responses that ***.

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[49] Domestic uranium production capacity rose from 9.5 million pounds of U_3O_8 in 1996 to 11.1 million pounds of U_3O_8 in 1998, or by 16.8 percent. Capacity then fell somewhat to 2.5 million pounds during Jan.-Mar. 1999 compared to 2.8 million pounds during the comparable period in 1998 (table III-1).

[50] Under U.S. law, U.S.-produced nuclear material remains subject to U.S. jurisdiction even after it has left the customs territory of the United States. Some foreign uranium purchasers perceive this continuing U.S. control as unreasonably intrusive, and will seek to avoid U.S. material (including USEC's SWUs) that is subject to these controls.

U.S. Enricher

USEC is the only U.S. enricher of uranium. USEC became a fully private entity in 1998 and acts as the sole executor and distributor of blended down LEU-HF derived from excess U.S. HEU and from imports under the Russian HEU Agreement;[51] the price and quantity of imported Russian low-enriched uranium are controlled by the HEU and Suspension agreements with the United States. USEC is legally required to conduct business in a manner that is least disruptive to the U.S. uranium market. Although traditionally USEC had produced LEU-HF for electric utilities almost exclusively on a toll basis, it has increasingly also become a supplier of EUP based on the domestic production and imports noted above.

Industry capacity--*** (table III-3).

Expansion of uranium enrichment capacity is very expensive and would take more than 1 year to complete. ***.

Inventory levels--USEC's U.S. inventories of its U.S.-produced LEU-HF, as a ratio of its total SWU sales, ***. Although a majority of these inventories of LEU-HF represent toll-enrichment, ***.

Export markets--USEC's SWU exports of U.S.-produced LEU-HF averaged almost *** percent of its total SWU sales during January 1996-March 1999. USEC indicated in its questionnaire responses that ***.

U.S. Fabricators

Four firms in the United States operate uranium fuel-rod assembly fabrication facilities that include the conversion processing and pelletizing of low-enriched uranium: ABB Combustion Engineering, General Electric, Siemans Power Corp., and Westinghouse Corp. The four fabricators compete in a global market and feel they are least-cost producers. The U.S. suspension agreements and antidumping duties may put them at a competitive disadvantage vis-a-vis their foreign competitors, although fabricators in the EU must contend with EU import quota restrictions on uranium from countries of the former USSR. The fabricators convert the LEU-HF into LEU-DO and pelletize the latter product. In addition, they frequently make small adjustments to the enrichment assay of the uranium to fit their customers' needs. Uranium processing at the fabrication stage represents about *** percent of the total fabrication costs to produce the completed fuel-rod assemblies.

Industry capacity--*** (table III-4).

Expansion of low-enriched uranium processing capacity in connection with fuel-rod assembly production is very expensive and would take more than 1 year to complete. ***.

Inventory levels--U.S. fabricators' process LEU-HF into LEU-DO primarily on a toll basis, such that their inventories of this product reported in Part III would not be a source of additional supply. In converting and processing LEU-HF into LEU-DO and pelletizing this latter compound, U.S. fabricators typically need to adjust the enrichment of the low-enriched feed. As a result, they frequently borrow some feed of one utility that they hold in inventory to adjust the enrichment of another utility's feed that they are

[51] In addition, USEC is the sole importer of Russian LEU-HF imported under the matched sales provisions of the Russian Suspension Agreement.

currently converting and pelletizing. This type of flexibility is prohibited for the uranium subject to the suspension agreements.

Export markets--***.

Imports[52]

Major foreign world producers of uranium at all of the major production and processing stages of the fuel cycle are important suppliers of these products/services to the U.S. market. Although swaps and loans may mask somewhat the full extent of the foreign uranium in the U.S. market, official U.S. import statistics are indicative of foreign uranium used by U.S. electric utilities. Eleven foreign countries supplied uranium concentrates to the U.S. market during January 1996-March 1999; 9 countries supplied natural UF_6 to the United States during this period; 12 supplied LEU-HF; 11 supplied low-enriched uranium oxides, which included LEU-DO; and 10 supplied other natural uranium products. U.S. uranium imports are supplied from current production as well as from inventories. The total quantity of U.S. imports of uranium concentrates generally fell during January 1996-March 1999. On the other hand, total U.S. imports of natural UF_6; LEU-HF; low-enriched uranium oxides, nitrates, and metals; and the category of "other uranium" fluctuated but tended to increase during this period.[53]

Kazakhstan

U.S. imports of uranium from Kazakhstan, also based on official U.S. import statistics, generally declined during January 1996-March 1999; such imports involved uranium concentrates; low-enriched oxides, nitrates, and metals; and the other-uranium products.[54] The quantity of imported Kazakh uranium concentrates accounted for 3.4 percent of total U.S. imports of this product during January 1996-March 1999, while imported Kazakh low-enriched uranium oxides, nitrates, and metals accounted for 52.3 percent of total U.S. imports of these uranium products. U.S. imports of the "other-uranium" category of products from Kazakhstan accounted for 32.4 percent of total U.S. imports of this uranium during January 1996-March 1999.

Kazakh uranium is reportedly sold at a discount on the world market because of import restrictions and bureaucratic requirements associated with the U.S. suspension agreement on uranium from Kazakhstan. The sole uranium producer in Kazakhstan, Kazatomprom, asserted in its foreign producer questionnaire responses that ***. COGEMA, a U.S. uranium producer, agreed that removal of controls on the importation of Kazakh uranium would quickly result in the disappearance of the discount for Kazakh

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[52] The data on uranium imports are shown in detail in table IV-1 and are briefly discussed here. Data on foreign-country production, capacity, capacity utilization, and shipments of uranium are shown in detail in Part VII of the report and are briefly discussed here.

[53] These import trends were based on official U.S. import statistics of Commerce. The other-uranium category includes only natural uranium as natural uranium metal, natural uranium other than in compounds, and natural uranium compounds other than uranium oxide and uranium hexafluoride.

[54] Under terms of the U.S. suspension agreement involving U.S. imports of uranium from Kazakhstan, no imports (for consumption) of Kazakh uranium are allowed if the U.S. market price is below $12.00 per pound of U_3O_8, 1 million pounds of U_3O_8 equivalent are allowed annually if the price were between $12.00 and $13.99 per pound, and greater amounts are allowed as the price exceeds $13.99 per pound. In addition, the suspension agreement allowed Kazakhstan to export uranium temporarily to the United States for processing and re-export to other countries.

uranium.[55]

U.S. imports of the Kazakh low-enriched oxides, nitrates, and metals were reportedly imported under re-export provisions similar to TIB arrangements. In its foreign producer questionnaire responses, Kazatomprom reported that ***. Kazatomprom asserted that ***.

The Kazakh foreign producer questionnaire provided uranium capacity, production, shipment, and inventory data for uranium concentrates; inventory and shipment data for LEU-HF and LEU-DO;[56] and detailed written responses to many of the questions. The reported information suggests that Kazatomprom likely has an ability in the short run (up to one year) to supply the U.S. market with uranium concentrates and other natural uranium products (other than natural UF_6) from unused production capacity. The potential to divert shipments from third-country markets may be constrained by long-term contracts, thereby limiting this uranium as a source of supply to the U.S. market. In addition, production difficulties may also limit the supply responsiveness of the Kazakh natural uranium.[57] Approximately *** pounds U_3O_8 of Kazakh uranium concentrates are reportedly committed under a long-term supply contract of Kazatomprom and under open-end contracts of Nukem for delivery in 1999 and *** pounds of Kazakh uranium concentrates are similarly committed for delivery in 2000. Additional contracts to supply Kazakh uranium concentrates have been negotiated for shipments after 2000.[58]

Kazatomprom likely has a limited ability to supply LEU-HF and LEU-DO from inventory stockpiles for consumption in response to changes in U.S. demand for uranium.[59] Reported poor quality of the majority of the Kazakh LEU and a reported limited ability of fabricators to process the uranium to meet Western specifications accounts for the limited supply responsiveness of this material.[60] Mr. Schillmoller of General Electric testified at the hearing that in 1996 several representatives of the firm inspected the LEU in Kazakhstan and found that less than 10 percent of the material meets western specifications for direct use in western fuel fabrication. Mr. Schillmoller cited 5 specific problems that affected more than 90 percent of the Kazakh low-enriched uranium stockpiles.[61] First, 90 percent of the enriched uranium is high in U^{236},

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[55] COGEMA made this assertion in a letter to the Commission dated, May 11, 1999, which was marked as a public document; the firm requested that the letter be made part of its U.S. producer's questionnaire response.

[56] Kazakhstan has no uranium enrichment or natural conversion facilities but does have a plant that is capable of processing LEU-HF into LEU-DO and then pelletizing the latter product for use in nuclear fuel rods. It does not appear that the plant produces the fuel-rods or assemblies (*NEI-International Uranium Fuel Seminar*, "Integration of the Military and Civilian Nuclear Fuel Cycles in Russia," Sept. 25-28, 1994; and *The McGraw-Hill Companies, Inc.*, "Nuclear Fuel," May 19, 1997).

[57] Nukem reported in its prehearing brief that Kazakhstan was unable to fill about *** pounds U_3O_8 of its quota under the suspension agreement with the United States during 1995-98, reportedly because of production difficulties in Kazakhstan. Nukem also reported that during 1996-98 Kazakhstan has not been able to deliver the full amount of uranium concentrates to Nukem under its purchase agreement with Kazakhstan. In addition, Nukem reports that ***.

[58] Nukem's prehearing brief, exh. 9.

[59] The Kazakh LEU inventories may not meet normal international specifications and may have undergone isotopic contamination. This material may contain remnants of the USSR military program, plus some reprocessed uranium from civil power reactors (*The Uranium Institute Market Report 1998*, "The Global Nuclear Fuel Market: Supply and Demand, 1998-2020, pp. 122-124).

[60] Testimony of Tony Schillmoller, Senior Program Manager for Business Development, General Electric, TR., pp. 162-166, and 192-195. In addition, David Sloan, Senior Trader for Nukem, testified that most U.S. utilities would not touch the Kazakh LEU with a 10-foot pole (TR. p. 234).

[61] The Kazakh prehearing brief asserted that the LEU stockpile totaled *** U, which had an average product

(continued...)

which creates major technical issues that add significant complexity and time to the fuel design and fabrication process. Second, the presence of high levels of U^{236} indicate that tramp isotopes, primarily U^{232} and U^{234}, may be present at levels that create significant health and safety issues during fuel fabrication. Therefore, all of the enriched uranium must be tested for the presence of these tramp isotopes, again with the expenditure of significant time and expense. Third, almost half of the material is in the form of already processed oxides, of which a significant portion is fabrication scrap. This material is not suitable for use in western fuel fabrication without first going through chemical purification. Fourth, the majority of the material is very low in assay. A process consuming years of delay would be required in order to blend this material up to the assays General Electric needs for fuel fabrication. Fifth, the Kazakh LEU is in obsolete Russian containers and must be transferred to standard western cylinders prior to shipment. Suitable containers for shipment of the oxides are in short supply.

Kazakhstan has *** home market use for uranium,[62] but it is planning to build three nuclear reactor plants to produce electricity to take advantage of its abundant reserves of uranium concentrates. The first reactor is expected to be operational in 2005, the second in 2007, and the third in 2009. The Uranium Institute reports, however, that under the most optimistic scenario all three reactors may be operational between 2007 and 2012.[63]

Uranium concentrates

Industry capacity.--Kazakh annual capacity to produce uranium concentrates remained steady at *** pounds U_3O_8 during 1996-98 and was projected to fall to *** pounds during 1999 and 2000. Kazakh production capacity utilization fluctuated between a low of *** percent in 1997 to a high of *** percent in 1998. Capacity utilization is projected to rise to *** percent in 1999 and *** percent in 2000, largely as a result of the projected ***. Kazakhstan reportedly has significant amounts of low-cost readily available reserves of uranium ore, but the ore grades are low. Kazakhstan now uses the ISL technique to recover uranium. It appears though that Kazakhstan's potential to be a major world producer of uranium concentrates may not be realized in the short run. As noted earlier, large capital outlays are required to construct a new ISL mine and processing facilities and it would take about 5 years before production could begin. The attempt by the Canadian company, World Wide Minerals, to revive conventional mining in Kazakhstan ended in failure. Kazakhstan, however, appears to be receptive to joint ventures with Western

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[61] (...continued)
assay of *** percent in the U^{235} isotope and equaled about *** SWUs or *** pounds of U_3O_8 equivalent. In addition, the brief asserted that capacity to process this material was limited, such that only a maximum of *** SWU, or *** U_3O_8 equivalent, could be made available each year during 1999-2001and a maximum of *** SWUs, or *** U_3O_8 equivalent, could be made available each year thereafter until the stockpile was completely processed and sold. (Kazakh prehearing brief, pp. 34-35.) As noted in Nukem's data table 7 (no page number) in its prehearing brief, this level of Kazakh LEU would account for *** percent of USEC's annual production capacity and SWUs inventory during 1999 and 2001 and *** percent of such annual capacity and inventory during 2002-04.

[62] Kazakhstan has one nuclear reactor that uses ***. The reactor supplies 135 MWe and steam for a desalination plant; it has been operating since 1973 and is scheduled to be decommissioned in 2003. Kazakhstan signed an agreement with the United States in Nov. 1997 that covers U.S. assistance in withdrawing this reactor from operation (*American Nuclear Society News*, Jan. 1998 and *ITAR-TASS News Agency*, Mar. 10, 1998).

[63] *The Uranium Institute Market Report 1998*, "The Global Nuclear Fuel Market: Supply and Demand, 1998-2020, p. 50.

companies and is likely to see some rebound in its production volumes within the next few years.[64]

No information was reported regarding the costs and time required to construct additional capacity to produce uranium concentrates in Kazakhstan. Kazatomprom reported that ***.

Inventory levels and export markets.--***.

Low-enriched uranium hexafluoride

Kazakhstan has no uranium enrichment capability. As discussed below, it has substantial inventories of LEU-HF.

Inventory levels and export markets.--Kazatomprom reported inventories of LEU-HF amounting to *** U in 1996 and remaining at this level through 1998 before falling to *** U by the end of March 1999; it projected inventories of *** U at the end of 1999 and *** U at the end of 2000. Shipments to *** reportedly accounted for the decline in LEU-HF inventories. ***.

Low-enriched uranium dioxide

Industry capacity.--Kazakh annual capacity to produce LEU-DO remained steady at *** U during 1996-98 and was projected to stay at this level during 1999-2000. ***.

Inventory levels and export markets.--Kazatomprom reported inventories of LEU-DO amounting to *** U in 1996, which fell to *** U by 1998 and were projected to remain at the latter level in 1999 and 2000. Kazatomprom reported shipments of LEU-DO only during 1996-97, when it reportedly ***. The Kazakh inventory of LEU-DO reportedly was enriched in Russia, but left in Kazakhstan when the breakup of the USSR occurred; Kazakhstan is claiming that this uranium is now of Kazakh origin.

Nonsubject Imports[65]

Uranium concentrates.--The five largest sources of nonsubject imports of uranium concentrates to the U.S. market during January 1996-March 1999, in descending order of importance by quantity, were Canada, Australia, South Africa, Namibia, and Russia. Together these countries accounted for almost 95 percent of all U.S. imports of nonsubject uranium concentrates and about 92 percent of all U.S. uranium concentrate imports during this period. Canada and Australia were by far the largest U.S. import sources of uranium concentrates during January 1996-March 1999, accounting for 39.6 percent and 27.3 percent, respectively, of total U.S. uranium concentrate imports during this period; South Africa accounted for 11.0 percent, Namibia for 7.3 percent, and Russia for 6.6 percent.[66]

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[64] *The Uranium Institute Market Report 1998*, "The Global Nuclear Fuel Market: Supply and Demand, 1998-2020," p. 95.

[65] The following discussion of imports is accompanied by a short discussion of world production capacity. This latter information is based primarily on a recent study by The Uranium Institute, a uranium trade association located in the United Kingdom (*The Uranium Institute Market Report 1998*, "The Global Nuclear Fuel Market: Supply and Demand, 1998-2020").

[66] In addition, two countries of the former USSR (other than Kazakhstan and Russia), Uzbekistan and Tajikistan, supplied uranium concentrates to the U.S. market during this period, accounting for 2.9 percent and 0.2 percent,

(continued...)

Worldwide uranium reserves (in the ground) amount to approximately 3.4 million metric tons, with about 52 percent of these classified as class 1 reserves (well-proven reserves) and 75 percent of these latter reserves in the low-cost category (recovery costs estimated to be under $40/kg U of natural uranium). These low-cost, well-proven reserves represent over 20 years of world reactor requirements at the current rate of consumption. Australia has the world's most extensive uranium reserves, amounting to 1.2 million metric tons or 35 percent of total world uranium reserves.[67] Total uranium reserves of the former USSR, excluding Ukraine,[68] account for nearly 30 percent of world reserves. Canadian uranium reserves are also extensive and account for about 13 percent of world reserves, but, because a substantial portion of the Canadian uranium reserves are high grade, they have about 20 percent of the world's low-cost reserves. The United States currently has uranium reserves that account for about 4.3 percent of the world total.

Natural UF_6.--The largest source of nonsubject U.S. imports of natural UF_6 during January 1996-March 1999 was overwhelmingly Canada, accounting for 97.2 percent of the total quantity of U.S. imports of this product during this period. Uzbekistan, Russia, South Africa, and Germany round out the top 5 foreign sources of natural UF_6; collectively, these latter 4 countries accounted for 2.4 percent of total U.S. imports.

There are 63,010 metric tons U (natural uranium) of annual world conversion capacity for processing uranium concentrates into natural UF_6 and natural UO_2; this capacity slightly exceeds current world annual reactor requirements of about 62,000 metric tons U. Russia, France, the United States, and Canada account for almost 87 percent of this capacity. Other than Russia, no other country of the former USSR is believed to have natural UF_6 conversion facilities.

Low-enriched UF_6.--The five largest sources of nonsubject U.S. imports of LEU-HF during January 1996-March 1999, in descending order of importance by quantity, were Russia, France, Germany, the Netherlands, and the United Kingdom. Together these countries accounted for 92 percent of all U.S. imports of LEU-HF during this period. Russia and France were by far the largest import sources of LEU-HF during January 1996-March 1999, accounting for 36.7 percent and 34.1 percent, respectively, of total U.S. LEU-HF imports during this period; Germany accounted for 8.1 percent, the Netherlands for 7.3 percent, and the United Kingdom for 5.8 percent.[69]

There are 54.9 million SWUs of annual world capacity for processing natural UF_6 into LEU-HF; this capacity exceeds estimated annual world enrichment requirements of 35 to 36 million SWU. Russia, the United States, and France account for about 90 percent of total world enrichment capacity. Other than Russia, no other country from the former USSR is believed to have uranium enrichment facilities.

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[66] (...continued)
respectively, of all U.S. imports of uranium concentrates during this period.

[67] Of Australia's total uranium reserves, 28 percent are called class 1 reserves and all are considered low-cost reserves totaling about 484,000 metric tons of kg U in the natural uranium (*The Uranium Institute Market Report 1998*, "The Global Nuclear Fuel Market: Supply and Demand, 1998-2020," p. 87).

[68] Although Ukraine's uranium deposits are believed to be extensive, they are too deep and low grade to qualify for reserve status.

[69] In addition, two countries of the former USSR (other than Russia), Uzbekistan and Ukraine, supplied LEU-HF to the U.S. market during this period, accounting for 4.0 percent and 0.3 percent, respectively, of total U.S. imports of LEU-HF during this period.

Low-enriched uranium oxides.--The five largest sources of nonsubject U.S. imports of the low-enriched uranium oxides, including importantly LEU-DO, during January 1996-March 1999, in descending order of importance by quantity, were France, Russia, Sweden, Uzbekistan, and Germany. Together these countries accounted for 87.2 percent of nonsubject U.S. imports of this uranium during this period and 41.6 percent of total U.S. imports of this uranium. France accounted for 11.7 percent of total U.S. imports of this uranium during January 1996-March 1999, Russia accounted for 10.5 percent, Sweden accounted for 10.3 percent, Uzbekistan for 4.8 percent, and Germany for 4.4 percent.[70]

There are an estimated 17,899 metric tons U of low-enriched and natural uranium (expressed in tons of heavy metal or tHM) of annual world conversion capacity for producing low-enriched and natural uranium oxides; this capability exceeds current annual world reactor requirements by approximately 40 percent. Russia, France, the United States, and Canada account for almost 56 percent of this capacity. Other than Russia and Kazakhstan, no other country from the former USSR is believed to have uranium conversion facilities.

Other natural uranium products.--The five largest sources of nonsubject U.S. imports of the other natural uranium products during January 1996-March 1999, in descending order of importance by quantity, were South Africa, Russia, Uzbekistan, Canada, and Australia. Together these countries accounted for 99.5 percent of nonsubject U.S. imports of this uranium during this period and 67.3 percent of total U.S. imports of this uranium. South Africa accounted for 21.1 percent of total U.S. imports of this uranium during January 1996-March 1999, Russia accounted for 16.1 percent, Uzbekistan accounted for 11.4 percent, Canada for 11.4 percent, and Australia for 7.4 percent.[71]

The world supply capability of these other natural uranium products is similar to that discussed for uranium concentrates.

U.S. Demand

The uranium fuel cycle indicates that four major elements of U.S. electric-utility demand are involved in obtaining uranium for nuclear reactors: the amount of uranium concentrates, conversion services to produce natural UF_6, enrichment services to produce LEU-HF, and conversion services to produce LEU-DO. The nature of this demand may be changing, however, as U.S. electric utilities are increasingly able to bypass the fuel cycle by purchasing directly the processed products, especially natural UF_6 and LEU-HF. This change, in turn, could lead to shorter lead times and allow electric utilities to reduce their long-term purchases of uranium in favor of short-term purchase contracts.

U.S. electric utilities have purchased a majority of the natural uranium and processing required for the final uranium product used in fuel-rod reloads largely through long-term contracts, i.e., three or more years prior to use of the purchased product/service. Reload cycles for U.S. utilities are typically 18 and 24 months. Each reload typically refuels about one-third of the total number of a utility's fuel cells and takes 1 to 2 months to complete. During this period the entire plant is shut down and the utility usually purchases electricity to supply its customers.[72]

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[70] Other than Kazakhstan, as the largest supplier to the United States, and Russia and Uzbekistan, no other countries of the former USSR exported low-enriched uranium oxides to the United States during this period.

[71] Other than Kazakhstan, as the largest supplier to the United States, and Russia and Uzbekistan, no other country of the former USSR exported the other natural uranium products to the United States during this period.

[72] Higher operating levels and/or longer reload cycles require more uranium at higher levels of enrichment.

(continued...)

Annual reload requirements, expressed in the volume of uranium and in the number of SWU required, appear to be widely used measures of uranium demand. Numerous trade reports forecast annual reload requirements for individual countries and for the world based on the quantity of uranium and the number of SWUs required. In addition, the EIA reports U.S. uranium purchases (in pounds of U_3O_8 equivalents) in its annual reports of the U.S. uranium industry.[73] Purchase contracts for uranium concentrates purchases are reported by EIA and show a declining trend from 57.4 million pounds U_3O_8 in 1996 to 27.1 million pounds U_3O_8 in1998.[74]

U.S. nuclear reactor requirements in metric tons of natural uranium and in uranium enrichment SWUs during 1996-97 and estimates/forecasts for 1998-2001 are shown in the following tabulation.[75] The Uranium Institute provided three estimate/forecast scenarios, low, middle (reference), and high. The forecasts for 1998-2001 shown in the tabulation are based on its reference scenario.[76]

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[72] (...continued)
Although *** percent or more of reload costs are accounted for by the costs of uranium and fabrication services, U.S. electric utilities reported in their questionnaire responses that energy requirements, core design, plant operation and maintenance, and safety are the most important considerations in the length of the fuel cycle. Five utilities noted, however, that lower fuel costs make the longer fuel cycles more beneficial.

[73] The quantity of uranium and toll-processing purchased annually and typically negotiated in the form of long-term contracts, but also including some spot contracts, also represents uranium demand. This measure of demand is principally for reload requirements in the future and, therefore, is based on perceptions, in the current period, of distant future demand and supply conditions. Because of different contract lengths, such demand is a mix of several future time periods and this mix can change from contract year to contract year; such a change in mix could by itself lead to apparent changes in demand even when underlying perceptions of future demand remain unchanged. In addition, it is not clear when or where long-term contract purchases of uranium/processing would actually be consumed; electric utilities could choose to increase their inventories when deliveries occur and purchase their requirements in the spot market, they could sell the contracted uranium/processing to draw down their inventories, and/or they could swap or loan the contracted uranium/processing. Due to the uncertainties resulting from this disconnect between the period of purchase and the period of actual consumption, purchases represent a more ambiguous basis to measure demand than reactor requirements.

[74] These figures represent contract purchases negotiated in the specified year for deliveries in subsequent years. Purchases in 1996 were for deliveries up to 9 years in the future, while purchases in 1998 were for deliveries up to 7 years in the future.

[75] The link between uranium requirements and enrichment requirements is not one-to-one. Although most factors affecting uranium demand and enrichment work in the same direction, as indicated earlier, tails assays work in the opposite direction in terms of the impact on demand for uranium and enrichment. As a result, sometimes small changes in uranium requirements in one direction will be associated with changes in enrichment requirements in the opposite direction.

[76] The reference scenario is based on the following 4 assumptions: (1) Slight improvement in the relative economics of nuclear power generation compared to alternative power generation such as coal and natural gas; (2) concerns regarding global warming fail to pass enough of the external costs of fossil-fuel based electricity generation to the prices of this electricity to achieve a major shift in the mix of energy sources; (3) gradual restructuring and liberalization of electricity sectors continues; and (4) public wariness toward nuclear projects continues.

II-17

Year	Metric tons of U in natural uranium	SWU (000's)
1996	17,500	10,400
1997	18,750	10,300
1998	19,008	10,933
1999	18,864	10,996
2000	18,739	10,859
2001	18,565	10,693
Source: *The Uranium Institute Market Report 1998*, "The Global Nuclear fuel Market: Supply and Demand, 1998-2020," pp. 75-76, 168 and 172.		

U.S. electric utilities' historical deliveries of uranium feed for enrichment by delivery year, 1996-98, and U.S. electric utilities' anticipated uranium market requirements by delivery year, 1999-2000, are shown in the following tabulation (the estimates for 1999-2001 are as of December 31, 1998):

Year	Thousands of pounds U_3O_8 equivalent	Year	Thousands of pounds U_3O_8 equivalent			
			Uranium under contracts	Unfilled market requirements	Anticipated total market requirements	Enrichment feed deliveries
1996	49,079	1999	43,003	863	43,866	46,033
1997	40,302	2000	42,233	7,111	49,344	52,976
1998	40,630	2001	29,817	15,922	45,739	40,764
Source: *Uranium Industry Annual 1998*, EIA, DOE, Apr. 1999, tables 21and 23, pp. 26-27.						

The utilities' deliveries of uranium feed shown in this tabulation are for U.S. and foreign natural uranium sent to the enricher in the United States and to foreign enrichers. The enrichment may satisfy reload requirements in the year shown and/or the following year. The quantity of uranium under contract, estimated for 1999-2001, includes the minimum required under the contracts plus optional deliveries specified in the contracts. Unfilled market requirements represent uranium estimated by EIA that will be purchased in the future.[77] Anticipated total market requirements are the sum of the first two figures. The

[77] Estimates of unfilled requirements and enrichment feed deliveries that are more than 2 or 3 years into the future are often subject to substantial revisions (telephone conversation with Doug Bonnar of EIA on June 10, 1999).

quantity of enrichment feed deliveries includes the anticipated total market requirements plus the utilities' estimated inventory adjustments (draw downs and build ups).

The derived nature of demand for uranium indicates that the level of U.S. demand for uranium depends on the level of U.S. demand for electricity, the number of operating U.S. nuclear power plants fueled by uranium, and the capacity utilization (load factor) of these nuclear power plants.[78] In addition, the price sensitivity of U.S. uranium demand depends on domestic demand for nuclear power plants producing electricity, as well as the availability of substitutes for uranium and the cost share of uranium in the total costs to produce electricity.

As indicated earlier, demand for electricity is affected by the rate of economic growth and by population changes. The U.S. economy has experienced a sustained period of growth since about midyear 1991, and it is expected to grow by 3.5 percent in 1999.[79] Electricity demand in the OECD countries is expected to grow at an average annual rate of 2.0 percent to 2.6 percent during the current period through 2005.[80]

The number of U.S. operating nuclear power plants and their level of electricity output are affected by a number of factors, including competition with other types of power plants, public concern for safety and political concern regarding nuclear proliferation, and the age and physical condition of the existing nuclear power plants. In addition, ongoing U.S. deregulation of electricity generation and distribution will continue to affect the makeup of U.S. power generation.

U.S. nuclear power plants compete principally with coal-fueled power plants, but also importantly with hydroelectric and natural gas power plants.[81] Nuclear-fuel plants use a much smaller volume of fuel compared to the other types of power plants. This advantage allows stockpiling of uranium to meet several years of fuel requirements leading to energy independence and security of supply; nuclear refueling programs tend to be less exposed to large swings in prices, supply disruptions, and currency fluctuations. In addition, operations of nuclear power plants do not emit pollutants like the fossil-fuel power plants. On the other hand, nuclear power plants involve complex engineering of safety systems and long construction lead times which have resulted in high capital costs compared to the other types of power plants.[82] In addition, nuclear power plants must dispose of highly radioactive spent fuel and the tails waste (a concentrated form of uranium). Debate on a disposal solution for these products has continued for years, with public safety interest groups skeptical of proposed solutions. Increased use of MOX in Europe and Japan may provide an alternative to storage proposals of the spent nuclear fuel and tails that have been resisted so far by the

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[78] Downtime for fuel-rod reloads and unexpected breakdowns in equipment lower the load factor of a nuclear power plant for a given level of electricity demand.

[79] *1999 Blue Chip Economic Indicators*, Apr. 10, 1999.

[80] This is lower than the average annual growth rate of 7.6 percent in the 1960's, 4.4 percent in the 1970's, and 2.8 percent in the 1980's. The declining growth rate of electricity consumption in developed countries reflects the relative increase in the services sector of developed economies.

[81] During 1996, about 56 percent of the electricity produced in the United States was generated by coal-fueled power plants, 22 percent was by uranium-fueled nuclear power plants, 11 percent by hydroelectric plants (water as fuel), 9 percent by natural-gas fueled power plants, and 2 percent by oil-fueled power plants. In 1997, nuclear power plants accounted for an estimated 20.1 percent of total electricity produced in the United States. (*The Uranium Institute Market Report 1998*, "The Global Nuclear Fuel Market: Supply and Demand, 1998-2020," p. 27).

[82] This disadvantage may be reduced in the future as new nuclear power plant designs require lower capital costs and shorter construction lead times (*The Uranium Institute Market Report 1998*, "The Global Nuclear Fuel Market: Supply and Demand, 1998-2020," p. 39).

general public. USEC reported in its questionnaire response that ***.[83] Another disadvantage of nuclear fuel power plants is the concern for nuclear proliferation. This has resulted in close worldwide monitoring and licensing of the production, storage, use, and disposal of uranium; these measures have resulted in higher administrative costs to use uranium compared to fossil fuels.

The aging U.S. nuclear power plants, with some approaching their operating lifetime of 40 years,[84] may be subject to excessive downtime for maintenance that will act to lower operating capabilities and raise operating costs.[85] Load capacities of U.S. nuclear power plants, which generally improved during 1990-95, declined in 1996 and 1997, to 70.9 percent of full capacity, or almost 5 percent below the world average.[86] Commonwealth Edison closed two nuclear power plants in 1998 prior to expiration of their 40-year operating licenses, reportedly because the plants were uneconomic. Ongoing U.S. deregulation of the electricity sector is creating more competition in the production and distribution of electricity. As part of this change, power plants, including nuclear power plants, are being divested from electricity distribution functions. The restructuring of electricity markets will likely lower selling prices of electricity, thereby affecting the investment climate for new power plants, including nuclear power plants.[87]

Based on the above factors, the outlook over the next few years for nuclear power plants in the United States is mixed; some plants are likely to close due principally to restructuring and others are likely to improve their performance and become cost-competitive generators of electricity.[88] Whether total electricity output of U.S. nuclear power plants changes will depend on whether any increase in load factors will offset the decline in the number of operating plants.

There are effectively no substitutes for the final uranium product used in U.S. nuclear power plants. As indicated earlier, MOX is an alternative nuclear fuel, which uses some uranium, in some foreign power plants. Although MOX may be under consideration for use by U.S. nuclear power plants, there is no schedule for introduction and it is not clear how much investment may be required to alter U.S. nuclear

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[83] In addition, Russia is currently re-enriching uranium tails for use as an input into the process of blending down HEU to LEU-HF. Russia is also reportedly enriching tails for ***, presumably for use as a substitute for natural UF_6 obtained via the fuel cycle.

[84] U.S. regulatory agencies have developed procedures for nuclear power plants to qualify for extensions of their operating licences beyond the 40-year period. Although several U.S. electric utilities have indicated that they will seek extensions, it is too early to tell how many petitioning nuclear power plants will be able to satisfy extension requirements.

[85] The United States has the largest number of nuclear power plants of any country and accounts for about 28 percent of world annual operating capacity, or 96,831 megawatts of electricity. The United States has no new nuclear power plants under construction. (*The Uranium Institute Market Report 1998*, "The Global Nuclear Fuel Market: Supply and Demand, 1998-2020," p. 33).

[86] The operating load factor of U.S. nuclear power plants depends on the level of electricity demand, on the relative price of the nuclear-generated electricity versus electricity prices of fossil-fuel and hydroelectric plants, and the amount of downtime. Longer fuel-rod reload cycles and refurbishment of aged nuclear power plants will lead to less downtime.

[87] The high capital costs and relatively long construction periods of nuclear power plants make new investments in these plants less attractive than some lower cost non-nuclear power plants, such as the combined cycle gas-fired plant. This latter type of plant is providing most of the new electrical generating capacity in liberalized electricity markets (*The Uranium Institute Market Report 1998*, "The Global Nuclear Fuel Market: Supply and Demand, 1998-2020," p. 40).

[88] Nuclear power plants in good condition and with their investment costs already sunk should be in a good position to produce electricity cheaply, as long as they have continued access to low fuel costs.

reactors to permit the use of this alternative nuclear fuel.[89] Excess inventories of natural UF_6 and availability of EUP act as substitutes for the mining/production of uranium concentrates and natural UF_6 conversion services. Large sources of EUP in the U.S. market are the imports of LEU-HF from blended-down HEU that are controlled by the Russian HEU Agreement and U.S. imports of LEU-HF from Russia under the matched sales provisions. Partial bypass of the nuclear fuel cycle also occurs due to some re-enrichment of uranium tails by Russia.

The cost of uranium as a share of total costs to produce electricity in nuclear power plants was reported to be *** percent of total costs for each reload cycle by ***, the only electric utility reporting such cost data in its purchaser questionnaire response. In light of the large capital costs, the cost share of uranium would be more significant after the capital costs have been fully depreciated than during the period of depreciation.

SUBSTITUTABILITY ISSUES

U.S.-produced uranium and imported uranium are generally physically interchangeable in meeting product requirements of U.S. nuclear power plants.[90] The only exception may be the LEU stockpiled in Kazakhstan, which is reported to be of poor quality and not usable in Western reactors without substantial cleaning and processing. In addition, U.S. imports of uranium from most countries of the former USSR reportedly are perceived to be less desirable because of the administrative burdens and swap/loan prohibitions of the suspension agreements.[91] In addition, uranium imports from the former USSR subject to suspension agreements are likely sold in the spot market; the uncertainty about when and how much would be allowed into the United States makes it nearly impossible to contract for uranium from the former USSR on a long-term basis. As noted earlier, 80 percent or more of the uranium and uranium processing purchased by U.S. electric utilities is estimated to be on a long-term contract basis. Foreign uranium and uranium services from the former USSR, however, are frequently purchased by U.S. utilities on both spot and long-term contract bases.[92] As noted earlier, worldwide regulation and monitoring of uranium

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[89] Some U.S. nuclear reactors could use MOX without any engineering changes to the reactors, whereas others would have to alter their reactors, such as in the design of the fuel-rod assembly ***.

[90] In the nuclear fuel cycle, U.S. electric utilities purchase uranium under contracts specifying that, as the uranium passes through successive stages of the fuel cycle, the producers and processors must correct any deficiencies in the quantity, assay, or purity of the uranium that they produced or processed.

[91] ***. Other purchasers reported that swaps of uranium take the form of location swaps, country of origin swaps, and deconversion swaps and, according to various responding utilities, these transactions facilitate processing, reduce fuel costs, provide flexibility to the end user to control fuel costs, and make the market more efficient. On the other hand, loans help match excess uranium of some firms with shortfalls in uranium of other firms. The responding utilities indicated that the exact amount of uranium feed required for enrichment and LEU-DO conversion is difficult to predict such that sometimes the enricher and more frequently the fabricator temporarily borrow uranium feed of one firm to make up a shortfall in feed from another firm in producing LEU-HF and LEU-DO. Such loans reportedly increase the efficiency of production and reduce fuel costs to the electric utilities.

[92] Toll-processing of uranium by foreign companies is purchased by U.S. utilities either directly or indirectly. In a direct purchase, U.S. electric utilities contract for the foreign conversion, enrichment, or fabrication and the feed product owned by U.S. utilities is physically processed in the foreign country and finally shipped to the United States. In an indirect purchase, U.S. utilities import or purchase the imported foreign-processed uranium, pay for the conversion, enrichment, or fabrication service component and transfer title of the utilities' upstream uranium

(continued...)

production, distribution, inventories, and waste/spent-fuel disposal have led to a world market where spot and long-term contract price indicators for uranium and the toll-processing services are published, usually on a monthly basis and typically on a restricted and unrestricted market basis. Further evidence of the substitutability of uranium and uranium processing unrestricted by import programs is the reportedly frequent, but largely untracked, use of swaps and loans. Such activity is usually indicative of a product that has fairly homogeneous physical characteristics and is traded competitively and relatively freely.

Factors Affecting Purchasing Decisions

Purchase Factors

Thirty-two U.S. electric utilities operating nuclear power plants responded to a request in the purchaser questionnaire to rank 14 purchase factors shown in table II-1 as very important (VI), somewhat important (SI), and not important (NI). A majority of the electric utilities responded for all countries and all uranium products/processing-services combined, while a few reported for individual countries of origin and or individual uranium products/processing services. The latter responses were similar to the combined responses such that the presentation and discussion in the report aggregates all responses. The total number of responses is shown separately for each purchase factor.[93] In descending order, lowest price, availability, reliability of supply,[94] discounts offered, and product quality were the most important factors. Packaging, product range, transportation costs, and transportation network were comparably ranked as the least important factors. Lowest price was ranked the highest in importance by the purchasing U.S. electric utilities; this likely reflects intense competition among suppliers worldwide, as well as the growing availability of natural UF_6 and EUP as finished products that bypass a portion of the fuel cycle and provide substitute products in addition to alternative supply sources.[95] Product quality was ranked only fifth in importance and likely reflects the generally close comparability in product characteristics and processing facilities, which, in turn, likely result at least partially from the close national and international tracking of uranium production, use, and inventory.

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[92] (...continued)
product to the account of the foreign processor; this latter transfer accounts for the feed component of the imported uranium product.

[93] Every responding electric utility did not necessarily report for every purchase factor listed; on the other hand, some utilities responded for several separate countries and/or products or processing services. As a result, the total responses for each category do not necessarily correspond to the number of firms reporting.

[94] Questionnaire responses of U.S. electric utilities indicated that the identity of the producers are generally known for long-term contracts for uranium and uranium services, unless the contract is with a well known trader or broker. This information is one way in which utilities try to assure supply reliability; production experience, delivery record, and financial viability were cited most frequently as the factors used to evaluate a potential supplier.

[95] On the other hand, 8 U.S. electric utilities reported in their questionnaire responses that the lowest priced bidder does not always get the sale and at times they have contracted with suppliers who are not the lowest priced. Most frequently mentioned reasons for doing this were concerns about financial stability, supplier reliability, inability to meet the requested delivery date, inability to meet a minimum delivery quantity, payment terms, and quantity flexibilities. In addition, ***.

Table II-1
Ranking of purchase factors by U.S. electric utilities operating nuclear power plants

Ranking of purchase factors			
Purchase factors	VI	SI	NI
Availability	32	7	0
Delivery terms	13	16	0
Delivery time	18	22	0
Discounts offered	25	10	4
Lowest price	38	1	0
Minimum quantity requirements	8	23	9
Packaging	1	9	26
Product consistency	16	14	7
Product quality	24	10	5
Product range	2	5	25
Reliable supply	31	7	0
Technical support	4	26	19
Transportation network	3	10	24
U.S. freight costs	4	6	25
Source: Compiled from data submitted in response to Commission questionnaires.			

Comparison of the U.S.-Produced and Subject Imported Uranium

U.S.-produced and subject imported uranium are both purchased by U.S. electric utilities for their nuclear generating plants. Purchaser questionnaire responses indicated that 16 responding electric utilities purchased all of their natural uranium on an open-country basis and 17 utilities purchased all of their enriched uranium on an open-country basis,[96] both subject to the uranium being legally acceptable in the U.S. market.[97] However, 2 electric utilities indicated that *** and 14 other electric utilities specified country of origin for at least a portion of their uranium purchases. Two of the responding utilities indicated that ***.

[96] Open country essentially means that the purchaser will accept uranium from any country; generally implicit in the open-country designation is that the uranium is legally acceptable.

[97] The uranium from the former USSR countries is reportedly sold at a discount to compensate for additional administrative costs associated with the suspension agreements and the Russian HEU Agreement. Some U.S. utilities may also be reluctant to purchase this foreign uranium because of restrictions on its availability for swaps or loans.

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Although most movements of uranium are tracked by country of origin and ownership title with meticulous record-keeping and accountability to U.S. and international monitoring agencies, the product is physically commingled across country of origin and ownership at the various processing stages due to its highly fungible nature. As a result, U.S. electric utilities cannot guarantee that their uranium inventories are physically those of the recorded country of origin.

Purchaser Sourcing Patterns

The purchaser questionnaires asked U.S. electric utilities that operate nuclear power plants to use the 14 purchase factors discussed earlier to compare U.S.-produced uranium products and processing services with those imported from Kazakhstan, indicating for each factor whether the domestic product/processing service was superior, comparable, or inferior to the product/processing service imported from the subject country. Six U.S. electric utilities provided comparisons between U.S. and imported Kazakh uranium, but only for uranium concentrates. The responses indicated that the U.S. and imported Kazakh uranium concentrates were generally comparable across all the purchase factors except for delivery, where three of the six firms indicated that the Kazakh uranium was inferior to the U.S. uranium.[98]

Twenty-nine U.S. electric utilities responded to questions in the purchaser questionnaire regarding the effect of terminating the suspension agreement with Kazakhstan on their firm and on the U.S. uranium market. The overwhelming response was that termination would have no effect/insignificant effect/negligible effect on the firms and on the U.S. market. Several firms cited most frequently the small supply of Kazakh uranium compared to large supplies from Australia, Canada, and Africa; existence of large uranium inventories at DOE and USEC; and the increase in uranium supplies to the U.S. market from the Russian HEU Agreement as the major factors affecting the U.S. uranium market.

In addition to comparisons with Kazakhstan, U.S. electric utilities reported various comparisons including all products and all countries, specific products and all countries, all products and specific countries, and specific products and specific countries. In all such comparisons, the uranium products and processing services were generally ranked as comparable across countries of origin.

ELASTICITY ESTIMATES

This section discusses the elasticity estimates used in the COMPAS analysis.

U.S. Supply Elasticity

The domestic supply elasticity for uranium measures the sensitivity of quantity supplied by U.S. producers to a change in the U.S. market price of uranium. The elasticity of domestic supply depends on several factors including U.S. producers' level of excess capacity, the ease with which U.S. producers can alter productive capacity, the existence of inventories, and the availability of alternate markets for U.S.-produced uranium.[99] Analysis of these factors indicates that, overall, U.S. producers have significant flexibility to alter their supply of uranium concentrates, and provision of enrichment and fabrication services. Although the U.S. converter producing natural UF_6 has ***, large inventories of natural UF_6 held

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[98] One of the responding utilities, ***.

[99] Domestic supply response is assumed to be symmetrical for both an increase and a decrease in demand for the domestic product. Therefore, factors opposite to those resulting in increased quantity supplied to the U.S. market result in decreased quantity supplied to the same extent.

principally by USEC and DOE suggest that significant flexibility exists for U.S. producers to supply this latter product. As a result, the domestic supply elasticity is likely to be in the range of 5 to 10 for uranium concentrates, natural UF_6, enrichment services,[100] and fabrication services, but virtually zero for conversion services to produce natural UF_6.

Both the petitioners and respondents commented on the Commission's supply elasticity estimates that were suggested in the prehearing report. The petitioners indicated that the lower end of the suggested supply range was appropriate, based primarily on comparing marginal costs of the major uranium concentrate production centers world-wide.[101] The respondents applied the staff's suggested domestic supply elasticity range in their calculations, aggregating it across the entire fuel cycle to obtain a consolidated supply elasticity range of 3.75 to 7.5. Like the petitioners, the respondent also used a fair-import elasticity equal to infinity. The respondents erroneously attributed their supply elasticity for Kazakhstan of 10 to 20 to the Commission staff, which made no separate estimate of Kazakh supply responsiveness. Any expansion of shipments of uranium from Kazakhstan to the United States appears very limited, possibly no more than a total of 2 million pounds U_3O_8 equivalent. As a result, the overall Kazakh supply elasticity may more appropriately range from 2 to 3.

U.S. Demand Elasticity

The U.S. price elasticity of demand for uranium measures the sensitivity of the overall quantity demanded of this commodity to changes in its U.S. market price of uranium. The price elasticity depends on the cost share of uranium in the production of electricity, the price elasticity of this downstream product, and the substitutability of other inputs for uranium in the downstream products. Based on available information, the demand elasticity for uranium is likely to be in the range of -0.5 to -1.5 for the natural uranium products, LEU-HF, and natural conversion and enrichment services, but demand for uranium in its final product form, LEU-DO, and for the fabrication services to process and pelletize the LEU is estimated to be highly inelastic, in the range of -0.1 to -0.3.[102] The demand elasticity for the individual products and services was reduced from that suggested in the prehearing report in recognition that to date most of the EUP sales involved a transfer of natural UF_6 for the feed component and a payment for the enrichment component. Some electric utilities may prefer this type of transaction to outright payment for the entire EUP because it enables the purchaser the flexibility to substitute between natural uranium and SWU, depending on changes in their relative prices. The availability of the natural UF_6, however, will likely represent a by-pass of some future uranium concentrates and natural conversion.

In discussions in their prehearing briefs, both the petitioners and respondents agreed with the staff's demand elasticity estimates suggested in the prehearing report.

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[100] USEC's excess capacity of enrichment services and its large holdings of natural UF_6 also allow the firm significant flexibility to supply LEU-HF. This flexibility should be viewed as an alternative to supply flexibility already discussed for natural UF_6 and enrichment services to avoid double counting.

[101] In its COMPAS estimation of the effects of Kazakh uranium imports, the petitioner set the fair-import supply elasticity equal to infinity. Given the large uranium production capacity and large inventories in those countries where uranium is fairly produced and traded, this estimate seems appropriate.

[102] In the short run, utilities could delay purchases of the final uranium product by extending their reload cycle; this could by done by operating at a lower output level and buying electricity to meet their sales contracts.

Substitution Elasticity[103]

The elasticity of substitution largely depends upon the degree to which there is an overlap of competition between U.S.-produced and imported uranium and the degree of product differentiation. Product differentiation, in turn, depends on such factors as physical characteristics (e.g., grades and quality) and conditions of sale (e.g., delivery lead times, reliability of supply, product service, import restrictions, etc.). Based on available information discussed earlier, the elasticity of substitution between domestic uranium and the imported uranium from Kazakhstan is likely to range from 4 to 6 for uranium concentrates, and 1 to 3 for LEU-HF and LEU-DO.[104] These estimates are based on unfettered access to the U.S. market and for sales made on a similar basis; the suspension agreement and/or antidumping duty orders could reduce significantly these estimates. Producers, importers, and purchasers indicated that long-term contract prices, both market-related and fixed (the latter with or without an escalator),[105] and spot purchase prices are typically negotiated and based on a number of factors, including consideration of various published spot prices at the time of negotiation. The petitioners and respondents disagree on the strength of the relationship between spot prices and long-term contract prices.[106] It is likely that market-related long-term contract prices are affected by spot prices at the time of delivery and to a lesser extent by the spot prices at the time the contract was negotiated.[107] Fixed-price contracts may also be affected by spot prices at the time of contract negotiations, but not spot prices at the time of delivery.[108] To account for the relationships between spot prices and long-term contract prices (both at the time long-term contracts are negotiated and at the time of delivery (the latter only for contracts with market-related price provisions), the staff suggests that an elasticity of substitution between Kazakh and U.S. uranium concentrates be reduced by half, for an adjusted range of 2 to 3 for uranium concentrates and 0.5 to 1.5 for LEU-HF and LEU-DO, when comparing the impact of Kazakh spot prices in the current period on U.S. producers' long-term contract prices negotiated

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[103] The substitution elasticity measures the responsiveness of the relative U.S. consumption levels of the subject imports and the U.S. like products to changes in their relative prices. This reflects how easily purchasers switch from the U.S. product to the subject imported products (or vice versa) when prices change.

[104] The substitution elasticity range for the Kazakh LEU is lower than that suggested in the prehearing report and reflects the extensive hearing testimony detailing the quality problems associated with this Kazakh uranium, which was recounted earlier in Part II.

[105] Market-related prices in long-term contracts usually involve a variety of formulations such that the price at the time of delivery under a long-term contract is based on but not necessarily equal to the specified reported spot price existing at the time of delivery.

[106] The petitioners cite an EIA estimate that 79 percent of the change in average long-term contract prices is accounted for by spot prices at the time the contracts were negotiated and by spot prices lagged 1 period (TR. p. 49). This may suggest that current spot prices and the change in spot prices in the most recent 12-month period are viewed as an important indicator of future price changes. On the other hand, the respondents report that new long-term contract prices do not follow spot prices to their lows reportedly because sellers will not sell much on the long-term market when they perceive the spot price temporarily below what they view it should be over the long-run future (TR. p. 182).

[107] To the extent that market conditions are similar during the time that the contract was negotiated and at the time of delivery under the contract, spot prices may actually be quite similar in both periods and give the impression that spot prices in the initial period were the primary factor affecting prices at the time of delivery.

[108] All types of long-term contracts are also negotiated based on buyer and seller perceptions of future demand and supply and the buyer's perceptions of the reliability of individual suppliers.

in the current period and deliveries of uranium under long-term contracts with market-related prices.[109]

In discussions in their prehearing briefs, both the petitioners and respondents agreed with the staff's substitution elasticity estimates suggested in the prehearing report. The petitioner felt that the elasticity of substitution should be at the higher end of the range. The respondents noted that the elasticity of substitution between the Kazakh and U.S. uranium should be zero for deliveries of U.S.-produced uranium under fixed-price contracts.[110] The staff has expanded its consideration of the elasticity of substitution to account for the impact of spot prices for the Kazakh uranium at the time long-term contracts for the domestic uranium are being negotiated and at the time of delivery of domestic uranium under long-term contracts with market-related price provisions.

The petitioners and respondents applied the same figures for the elasticity of substitution between the Kazakh and U.S. uranium to the elasticity of substitution between the non-target imported uranium and U.S. uranium and the Kazakh and non-target imported uranium. The staff concurs in that the non-target imports generally are subject to the same U.S. market and world price effects as are imports from Kazakstan.

Modeling the Potential Effects of Imposing an Antidumping Duty Order

The COMPAS analysis uses a nonlinear partial equilibrium model of supply and demand that assumes that domestic and imported products are less than perfect substitutes. Competition in the U.S. market is characterized by measures of the sensitivity of buyers and sellers to price changes and under the assumption that the substitutability between products remains constant. Such models, also known as Armington models, are relatively standard in applied trade policy analysis, and are used extensively for the analysis of trade policy changes both in partial and general equilibrium.[111] Based on the discussion contained earlier in Part II of this report, the staff selects a range of estimates that represent price-supply, price-demand, and product-substitution relationships (i.e., supply elasticity, demand elasticity, and substitution elasticity) in the U.S. uranium market. The model uses these estimates with data on market shares usually from the most recent 1-year period (for which data are available), Commerce's estimated margins of dumping, transportation costs, and current tariffs to analyze the likely effect of unfair pricing of subject imports on the U.S. domestic like product industry.

During October 20, 1992-January 11, 1999, a suspension agreement controlled the amount of uranium imported from Kazakhstan and specified restrictions on its use. Commerce reported a 115.82 percent final antidumping duty on uranium from Kazakhstan based on BIA for a 6-month period during 1991, prior to when Kazakhstan was an independent country.

Estimated effects of dumping for 1998, 1999, and 2000 are discussed below. The results are based

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[109] This adjustment acknowledges that Kazakh uranium, which is typically sold in the United States on a spot basis, may still impact domestic uranium, which is typically sold on a long-term contract basis.

[110] The respondents constructed a consolidated elasticity of substitution between the Kazakh and U.S. uranium based on the elasticity range suggested by the staff. The consolidation covered purchases of uranium concentrates or their equivalent at each of the processing states, such that the consolidated substitution elasticity included a measure of uranium concentrates in any natural UF_6 and LEU-HF that were purchased directly. The respondents also considered committed versus uncommitted demand in their elasticity calculation.

[111] For a discussion of the use of Armington type models of this type for trade policy analysis, see Joseph Francois and H. Keith Hall (1997) "Partial Equilibrium Modeling," Chapter 5 of *Applied Methods for Trade Policy Analysis: A Handbook*, Joseph F. Francois and Kenneth A. Reinert, editors, Cambridge University Press, 1997. See also Armington (1969) "A Theory of Demand for Products Distinguished by Place of Production," *IMF Staff Papers*, vol. 16, pp. 159-178.

on actual market shares for 1998 and on estimated market shares for 1999 and 2000. The market shares used for each year, which were based on EIA data, are discussed below and followed by the modeling results. The modeling results are based only on the uranium concentrates sector and,[112] as such, may overestimate the effects of the imported Kazakh uranium on the entire domestic uranium industry.[113]

Market shares for each of the three years modeled were based on shipment values of uranium feed (in pounds of U_3O_8 equivalent) delivered by U.S. electric utilities for enrichment, by delivery year. Actual delivery data were used for 1998 and estimates were used for 1999 and 2000. In addition to enrichment feed deliveries, the staff also included U.S. electric utility contracted purchases of uranium concentrates in each of the subject years for delivery in later years. Actual contracted purchases in 1998 equaled 27.1 million pounds U_3O_8 equivalent, which were also used as an estimate of purchases in 1999 and 2000 for delivery in subsequent years.[114] As a result, the annual market shares were calculated on current year deliveries for enrichment and on new purchases;[115] annual deliveries for enrichment ranged from 60 percent to 66.2 percent of the total value of the market during 1998-2000 and new purchases accounted for the remainder. The estimated market shares for Kazakhstan in 1999 and 2000 were based on two principal assumptions: (1) the Kazakh uranium was sold to U.S. electric utilities in the spot market for delivery in the year purchased and (2) the total quantity of uranium available from Kazakhstan in each of these years equaled the total reported U_3O_8 capacity in each year reduced by a majority of the reported commitments to customers in third-countries for the Kazakh uranium in each year.[116] Market share of the uranium from U.S. producers and from all other countries was the residual after the Kazakh share was calculated; the split between domestic and all-other uranium sources was based on their market-share relationship in 1998. The composite elasticity of substitution between the domestic and Kazakh uranium was calculated from the pricing mechanism breakout of U.S. electric utilities' total purchases of uranium delivered in 1998 and reported by the EIA.[117]

The estimated domestic price, output, and revenue effects of the dumping of Kazakh uranium in the

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[112] Both petitioners and respondents estimated effects of the imported Kazakh uranium on the U.S. industry based on quantities and values of uranium concentrates.

[113] The U.S. uranium industry includes production of uranium concentrates, conversion, enrichment, and processing by fabricators; as noted earlier in Part II, enrichment accounts for over 50 percent of the total value of uranium. Hence, the overall market share of the imported Kazakh uranium is likely overstated, leading to an upward bias in estimated effects; Kazakhstan reportedly can ship only a limited amount of low-enriched uranium, it has no natural conversion capacity, and its processing capacity at the fabricator level reportedly cannot produce LEU-DO acceptable to U.S. reactors. Although lower uranium concentrate prices allow electric utilities to substitute partially natural uranium for SWU, this substitution is limited by contract and by technical factors. Some of the estimated effects for each year included the impact on purchase contracts negotiated during 1998-2000 that involved deliveries up to 7 years in the future, but no deliveries in the year negotiated. Future deliveries tied to spot prices at the time of delivery, may involve prices that are substantially higher than those today and be quite lucrative for the U.S. suppliers.

[114] Such purchases declined steadily from 57.4 million pounds U_3O_8 equivalent in 1996 for contracts up to 9 years in the future to the 27.1 million pound figure in 1998 for contracts up to 7 years in the future.

[115] Annual deliveries of uranium for enrichment, which are closely related to annual reactor requirements, were reported by EIA in pounds U_3O_8 equivalent; the average value per pound of U_3O_8 was also reported for each year.

[116] The reductions for third-country commitments allowed for *** pounds U_3O_8 equivalent to be shifted to the U.S. market.

[117] This elasticity of substitution accounted for the different pricing mechanisms for both current-year deliveries and negotiated purchase contracts for uranium concentrates.

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U.S. market are summarized in the following tabulation by year.[118] Detailed results for each year are shown in tables II-2 through II-4.

Year	Domestic price effects	Domestic output effects	Domestic revenue effects
1998	-0.1% – -0.3%	-0.4% – -1.7%	-0.5% – -1.8%
1999	-0.1% – -0.5%	-0.9% – -3.4%	-1.1% – -3.7%
2000	-0.0% – -0.2%	-0.3% – -1.3%	-0.4% – -1.4%

The tabulation shows percentage reductions in the domestic price, output, and revenue associated with the dumping. The greatest impact occurs in 1999, when the estimated U.S. market share of Kazakh uranium is the highest. During 1999 domestic prices of uranium concentrates are estimated to fall in a range of 0.2 to 0.9 percent, domestic output is estimated to fall in a range of 0.9 to 3.4 percent, and domestic revenue is estimated to fall in a range of 1.1 to 3.7 percent.[119] The estimated effects are smallest in 1998, when the suspension agreement was still in effect, and declined in 2000 from 1999 as the U.S. market share of Kazakh uranium concentrates fell due to rising third-country commitments.

[118] Ranges of estimated effects are shown, corresponding to the various combinations of the endpoints of elasticity ranges discussed earlier.

[119] The petitioners estimated a total revenue effect for 1999 ranging from -5.9 percent to -12.0 percent (petitioners' prehearing brief, app. B), while the respondents estimated a total revenue effect for 1999-2000 of -2.6 percent (respondents posthearing brief, app. 17).

Table II-2
Estimated effects of LTFV pricing of imports of Kazakh uranium on the domestic industry during 1998

COMPAS ver. 1.4 (DUMPING) – THE EFFECTS OF LTFV PRICING OF IMPORTS (6/1/93)
by Joseph Francois and Keith Hall, Office of Economics, USITC

INPUTS (in percentages)	06/21 Kazakhstan--2000		From:	To:
Margin:	115.82	Substitution Elast.		
Domestic Share:	15.9	Domsetic/Unfair:	1.38	2.06
Unfair Import Share:	3	Domestic/Fair:	4	6
Ave. U.S. Tariff Rate:	0	Unfair/Fair:	4	6
Transportation Ratio:	0	Aggregate Demand Elast:	0.5	1.5
Domestic Content:	0	Domestic Supply Elast:	5	10
Dom. Capacity Util:	50	Fair Supply Elast:	inf	inf

Estimated Impact of Dumping on U.S. Market (as percent of "fair" values)

SCENARIOS	#1	#2	#3	#4	#5	#6	#7	#8	But-for Imports:
Domestic Price:	-0.2%	-0.2%	0.0%	0.0%	-0.4%	-0.2%	-0.1%	-0.1%	-0.5%
Domestic Output:	-1.2%	-1.5%	0.2%	0.2%	-1.8%	-2.4%	-0.6%	-0.8%	-2.5%
Domestic Revenue:	-1.4%	-1.7%	0.2%	0.2%	-2.1%	-2.6%	-0.8%	-0.9%	-3.0%
"BUT-FOR" ESTIMATIONS									
Domestic Share:	15.4%	15.5%	15.5%	15.5%	14.9%	15.0%	15.1%	15.1%	16.4%
Unfair Import Share:	0.4%	0.4%	0.4%	0.4%	0.1%	0.1%	0.1%	0.1%	–
Fair Share:	84.2%	84.1%	84.0%	84.1%	84.9%	84.9%	84.8%	84.8%	83.6%
Capacity Utilization:	50.6%	50.8%	49.9%	49.9%	50.9%	51.2%	50.3%	50.4%	51.3%
ERRORS									
complementary goods?			yes	yes					
but-for imports?									

Estimated Impact of Dumping on Imports (as a percentage of "fair" values)

Unfair Import Price:	-53.7%	-53.7%	-53.7%	-53.7%	-53.7%	-53.7%	-53.7%	-53.7%	–
Unfair Import Output:	1352.0%	1352.2%	1386.4%	1386.4%	5392.1%	5393.8%	5524.8%	5525.0%	–
Unfair Import Revenue:	572.8%	572.9%	588.7%	588.7%	2444.8%	2445.5%	2506.2%	2506.3%	–
Fair Import Price:	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fair Import Output:	-7.9%	-7.8%	-5.6%	-5.6%	-12.2%	-12.1%	-9.9%	-9.9%	-3.0%
Fair Import Revenue:	-7.9%	-7.8%	-5.6%	-5.6%	-12.2%	-12.1%	-9.9%	-9.9%	-3.0%

Source: Based on data submitted in response to Commission questionnaires and the *Uranium Industry Annual 1998*, EIA, Apr. 1999.

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Table II-3
Estimated effects of LTFV pricing of imports of Kazakh uranium on the domestic industry during 1999

COMPAS ver. 1.4 (DUMPING) -- THE EFFECTS OF LTFV PRICING OF IMPORTS (6/1/93)
by Joseph Francois and Keith Hall, Office of Economics, USITC

INPUTS (in percentages)	07/13	**Kazakhstan-1999**	From:	To:
Margin:	115.82	Substitution Elast.		
Domestic Share:	15.7	Domsetic/Unfair:	1.38	2.06
Unfair Import Share:	4.3	Domestic/Fair:	4	6
Ave. U.S. Tariff Rate:	0	Unfair/Fair:	4	6
Transportation Ratio:	0	Aggregate Demand Elast:	0.5	1.5
Domestic Content:	0	Domestic Supply Elast:	5	10
Dom. Capacity Util:	50	Fair Supply Elast:	inf	inf

Estimated Impact of Dumping on U.S. Market (as percent of "fair" values)

SCENARIOS	#1	#2	#3	#4	#5	#6	#7	#8	But-for Imports:
Domestic Price:	-0.3%	-0.2%	0.0%	0.0%	-0.5%	-0.3%	-0.2%	-0.1%	-0.7%
Domestic Output:	-1.7%	-2.2%	0.2%	0.3%	-2.6%	-3.4%	-0.9%	-1.2%	-3.6%
Domestic Revenue:	-2.1%	-2.4%	0.3%	0.3%	-3.1%	-3.7%	-1.1%	-1.3%	-4.3%
"BUT-FOR" ESTIMATIONS									
Domestic Share:	15.0%	15.1%	15.2%	15.2%	14.4%	14.5%	14.6%	14.6%	16.4%
Unfair Import Share:	0.6%	0.6%	0.6%	0.6%	0.2%	0.2%	0.2%	0.2%	--
Fair Share:	84.4%	84.3%	84.2%	84.2%	85.5%	85.4%	85.3%	85.2%	83.6%
Capacity Utilization:	50.9%	51.1%	49.9%	49.9%	51.3%	51.8%	50.5%	50.6%	51.9%

ERRORS									
complementary goods?			yes	yes					
but-for imports?									

Estimated Impact of Dumping on Imports (as a percentage of "fair" values)

Unfair Import Price:	-53.7%	-53.7%	-53.7%	-53.7%	-53.7%	-53.7%	-53.7%	-53.7%	--
Unfair Import Output:	1307.5%	1307.8%	1355.5%	1355.5%	5127.9%	5130.1%	5309.7%	5310.0%	--
Unfair Import Revenue:	552.2%	552.3%	574.4%	574.4%	2322.3%	2323.4%	2406.6%	2406.7%	--
Fair Import Price:	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fair Import Output:	-11.1%	-11.0%	-7.9%	-7.9%	-17.0%	-16.9%	-13.9%	-13.9%	-4.3%
Fair Import Revenue:	-11.1%	-11.0%	-7.9%	-7.9%	-17.0%	-16.9%	-13.9%	-13.9%	-4.3%

Source: Based on data submitted in response to Commission questionnaires and the *Uranium Industry Annual 1998*, EIA, Apr. 1999.

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Table II-4
Estimated effects of LTFV pricing of imports of Kazakh uranium on the domestic industry during 2000

COMPAS ver. 1.4 (DUMPING) -- THE EFFECTS OF LTFV PRICING OF IMPORTS (6/1/93)
by Joseph Francois and Keith Hall, Office of Economics, USITC

INPUTS (in percentages)	07/13	**Kazakhstan--2000**	From:	To:
Margin:	115.82	Substitution Elast.		
Domestic Share:	16.1	Domsetic/Unfair:	1.38	2.06
Unfair Import Share:	1.6	Domestic/Fair:	4	6
Ave. U.S. Tariff Rate:	0	Unfair/Fair:	4	6
Transportation Ratio:	0	Aggregate Demand Elast:	0.5	1.5
Domestic Content:	0	Domestic Supply Elast:	5	10
Dom. Capacity Util:	50	Fair Supply Elast:	inf	inf

Estimated Impact of Dumping on U.S. Market (as percent of "fair" values)

SCENARIOS	#1	#2	#3	#4	#5	#6	#7	#8	But-for Imports:
Domestic Price:	-0.1%	-0.1%	0.0%	0.0%	-0.2%	-0.1%	-0.1%	-0.0%	-0.3%
Domestic Output:	-0.6%	-0.8%	0.1%	0.1%	-1.0%	-1.3%	-0.3%	-0.5%	-1.3%
Domestic Revenue:	-0.8%	-0.9%	0.1%	0.1%	-1.1%	-1.4%	-0.4%	-0.5%	-1.6%
"BUT-FOR" ESTIMATIONS									
Domestic Share:	15.8%	15.9%	15.9%	15.9%	15.6%	15.6%	15.7%	15.7%	16.4%
Unfair Import Share:	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	--
Fair Share:	83.9%	83.9%	83.9%	83.9%	84.4%	84.3%	84.3%	84.3%	83.6%
Capacity Utilization:	50.3%	50.4%	50.0%	49.9%	50.5%	50.6%	50.2%	50.2%	50.7%
ERRORS									
complementary goods?			yes	yes					
but-for imports?									

Estimated Impact of Dumping on Imports (as a percentage of "fair" values)

Unfair Import Price:	-53.7%	-53.7%	-53.7%	-53.7%	-53.7%	-53.7%	-53.7%	-53.7%	--
Unfair Import Output:	1401.9%	1402.0%	1420.8%	1420.8%	5694.5%	5695.4%	5768.7%	5768.8%	--
Unfair Import Revenue:	595.9%	596.0%	604.7%	604.7%	2584.9%	2585.3%	2619.3%	2619.3%	--
Fair Import Price:	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fair Import Output:	-4.3%	-4.3%	-3.0%	-3.0%	-6.7%	-6.7%	-5.4%	-5.4%	-1.6%
Fair Import Revenue:	-4.3%	-4.3%	-3.0%	-3.0%	-6.7%	-6.7%	-5.4%	-5.4%	-1.6%

Source: Based on data submitted in response to Commission questionnaires and the *Uranium Industry Annual 1998*, EIA, Apr. 1999.

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PART III: CONDITION OF THE U.S. INDUSTRY

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 dumping margin was presented earlier in this report and information on the volume and pricing of imports of the subject merchandise is presented in Parts IV and 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 establishments that accounted for over 90 percent of U.S. uranium concentration and 100 percent of U.S. uranium conversion, enrichment, and fabrication in the period for which the data were collected.

U.S. CONCENTRATE PRODUCERS

In addition to the two remaining petitioners, Rio Algom and Uranium Resources, at least four other firms produced uranium concentrate in the United States from January 1996 to March 1999. Two of these producers, COGEMA, Inc., and Power Resources, are subsidiaries of COGEMA and Cameco, respectively, and ***. The remaining producers, IMC Global, Bannockburn, IL, and International Uranium (USA), Denver, CO, produced concentrate only indirectly and ***. International Uranium (USA) toll produced ***, and IMC Global's production was a by-product of its phosphoric acid production. IMC Global's concentrate-producing facilities were closed in January of this year, and Uranium Resources is currently in the process of closing its concentrate-producing facilities, citing the "market price decline since mid-1996." Another producer with concentrating capabilities, Cotter, Lakewood, CO, produced and stockpiled uranium ore, but not concentrate.[1] The concentrate-producing establishments of all of the above firms are exclusive to uranium concentrate production.

Data relating to U.S. concentrate producers' operations are shown in table III-1. Because they are the farthest removed from the end product, the concentrate producers are generally more vulnerable to changes in the market than other segments of the industry. But while production and capacity utilization fell, total sales remained relatively stable, even increasing in January-March 1999. The relative stability is largely due to ***; and the increase in January-March 1999 is largely due to ***. With the opening of Rio Algom's Smith Ranch facility, the industry's overall capacity and employment increased until January-March 1999, when IMC Global closed operations. With the current closing of Uranium Resources' facilities, this trend continues. The data also reveal underutilized capacity, erratic but generally declining unit sales values, and significantly higher unit values for exports than for U.S. sales. The latter would suggest a U.S. market out of synch with the world market for the period of investigation; however, ***, and these sales fulfilled long-term contracts at previously specified prices.

[1] Cotter's capacity, about *** pounds U_3O_8 per year, was shut down during the period of investigation but is currently being reactivated for production. The ore produced during the period will reduce to about *** pounds of concentrate. Cotter ***.

III-1

Table III-1
Natural uranium concentrate (concentrated U_3O_8): U.S. production, average practical capacity, capacity utilization, domestic sales, exports, end-of-period inventories, average number of U.S. production and related workers, and hours worked by and wages paid to such workers, 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

Item	1996	1997	1998	Jan.-Mar.-- 1998	1999
Production *(1,000 pounds U_3O_8)*	5,680	4,989	4,389	1,313	1,112
Average capacity *(1,000 pounds U_3O_8)*	9,500	9,700	11,050	2,761	2,486
Ratio of production to capacity *(percent)*	59.8	51.4	39.7	47.6	44.7
U.S. sales:					
Quantity *(1,000 pounds U_3O_8)*	4,059	3,796	3,776	404	1,082
Value[1] *(1,000 dollars)*	59,419	51,290	54,241	6,790	15,872
Unit value *(per pound)*	$14.67	$13.51	$14.36	$16.81	$14.67
Exports:					
Quantity *(1,000 pounds U_3O_8)*	973	1,256	1,116	263	0
Value[1] *(1,000 dollars)*	20,805	24,236	21,701	4,927	0
Unit value *(per pound)*	$21.38	$19.30	$19.45	$18.73	0
Total sales:					
Quantity *(1,000 pounds U_3O_8)*	5,032	5,052	4,892	667	1,082
Value[1] *(1,000 dollars)*	80,224	75,526	75,942	11,717	15,872
Unit value *(per pound)*	$15.94	$14.95	$15.52	$17.57	$14.67
Inventories *(1,000 pounds U_3O_8)*	3,293	3,097	2,594	3,534	2,486
Ratio of inventories to total sales during the period *(percent)*	65.4	61.3	53.0	132.5	57.4
Average number of production and related workers	293	305	345	349	287
Hours worked by production and related workers *(1,000 hours)*	583	618	750	198	145
Pounds produced per hour	9.7	8.1	5.9	6.6	7.7
Wages paid to production and related workers *(1,000 dollars)*	8,753	9,109	11,015	2,887	2,169
Hourly compensation paid to production and related workers	$15.02	$14.75	$14.69	$14.62	$14.94

[1] Net sales value, i.e., gross value less all discounts, allowances, rebates, and the value of returned goods.

Note.--The ratios of inventories to total sales in Jan.-Mar. 1998 and Jan.-Mar. 1999 are annualized.

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

III-2

U.S. CONVERTER

The only uranium conversion facilities in the United States are owned and operated by ConverDyn in Denver, CO, and Metropolis, IL. Prior to 1996, the facility in Metropolis, IL, was owned and operated separately. ConverDyn functions basically as a toll producer, converting the utilities' concentrate into natural UF_6. With separate equipment, ConverDyn also produces other fluorine compounds, but natural UF_6 accounts for about *** percent of its overall sales. ***.

Data relating to ConverDyn's uranium conversion operations are shown in table III-2. Although conversion only adds about 3 percent to the cost of nuclear fuel production, it is a necessary step in transforming the uranium into usable form and generated about *** in total sales from January 1996 to March 1999. ***. (It should be noted that the values and unit values in table III-2 do not represent the value of the natural UF_6, only the value added to the concentrate by conversion). With respect to prices, ConverDyn states that ***.

Table III-2
Natural uranium hexafluoride (natural UF_6): U.S. production, average practical capacity, capacity utilization, domestic sales, exports, end-of-period inventories, average number of U.S. production and related workers, and hours worked by and wages paid to such workers, 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

* * * * * * *

U.S. ENRICHER

The only enrichment facilities in the United States are owned and operated by USEC. As noted previously, the U.S. Government created USEC in 1992 as a step toward the privatization of its enrichment activities, hitherto under the control of DOE. Although its enabling legislation intended it to operate as a market-oriented business, it did not become completely private until July 1998, when it was fully divested of government ownership. In addition to providing enrichment services worldwide, it is the sole executor and distributor of U.S. surplus defense inventories and Russian surplus defense inventories under the Russian HEU Agreement. Under the USEC Privatization Act of 1996, however, USEC's distribution of this material is restricted, and overall it is statutorily mandated to conduct business in a manner that is least disruptive to the market. USEC's enrichment plants are in Paducah, KY, and Piketon, OH.

For its enrichment services, USEC basically operates as a toll producer, enriching natural UF_6 owned by the utilities and charging a fee for the SWUs it expends in the process. In some cases the utility does not provide the natural UF_6, which USEC then provides at an additional charge. The enriched UF_6 it purchases and imports from Russia under the HEU Agreement is distributed to the utilities as is: payment is in cash for the enriched component and in kind for the natural component. The Russian HEU Agreement has forced USEC to use less of its own enrichment capabilities, and it sees imports from Kazakhstan, including that enriched in third countries, as exacerbating an already low-priced and oversupplied market.

Data relating to USEC's production, not its trade in U.S. and Russian stockpiles, are shown in table III-3. In terms of sales and value added to the product, enrichment is by far the largest component of the U.S. industry producing nuclear fuel. The service, accounting for about 42 percent of the value of the final product, generated over *** in sales during the period of investigation while maintaining a workforce of several thousand. ***. (Note that values and unit values do not reflect the value of the enriched UF_6, only the value added to the natural UF_6 by enrichment).

III-3

Table III-3
Enriched uranium hexafluoride (enriched UF_6 (LEU-HF)): U.S. production, average practical capacity, capacity utilization, domestic sales, exports, end-of-period inventories, average number of U.S. production and related workers, and hours worked by and wages paid to such workers, 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

* * * * * * *

U.S. FABRICATORS

Four firms in the United States own and operate uranium fabrication facilities that include the conversion and pelletizing processes: ABB Combustion Engineering, Inc., Festus, MO; General Electric, Wilmington, NC; Siemans Power Corp., Richland, WA; and Westinghouse Corp., Columbia, SC.[2] Unlike U.S. producers of the other forms of uranium, which are primarily in the business of processing uranium, the fabricators are large, multi-product corporations in which the fabrication of uranium is only one among many operations. And while pre-fabricated uranium is a material commodity, its fabrication requires a certain degree of customizing to fit users' needs. The fabricators are also unlike the other uranium producers in being ***.

Data relating to the fabricators' U.S. production are shown in table III-4. Ideally, the data should reflect only that part of fabrication that is included within the product scope–i.e., the conversion and pelletizing processes. Two of the U.S. producers, however, Combustion Engineering and Westinghouse, were unable to isolate these processes for the Commission's purposes and provided data for fabrication as a whole. Conversion of enriched UF_6 into enriched oxides, nitrates, and metals, and the transformation of this material into ceramic pellets accounts for 55-60 percent of the value of fabrication; conversely, encapsulation and assembly accounts for 40-45 percent of the process. The net result of Westinghouse's and Combustion Engineering's inclusion of the latter processes in their respective data sets is that the aggregate figures for value and employment in table III-4 are overstated by about *** percent.

Perhaps because of their possible efficiencies and/or their position at the final stage of uranium processing, the fabricators appear to have been less adversely impacted by the market than the other producers since 1996, or at least the indicators are more mixed. Production and overall sales generally increased while inventories declined. Employment fell somewhat, but not at the expense of productivity and total wages. Unit values, while generally lower after 1996, are irregular. In contrast to other segments of the industry, they are generally higher for U.S. sales than for exports, but may reflect differences in pre-set contractual arrangements and are not necessarily indicative of separate markets.

THE U.S. INDUSTRY AS A WHOLE

Simply aggregating the data of the different producers would result in recounting the same uranium several times; however, certain employment and sales value data can be aggregated without such distortions and afford some meaningful representation of the industry as a whole. Such data are summarized in table III-5. The total sales value represents an approximation of the total value of nuclear fuel produced in the United States, less the value of its encapsulation into fuel rods and the rods' assembly for actual use. This value dropped by 12.2 percent from 1996 to 1998 and by 41.1 percent from January-March 1998 to January-March 1999. The average number of workers used to produce such fuel and the hours worked by

[2] A fifth U.S. producer provides encapsulation and assembly services only.

Table III-4
Enriched uranium oxides, nitrates, and metals: U.S. production, average practical capacity, capacity utilization, domestic sales, exports, end-of-period inventories, average number of U.S. production and related workers, and hours worked by and wages paid to such workers, 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

* * * * * * *

Table III-5
Uranium: U.S. domestic and export sales values, average number of U.S. production and related workers, and hours worked by and wages paid to such workers, 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

Item	1996	1997	1998	Jan.-Mar.-- 1998	1999
U.S. sales[1] *(1,000 dollars)*	1,240,944	1,011,083	1,056,857	218,804	128,918
Exports[1] *(1,000 dollars)*	736,825	783,436	679,202	141,595	83,476
Total sales[1] *(1,000 dollars)*	1,977,769	1,794,519	1,736,059	360,399	212,395
Average number of production and related workers	6,498	6,480	6,313	6,409	5,885
Hours worked by production and related workers *(1,000 hours)*	12,942	12,940	12,581	3,135	2,875
Wages paid to production and related workers *(1,000 dollars)*	313,457	333,955	342,575	83,819	80,105
Hourly compensation paid to production and related workers	$24.22	$25.81	$27.23	$26.74	$ 27.86

[1] Net sales value, i.e., gross value less all discounts, allowances, rebates, and the value of returned goods.

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

them also fell in these periods; however, overall wages increased in 1996-98 as a result of increased hourly compensation.

PART IV: U.S. IMPORTS, TOTAL MARKET VALUE, AND SHARE OF VALUE

IMPORTS

Table IV-1 shows total imports into the United States of each of the major forms of uranium. While imports of natural uranium generally declined during the period, imports of enriched uranium increased. The net effect was a notable increase in the value of imports in 1998. Owing to the different units of measurement of the different forms of uranium, quantities cannot be aggregated. (Note that official import statistics report quantities for the various forms of uranium in terms of gross weight, and conversion factors were used to convert the gross weights into the appropriate weights used for trade. No conversion factor was used for "other uranium," as its content mix is unknown). No such considerations limit the aggregation of values. Irregularities in the average unit values for enriched uranium oxides, nitrates, and metals point to the complexities of uranium trading and are not necessarily an indication of unreliability in the data set. In any case, it remains the best data available for overall imports. Imports by country are shown in appendix D.

Several firms in the United States, including USEC and the fabricators, imported uranium in one form or another during the period for which data were collected; however, only two firms, Nukem (the U.S. subsidiary of Nukem GmbH) and KATEP (the National Atomic Corp. of the Republic of Kazakhstan) and its successor, Kazatomprom, are known to have imported uranium from Kazakhstan. Nukem imported uranium concentrate and KATEP/Kazatomprom imported enriched uranium oxides for processing (at General Electric) and re-export. The latter uranium was originally produced in Russia under the USSR and inventoried in Kazakhstan and is now officially the property of the Kazakh Government. There are no enrichment facilities in Kazakhstan. Commerce has yet to determine the official country of origin of Kazakhstan's Russian-made enriched uranium and thus whether it is subject to the Russian or (former) Kazakhstan suspension agreement. To date such a determination has been avoided because Kazakhstan has only imported this material under the former suspension agreement's re-export provisions. All imports from Kazakhstan, based on Commerce's official statistics, are shown in table IV-2. The data show that imports from Kazakhstan accounted for about 2.3 percent of the value of all imports from January 1996 to March 1999, and that the unit values of these imports were below the unit values of the aggregate; however, the trends in imports from Kazakhstan are irregular, and there were no imports in January-March 1999. Imports from Kazakhstan based on the questionnaire responses of Nukem and Kazatomprom are shown in table IV-3. As can be seen, neither the distribution nor the quantities and values of the data are wholly in line with official statistics, and the data should not be compared with Commerce data for other countries.

In addition to the uranium concentrate and enriched uranium oxides that Nukem and KATEP/Kazatomprom imported, *** imported *** kg U of enriched uranium hexafluoride, valued at over ***, from ***, that was made from uranium concentrate from Kazakhstan. For customs purposes uranium that has been further processed in and imported from third countries is officially an import from the third country–in this case, ***; however, Commerce ruled in 1996 that third-country processed uranium originating in Russia, Kazakhstan, and Uzbekistan, known as "by-pass" uranium, was nevertheless subject to these countries' respective suspension agreements and was regulated accordingly.

IV-1

Table IV-1
Uranium: U.S. imports, by form, 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

Item	1996	1997	1998	Jan.-Mar.-- 1998	1999
	Quantity				
Concentrate (1,000 pounds U_3O_8)	16,748	16,838	12,022	3,060	1,530
Natural hexafluoride (1,000 kg U)	7,395	8,256	8,767	2,319	2,201
Enriched hexafluoride (1,000 kg U)	693	581	847	127	103
Enriched oxides, nitrates, and metals (1,000 kg U)	56	166	53	([1])	6
Other uranium (1,000 kg)	310	449	264	86	444
	Value (*1,000 dollars*)				
Concentrate	282,686	265,843	177,332	44,819	19,371
Natural hexafluoride	346,411	325,745	333,530	97,908	63,976
Enriched hexafluoride	513,574	367,025	647,325	93,421	95,430
Enriched oxides, nitrates, and metals	35,207	90,121	64,934	42	2,495
Other uranium	9,341	10,417	6,255	2,405	8,534
Total	1,187,219	1,059,150	1,229,376	238,594	189,806
	Unit value				
Concentrate	$16.88	$15.79	$14.75	$14.65	$12.66
Natural hexafluoride	46.85	39.45	38.04	42.21	29.07
Enriched hexafluoride	741.61	632.03	764.37	733.02	927.57
Enriched oxides, nitrates, and metals	623.66	544.50	1,230.34	193.00	404.38
Other uranium	30.13	23.19	23.70	27.94	19.22

[1] Less than 500 kg U.

Note.--Because of rounding, figures may not add to the totals shown. Totals are calculated from the unrounded figures.

Source: Compiled from official statistics of Commerce. Concentrate = HTS 2844.10.20.10 (conversion factor: kg(0.825) = kg U); natural hexafluoride = HTS 2844.10.20.25 (conversion factor: kg(0.67618) = kg U); enriched hexafluoride = HTS 2844.20.00.20 (conversion factor: kg(0.67618) = kg U); enriched oxides, nitrates, and metals = HTS 2844.20.00.10 and 2844.20.00.30 (conversion factor: kg(0.88149) = kg U; other uranium = HTS 2844.10.10.00, 2844.10.20.55, and 2844.10.50.00 (not converted).

IV-2

Table IV-2
Uranium: U.S. imports from Kazakhstan based on official statistics, by form, 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

Item	1996	1997	1998	Jan.-Mar.-- 1998	1999
			Quantity		
Concentrate (1,000 pounds U_3O_8)	893	271	458	105	0
Natural hexafluoride (1,000 kg U)	0	0	0	0	0
Enriched hexafluoride (1,000 kg U)	0	0	0	0	0
Enriched oxides, nitrates, and metals (1,000 kg U)	0	106	41	0	0
Other uranium (1,000 kg)	0	389	86	86	0
			Value (*1,000 dollars*)		
Concentrate	12,765	3,238	5,422	1,246	0
Natural hexafluoride	0	0	0	0	0
Enriched hexafluoride	0	0	0	0	0
Enriched oxides, nitrates, and metals	0	33,199	18,992	0	0
Other uranium	0	8,948	2,405	2,405	0
Total	12,765	45,385	26,819	3,650	0
			Unit value		
Concentrate	$14.30	$11.94	$11.84	$11.92	0
Natural hexafluoride	0	0	0	0	0
Enriched hexafluoride	0	0	0	0	0
Enriched oxides, nitrates, and metals	0	314.42	458.96	0	0
Other uranium	0	23.01	27.94	27.94	0

Note.--Because of rounding, figures may not add to the totals shown. Totals are calculated from the unrounded figures.

Source: Compiled from official statistics of Commerce. Concentrate = HTS 2844.10.20.10 (conversion factor: kg(0.825) = kg U); natural hexafluoride = HTS 2844.10.20.25 (conversion factor: kg(0.67618) = kg U); enriched hexafluoride = HTS 2844.20.00.20 (conversion factor: kg(0.67618) = kg U); enriched oxides, nitrates, and metals = HTS 2844.20.00.10 and 2844.20.00.30 (conversion factor: kg(0.88149) = kg U; other uranium = HTS 2844.10.10.00, 2844.10.20.55, and 2844.10.50.00 (not converted).

Table IV-3
Uranium: U.S. imports from Kazakhstan based on questionnaire data, by form, 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

* * * * * * *

IV-3

CONSUMPTION

U.S. consumption of uranium, for purposes of a causal analysis, is an elusive construct in today's market. U.S.-based nuclear power plants annually consume a finite quantity of enriched uranium oxides, nitrates, and metals; but, for purposes of examining market effects, such a measure of consumption, whether in kg U, SWUs, or pounds U_3O_8, fails to incorporate the proliferation of market players other than the utilities and the vast amount of trading in all forms of uranium that characterize the current situation. Similarly, an analysis of consumption of each of the various forms independently of the others is unrealistic because of their mutual competitiveness and the uncertainties in today's market. In the early 1990's a segmented analysis of the industry was more viable in that the primary players consisted of the concentrators and the utilities and the bulk of the market consisted of the buying and selling of concentrate and toll services therefor. Today, in addition to concentrate and toll services, all forms of uranium are bought and sold by a host of traders, producers, and users alike, resulting in a dynamic market where each form of uranium competes with every other form in inconsistent ways. A sale of concentrate can displace a sale of LEU-HF no less than a sale of LEU-HF can displace a sale of concentrate, or any other form of uranium for that matter. A loss of share in the concentrate market can have as much or more to do with activity (or perceived activity) in the enriched uranium market as with the natural uranium market. A segmented analysis presupposes the independence of the various forms of uranium and a market which is in some form of equilibrium, neither of which are realities in today's market. Given the reasonableness of a consumption estimate that incorporates all forms of uranium under investigation, the quantities of the various forms of U.S.-produced and imported uranium cannot simply be aggregated: each of the U.S.-produced forms is successively imbedded in another in the various production processes so that reducing both U.S.-produced and imported forms to a common unit of measure requires broad assumptions.

The total value of uranium produced and imported in the United States, though not indicative of consumption in the usual sense, is less inclined than the total quantity to distort an aggregate summation. Table IV-4 shows the total value of the various forms of uranium produced in the United States (based on total sales value of production) combined with the total value of imports (based on Commerce data). (A comparison of import values with U.S. sales alone would overstate the impact of imports to the extent that an unknown but significant quantity of imports are re-exported after further processing). As a share of this value, imports rose from 37.5 percent to 47.2 percent during the period of investigation. Kazakhstan's share, during the period its imports were subject to a suspension agreement, fluctuated between 0.4 percent and 1.6 percent. As indicated previously, its suspension agreement was terminated on January 11, 1999.

IV-4

Table IV-4
Uranium: Sales of domestic product, U.S. imports, and total market value, 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

Item	1996	1997	1998	Jan.-Mar.-- 1998	1998
	Value (*1,000 dollars*)				
Sales from U.S. production	1,977,769	1,794,519	1,736,059	360,399	212,395
U.S. imports from--					
Kazakhstan	12,765	45,385	26,819	3,651	0
Russia	228,070	146,983	435,311	77,567	3,380
Ukraine	0	0	942	0	0
Uzbekistan	9,898	27,753	23,444	0	0
Subtotal	250,734	220,122	486,515	81,218	3,380
All other	936,484	839,028	742,861	157,736	186,426
Total	1,187,219	1,059,150	1,229,376	238,594	189,806
Total	3,164,988	2,853,669	2,965,435	598,993	402,201
	Share of total value (*percent*)				
Producers' U.S. sales	62.5	62.9	58.5	60.2	52.8
U.S. imports from--					
Kazakhstan	0.4	1.6	0.9	0.6	0.0
Russia	7.2	5.2	14.7	12.9	0.8
Ukraine	0.0	0.0	([1])	0.0	0.0
Uzbekistan	0.3	1.0	0.8	0.0	0.0
Subtotal	7.9	7.7	16.4	13.6	0.8
All other	29.6	29.4	25.1	26.3	46.4
Total	37.5	37.1	41.5	39.8	47.2

[1] Less than 0.05 percent.

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

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

IV-5

PART V: PRICING AND RELATED DATA

FACTORS AFFECTING PRICING

The exchanging or swapping of uranium products in their various forms is a common practice in the uranium industry. Swaps are normally undertaken by industry participants, including producers, importers, converters, enrichers, traders, or utilities, to avoid transportation costs and to ensure that the product is available for a customer in a timely manner with contract-specified quantities. Swaps are undertaken for other reasons such as meeting unexpected excess demand requirements and optimizing inventories, or in changing the country of origin of the uranium products. By swapping material of one country origin for material of another country origin, the owner of government-restricted material may be able to secure other material that is not subject to restriction. None of the firms providing questionnaires indicated that swaps had a significant effect on prices during 1996-98.

While swaps can be used to circumvent import restrictions, the U.S. Government does regulate swaps to some extent. *** stated that swaps that occurred during 1996-98 concerning uranium brought to the United States were approved by Commerce in accordance with the rules governing the suspension agreement.

In addition to swaps, loans and leases of all forms of uranium products between different industry participants are also used in this industry. Loans are undertaken largely for some of the same reasons discussed for swaps, including the need to meet excess demands, and to optimize inventories. For example, owners of inventory often make loans in an effort to offset holding costs. Brokers and traders may take leases to cover deliveries or may lease uranium products if they have purchased them and are trying to reduce their carrying charges until they can sell the product, change the form of the material, or move the location of the material. Questionnaire responses indicate that loans did not have any significant effect on market prices during 1996-98. ***.

When asked where company inventories of uranium concentrates are stored, and whether these inventories have an effect on domestic prices, responses varied. *** and *** both hold the majority of their inventories of uranium concentrates at their own production facilities, while the majority of the inventories of the other four producers is held by ***. None of the producers consider inventory holding costs to be a major factor in arriving at their selling prices. ***.

U.S. Inland Transportation Costs

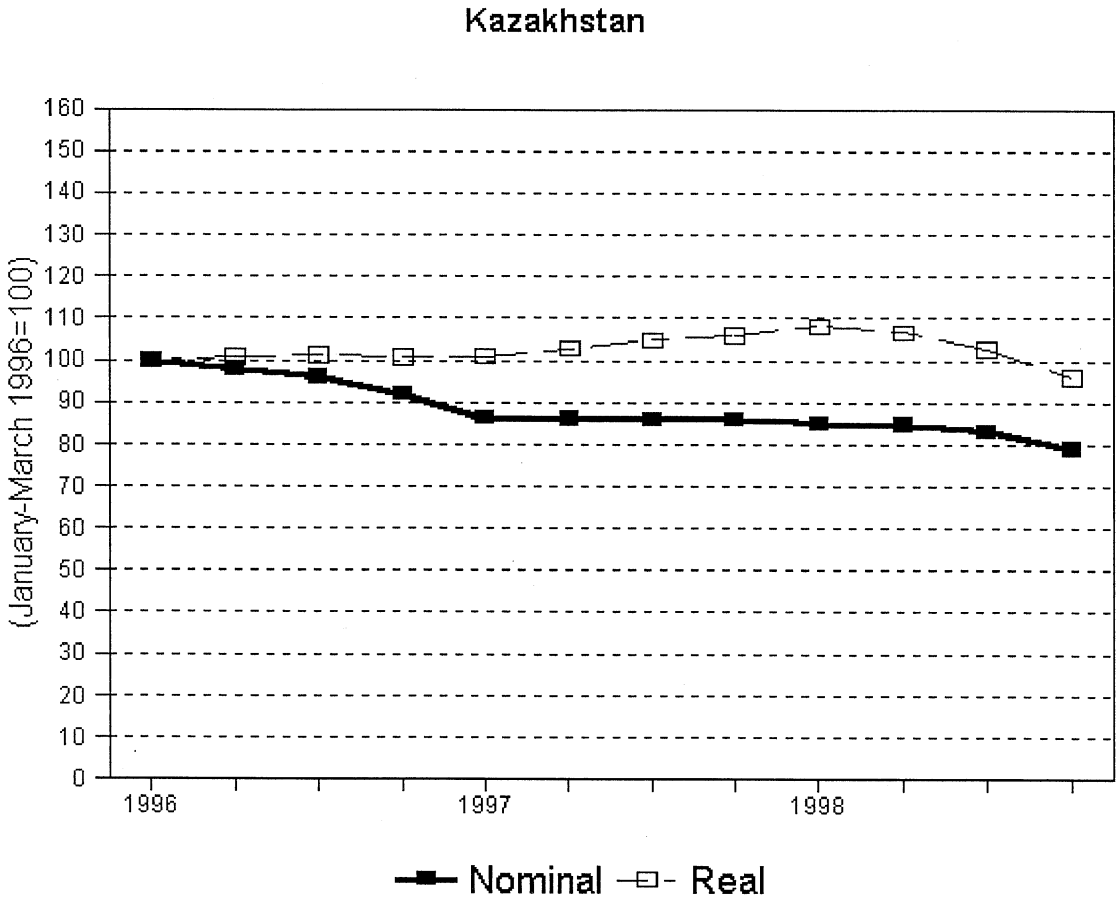
U.S. inland transportation costs typically account for a very small percentage of the total delivered price of uranium products. ***.

Exchange Rates

Quarterly nominal and real exchange rate indexes for 1996-98 for the currency of Kazakhstan in relation to the U.S. dollar are presented in presented in figure V-1.[1] The nominal exchange rate of the Kazakh tenge declined overall relative to the dollar during the period shown while the real exchange rate remained relatively stable in relation to the dollar.

[1] Real exchange rates are calculated by adjusting the nominal rates for movements in producer prices in the United States and Kazakhstan.

Figure V-1
Exchange rates: Indexes of the nominal and real exchange rates of the currency of Kazakhstan in relation to the U.S. dollar, by quarters, 1996-98



Source: IMF, *International Financial Statistics*, May 1999.

V-2

Sales Terms and Discounts

Prices of uranium products are usually quoted on a delivered basis. All six U.S. concentrate producers, Nukem, and ConverDyn reported quoting delivered prices on all of their sales. However, USEC reported that it ***.

Discounts are not common in the uranium industry. None of the U.S. producers of concentrates reported that they have a formal discount policy. *** said that it typically quotes prices to buyers based on prevailing market conditions and the cost of production. All six concentrate producers have a policy of requiring payment within 30 days. Nukem also stated that ***. ConverDyn said that ***.

Most sales of uranium are made on a contract basis. Multi-year contracts are very common in the case of uranium concentrates. Four of six producers, ***, and ***, the importer, reported that they commonly negotiate contracts ranging in length from 3 to 5 years.[2] Negotiations for these contracts typically begin 1 to 2 years before the actual contract period. These contracts are seldom renegotiated during the years in which they are in effect. While terms vary, contracts typically fix both prices and quantities during the contract period, but do not contain meet-or-release provisions or standard quantity requirements and do not require price premiums for sub-minimum shipments. ConverDyn stated that ***.

PRICE DATA

Quarterly quantity and value information was requested for 1996-98 for the following three uranium products:

Product 1– Uranium concentrates (U_3O_8), commonly called yellowcake, which has not been converted or enriched,

Product 2– Uranium hexafluoride (UF_6) in the natural (unenriched) state, and

Product 3– Uranium hexafluoride (UF_6) enriched in the U^{235} isotope.

U.S. producers of concentrates were asked to report selling prices for product 1 and importers were asked to provide selling prices for all three products. ConverDyn, the U.S. converter, and USEC, the U.S. enricher, were asked to report their toll processing fees to U.S. utilities for products 2 and 3 on a quarterly basis during 1996-98.

Because of the importance of contracts in this industry, separate price data were requested for three categories of transactions involving uranium concentrates. Category 1 consists of a combination of spot sales and those contract sales of uranium concentrates where the prices are based on market prices at the time of shipment, and the contracts do not specify a price/cost-based floor, a price ceiling, or a discount from the market price. Category 2 consists of contract sales of the concentrates where prices are based on market prices at the time of shipment but the contract specifies a price/cost-based floor, a ceiling price, a discount from market price, or some combination of these. Category 3 consists of contract sales of uranium concentrates where prices are fixed or subject to escalator clauses specified in the contract. Separate data on toll-processing fees for products 2 and 3 were also requested under the same three categories. In addition to these requirements, questionnaire recipients were asked to report price and fee data separately for each contract in multi-year contracts and to show the contract date, contract period, and the total contract quantity.

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[2] Nukem stated ***.

The six U.S. producers of concentrates, ConverDyn, and USEC all provided varying amounts of price information. The usable price data reported by concentrate producers accounted for 58 percent of the total quantity of producer sales of concentrates during 1998. The price information provided by ConverDyn was limited in value because it was not broken out by contract period. Data from USEC was relatively complete for the specified period. Nukem ***.

Trends in prices of concentrates and price comparisons between U.S.-produced and imported concentrates, and trends in fees received by ConverDyn and USEC, are discussed separately in the following sections. These sections are followed by a discussion of fee information provided by three uranium fabricators.

Trends in Prices of Concentrates

Net delivered prices of U.S.-produced and imported concentrates (product 1) falling under sales category 1 are shown in table V-1, and prices of domestic concentrates (product 1) for sales categories 2 and 3 are presented in tables V-2 and V-3 on a quarterly basis for 1996-98. The small amount of data for category 1 indicates that domestic prices on spot sales and short-term contracts declined during periods where sales were reported, decreasing from a high of $14.95 per pound of U_3O_8 in the first quarter of 1997 to a low of $10.60 in the second quarter of 1998, the last quarter where sales were reported (table V-1). While no trend can be determined from the two quarterly import prices shown in the table, Nukem's price in the second quarter of 1996 was ***.

Since product 1 data for categories 2 and 3 are based on mid-term and long-term agreements negotiated in different years, prices associated with the reported quarterly shipments during 1996-98 are shown separately by the year that the contracts were agreed upon. However, even with these breakouts trends in prices are difficult to determine. Quarterly movements in prices for sales under these categories are more likely to reflect contract terms than changing market conditions. As an alternative to these data, an average price is shown for each contract year in the last row of tables V-2 and V-3. The prices are weighted by the total quarterly shipments for 1996-98 corresponding to each contract year shown. The data are intended to show movements in average prices from one contract period to the next. No trend is evident for U.S. producers' uranium concentrate prices for the contract years shown.

Nukem reported two quarterly uranium concentrate prices under category 2 and four prices under category 3. Under a category 2 contract ***.

Price Comparisons For Uranium Concentrate

Because of the small amount of import price data available, any price comparisons are limited in value because the producers' and importer's contracts were negotiated in different years. No price comparisons could be made for sales under category 1 since there were no U.S. producer sales under this category in the quarters where Nukem reported prices. Under category 2, Nukem's price of ***.

Trends In Conversion Fees For Natural Uranium Hexafluoride

ConverDyn, the U.S. uranium converter, was asked to report its quarterly fees for product 2 in the same way that prices were requested on sales of uranium concentrates. All of ConverDyn's transactions were reported under sale categories 2 and 3. Although ConverDyn's fees and shipments were provided on a quarterly basis, it did not break out the data by individual contract years. Therefore, the aggregated data are limited in value and are not shown in a table. ConverDyn's conversion fees under category 2 amounted to ***.

V-4

Table V-1
Uranium concentrates: Net delivered selling prices and quantities of spot sales and certain contract sales of U.S.-produced and imported product 1 from Kazakhstan, by quarters, 1996-98

* * * * * * *

Table V-2
Uranium concentrates: Net delivered selling prices and quantities of U.S. produced product 1 for restricted spot market-related contract sales, by quarters, 1996-98

* * * * * * *

Table V-3
Uranium concentrates: Net delivered selling prices and quantities of U.S.-produced product 1 for fixed-escalated-price contract sates, by quarters, 1996-98

* * * * * * *

Converdyn also reported average base prices for all contracts negotiated during each year for 1996-98. The average base price per kilogram was ***.

Trends In Fees For Enriched Uranium Hexafluoride

USEC's quarterly enrichment fees for product 3 in both dollars per kilogram of enriched uranium and in dollars per SWU are shown in tables V-4 and V-5 for 1996-98.[3] All shipments by USEC are under category 3. ***.

Fabricator Conversion Fees

Uranium fabricators were asked to estimate their annual unit costs to convert LEU-HF to LEU-DO and then to transform this LEU product into pellets for use in their U.S.-produced fuel-rod assemblies during 1996-98. Three fabricators, ABB Combustion Engineering, General Electric, and Siemens Power, provided responses. During this period conversion costs averaged *** per kilogram for ABB Combustion Engineering, *** for General Electric, and *** for Siemens Power. *** Combustion Engineering reported average pelletizing costs of *** per kilogram during this period, while *** reported respective averages of ***. *** reported that the costs of converting and pelletizing amounted to an average of *** percent of the total cost of a fuel rod, while *** reported averages of *** percent and *** percent. *** and *** also reported that the costs of freight and containers were insignificant.

[3] Product assays ranged from *** percent to *** percent and tails assays ranged from *** percent to *** percent.

Table V-4
Uranium hexafluoride: U.S. enrichment fees for product 3 and quantities of enriched uranium, by quarters, 1996-98

* * * * * * *

Table V-5
Uranium hexafluoride: U.S. enrichment fees for product 3 and quantities of enriched uranium in SWUs, by quarters, 1996-98

* * * * * * *

LOST REVENUES AND LOST SALES

None of the U.S. firms producing uranium in its various forms were able to document specific instances of lost revenues and lost sales resulting from competition from imports from Kazakhstan during 1996-99 in their questionnaire responses. Three of the six producers of concentrates reported that they did not experience either lost revenues or lost sales during the period. Responses for the other concentrate producers varied. *** said that it did not experience lost revenues during 1996-98 but was not sure whether any lost sales had occurred. *** said that it was not able to compete in price with any imports during the period due to such factors as increased operating costs, exhaustion of ore bodies, and the strength of the U.S. dollar compared to other currencies. However, it believes that imports from Kazakhstan are small in comparison with competing imports from other sources. Another concentrate producer, ***, believes that it was forced to reduce its prices on a particular long-term contract beginning in the middle of 1996. However, it did not provide specific information on specific quantities involved in the contract, or the approximate date when the price reduction occurred. Similarly, *** could not document any instances of lost sales. It stated that the suspension agreement has been effective in limiting any lost sales from Kazakhstan during the period that it has been in effect. ***, another concentrate producer, believes that imports from Kazakhstan resulted in both lost revenues and lost sales, but it could not document any specific allegations.

ConverDyn, the only U.S.-converter of uranium, believes that ***. Similarly, USEC, the only firm providing enrichment services in the United States, ***. None of the uranium fabricators reported losing sales or revenue to importers.

V-6

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

BACKGROUND

Financial data for the U.S. producers in the uranium industry are presented separately, as a consolidation of most of such data would not be representative due to the mix of reported coverages, the degree of export sales, and the nature of operations.[1] The reported financial data for each sector is as follows:

Concentrators–six producers representing approximately 90 percent of U.S. production in 1998 provided data, all with fiscal year ends of December 31 (***).

Converter–the sole U.S. converter in operation, ConverDyn, provided data. The firm is owned equally by Allied Signal Energy Service and General Atomics Energy Services and has a fiscal year end of December 31.

Enricher–the only U.S. enricher, USEC, reported data. USEC was privatized in 1998 and is a public company traded on the NYSE, with a fiscal year end of June 30.

Fabricators–three of the U.S. fabricators[2] provided financial data, representing an estimated *** percent of U.S. production in 1998.

OPERATIONS OF CONCENTRATORS

The results of the operations of the U.S. producers are presented in table VI-1 and by firm in table VI-2. The uranium concentrates are produced by ISL, as by-products of phosphoric acid production, from the mining of various minerals, and from mine water. The products are milled and processed by the concentrators prior to shipment to the converter, who converts the uranium concentrates to uranium hexafluoride.

Sales quantities and values are erratic and the firms in the aggregate incurred operating losses in all periods. The operating loss margins exceeded 10 percent in the most current periods. The data from the concentrators are ***.

OPERATIONS OF THE CONVERTER

The results of the operations of the U.S. converter, ConverDyn, are presented in table VI-3. The firm converts uranium concentrates to uranium hexafluoride prior to enrichment. ConverDyn generally does not own the material, but charges a fee for the processing; therefore the revenue is basically for services and does not include the value of the product.

Total sales quantities and values ***.

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[1] For these reasons and as the financial data of the most dominant sector, USEC, is audited, no verification was conducted.

[2] The fabricators and their fiscal year ends are Combustion Engineering (Dec. 31), General Electric (Dec. 31), and Siemens Power (Sept 30). Westinghouse submitted incomplete financial data.

Table VI-1
Results of operations of U.S. concentrators in the production of uranium concentrates, fiscal years 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

Item	Fiscal year			Jan.-Mar.	
	1996	1997	1998	1998	1999
	Quantity (*1,000's of pounds of uranium-U_3O_8*)				
Net sales	4,362	5,018	***	667	1,082
	Value (*$1,000*)				
Net sales	70,252	74,906	***	12,618	15,872
COGS	60,970	85,970	***	11,778	17,975
Gross profit	9,282	(11,064)	***	840	(2,103)
SG&A expenses	12,574	15,069	***	3,310	2,776
Operating income or (loss)	(3,292)	(26,133)	***	(2,470)	(4,879)
Interest expense	1,399	8,635	***	2,161	2,387
Other expense	14,072	10,077	***	(1,393)	(3,417)
Other income items	9,937	20,507	***	838	406
Net income or (loss)	(8,826)	(24,338)	***	(2,400)	(3,443)
Depreciation/amortization	23,464	28,386	***	6,089	5,690
Cash flow	14,638	4,048	***	3,689	2,247
	Ratio to net sales (*percent*)				
COGS	86.8	114.8	***	93.3	113.3
Gross profit	13.2	(14.8)	***	6.7	(13.3)
SG&A expenses	17.9	20.1	***	26.2	17.5
Operating income or (loss)	(4.7)	(34.9)	***	(19.6)	(30.7)
	Value (*per pound of uranium-U_3O_8*)				
Net sales	$16.11	$14.93	***	$18.92	$14.67
COGS	13.98	17.13	***	17.66	16.61
Gross profit	2.13	(2.20)	***	1.26	(1.94)
SG&A expenses	2.88	3.00	***	4.96	2.57
Operating income or (loss)	(0.75)	(5.21)	***	(3.70)	(4.51)
	Number of firms reporting				
Operating losses	2	5	4	3	4
Data	5	5	6	3	3

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

VI-2

Table VI-2
Results of operations of U.S. concentrators (by firm) in the production of uranium concentrates, fiscal years 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

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Table VI-3
Results of operations of ConverDyn in the production of natural uranium hexafluoride, fiscal years 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

* * * * * * *

OPERATIONS OF THE ENRICHER

The results of operations of the only U.S. enricher, USEC, are presented in table VI-4. On July 28, 1998, the sale of USEC's common stock in connection with an initial public offering (the "IPO") was completed, resulting in net proceeds to the U.S. Government aggregating $3.1 billion, including $1.4 billion from the IPO and $1.7 billion from the exit dividend paid to the U.S.Treasury. The U.S. Government, the sole selling shareholder, sold its entire interest. USEC did not receive any proceeds from the IPO.[3] The financial data represent the overall operations of USEC and are consistent with the firm's filings with the Securities and Exchange Commission.

Substantially all of the company's revenue is derived from the sale of uranium enrichment services, with customers supplying the natural uranium feed stock to be enriched. USEC also derives a relatively small amount of revenue from sales of EUP. With respect to sales of EUP, the company supplies the natural uranium feed stock and enriches it for customers. The company has a significant inventory of natural uranium which it may sell to customers as natural uranium or in the form of EUP. The standard measure of service in the uranium enrichment industry is SWU. A SWU is the amount of effort that is required to transform a given amount of natural uranium into two streams of uranium, one enriched in the U^{235} isotope and the other depleted in the U^{235} isotope.[4]

In fiscal 1998, the company received 3,800 metric tons of natural uranium and 45 metric tons of LEU from DOE to satisfy certain obligations of DOE to the company. USEC cannot deliver such uranium for commercial use in the United States over less than a four-year period. In addition, as directed by the Privatization Act, in fiscal 1998 DOE transferred 7,000 metric tons of natural uranium to USEC and it will deliver 50 metric tons of HEU (representing 3.4 million SWUs and 5,000 metric tons of natural uranium) to USEC over the period September 1998 to September 2003. The Privatization Act places certain limits on the company's ability to deliver this material for commercial use in the United States.[5]

Russian HEU Contract

USEC has been designated by the U.S. Government to act as its Executive Agent in connection with a government-to-government agreement between the United States and Russian relating to the acquisition of enriched uranium recovered from dismantled nuclear weapons form the former USSR. In January 1994,

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[3] USEC's 10Q for the quarter ended Mar. 31, 1999, p. 6.

[4] USEC's 10K for the year ended June 30, 1998, p. 3.

[5] Ibid, p. 5.

Table VI-4
Results of operations of USEC in the enrichment of uranium hexafluoride, fiscal years 1996-98, July-Mar. 1998, and July-Mar. 1999

Item	Fiscal year			July-Mar.	
	1996	1997	1998	1998	1999
	Quantity (*1,000's of SWU*)				
Net sales	***	***	***	***	***
	Value (*$1,000*)				
Net sales	1,412,800	1,577,800	1,421,200	1,056,700	990,700
COGS	973,000	1,162,300	1,062,100	792,200	786,400
Gross profit	439,800	415,500	359,100	264,500	204,300
Special charges	0	0	46,600	0	0
Project development[1]	103,600	141,500	136,700	103,000	78,700
SG&A expenses	36,000	31,800	34,700	24,800	27,400
Operating income or (loss)	300,200	242,200	141,100	136,700	98,200
Interest expense	0	0	0	0	23,900
Other expense	0	0	0	0	0
Other income items	3,900	7,900	5,200	5,300	13,600
Net income or (loss)	304,100	250,100	146,300	142,000	87,900
Depreciation/amortization	13,700	14,600	16,100	11,300	11,400
Cash flow	317,800	264,700	162,400	153,300	99,300
	Ratio to net sales (*percent*)				
COGS	68.9	73.7	74.7	75.0	79.4
Gross profit	31.1	26.3	25.3	25.0	20.6
SG&A expenses	2.5	2.0	2.4	2.3	2.8
Operating income or (loss)	21.2	15.4	9.9	12.9	9.9
	Value (*per SWU*)[2]				
Net sales	***	***	***	***	***
COGS	***	***	***	***	***
Gross profit	***	***	***	***	***
SG&A expenses	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***

[1] Research and development.
[2] Includes a relatively small amount of revenue from sales of enriched uranium product.
Note: Because USEC's fiscal year ends June 30, July-March interim data are presented.

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

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USEC signed a commercial agreement (the "Russian HEU Contract") with AO Techsnabexport ("Tenex"), Executive Agent for the Russian Federation. Under the contract, USEC expects to purchase up to approximately 92 million SWUs over a 20-year period according to a specified schedule.

Pursuant to the Russian HEU Contract, USEC ordered 4.4 million SWU in calendar 1998, of which 0.8 million SWUs had been delivered as of June 30, 1998, and 5.5 million SWUs have been ordered for calendar 1999. USEC has committed to order up to 5.5 million SWUs in each of the calendar years 2000 and 2001. The quantities and the mechanism for establishing prices for SWU purchases under the Russian HEU Contract through 2001 have been set, although prices for SWU delivered in 1999, 2000, and 2001 are subject to price adjustments based on U.S. inflation.[6]

SWU purchased under the Russian HEU Contract and other purchase contracts represented 38 percent of the combined produced and purchased supply mix, compared with 23 percent for fiscal 1997. Unit costs of SWU purchased under the Russian HEU Contract are substantially higher than the company's marginal cost of production. The company purchased SWU derived from HEU as follows: 3.6 million SWUs at a cost of $315.8 million and 1.8 million SWUs at a cost of $157.3 million for the fiscal years 1998 and 1997, respectively.[7]

USEC's Results of Operations

Revenue amounted to $1,421.2 million in fiscal 1998, a decline of $156.6 million (or 10 percent) from $1,577.8 million in fiscal 1997. The decline in revenue was attributable primarily to changes in the timing of customer nuclear reactor refueling resulting in a 12 percent decline in sales of SWU in fiscal 1998, following a 14 percent increase in fiscal 1997. During fiscal 1998, the USEC provided enrichment services for 100 reactors as compared with 110 in fiscal 1997. The average SWU price billed to customers was $116, an increase of approximately 1 percent compared with fiscal 1997, notwithstanding the overall trend toward lower prices for contracts negotiated since July 1993 in the highly competitive uranium enrichment market. Sales of uranium to electric utility customers increased to $40.8 million, compared with $25.9 million in fiscal 1997.[8]

Gross profit amounted to $359.1 million in fiscal 1998, a decline of $56.4 million (or 14 percent) from $415.5 million in fiscal 1997. The decline resulted from lower sales of SWU, changes in the timing of customers' orders, lower production volume and higher unit costs at the two leased gaseous diffusion plants, and an increase in purchased SWU under the Russian HEU Contract. Special charges amounted to $46.6 million for fiscal 1998 for costs related to the privatization and certain severance and transition benefits to be paid to workers in connection with workforce reductions over the next two years. Project development costs, primarily for the AVLIS project, amounted to $136.7 million for fiscal 1998, a decline of $4.8 million (or 3 percent) from $141.5 million in fiscal 1997.[9]

Operating income and margins declined each year and between the interim periods. The operating income margins declined from 21.2 percent in 1996 to 9.9 percent in 1998, and from 12.9 percent to 9.9 percent between the nine-month interim periods.

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[6] Ibid, p. 4.

[7] Ibid, p. 17.

[8] Ibid, p. 16.

[9] Ibid, p. 17.

VI-5

OPERATIONS OF FABRICATORS

The fuel fabricators convert enriched uranium hexafloride into a stable solid form, usually uranium oxide, which is then further processed into finished fabricated fuel assemblies. The firms generally do not own the material, therefore the revenues are basically service fees. The results of operations of three U.S. fabricators, which include the processing to uranium oxide (***) and the total fuel assembly cost (***), are presented in table VI-5 and by firm in table VI-6. ***.

Table VI-5
Results of operations of U.S. fabricators in the production of uranium, fiscal years 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

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Table VI-6
Results of operations of U.S. fabricators (by firm) in the production of uranium, fiscal years 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

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CAPITAL EXPENDITURES, R&D EXPENSES, AND INVESTMENT IN PRODUCTIVE FACILITIES

Capital expenditures, R&D expenses, and the original cost and book value of property, plant, and equipment used in the production of uranium products for each sector are shown in table VI-7. The data is aggregated as there is no double-counting, but there is a mix of reported coverage and the type of operation.

Capital expenditures fluctuated over the period and vary by year among the sectors. R&D expenses are dominated by USEC due to the nature of its operation. The original costs of the fixed assets are dominated by the concentrators, but the assets are depreciated or written down to relatively lower amounts than in the other sectors. USEC leases the gaseous diffusion plants from DOE, and the values are not included in the asset data.

Table VI-7
Value of assets, capital expenditures, and R&D expenses of U.S. producers of uranium products, fiscal years 1995-97, Jan.-Mar. 1997, and Jan.-Mar. 1998

* * * * * * *

CAPITAL AND INVESTMENT

The producers' comments regarding any actual or potential negative effects of imports of uranium from Kazakhstan on the firms' growth, investment, ability to raise capital, and/or development and production efforts (including efforts to develop a derivative or more advanced version of the product) are shown in appendix E.

PART VII: THREAT CONSIDERATIONS

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

When the USSR dissolved into separate republics at the end of 1991, Kazakhstan inherited several working uranium mines and concentrating facilities, inventories of enriched uranium, a partial fabrication facility, and considerable known reserves of unmined uranium ore. It also inherited the operational style of a planned economy, which put it at a disadvantage in marketing its newly acquired resources to the world. But with the help of agreements and joint ventures with global firms like Nukem and Cameco, it has become a major supplier in the world uranium market. With only one nuclear power facility partially using uranium fuel, the country has yet to be a factor in the world's demand for uranium; however, Kazakhstan reports that it is currently in the process of ***.

URANIUM CONCENTRATE

Kazakhstan currently has two major areas of uranium mining operations: one in the south, which includes the Chili, Centralnoye, and Stepnoye production centers using the ISL method; and one in the north, which includes the Tsellini center using conventional mining methods. Concentrate-producing capacity exists at a plant in Tsellini and at another in Ust-Kamenogarsk, known as the Ulba plant. Very little or no uranium from the Tsellini area has reached the market. Kazakhstan entered into an agreement with World Wide Minerals (Canada) in 1996 to develop this center, but operations were suspended pending negotiations for export licenses.[1] ***. The southern mines and the Ulba plant, however, have continued to operate. Pursuant to a long-term supply contract initiated in 1992, the majority of this production has been sold to Nukem. Nukem, in turn, sells the uranium throughout the world, including the United States. Kazatomprom, the organization that oversees Kazakhstan's production and sales of uranium, reports that ***. Kazakhstan also signed a long-term contract to supply ***, and entered into a 10-year agreement with Cameco in 1993 that allows Cameco exclusive marketing rights for any uncommitted production.[2]

Kazakhstan's production, sales, and capacity to produce uranium concentrate are shown in table VII-1. ***.[3] [4]

Table VII-1
Uranium concentrate: Kazakhstan's production, capacity, sales, exports, and end-of-period inventories, 1996-98, Jan.-Mar. 1998, and Jan.-Mar. 1999

* * * * * * *

[1] *Prospects for Uranium from Central Asia and Mongolia*, presented by Thomas C. Pool, President, International Nuclear, Inc., at NEI International Fuel Seminar 98, Oct. 1998.
[2] Ibid.
[3] ***.
[4] ***.

VII-1

NATURAL URANIUM HEXAFLUORIDE AND ENRICHED URANIUM HEXAFLUORIDE

There is no capacity in Kazakhstan for the production of natural uranium hexafluoride or enriched uranium hexafluoride; however, Kazakhstan inherited an inventory of *** kg U of low enriched uranium hexafluoride from the USSR, a quantity equivalent to about *** of U.S. production in 1998.[5] ***. According to data provided by the Kazakh Government to General Electric,[6] none of this material is directly usable by U.S. utilities and only *** percent can readily be processed to meet U.S. utilities' needs, mainly by raising its enrichment levels. Another *** percent is so contaminated with highly radioactive isotopes as to preclude its processing altogether.[7] The remaining material is of an intermediate quality and may or may not be processable for domestic use pending test results for specific levels of contaminant isotopes.

ENRICHED URANIUM OXIDES, NITRATES, AND METALS

Kazakhstan also inherited a *** quantity of enriched uranium oxide. As of the beginning of 1996, it held about *** kg U of this material. ***. As with its stocks of enriched UF_6, Kazakhstan and General Electric report that about *** percent of its remaining enriched UO_2 can readily by reprocessed for U.S. use (it was this material that was processed by General Electric under the re-export provisions of the suspension agreement), and *** percent is beyond processing at all, at least in the United States. The degree to which the remaining material could be reprocessed in the United States for U.S. use is speculative at this time. Besides being ***.

In addition to its remaining inventory of USSR-produced enriched UO_2, Kazakhstan has the capacity to produce *** kg U per year on its own at the aforementioned Ulba facility; however, the facility is reportedly incapable of producing enriched UO_2 to U.S. specifications. Kazakhstan reports that its inability to produce enriched UF_6, the raw material for the plant's production, has limited the plant's use to the partial fabrication[8] of enriched UF_6 supplied from outside the country. ***.[9]

INVENTORIES AND OTHER CONSIDERATIONS

The suspension agreement effectively precluded the holding of Kazakh-produced uranium in the United States. Nukem reports that "***."

In addition to having limited U.S.-market access pursuant to the suspension agreement, Kazakh origin uranium (along with uranium from other former republics of the USSR) is subject to Euratom sales quotas in Europe. During the period of investigation, the Euratom Commission allowed about 25 percent of utilities' annual uranium requirements to be fulfilled with CIS uranium. The 25 percent is defined in terms of actual usage--purchases and inventories could theoretically be higher.

Kazakhstan maintains that the restrictions on the imports of its product into the United States and Europe have artificially lowered the value of its products to buyers, and the effect of terminating the suspension agreement will allow the price for its uranium to increase on the world market, with or without an antidumping duty. As hitherto described in this report, the market respects two broad price categories for uranium, one for unrestricted uranium, which, like Kazakh uranium, can only be sold free of restriction

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[5] ***.

[6] See app. 14 of posthearing brief on behalf of Kazakhstan.

[7] The processability of Kazakhstan's enriched uranium stock is primarily determined by its levels of the isotope U_{236}, which is relatively benign itself but is an indicator of the levels of the highly radioactive isotopes U_{232} and U_{234}, which can preclude processing in the United States because of health concerns.

[8] The plant is capable of converting enriched UF_6 into enriched UO_2, but is not capable of encapsulation and fuel rod assembly.

[9] ***.

VII-2

to unrestricted markets, and one for restricted uranium, which can be sold free of restriction to restricted markets as well. Other considerations being equal, buyers demand a lower price for unrestricted uranium because of the limited markets in which it can be freely traded. There are additional benefits to Kazakhstan in terminating the agreement regardless of an antidumping duty. In addition to potentially allowing the price of Kazakh uranium to increase, termination of the suspension agreement allows the entry of Kazakh uranium into the United States indirectly by means of third-country enrichment (by-passing) or swapping–i.e., trading uranium in a third country under the proviso that an equivalent amount of that or another country's uranium then be shipped or book transferred to the United States. While less efficient than trading directly, these practices allow Kazakhstan access to the U.S. market in previously limited ways while effectively circumventing any antidumping duty.

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APPENDIX A

FEDERAL REGISTER NOTICES

A-1

INTERNATIONAL TRADE COMMISSION

[Investigation No. 731–TA–539–A (Final)]

Uranium From Kazakhstan

AGENCY: United States International Trade Commission.

ACTION: Continuance and scheduling of the final phase of an antidumping investigation.

SUMMARY: The Commission hereby gives notice of the continuance and scheduling of the final phase of antidumping investigation No. 731–TA–539–A (Final) under section 735(b) of the Tariff Act of 1930 (19 U.S.C. § 1673d(b)) (the Act) to determine whether an industry in the United States is materially injured or threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of less-than-fair-value imports from Kazakhstan of uranium, provided for in subheadings 2612.10.00, 2844.10.10, 2844.10.20, 2844.10.50, and 2844.20.00 of the Harmonized Tariff Schedule of the United States.[1]

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

EFFECTIVE DATE: January 15, 1999.

FOR FURTHER INFORMATION CONTACT: Larry Reavis (202–205–3185), Office of Investigations, U.S. International Trade Commission, 500 E Street SW, Washington, DC 20436. Hearing-impaired persons can obtain information on this matter by contacting the Commission's TDD terminal on 202–205–1810. Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202–205–2000. General information concerning the Commission may also be obtained by accessing its internet server (http://www.usitc.gov).

SUPPLEMENTARY INFORMATION:

Background

The final phase of this investigation is being continued and scheduled in response to the Department of Commerce's notice that it is resuming its antidumping investigation (64 FR 2877, January 19, 1999) as a result of the Government of Kazakhstan's termination of its suspension agreement on uranium. The original investigation was initiated on November 8, 1991 (pursuant to a petition filed by the Ad Hoc Committee of Domestic Uranium

[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] Commissioner Crawford dissenting.

[1] For purposes of this investigation, Commerce has defined the subject merchandise as "natural uranium in the form of uranium ores and concentrates; natural uranium metal and natural uranium compounds; alloys, dispersions (including cermets), ceramic products and mixtures containing natural uranium or natural uranium compounds; uranium enriched in U^{235} and its compounds; alloys, dispersions (including cermets), ceramic products, and mixtures containing uranium enriched in U^{235} or compounds or uranium enriched in U^{235}. HEU [highly enriched uranium] is included in the scope of the investigation."

Producers and the Oil, Chemical, and Atomic Workers International Union), and was continued against the Republic of Kazakhstan after the dissolution of the Soviet Union. The suspension agreement with respect to Kazakhstan was in effect from October 16, 1992, to January 11, 1999. The scheduling of the Commission's investigation is consistent with Commerce's postponement of its final determination until June 3, 1999.

Participation in the Investigation and Public Service List

Persons, including industrial users of the subject merchandise and, if the merchandise is sold at the retail level, representative consumer organizations, wishing to participate in the final phase of this investigation as parties must file an entry of appearance with the Secretary to the Commission, as provided in section 201.11 of the Commission's rules, no later than 21 days prior to the hearing date specified in this notice. A party that filed a notice of appearance during the preliminary phase of the investigation need not file an additional notice of appearance during this final phase. The Secretary will maintain a public service list containing the names and addresses of all persons, or their representatives, who are parties to the investigation.

Limited Disclosure of Business Proprietary Information (BPI) Under an Administrative Protective Order (APO) and BPI Service List

Pursuant to section 207.7(a) of the Commission's rules, the Secretary will make BPI gathered in the final phase of this investigation available to authorized applicants under the APO issued in the investigation, provided that the application is made no later than 21 days prior to the hearing date specified in this notice. Authorized applicants must represent interested parties, as defined by 19 U.S.C. § 1677(9), who are parties to the investigation. A party granted access to BPI in the preliminary phase of the investigation need not reapply for such access. A separate service list will be maintained by the Secretary for those parties authorized to receive BPI under the APO.

Staff Report

The prehearing staff report in the final phase of this investigation will be placed in the nonpublic record on May 25, 1999, and a public version will be issued thereafter, pursuant to section 207.22 of the Commission's rules.

Hearing

The Commission will hold a hearing in connection with the final phase of this investigation beginning at 9:30 a.m. on June 9, 1999, at the U.S. International Trade Commission Building. Requests to appear at the hearing should be filed in writing with the Secretary to the Commission on or before May 31, 1999. A nonparty who has testimony that may aid the Commission's deliberations may request permission to present a short statement at the hearing. All parties and nonparties desiring to appear at the hearing and make oral presentations should attend a prehearing conference to be held at 9:30 a.m. on June 2, 1999, at the U.S. International Trade Commission Building. Oral testimony and written materials to be submitted at the public hearing are governed by sections 201.6(b)(2), 201.13(f), and 207.24 of the Commission's rules. Parties must submit any request to present a portion of their hearing testimony *in camera* no later than 7 days prior to the date of the hearing.

Written Submissions

Each party who is an interested party shall submit a prehearing brief to the Commission. Prehearing briefs must conform with the provisions of section 207.23 of the Commission's rules; the deadline for filing is June 1, 1999. Parties may also file written testimony in connection with their presentation at the hearing, as provided in section 207.24 of the Commission's rules, and posthearing briefs, which must conform with the provisions of section 207.25 of the Commission's rules. The deadline for filing posthearing briefs is June 17, 1999; witness testimony must be filed no later than three days before the hearing. In addition, any person who has not entered an appearance as a party to the investigation may submit a written statement of information pertinent to the subject of the investigation on or before June 17, 1999. On July 1, 1999, the Commission will make available to parties all information on which they have not had an opportunity to comment. Parties may submit final comments on this information on or before July 6, 1999, but such final comments must not contain new factual information and must otherwise comply with section 207.30 of the Commission's rules. All written submissions must conform with the provisions of section 201.8 of the Commission's rules; any submissions that contain BPI must also conform with the requirements of sections 201.6, 207.3, and 207.7 of the Commission's rules. The Commission's rules do not authorize filing of submissions with the Secretary by facsimile or electronic means.

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

Authority: This investigation is being conducted under authority of title VII of the Tariff Act of 1930; this notice is published pursuant to section 207.21 of the Commission's rules.

Issued: February 26, 1999.

By order of the Commission.

Donna R. Koehnke,

Secretary.

[FR Doc. 99-5261 Filed 3-1-99; 8:45 am]

BILLING CODE 7020-02-P

DEPARTMENT OF JUSTICE

Executive Office for Immigration Review; Agency Information Collection Activities: Extension of a Currently Approved Collection; Comment Request

ACTION: Notice of information collection under review; Application for cancellation of removal.

The extension of the currently approved information collection is published to obtain comments from the public and affected agencies. Comments are encouraged and will be accepted until May 3, 1999.

Request written comments and suggestions from the public and affected agencies concerning the extension of the collection of information. Your comments should address one or more of the following four points:

(1) Evaluate whether the collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;

(2) Evaluate the accuracy of the agency's estimate of the burden of the collection of information, including the validity of the methodology and assumptions used;

(3) Enhance the quality, utility, and clarity of the information to be collected; and

(4) Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or

DEPARTMENT OF COMMERCE

International Trade Administration

[A–834–802]

Final Determination of Sales at Less Than Fair Value: Uranium From the Republic of Kazakhstan

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

EFFECTIVE DATE: June 10, 1999.

FOR FURTHER INFORMATION CONTACT: James C. Doyle, Sally C. Gannon or Juanita H. Chen, Enforcement Group III, Import Administration, International Trade Administration, U.S. Department of Commerce, 14th Street & Constitution Avenue, N.W., Washington, DC 20230; telephone: 202–482–3793.

SUMMARY: After the Republic of Kazakhstan ("Kazakhstan") terminated the suspension agreement on uranium from Kazakhstan, the U.S. Department of Commerce ("Department") resumed its antidumping investigation on uranium from Kazakhstan. The Department determines that imports of uranium from Kazakhstan are being sold, or are likely to be sold, in the United States at less than fair value, as provided in Section 735 of the Tariff Act of 1930, as amended (1994) ("the Act").

SUPPLEMENTARY INFORMATION:

The Applicable Statute

Unless otherwise indicated, all citations to the Act are references to the provisions effective in 1994. In addition, unless otherwise indicated, all citations to the Department's regulations are citations to the regulations at 19 CFR Part 353 (1994).

Case History

On November 29, 1991, the Department initiated an antidumping investigation on uranium from the Union of Soviet Socialist Republics ("Soviet Union"). *See Initiation of Antidumping Duty Investigation: Uranium from the Union of Soviet Socialist Republics*, 56 FR 63711 (December 5, 1991). On December 25, 1991, the Soviet Union dissolved and the United States subsequently recognized the twelve newly independent states ("NIS") which emerged, one of which was the Republic of Kazakhstan. On January 16, 1992, the Department presented an antidumping duty questionnaire to the Embassy of the Russian Federation, the only NIS which had a diplomatic facility in the United States at that time, for service on Kazakhstan. On January 30, 1992, the Department sent questionnaires to the

United States Embassy in Moscow, which served copies of the questionnaire on the permanent representative to the Russian Federation of each NIS. The questionnaires were served on February 10 and 11, 1992. On March 25, 1992, the Department stated that it intended to continue its antidumping duty investigation with respect to the NIS of the former Soviet Union. *See Postponement of Preliminary Antidumping Duty Determination: Uranium from the Former Union of Soviet Socialist Republics (USSR)*, 57 FR 11064 (April 1, 1992).

On June 3, 1992, the Department issued its preliminary determination, in its antidumping duty investigation on uranium from Kazakhstan, that imports of uranium from Kazakhstan were being, or were likely to be, sold in the United States at less than fair value, as provided for in the Act. *See Preliminary Determinations of Sales at Less Than Fair Value: Uranium from Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Ukraine and Uzbekistan; and Preliminary Determinations of Sales at Not Less Than Fair Value: Uranium from Armenia, Azerbaijan, Byelarus, Georgia, Moldova and Turkmenistan*, 57 FR 23380 (June 3, 1992). On October 16, 1992, the Department amended the preliminary determination to include highly enriched uranium ("HEU") in the scope of the investigation. *See Antidumping; Uranium from Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Ukraine, and Uzbekistan; Suspension of Investigations and Amendment of Preliminary Determinations*, 57 FR 49221 (October 30, 1992). Also on this date, the Department also signed an agreement suspending the InvestigationInvestigation investigation. *See Agreement Suspending the Antidumping Investigation on Uranium from Kazakhstan*, 57 FR 49222 (October 30, 1992) ("Suspension Agreement"). The basis for the Suspension Agreement was an agreement by Kazakhstan to restrict exports of uranium to the United States.

On November 10, 1998, the Department received notice from Kazakhstan of its intent to terminate the Suspension Agreement. Section XII of the Suspension Agreement provides that Kazakhstan may terminate the Suspension Agreement at any time upon notice to the Department, and termination would be effective 60 days after such notice. Accordingly, on January 11, 1999, the Department terminated the Suspension Agreement, as requested by Kazakhstan, and resumed the iInvestigationnvestigation. *See Termination of Suspension Agreement, Resumption of Antidumping Investigation, and Termination of Administrative Review on Uranium From Kazakhstan*, 64 FR 2877 (January 19, 1999). On January 13, 1999, the Department issued a supplemental questionnaire for the original period of investigation ("POI") to Kazakhstan. The supplemental questionnaire was issued to Kazakhstan as requests for separate rates were not submitted to the Department. On January 28, 1999, Kazakhstan requested a 60-day postponement of the date of the Department's final determination. On February 1, 1999, Kazakhstan submitted its response to Section A of the supplemental questionnaire. On February 3, 1999, Kazakhstan submitted minor corrections to its Section A response. On February 17, 1999, Kazakhstan submitted its response to Sections C and D of the supplemental questionnaire.

In reviewing Kazakhstan's response, the Department determined that Kazakhstan's response required significant additional information. Therefore, on March 5, 1999, the Department issued a second supplemental questionnaire. On March 12, 1999, the Department published a notice in the **Federal Register** postponing the final determination date to June 3, 1999 and postponing the hearing date to May 12, 1999. *See Notice of Postponement of Final Antidumping Determination: Uranium From Kazakhstan*, 64 FR 12287 (March 12, 1999). On March 17, 1999, Kazakhstan responded to the Department's second supplemental questionnaire. Kazakhstan stated that it has endeavored to the best of its ability to assemble the information, but complete data no longer exists for the POI. Kazakhstan argued that it should not be penalized for actions taken by parties, such as the Russian Federation Ministry for Atomic Energy ("MINATOM"), prior to the existence of Kazakhstan. Instead, Kazakhstan provided information from 1994, which it claimed was the earliest available data, and provided no translations for the documents previously submitted. On April 19, 1999, Kazakhstan submitted additional information to supplement its Section D response.

The Department conducted verification of the provided information. The Department conducted verification in Almaty, Kazakhstan, from May 4, 1999 through May 8, 1999. On May 5, 1999, the Department published a notice in the **Federal Register** extending the deadline for case briefs until May 17, 1999, rebuttal briefs until May 21, 1999, and extending the hearing date to May 25, 1999. *See Antidumping Investigation on Uranium from the Republic of Kazakhstan: Notice of Extension of Time for Briefs and Hearing*, 64 FR 24137 (May 5, 1999).

On May 17, 1999, the Department received case briefs from Kazakhstan and from the uranium coalition consisting of the Ad Hoc Committee of Domestic Uranium Producers (a petitioner), the Paper, Allied-Industrial-Chemical and Energy Workers International Union (the successor to petitioner Oil, Chemical, and Atomic Workers' Union), and USEC, Inc. (hereinafter collectively "Uranium Coalition"). On May 21, 1999, the Department received rebuttal briefs from Kazakhstan and the Uranium Coalition. On May 26, 1999, the Department conducted a hearing on the issues.

Scope of the Investigation

The merchandise covered by this investigation constitutes one class or kind of merchandise. The merchandise covered by this investigation includes natural uranium in the form of uranium ores and concentrates; natural uranium metal and natural uranium compounds; alloys, dispersions (including cermets), ceramic products and mixtures containing natural uranium or natural uranium compounds; uranium enriched in U^{235} and its compounds; alloys, dispersions (including cermets), ceramic products, and mixtures containing uranium enriched in U^{235} or compounds of uranium enriched in U^{235}. Both low enriched uranium ("LEU") and HEU are included within the scope of this investigation. LEU is uranium enriched in U^{235} to a level of up to 20 percent, while HEU is uranium enriched in U^{235} to a level of 20 percent or more. The uranium subject to this investigation is provided for under subheadings 2612.10.00.00, 2844.10.10.00, 2844.10.20.10, 2844.10.20.25, 2844.10.20.50, 2844.10.20.55, 2844.10.50.00, 2844.20.00.10, 2844.20.00.20, 2844.20.00.30, and 2844.20.00.50, of the Harmonized Tariff Schedule ("HTS"). Although the HTS subheadings are provided for convenience and customs purposes, our written description of the scope of these proceedings is dispositive. HEU is also included in the scope of this investigation. "Milling" or "conversion" performed in a third country does not confer origin for purposes of this investigation. Milling consists of processing uranium ore into uranium concentrate. Conversion consists of transforming uranium concentrate into natural uranium hexafluoride (UF_6).

Since milling or conversion does not confer origin, uranium ore or concentrate of Kazakhstan origin that is subsequently milled and/or converted in a third country will be considered of Kazakhstan origin. The Department continues to regard enrichment of uranium as conferring origin.

Period of the Investigation

The POI is June 1, 1991 through November 30, 1991.

Verification

As provided in Section 776(b) of the Act, the Department conducted a verification of the information provided by Kazakhstan using standard verification procedures including, where possible, the examination of relevant sales and financial records and attempts to trace back to original source documentation containing relevant information, as well as the examination of 1994 documentation and other available information.

Best Information Available

The Department has determined, in accordance with Section 776(c) of the Act, that the use of best information available ("BIA") is appropriate in this investigation. In deciding whether to use BIA, Section 776(c) provides that the Department may take into account whether the respondent provided a complete, accurate, and timely response to the Department's request for factual information. The Department requires a response which provides complete and accurate information on U.S. sales and factors of production in order to consider the response in its final determination. The responses which Kazakhstan submitted were severely deficient on their face: no U.S. sales data was provided, and factors of production information from the POI was so incomplete as to render the data useless for the Department's purposes. Furthermore, the Department was unable to verify the information which Kazakhstan did provide. Accordingly, the incomplete nature of Kazakhstan's responses and the failure of the data to verify requires the Department to use BIA. BIA is based on information submitted in the petition, detailed in the Department's initiation notice, and analyzed in the preliminary determination. *See* Comment 2, below.

Fair Value Comparisons

To determine whether sales of uranium from Kazakhstan to the United States were made at less than fair value, the Department sought to compare the United States prices to the foreign market value. *See* Comment 2, below.

Interested Party Comments

Comment 1: The Uranium Coalition argues that the Department's decision to issue a new questionnaire to Kazakhstan after termination of the Suspension Agreement, because Kazakhstan may not have had a full opportunity to respond to the original antidumping questionnaire, was inconsistent with the factual record and established legal precedent. The Uranium Coalition contends that record evidence indicates the Department gave Kazakhstan ample opportunity to respond in the preliminary segment of this Investigationinvestigation. The Uranium Coalition states that the Department exceeded the minimum requirements of delivering a public version of the petition to the Embassy for the Soviet Union in Washington, D.C., notifying Kazakhstan of the deadline for its response, providing Kazakhstan an opportunity to extend the deadline for its response, and ensuring Kazakhstan had adequate opportunity to comment on information submitted by other parties. *See* 19 C.F.R. Sections 353.12(g), 353.31(b)(2), and 353.31(c)(3). The Uranium Coalition notes that the Department delivered two copies of the petition, two copies of the questionnaire, extended the deadline for responses three times, issued a new service list, and remained in constant contact with the Deputy Trade Representative of the Trade Representation of the Russian Federation. The Uranium Coalition further notes that in the Department's cable requesting the Foreign Commercial Service deliver the questionnaire, the Department stated that its efforts in serving the questionnaires is to give each republic the opportunity to fully participate. The Uranium Coalition goes on to state that its arguments concerning the Department's efforts are supported by the findings of the court in the *Techsnabexport, Ltd.* v. *United States* proceedings (hereinafter collectively "Tenex" proceedings). See 795 F. Supp. 428 (Ct. Int'l Trade Ct. Int'l Trade1992) ("Tenex I"); 802 F. Supp. 469 (Ct.t. Int'lnt'l Traderade 1992) ("Tenex II"). The Uranium Coalition points out that it had been argued in the Tenex proceedings that the Department had violated the parties' procedural due process rights to notice and opportunity to participate, and the Court of International Trade ("CIT") determined that the actions taken by the Department provided adequate process and the opportunity to participate in the Investigationinvestigation to the fullest extent, thus, the Department should not have been concerned about Kazakhstan's opportunity to respond to the questionnaire upon resumption of the Investigationinvestigation.

The Uranium Coalition notes that the Department's preliminary determination was based on BIA because Kazakhstan did not supply any requested information. The Uranium Coalition argues that the Department has consistently refused to accept new information submitted to remedy deficiencies that led to a BIA preliminary determination, citing *Certain Fresh Cut Flowers from Columbia; Final Results of Antidumping Duty Administrative Reviews*, 61 FR 42833, 42855 (August 19, 1995); and *Final Determination of Sales at Less Than Fair Value: Certain Cold-Rolled Carbon Steel Flat Products and Certain Cut-to-Length Carbon Steel Plate From Italy*, 58 FR 37152, 37153 (July 9, 1993). The Uranium Coalition also argues that 19 U.S.C. Section 1673c(i)(1)(B) directs the Department to treat the date on which the Suspension Agreement is terminated as the day on which the preliminary determination is issued. The Uranium Coalition argues that allowing submission of information after the preliminary determination will lead to abuse of the statutory provision for suspension agreements, in that initially non-cooperative parties could be afforded an additional opportunity to provide the required information, perhaps years later.

Finally, the Uranium Coalition argues that due process is compromised by the collection of new information after the preliminary determination, as the Department is left insufficient time to properly analyze the information, conduct verification, and interested parties are left insufficient time to review and comment on the information. The Uranium Coalition notes that due process concerns are particularly serious if the Department issues a final determination based on a data set different from that used in the preliminary determination.

Kazakhstan argues that the Department's decision to provide Kazakhstan an opportunity to submit information in the resumed Investigationinvestigation was correct and proper. Kazakhstan notes that the Department "may request any person to submit factual information at any time during a proceeding." 19 CFR. Section 353.31(b)(1). Kazakhstan agrees that the Department made a valiant effort to serve the initial questionnaire, but argues that it was unable, not unwilling, to respond to the questionnaire. Kazakhstan argues that at the time of the initial questionnaire, Kazakhstan was

undergoing its creation and restructuring, including establishing a system to oversee uranium production in its territory. Kazakhstan notes that the National Joint-Stock Company of Atomic Energy and Industry ("KATEP") was not created until after the questionnaires were served on the NIS. Kazakhstan notes that its willingness to respond is demonstrated by its full cooperation with the Department during the seven years of the suspension agreement. Kazakhstan argues that this indicates that it would have provided the information requested by the Department in the original Investigationinvestigation had it been in a position to do so at the time.

Kazakhstan disagrees with the Uranium Coalition's claim that the Department is creating bad precedent in suspension agreements by allowing Kazakhstan the opportunity to submit sales and factor information in the resumed investigation. Kazakhstan argues that because the circumstances in this investigation are exceptional, the only "precedent" established is that the Department has the discretion, under extreme circumstances and in the interest of fairness, to determine whether it is appropriate to provide an opportunity to submit information in a resumed investigation. Kazakhstan notes that the Department's decision to provide such an opportunity is in accordance with the Tenex proceedings, where the CIT stated that if presented with the question, it would "decide in conjunction with review of the final determination whether the opportunity given [to provide republic-specific data] was statutorily sufficient." *See* 802 F. Supp. at 473

Kazakhstan also disagrees with the Uranium Coalition's claim that the domestic interested parties may not have had an adequate opportunity to review and comment on the information submitted in the resumed investigation. Kazakhstan notes that the Uranium Coalition had over three months to examine Kazakhstan's sales and factor information, none of which has materially changed since the date of initial filing. Accordingly, Kazakhstan argues that the Uranium Coalition cannot contend it had no opportunity to comment on the submitted information. Kazakhstan further notes that the Uranium Coalition has never offered material comments or submitted any sales or factor information specific to Kazakhstan during any point in the investigation.

In light of the circumstances, Kazakhstan argues that the Department appropriately provided Kazakhstan the opportunity to submit information in the resumed investigation. Kazakhstan argues that the supplemental questionnaires were all the more appropriate considering there was no republic-specific information on the record which would allow the Department to make a proper analysis of dumping in the resumed investigation.

Department's Position: The Department recognizes that the court in the Tenex proceedings determined that the actions taken by the Department provided adequate opportunity to participate in the investigation to the fullest extent. In discussing notice and opportunity to be heard and participate in the investigation, the CIT stated that the "petition gave notice of intent to reach exports from the republics as well as the USSR, and the proceedings have been sufficiently delayed so that the plaintiffs have had adequate notice and opportunity to participate." *Tenex I* at 437. The Court further stated that "although unionwide data was used at the outset, presumably the republics have been given the opportunity to provide republic-specific data. If presented with the question, the court will decide in conjunction with review of the final determination whether the opportunity given was statutorily sufficient." *Tenex II* at 473.

Given the unique circumstances of this case and the lapse of time since the original questionnaires were presented, Kazakhstan may have gained access to the data the Department originally requested. The Department determined that it was appropriate to give such additional opportunity to Kazakhstan to provide the originally-requested information at this time. The CIT noted that the "[due process] test is one of fundamental fairness in light of the total circumstances." *Tenex I* at 436. Therefore, while the Department fulfilled its due process obligation given the circumstances at the beginning of this proceeding, the circumstances have changed, calling for a more accommodating opportunity to respond to the original questionnaire.

In essence, the Uranium Coalition argues that the Department gave Kazakhstan too much due process; yet fails to indicate a maximum limit on due process measures. The Department took such measures in light of the unique circumstances of this investigation. At the time of the preliminary investigation and issuance of the original questionnaire, the Soviet Union had just collapsed and the resulting NIS, including Kazakhstan, were struggling to establish themselves. Taking this into consideration, along with the fact that eight years have elapsed since initiation of the investigation, the Department considers it reasonable to have afforded Kazakhstan an additional opportunity to fully participate in the investigation.

Comment 2: The Uranium Coalition argues that the Department should use BIA and apply the 177.87 percent margin calculated for natural uranium in the preliminary determination. The Uranium Coalition notes that Section 776(c) of the Act mandates the Department to use BIA "whenever a party * * * refuses or is unable to produce information requested in a timely manner and in the form required, or otherwise significantly impedes an investigation * * *" *See also* 19 U.S.C. Section1677e(c). The Uranium Coalition argues that application of BIA furthers the purpose of encouraging full disclosure by respondents, so that the Department can compute margins as accurately as possible. The Uranium Coalition argues that the Department must apply BIA even when a respondent's inability to provide requested information is due to circumstances outside the respondent's control. *See Final Determination of Sales at Less Than Fair Value; Sweaters Wholly or in Chief Weight of Man-Made Fiber From Taiwan*, 55 F.R. 34585 (August 23, 1990) (documents destroyed by fire); *NSK Ltd.* v. *United States*, 794 F. Supp. 1156, 1160 (Ct. Int'l Trade 1992) (corporate policy to destroy data after five years). The Uranium Coalition argues that the CIT has rejected a "best efforts" exception to the application of BIA. *See Tai Yang Metal Industrial Co., Ltd.* v. *United States*, 712 F. Supp. 973, 977–78 (Ct. Int'l Trade 1989); *Uddeholm Corp.* v. *United States*, 676 F. Supp. 1234, 1237 (Ct. Int'l Trade 1987). The Uranium Coalition further argues that Kazakhstan's inability to obtain information from third parties[1] is no exception to the requirement of a BIA determination. The Uranium Coalition argues that the Department has consistently applied BIA when information held by a third party has not been submitted. *See Fresh and Chilled Atlantic Salmon from Norway; Final Results from Antidumping Duty Administrative Review*, 58 FR 37912, 37915 (July 14, 1993); *see also Tapered Roller Bearings and Parts Thereof, Finished and Unfinished, from the People's Republic of China; Final Results of Antidumping Duty Administrative Reviews*, 61 FR 65527, 65538 (December 13, 1996). The Uranium Coalition also notes that the

[1] The Uranium Coalition notes that it is uncertain from the evidence whether Kazakhstan expended sufficient effort in obtaining information from third parties.

Department has determined that the fact that a third party might have incentive not to provide information is no exception to the application of BIA. *See Notice of Final Determination of Sales at Less Than Fair Value: Hot-Rolled Flat-Rolled Carbon-Quality Steel Products from Japan*, 64 FR 24329, 24368 (May 6, 1999) [2].

The Uranium Coalition argues that the Department should apply total, not partial, BIA in calculating the final margin. The Uranium Coalition first argues that the Department should have proceeded to a final determination based on BIA due to Kazakhstan's failure to answer the original questionnaire. Disagreeing with the Department's decision to issue a supplemental questionnaire instead, the Uranium Coalition argues that, nevertheless, the Department should apply total BIA in its final determination as Kazakhstan's subsequent response is inadequate, untimely and not verifiable. The Uranium Coalition points to numerous deficiencies in Kazakhstan's response, including: (1) No U.S. sales information provided for its Section C response, which is necessary to calculate prices; (2) information based on 1994 and 1998 data, instead of 1991 data; (3) factors of production reported only for the in situ leaching production processes, despite the use of other processes during both 1991 and 1994; (4) incomplete factors of production data provided; (5) no financial or government documents provided; (6) no quantity and value of sales data provided for its Section A response; and (7) no supporting documentation for Section D provided, as requested by the Department. The Uranium Coalition argues that Kazakhstan should not be allowed to benefit from submitting self-selected information. While 1991 information may no longer be available, the Uranium Coalition argues that regardless of the passage of time, change in personnel, and destruction of relevant records, the Department should base its final determination on BIA. *See Koyo Seiko Co. Ltd.* v. *United States*, 796 F. Supp. 517, 525 (Ct. Int'l Trade 1992) (applying BIA where respondent was unable to provide 1974 information in 1986). The Uranium Coalition argues that not only is the Department unable to calculate foreign market value without factors of production data, overall, the submitted data is insufficient for the Department to calculate a margin.

As Kazakhstan is the sole respondent and a non-market economy, the Uranium Coalition argues the only rate the Department should use is the rate from the preliminary determination. The rate established in the preliminary determination was based upon the petition and information submitted by Petitioners and two parties from which the Department solicited information. *See Preliminary Determination of Sales at Less Than Fair Value: Uranium from Kazakhstan, et al.* 57 FR at 23382.

The Uranium Coalition argues that Kazakhstan has not cooperated with the investigation from the start, beginning with its failure to respond to the original questionnaire. The Uranium Coalition notes that while Kazakhstan had 60 days to prepare for the resumed investigation after providing notice of its intent to terminate the Suspension Agreement, it nevertheless provided no information. Furthermore, the Uranium Coalition notes that the data untimely provided by Kazakhstan during verification could have been reviewed prior to the date its questionnaire responses were due. The Uranium Coalition argues that this demonstrates Kazakhstan's failure to cooperate; the Department should consider Kazakhstan's lack of cooperation in its final determination and apply the rate established in the preliminary determination.

While Kazakhstan disagrees with the continuation of the investigation, it argues that if the investigation is not terminated, the Department should use 1994 factor information in its final determination. Kazakhstan argues that it cooperated to the best of its ability, again noting that the original respondent named in the petition, the Soviet Union, no longer exists. Kazakhstan states that several third parties control the POI data on sales and production for the area in the Soviet Union now known as Kazakhstan. Kazakhstan notes that it attempted to obtain data from these third parties. Within MINATOM, Kazakhstan states that it contacted and requested information from the First Department, Atomredmetzoloto, which oversaw mining and milling in the Soviet Union during the POI, and Techsnabexport, which oversaw all uranium sales from the Soviet Union during the POI. Kazakhstan states that it received no information from these requests. Kazakhstan also states that while the regional departments that reported to Atomredmetzoloto (Uzhpolymetal, Vostokredmet, Tselliny and Prikaspiysky (a.k.a. Kaskor)) are possible sources of POI sales and production information, it is unclear what records they created and retained in the ordinary course of business as each followed different standards then. Furthermore, Kazakhstan notes that none of these records are under its control; Uzhpolymetal is in Kyrgyzstan and Vostokredmet is located in Tajikistan. As for Tselliny and Kaskor, Kazakhstan states that it explained during verification that neither regional department was under the direct control of KATEP or of Kazatomprom. Finally, Kazakhstan notes that because many of the third parties now compete with Kazakhstan in the uranium market, they have an incentive not to respond to requests for information.

Kazakhstan also argues that after the dissolution of the Soviet Union on December 25, 1991, there was no formal centralized management of uranium activities in Kazakhstan until the establishment of KATEP on February 12, 1992. Kazakhstan notes that while KATEP was created to take sole responsibility for all sales of subject merchandise from Kazakhstan, KATEP did not have full day-to-day management responsibility over all uranium production in Kazakhstan. Kazakhstan asserts that Kazatomprom, created on July 12, 1997, was the first entity with sole responsibility for the mining and marketing of uranium from Kazakhstan. Kazakhstan argues that the lack of formal oversight contributed to the incomplete nature of the 1991 and 1994 records.

Kazakhstan argues that the passage of time is another constraint on the availability of information. Kazakhstan notes that the individuals who recorded information during the POI are not the same individuals who helped prepare the questionnaire responses. Without the personal recollection of these individuals, Kazakhstan argues that reconstruction of the archived files was difficult. Kazakhstan also argues that because the POI is eight years ago, much of the 1991 (as well as the 1994) information has been destroyed in the ordinary course of business pursuant to document destruction policies, referencing the certificate of destruction produced during verification as examples of the policies. *See* May 13, 1999 Verification Report ("Verification Report"), at 13 and 26. Kazakhstan was also hindered in its efforts to locate data as much of the information on uranium was, and still is, considered state secrets. Kazakhstan states that knowledge on the material was limited and circulation of information was restricted. Only a limited number of

[2] The Uranium Coalition states that while that determination was made under the current antidumping statute, the principle of making an adverse inference when information is not provided applies to the pre-URAA use of BIA. *See Rhone Poulenc* v. *United States*, 899 F.2d 1185, 1190–91 (Fed. Cir. 1990).

documents on uranium were made and circulated among a small circle of officials. Accordingly, Kazakhstan argues that this made locating complete sets of documents difficult.

Kazakhstan argues that its efforts in light of the unusual and difficult situation indicates it cooperated to the best of its ability and, thus, the Department should use the 1994 factors information submitted by Kazakhstan in the final determination. Kazakhstan argues that the 1994 information it produced, despite the described obstacles, is as complete as possible, as well as verifiable. Kazakhstan states that it submitted 1994 factors information for four of the seven facilities operating during the POI. Kazakhstan argues that the Department has complete information on the total uranium output at these four facilities, and the inputs needed to produce one kilogram of uranium at each of those facilities. Kazakhstan argues that the main source documents provided for 1994, the technical reports, tied to other information available for 1994, such as the unit reports, monthly cost of production reports and the annual report filed with government authorities. Kazakhstan concedes that the Department was generally unable to trace the 1994 technical reports to a level of detail lower than the unit reports but argues that this was because more detailed information did not exist, and was not because of any inconsistency in the information.

Kazakhstan argues that the 1994 factors information is as representative of uranium production during the POI as any other source. Kazakhstan also argues that the 1994 factors information accurately represents possible uranium production today. Accordingly, Kazakhstan argues that an antidumping duty based on the provided 1994 factors information would be superior to one based on other sources. In comparing the 1994 information with the limited information available for 1991, Kazakhstan claims that similar inputs were consumed at similar levels and facility production levels were comparable. In fact, Kazakhstan suggests that 1994 data may be preferred over 1991 data as Kazakhstan controlled the 1994 facilities, whereas MINATOM controlled the 1991 facilities. Furthermore, Kazakhstan argues that the 1994 factors are based on actual production information in Kazakhstan at the same facilities operating in 1991, whereas the factors submitted by petitioners and used in the preliminary determination were estimates for Canadian facilities, where actual source documents were not used.

Kazakhstan notes that the Department has substantial discretion in selecting the source of BIA to use in its calculations. *See Magnesium Corp.* v. *United States*, 938 F. Supp. 885, 902 (Ct. Int'l Trade 1996). Kazakhstan asserts that the Uranium Coalition incorrectly contends that the Department must use information submitted in the petition as BIA. Kazakhstan notes that the Department may consider any and all information on the record in selecting BIA and argues that the final determination should be based on republic-specific data. Accordingly, Kazakhstan argues that the data it has submitted is far superior to the information submitted by the petitioners.

Department's Position: The Department continues to apply the overall rate of 115.82 percent as the BIA rate for the final determination. The Department notes that at verification none of the information provided, timely or otherwise, could be traced to annual report information at verification. Further, the Department was unable to check original well-site and factory information to tie to the few technical reports available for review. As a result, the record data can only be considered fragmentary. Without any verifiable data, the Department must resort to the rate established at preliminary determination. Additionally, while Kazakhstan asserts that it should not be held responsible for the failure of Tenex to provide data regarding U.S. shipments of subject merchandise during the POI, the Department notes that precedent to the contrary exists. Even where another party controls the information, the Department may rely on BIA if the information is not provided by the respondent. *See Helmerich & Payne, Inc.* v. *United States*, 24 F. Supp. 2d 304, n. 6 (Ct. Int'l Trade 1998).

The Department's practice is to base BIA on a simple average of the margins based on petition data, as opposed to the highest margin based on petition data, when the Department determines that the respondent has attempted to cooperate with the Department's Investigationinvestigation. In this instance, the Department calculated a natural and enriched uranium rate, modifying the original petition rates. Therefore, the Department considers it appropriate to apply the average rate of 115.82%. See e.g., Preliminary Determination of Sales at Less Than Fair Value: Circular Welded Non-Alloy Steel Pipe from Taiwan, 57 FR 17892 (April 28, 1992). The Department believes that Kazakhstan attempted to cooperate in this proceeding because, while the response lacks sufficient data to use in the calculation of a dumping margin, it nevertheless contains sufficient data for the Department to conclude that a serious and sustained effort was undertaken by Kazakhstan to provide data responsive to the Department's questionnaires for the POI. Therefore, the Department is basing the final margin on an average of the margins for uranium concentrate and enriched uranium derived from the petition. In this instance, the petition included margins for natural and enriched uranium, which the Department adjusted for purposes of the preliminary determination *See Preliminary Determination of Sales at Less Than Fair Value: Circular Welded Non-Alloy Steel Pipe from Taiwan*, 57 FR 17892 (April 28, 1992). The average of those rates, as adjusted, is 115.82 percent.

Comment 3: The Uranium Coalition asserts that the Department has the authority to clarify the scope of this Investigationinvestigation to include Kazakhstan origin natural uranium enriched in third countries in order to prevent the potential circumvention of any future antidumping duty order. The Uranium Coalition further asserts that such a clarification would be in accordance with the Department's substantial transformation analysis, the intent of the petition, and the purpose of the antidumping law. Regarding their circumvention concerns, the Uranium Coalition cites the potential cost savings for utilities purchasing Kazakhstan origin uranium at the unrestricted market price and claim that contracts permitting the foreign enrichment of Kazakhstan origin uranium are already in place. The Uranium Coalition notes that the Department's need to address potential circumvention in its substantial transformation analyses may result in a determination which differs from that of the United States Customs Service ("U.S. Customs") and that, in this case, the elements of the Department's substantial transformation analysis require a determination that third-country enrichment does not change the country of origin of Kazakhstan uranium.

The Uranium Coalition asserts that, while the petition's scope did not specifically include uranium enriched in third countries, its intent was clearly to cover all forms of uranium products and to prevent circumvention. The Uranium Coalition argues that there was no reasonable basis in 1991 to foresee the increasing use of foreign enrichment by U.S. utilities and that the Suspension Agreement was subsequently modified to cover these third-country enrichment transactions. Finally, the Uranium

Coalition notes that the Department must clarify the scope of this Investigationinvestigation in order to achieve the antidumping law's purpose of remedying the negative impact on a U.S. industry of unfairly traded imports. The Uranium Coalition argues that, when the unfairly-priced Kazakhstan uranium is enriched abroad rather than in the United States, the injurious effect on the mining sector of the U.S. industry is not altered and that the adverse effects are in fact exacerbated because the enrichment sector of the U.S. industry is damaged.

Kazakhstan contends that the Uranium Coalition's request represents an untimely attempt to improperly expand the scope of the investigation and any resulting antidumping duty order to cover uranium produced in countries not subject to this Investigationinvestigation. Kazakhstan argues that all of the factors normally considered by the Department in its substantial transformation analysis confirm that enrichment does substantially transform and confer a new country of origin on enriched uranium. Thus, Kazakhstan asserts the Department does not have the authority to expand the scope of this proceeding. Kazakhstan further asserts that including uranium enriched, and therefore produced, in third countries in the scope of this case would violate the World Trade Organization's Agreement on Rules of Origin as well as "circumvent" the standards for circumvention established in the U.S. statute.

Department's Position: The Department agrees with Kazakhstan, in part. As an initial matter, there is no evidence on the record to indicate that there were any entries into the United States during the POI of Kazakhstan uranium enriched in a third country. In fact, the Uranium Coalition notes in its brief that the practice about which they are concerned evolved after the POI. The Uranium Coalition's concern clearly centers on current and future contracts involving third-country enrichment and, therefore, is unrelated to the calculation of a dumping margin on uranium from Kazakhstan during the POI. Thus, the Department need not decide in this final determination whether uranium from Kazakhstan enriched in a third country was sold at less than fair value during the POI.

With respect to the third-country enrichment issue, its importance and complexity is illustrated by the extensive argument contained in the Uranium Coalition's and Kazakhstan's briefs and in the time devoted to this issue at the hearing. However, Kazakhstan argues that the Uranium Coalition raised the third-country enrichment issue so late in the proceeding that its due process rights were prejudiced. The Department finds that neither the Department nor Kazakhstan could effectively examine the issue prior to issuance of the final determination. A review of the case schedule on and after the date of the Uranium Coalition's filing illustrates the point. The Uranium Coalition's submission was filed on April 26, 1999, one week prior to the beginning of verification. The Department conducted verification in Kazakhstan during the week of May 4, 1999 through May 8, 1999, and issued a verification report on May 13, 1999. Parties filed case briefs on May 17, 1999, and rebuttal briefs on May 21, 1999. The hearing was held on May 26, 1999, just eight days before the date of the final determination. This schedule simply did not permit the Department sufficient time to issue supplemental questionnaires, pose questions to the Uranium Coalition or engage in the other activities necessary to properly evaluate the law, arguments, and facts surrounding this issue. Additionally, the Uranium Coalition's filing on this issue was made in the context of an investigation resumed after an almost eight-year hiatus, during which the Government of Kazakhstan began rationalizing its uranium production. Furthermore, during the initial investigation, the respondent country became independent, further complicating the link between the initial 1991–92 phase of the investigation, the 1999 resumed investigation, and the third-country enrichment issue.

As a result of the above considerations, and to provide sufficient opportunity for full analysis of the law, argument and facts regarding this issue, the Department will initiate a scope inquiry on Kazakhstan uranium enriched in a third country simultaneously with the issuance of any antidumping order in this proceeding.

Comment 4: The Uranium Coalition contends that the Department should include uranium imported under a U.S. Customs temporary import bond ("TIB") within the scope of this Investigationinvestigation in order to prevent certain "swap" transactions which may otherwise be used to circumvent a future antidumping duty order. The Uranium Coalition argues that, in this case, the Department has clear evidence, based on the past conduct of importers and domestic parties during the administration of the Suspension Agreement, that temporarily-imported merchandise can be, and has been, used to introduce dumped merchandise into U.S. commerce. The Uranium Coalition asserts that the Department has the authority to inform U.S. Customs that, due to the fungibility of the product and the nature of commercial activities in this particular industry, all Kazakhstan uranium entries, including TIB entries, must be subject to antidumping duty assessment to prevent circumvention of an order.

Alternatively, the Uranium Coalition urges the Department, at a minimum, to direct U.S. Customs to consider any entry of Kazakhstan uranium as a consumption entry subject to the antidumping order unless the TIB "statement of use" accompanying the TIB application under 19 CFR 10.31 includes a statement that the uranium to be imported under TIB will not be, and has not been, used as part of any swap, loan, or exchange transaction.

Kazakhstan argues that the Uranium Coalition's request to include Kazakhstan uranium entered under TIB in the scope of this proceeding is both untimely and improper and should be rejected by the Department. Kazakhstan notes that this issue was first raised in the Uranium Coalition's case brief, disallowing the Department the opportunity to make use of proper notice and comment procedures before departing from a prior practice with such broad implications. Furthermore, Kazakhstan notes the Uranium Coalition's concession that the Department has previously held, and the CIT upheld, that antidumping duty orders do not apply to merchandise entered under TIB.

Department's Position: The Department agrees with Kazakhstan. As noted by the Uranium Coalition, the Department has previously rejected a request to apply antidumping duties to merchandise imported under TIB procedures. *See Remand Determination: Titanium Metals Corp.* v. *United States*, Court No. 94–04–00236 (Apr. 17, 1995). The CIT then upheld this decision. See *Titanium Metals Corp.* v. *United States*, 901 F. Supp. 362 (Ct. Int'l Trade 1995). While the Department recognizes the Uranium Coalition's concerns regarding the atypical characteristics of uranium and the uranium industry, the Department reaffirms its prior finding that merchandise entered pursuant to TIB is not entered for consumption. As a result, antidumping duties cannot apply to TIB entries. In addition, the Department has no legal authority to instruct U.S. Customs to require an additional certification for such Kazakhstan TIB entries, as alternatively requested by the Uranium Coalition.

Comment 5: Kazakhstan notes that the respondent named in the original antidumping petition, the Soviet Union, was dissolved less than one month after initiation of the Investigationinvestigation and no longer exists. Kazakhstan stresses that while the courts sustained the determination to continue the Investigationinvestigation despite the dissolution of the Soviet Union, the final determination of the Investigationinvestigation must be based on facts involving Kazakhstan, not the Soviet Union. Kazakhstan argues that the distinction between Kazakhstan and the Soviet Union is critical to the Department's analyses of: (1) Whether the petition was filed on behalf of the domestic industry against Kazakhstan in particular; (2) whether there were sales of subject merchandise from Kazakhstan to the United States during the POI; and (3) the selection of surrogate values for Kazakhstan.

According to the Uranium Coalition, the fact that Kazakhstan is no longer a part of the Soviet Union does not change the Department's obligation to conduct an antidumping investigation of uranium produced during the POI in the territory which is now Kazakhstan. The Uranium Coalition argues that the Department reasonably construed the antidumping statute as authorizing continuation of this Investigationinvestigation, despite the fact that the petition leading to this Investigationinvestigation was filed against subject merchandise from the Soviet Union.

According to the Uranium Coalition, Section 731 of the Act instructs the Department to impose antidumping duties whenever foreign merchandise is sold at less than fair value in the United States, where the International Trade Commission determines that such imported merchandise causes injury to a domestic industry. The Uranium Coalition further argues that this statutory provision contains no requirement that the Department take changes in the political landscape of a foreign territory into account when determining whether the imposition of antidumping duties is warranted. According to the Uranium Coalition, it is the foreign merchandise—not the particular political configuration of the territory in which the merchandise originated—which is the critical aspect of the antidumping analysis. Thus, the Uranium Coalition concludes, changes in the geopolitical territory of the former Soviet Union are not relevant for purposes of determining whether uranium produced in any region of the former Soviet Union was traded unfairly in the United States.

In support of its conclusion, the Uranium Coalition cites to Tenex II. *See* 802 F. Supp. 469. According to the Uranium Coalition, the CIT held that the Department had full legal authority to continue its uranium investigation against the former Soviet republics, notwithstanding dissolution of the Soviet Union, because the antidumping statute did not require the Department to take into account changes in political structures in the course of its investigation. Further, according to the Uranium Coalition, since the Tenex proceedings, this rationale has been applied consistently by the Department. *See Transfer of the Antidumping Order on Solid Urea from the Union of Soviet Socialist Republics to the Commonwealth of Independent States and the Baltic States and Opportunity to Comment*, 57 Fed. Reg. 28828 (Jun. 29, 1992); *Application of U.S. Antidumping and Countervailing Duty Laws to Hong Kong*, 62 Fed. Reg. 42965 (Aug. 11, 1997); *Solid Urea from the German Democratic Republic*, 63 Fed. Reg. 7122, 7122–23 (Feb. 12, 1998); *Certain Cut-to-Length Carbon-Quality Steel Plate from the Former Yugoslav Republic of Macedonia*, 64 Fed. Reg. 12993 (Mar. 16, 1999).

Department's Position: The Department agrees with Kazakhstan, in part. The Department agrees that Kazakhstan is a different entity from the Soviet Union. In recognition of that fact, the Department attempted to collect and verify separate Kazakhstan-specific information. However, Kazakhstan failed to provide sufficient verifiable data which the Department could use in its analysis. As a result, the Department must use BIA, for the reasons discussed in Comment 2, above. The Department notes that the continuation of this investigation against Kazakhstan was challenged at the CIT, where the Department's decision to continue was upheld. *See* Tenex proceedings.

Comment 6: Kazakhstan argues that the investigation should be terminated as the Uranium Coalition does not have the support of the domestic industry and, thus, lacks standing to represent the industry in the resumed investigation. Kazakhstan claims that two of the original petitioners, Power Resources, Inc. ("PRI") and Cogema, Inc. ("Cogema"), currently account for over half the production of uranium in the United States. Kazakhstan states that PRI expressed its opposition to the investigation in an April 15, 1999 letter and Cogema expressed its opposition in a May 5, 1999 letter. Kazakhstan argues that their opposition indicates that the investigation is not "on behalf of" the domestic uranium industry.

Kazakhstan argues that the Department has the power to rescind its decision to initiate an antidumping investigation where it is discovered that the petition is not being maintained on behalf of the industry. *See Gilmore Steel Corp.* versus *United States*, 585 F. Supp. 670, 674 (Ct. Int'l Trade 1984). Kazakhstan argues that when members of the domestic industry provide grounds to doubt a petitioner's standing, the Department should evaluate whether those parties which oppose the investigation represent a majority of the domestic industry, to determine whether the petition is properly filed on behalf of the domestic industry. *See Suramerica de Aleaciones Laminadas, C.A.* v. *United States*, 966 F.2d 660, 662–63 (Fed. Cir. 1992). Kazakhstan claims that PRI and Cogema account for a majority of the domestic industry and, since this majority of the domestic industry opposes the investigation, Kazakhstan argues that the Department should terminate the investigation immediately.[3]

The Uranium Coalition also states that the letters from PRI and Cogema were not properly filed, are therefore not on the record of this investigation and thus cannot be considered by the Department. Moreover, even if the letters had been properly placed on the record, the Uranium Coalition continues, Cogema and PRI are parties that are related to the producer through their joint ventures in Kazakhstan. Hence, neither PRI nor Cogema would be considered part of the domestic industry.

Department's Position: The Department agrees with the Uranium Coalition. The Department notes that the letters submitted by PRI and Cogema, as domestic uranium producers opposed to the investigation, were improperly submitted and cannot be considered. First, the letter from PRI, to which Kazakhstan refers, does not appear on the record for this investigation. Second, the courtesy copies of the PRI and Cogema letters provided separately to Department analysts show no certificate of service, and thus it appears that the parties were never properly served the letters. Pursuant to 19 CFR 353.31(g)(2), the Department "will not accept any document that is not accompanied by a certificate of service listing the parties served, the type of document served,

[3] As an alternative, Kazakhstan suggest that the Department survey all uranium producers in the United States to determine the producers' stance on the investigation.

and, for each, indicating the date and method of service." Third, neither letter contains a certification as to the contents of the letter, as required under 19 CFR 353.31(i).[4]

The PRI and Cogema letters were also untimely submitted. Pursuant to 19 CFR 353.31(c)(2), the Department "will not consider any allegation in an investigation that the petitioner lacks standing unless the allegation is submitted, together with supporting factual information, not later than 10 days before the scheduled date for the Secretary's preliminary determination." The Department notes that while Pathfinder Mines Corporation ("Pathfinder"), a Cogema subsidiary, properly submitted a letter to the record in furtherance of Cogema's opposition, Pathfinder's letter was dated May 17, 1999, which is clearly past the regulatory deadline.

Finally, even if PRI and Cogema had properly expressed their opposition to this investigation, publicly available information indicates that PRI, a wholly owned subsidiary of Cameco, and Cogema, a foreign-owned producer, have certain joint ventures with Kazakhstan that mandate the Department to disregard their opposition to the investigation. *See* the Uranium Coalition's rebuttal brief, at Exhibit 3 ("The Reconstruction of the Uranium Industry in Kazakhstan"). Section 771(4)(A) defines the term industry to mean "the domestic producers as a whole of a like product." Section 771(4)(B) provides that "when some producers are related to the exporters * * * of the allegedly * * * dumped merchandise, the term "industry" may be applied in appropriate circumstances by excluding such producers from those included in that industry." As both PRI and Cogema have business relations with the foreign producer in this investigation, the Department is disregarding their positions for purposes of standing. For these aforementioned reasons, even if the objections had been properly and timely filed, the Department would continue this investigation.

Comment 7: Kazakhstan argues that it made no sales of subject merchandise to the United States during the POI as it did not exist during the POI. Kazakhstan argues that as part of the Soviet Union, the region's economy was under the guidance and control of Soviet authorities and companies existing in the region had no independent production or sales activities. Kazakhstan argues that during the POI, Tenex had sole authority for making sales of uranium produced in the Soviet Union, noting that Tenex is a wholly-owned and controlled subsidiary of MINATOM. Kazakhstan further notes that, pursuant to contracts between Tenex and the uranium producers for the region during the POI, the manner in which the uranium producers were compensated for uranium provided to Tenex reveal that the uranium producers had no control over sales. Accordingly, Kazakhstan states that even if there was any evidence of sales from Kazakhstan to the United States during the POI, and Kazakhstan asserts there is no such evidence, under the circumstances it is not reasonable to conclude that Kazakhstan or its uranium producers bore any responsibility for those sales.

Kazakhstan insists that "where parties in the territory that is now the Republic of Kazakhstan were not even responsible for the sales of their merchandise at the time, proving the negative is virtually impossible." *See* Kazakhstan's Rebuttal Brief, at 17. Kazakhstan states that the Uranium Coalition has not disputed that no sales of subject merchandise produced in Kazakhstan were made to the United States during the POI. Kazakhstan argues that without sales, the Department has previously held that "there are no United States prices with which to compare foreign market value, and, thus, no dumping margins." *See Final Determination of No Sales at Less Than Fair Value: Ferrosilicon from Argentina*, 58 FR 27534, 27535 (May 10, 1993). Kazakhstan argues that this conclusion flows directly from the definition of U.S. price. *See* 19 CFR 353.41(a). Kazakhstan argues there is no evidence of any sales, thus, the Department has no reasonable basis to conclude that there were any dumping margins and the investigation should be terminated.

The Uranium Coalition argues that Kazakhstan's assertion, that it made no sales of subject merchandise to the United States during the POI, is based on the incorrect assumption that the investigation covers material sold by Kazakhstan or by a "Kazakh entity." The Uranium Coalition argues that Kazakhstan should properly be considering material from Kazakhstan that is sold in the United States, and not considering the party that controlled production or sold the uranium, noting that the Department's instructions to U.S. Customs was "for all manufacturers, producers, and exporters of uranium from Kazakhstan." The Uranium Coalition notes that the burden of proof is on Kazakhstan to produce evidence that there were no sales of subject merchandise to the United States during the POI. *See Electrolytic Manganese Dioxide from Ireland; Final Determination of No Sales at Less Than Fair Value*, 54 FR 8776 (March 2, 1989); *see also, Final Determination of No Sales at Less Than Fair Value: Ferrosilicon from Argentina*, 58 FR 27534, 27535 (May 10, 1993). The Uranium Coalition argues that Kazakhstan has failed to meet its burden by failing to provide verified evidence, noting that the Department's verification report states that Kazakhstan did not provide any evidence that could have resolved whether there were any shipments to the United States during the POI. Furthermore, the Uranium Coalition contends that it is highly likely that there were sales of uranium from Kazakhstan to the United States during the POI as the region now known as Kazakhstan accounted for 50 percent of all uranium production by the former Soviet republics in 1991. *See* the Uranium Coalition's Rebuttal Brief at 32.

Department's Position: The Department agrees with the Uranium Coalition. The issue of continuing this proceeding with respect to the individual Republic was previously settled in court. *See* Tenex proceedings. Thus, the claim that Kazakhstan itself did not make any sales of uranium to the U.S. during the POI is irrelevant to this investigation. As the Uranium Coalition points out, Kazakhstan accounted for 50 percent of all uranium production of the Soviet Union. Furthermore, at verification, the Department found that Tenex and the Tselliny combinat had signed a commission agreement in 1990. *See* Verification Report at 3. This commission contract supports the contention that a regular channel of trade of natural uranium from Kazakhstan through Tenex to foreign locations had been established. The Department noted at verification that Kazakhstan's responses "included shipping documents indicating that uranium produced in Kazakhstan may have been shipped to the United States by Tenex both before and during the POI." *See* Verification Report at 10–11. At verification, given this evidence, the Department attempted to confirm whether there were sales of subject merchandise to the United States during

[4] The Department notes that even had the letters been certified, the contents fail to substantiate Kazakhstan's claim that PRI and Cogema represent a majority of the domestic uranium industry by providing the evidence stipulated in the Department's regulations. Accordingly, the Department cannot assume that PRI and Cogema represent a majority of the domestic uranium industry.

the POI. While the Department requested additional data from Kazakhstan regarding U.S. sales, Kazakhstan failed to provide any data to clarify the existing evidence. Similarly, when the Department attempted to follow up on the Tenex-Tselliny combinat contract, Kazakhstan did not provide any supporting documentation, such as receipts or other documentation indicating payments received from Tenex pursuant to the contract. As a result, the Department was unable to examine key source data which could have supported Kazakhstan's claim of no shipments to the United States of subject merchandise during the POI. Evidence on the record indicates that uranium from what is now known as Kazakhstan was most likely shipped to the United States during the POI. Kazakhstan was unable to provide information countering this evidence. Accordingly, the Department must conclude as BIA that there were sales of subject merchandise to the United States during the POI and Kazakhstan did not provide data on those sales.

Comment 8: Kazakhstan argues that the Department should use South Africa as the primary surrogate country. Kazakhstan argues that its surrogate value submission to the record, dated April 28, 1999, demonstrates that South Africa satisfies the statutory criteria for selection as the primary surrogate country, pursuant to Section 773(c)(4) of the Act. Kazakhstan argues that the Department is permitted to select a different surrogate country in the final determination than selected in the preliminary determination, citing *Tehnoimportexport* v. *United States*, 766 F. Supp. 1169, 1175 (Ct. Int'l Trade 1991); and *Kerr McGee Chemical Corp.* v. *United States*, 985 F. Supp. 1166, 1180 (Ct. Int'l Trade 1997). Kazakhstan argues that in the preliminary determination, the Department used a single surrogate based on Soviet Union economic data because, lacking accurate or detailed information, the Department mistakenly assumed that the level of economic development of the former Soviet Union republics was essentially the same. However, Kazakhstan argues there is now enough information available to show the former republics' different levels of economic development, thus, the Department should not make the same assumption at the final determination. Kazakhstan argues that the Department has generally preferred using publicly available pricing information as the source of surrogate values as opposed to using proprietary information. Kazakhstan asserts that the only publicly available information on the record to value virtually every input used to produce subject merchandise is from South Africa. Accordingly, Kazakhstan argues that the Department should select South Africa as the primary surrogate country in the interest of calculating a fair and accurate margin in the final determination. Finally, Kazakhstan argues that the Department should not add freight charges to the valuation of any input for which freight-inclusive import values are used as surrogate values.

The Uranium Coalition rebuts Kazakhstan's contention that South Africa should be the primary surrogate country by stating that the Department does not change surrogate countries after the preliminary determination unless it finds compelling reasons to do so. The Uranium Coalition argues that, to date, Kazakhstan has not provided such information. Further, the Uranium Coalition cites to the *Addendum to Memorandum Regarding Choice of Surrogate Countries, Antidumping Investigation of Uranium from the Former Soviet Union* (March 24, 1992), where the Department determined that the most appropriate course of action was to use the surrogate countries decided upon for the Soviet Union, for the NIS. The Uranium Coalition also contends that Kazakhstan's premise that the Department did not perform a surrogate country analysis is incorrect. Furthermore, the Uranium Coalition states that Kazakhstan's assertion that because Kazakhstan is not the Soviet Union that the Department's prior analysis is incorrect. Finally, the Uranium Coalition argues that the information on the record for South Africa is incomplete and unreliable in many respects.

Department's Position: As the Department is relying on BIA for its calculation of the antidumping duty margin in this proceeding, this issue is moot. *See* Comment 2.

Suspension of Liquidation

In accordance with Section 735(d) of the Act, the Department is instructing U.S. Customs to continue suspending liquidation of all unliquidated entries of uranium from Kazakhstan, as defined in the Scope of the Investigation section of this notice, that are entered or withdrawn from warehouse for consumption on or after January 11, 1999 (the effective date of the termination of the Suspension Agreement). U.S. Customs shall continue to require a cash deposit or bond equal to 115.82 percent *ad valorem*, the estimated weighted-average amount by which the foreign market value of the subject merchandise exceeds the United States price, for all manufacturers, producers and exporters of uranium from Kazakhstan. These suspension of liquidation instructions will remain in effect until further notice.

International Trade Commission Notification

In accordance with Section 735(b)(2) of the Act, the Department has notified the International Trade Commission ("ITC") of its final determination. The ITC will determine whether these imports are materially injuring, or threaten material injury to, the United States uranium industry. The ITC shall make this determination before the latter of: (1) 120 days after the effective date of the preliminary determination; or (2) 45 days after publication of the Department's final determination. If the ITC determines that such injury does not exist with respect to uranium, this proceeding will be terminated and all securities will be refunded or canceled. If the ITC determines that such injury exists with respect to uranium, the Department will issue an antidumping duty order directing U.S. Customs officials to assess antidumping duties on all imports of uranium from Kazakhstan for the period discussed above in the Suspension of Liquidation section of this notice.

This determination is issued and published in accordance with Section 735(d) of the Act (19 U.S.C. 1673(d)) and 19 C.F.R. 353.20(a)(4).

Dated: June 3, 1999.

Richard W. Moreland,

Acting Assistant Secretary for Import Administration.

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[Docket No. 990416102-9102-01]

RIN 0648-ZA64

Notice and Request for Proposals

AGENCY: National Weather Service (NWS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce (DOC).

ACTION: Request for proposals.

SUMMARY: The Collaborative Science, Technology, and Applied Research (CSTAR) Program represents an NOAA/NWS effort to create a cost-effective continuum from basic and applied research to operations through

APPENDIX B

WITNESSES AT THE COMMISSION'S HEARING

B-1

CALENDAR OF PUBLIC HEARINGS

Those listed below appeared as witnesses at the United States International Trade Commission's hearing:

Subject: Uranium from Kazakhstan

Inv. Nos.: 731-TA-539-A (F)

Date and Time: June 9, 1999 - 9:30 a.m.

Sessions were held in connection with this investigation in the Main Hearing Room, 500 E Street, SW, Washington, DC.

OPENING REMARKS

Petitioners (**Valerie A. Slater**, Akin, Gump, Strauss, Hauer & Feld, L.L.P.)
Respondents (**Carolyn Lamm**, White & Case, L.L.P.)

In Support of the Imposition of Antidumping Duties:

Akin, Gump, Strauss, Hauer & Feld, L.L.P.
Washington, D.C.
on behalf of

Ad Hoc Committee of Domestic Uranium Producers
Paper, Allied-Industrial-Chemical and Energy Workers International Union ("PACE")(formerly the Oil, Chemical and Atomic Workers International Union)
USEC, Incorporated

R. Mark Stout, Vice President, Land and Marketing, Rio Algom Mining Corporation

Joseph Card, Vice President, Marketing, Uranium Resources, Incorporated

Danny M. Collier, Senior Vice President, Consulting, NAC International

Dan Minter, President, Local 5-689, PACE

-MORE-

In Support of the Imposition of Antidumping Duties-Continued:

Richard Miller, Consultant, PACE

Philip G. Sewell, Vice President, Corporate Development and International Trade, USEC, Incorporated

Daniel W. Klett, Principal, Capital Trade, Incorporated

Dennis Stover, Vice President, Engineering and ISL Technology

Robert Van Namen, Vice President, Marketing and Sales USEC, Incorporated

Valerie A. Slater	)--Akin, Gump, Strauss, Hauer & Feld, L.L.P.
Stephen J. Claeys	)--Akin, Gump, Strauss, Hauer & Feld, L.L.P.
Philip H. Potter	)--PACE
	)--OF COUNSEL
Richard O. Cunningham	)--Steptoe & Johnson, L.L.P.
Eric C. Emerson	)--Steptoe & Johnson, L.L.P.

In Opposition to the Imposition of Antidumping Duties:

Embassy of the Republic of Kazakhstan, Washington, D.C.

Honorable Bolat Nurgaliyev, Ambassador Extraordinary and Plenipotentiary

Shearman & Sterling
Washington, D.C.
on behalf of

Republic of Kazakhstan

White & Case, L.L.P.
Washington, D.C.
on behalf of

NUKEM, Incorporated

and

In Opposition to the Imposition of Antidumping Duties-Continued:

Shaw Pittman
Washington, D.C.
on behalf of

Ad Hoc Utilities Group ("Utilities Group")

Andrew R. Wechsler, Managing Director of International Practices, LECG, Incorporated

Brian C. Becker, Managing Senior Economist, LECG, Incorporated

Dustin J. Garrow, Consultant, CIMA Energy

Michael H. Schwartz, Consultant, Energy Resources International, Incorporated

Scott Melbye, Vice President, Marketing, Power Resources, Incorporated

Steve Collings, President, Crow Butte Resources, Incorporated

Tony Schillmoller, Senior Program Manager Business Development, General Electric Corporation

Tom Marshall, Manager, Uranium Programs, Westinghouse Corporation

David Sloan, Senior Trader, NUKEM, Incorporated

David Culp, Manager, Nuclear Fuel Management, Duke Power Company

Kenneth S. Peterson, Fuel Supply Manager, Commonwealth Edison Company

Claude Villard, Manager, Nuclear Fuel, Florida Power and Light Company

Charies A. Blanton, III, Fuel Procurement Specialist, Nuclear Analysis and Fuel, Virginia Power

Timothy Y. McGraw, Manager, Nuclear Fuel

Bruce Hunt, Manager, Nuclear Fuel Department, Southern Company

-MORE-

In Opposition to the Imposition of Antidumping Duties-Continued:

Thomas B. Wilner)--Shearman & Sterling
Michael J. Chapman)--Shearman & Sterling
Carolyn Lamm)--White & Case, L.L.P.
Lyle Vander Scdaaf)--White & Case, L.L.P.
)--OF COUNSEL
Stephan Becker)--Shaw Pittman
Nancy Fischer)--Shaw Pittman
Elizabeth Becker)--Shaw Pittman

CLOSING REMARKS

Petitioners (**Valerie A. Slater**, Akin, Gump, Strauss, Hauer & Feld, L.L.P.)
Petitioners (**Richard O. Cunningham**, Steptoe & Johnson, L.L.P.)
Respondents (**Thomas B. Wilner**, Shearman & Sterling)

-END-

APPENDIX C

SUMMARY DATA

C-1

Table C-1
Uranium: Summary data concerning the U.S. market, 1996-98, January-March 1998, and January-March 1999

(Value=1,000 dollars, period changes=percent, except where noted)

Item	Reported data			January-March		Period changes			Jan.-Mar.
	1996	1997	1998	1998	1999	1996-98	1996-97	1997-98	1998-99
Total U.S. sales value:									
Amount	3,164,988	2,853,669	2,965,435	598,993	402,201	-6.3	-9.8	3.9	-32.9
Producers' share (1)	62.5	62.9	58.5	60.2	52.8	-3.9	0.4	-4.3	-7.4
Importers' share (1):									
Kazakhstan	0.4	1.6	0.9	0.6	0.0	0.5	1.2	-0.7	-0.6
Russia	7.2	5.2	14.7	12.9	0.8	7.5	-2.1	9.5	-12.1
Ukraine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uzbekistan	0.3	1.0	0.8	0.0	0.0	0.5	0.7	-0.2	0.0
Subtotal	7.9	7.7	16.4	13.6	0.8	8.5	-0.2	8.7	-12.7
Other sources	29.6	29.4	25.1	26.3	46.4	-4.5	-0.2	-4.4	20.1
Total imports	37.5	37.1	41.5	39.8	47.2	3.9	-0.4	4.3	7.4
Value of U.S. imports from:									
Kazakhstan	12,765	45,385	26,819	3,651	0	110.1	255.5	-40.9	-100.0
Russia	228,070	146,983	435,311	77,567	3,380	90.9	-35.6	196.2	-95.6
Ukraine	0	0	942	0	0	(2)	(2)	(2)	(2)
Uzbekistan	9,898	27,753	23,444	0	0	136.8	180.4	-15.5	(2)
Subtotal	250,734	220,122	486,515	81,218	3,380	94.0	-12.2	121.0	-95.8
Other sources	936,484	839,028	742,861	157,376	186,426	-20.7	-10.4	-11.5	18.5
Total imports	1,187,219	1,059,150	1,229,376	238,594	189,806	3.6	-10.8	16.1	-20.4
U.S. producers':									
U.S. sales	1,240,944	1,011,083	1,056,857	218,804	128,919	-14.8	-18.5	4.5	-41.1
Exports	736,825	783,436	679,202	141,595	83,476	-7.8	6.3	-13.3	-41.0
Total sales	1,977,769	1,794,519	1,736,059	360,399	212,395	-12.2	-9.3	-3.3	-41.1
Production workers	6,498	6,480	6,313	6,409	5,885	-2.8	-0.3	-2.6	-8.2
Hours worked (1,000s)	12,942	12,940	12,581	3,135	2,875	-2.8	-0.0	-2.8	-8.3
Wages paid ($1,000s)	313,457	333,955	342,575	83,819	80,105	9.3	6.5	2.6	-4.4
Hourly wages	$24.22	$25.81	$27.23	$26.74	$27.86	12.4	6.6	5.5	4.2

(1) "Reported data" are in percent and "period changes" are in percentage points.
(2) Not applicable.

Note.--Financial data are reported on a fiscal year basis and may not necessarily be comparable to data reported on a calendar year basis.

Note.--U.S. producers' data combines data reported by concentrators, converters, enrichers, and fabricators.

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

C-3

APPENDIX D

IMPORT DATA

D-1

Table D-1
Uranium concentrate: U.S. imports, by source, 1996-98 and Jan. - Mar. 1999

Source	1996	1997	1998	Jan-Mar 99	Total period	
	Quantity (pounds U3O8)				Q (lbs U3O8)	Share (%)
Canada	7,200,426	6,436,190	4,209,617	797,374	18,643,607	39.6
Australia	4,000,594	4,909,944	3,208,978	733,118	12,852,635	27.3
South Africa	357,162	2,297,364	2,512,583	0	5,167,109	11.0
Namibia	836,304	1,930,578	666,736	0	3,433,618	7.3
Russia	1,957,494	843,133	320,415	0	3,121,043	6.6
Kazakhstan	892,545	271,335	457,902	0	1,621,781	3.4
Uzbekistan	618,449	124,384	645,700	0	1,388,532	2.9
Benin	806,999	0	0	0	806,999	1.7
Tajikistan	78,163	0	0	0	78,163	0.2
Sweden	0	21,826	0	0	21,826	0.0
United Kingdom	0	3,514	85	0	3,599	0.0
Total	16,748,135	16,838,268	12,022,017	1,530,492	47,138,912	100.0
	LDP value ($)				LDP value ($)	Share (%)
Canada	130,874,623	107,823,518	55,770,329	10,404,932	304,873,402	40.9
Australia	77,136,187	81,510,996	53,675,387	8,965,937	221,288,507	29.7
South Africa	7,286,169	32,162,362	40,759,115	0	80,207,646	10.8
Namibia	11,455,431	26,558,953	9,172,022	0	47,186,406	6.3
Russia	27,586,285	11,205,755	3,351,880	0	42,143,920	5.7
Kazakhstan	12,765,484	3,238,492	5,422,088	0	21,426,064	2.9
Uzbekistan	9,898,433	2,061,439	9,178,176	0	21,138,048	2.8
Benin	4,564,240	0	0	0	4,564,240	0.6
Tajikistan	1,118,860	0	0	0	1,118,860	0.2
Sweden	0	392,658	0	0	392,658	0.1
United Kingdom	0	888,560	2,860	0	891,420	0.1
Total	282,685,712	265,842,733	177,331,857	19,370,869	745,231,171	100.0

Source: USDOC (HTS 2844.10.2010). [conversion factor: kg * 0.825 = kg U]

D-3

Table D-2
Natural uranium hexafluoride: U.S. imports, by source, 1996-98 and Jan. - Mar. 1999

Source	1996	1997	1998	Jan-Mar 99	Total period	
	Quantity (kg U)				Quantity (kgU)	Share (%)
Canada	7,255,519	7,966,204	8,448,004	2,200,773	25,870,499	97.2
Uzbekistan	0	261,554	0	0	261,554	1.0
Russia	90,459	0	43,392	0	133,852	0.5
South Africa	0	0	126,941	0	126,941	0.5
Germany	48,803	11,156	47,677	0	107,636	0.4
France	0	0	100,676	0	100,676	0.4
United Kingdom	0	12,481	0	0	12,481	0.0
China	0	5,013	0	0	5,013	0.0
Belgium	0	0	47	0	47	0.0
Total	7,394,782	8,256,407	8,766,737	2,200,773	26,618,697	100.0
	LDP value ($)				LDP value ($)	Share (%)
Canada	323,011,911	293,280,257	265,604,038	63,975,780	945,871,986	88.4
Uzbekistan	0	6,428,537	0	0	6,428,537	0.6
Russia	3,181,824	0	20,217,402	0	23,399,226	2.2
South Africa	0	0	5,819,716	0	5,819,716	0.5
Germany	20,217,068	10,061,712	30,921,268	0	61,200,048	5.7
France	0	0	10,956,957	0	10,956,957	1.0
United Kingdom	0	11,209,943	0	0	11,209,943	1.0
China	0	4,764,061	0	0	4,764,061	0.4
Belgium	0	0	10,313	0	10,313	0.0
Total	346,410,803	325,744,510	333,529,694	63,975,780	1,069,660,787	100.0

Source: USDOC (HTS 2844.10.2025). [conversion factor: kg * 0.67618 = kg U]

D-4

Table D-3
Enriched uranium hexafluoride: U.S. imports, by source, 1996-98 and Jan. - Mar. 1999

Source	1996	1997	1998	Jan-Mar 99	Total period	
	Quantity (kg U)				Quantity (kg U)	Share (%)
Russia	207,008	153,051	455,810	0	815,869	36.7
France	370,473	248,828	110,066	29,513	758,880	34.1
Germany	3,060	102,812	66,026	7,564	179,463	8.1
Netherlands	48,537	61,653	46,681	5,582	162,452	7.3
United Kingdom	60,613	0	36,980	31,596	129,188	5.8
Uzbekistan	0	6,912	82,148	0	89,060	4.0
Australia	0	0	39,540	1	39,541	1.8
China	0	3,396	0	24,777	28,172	1.3
Canada	2,818	0	3,896	0	6,714	0.3
Ukraine	0	0	5,727	0	5,727	0.3
Niger	0	4,056	0	0	4,056	0.2
Sweden	0	0	0	3,849	3,849	0.2
Total	692,508	580,708	846,874	102,881	2,222,971	100.0
	LDP value ($)				LDP value ($)	Share (%)
Russia	197,295,077	105,186,192	411,695,786	0	714,177,055	44.0
France	248,402,220	135,613,737	113,169,568	17,612,530	514,798,055	31.7
Germany	2,320,970	73,286,339	38,256,264	4,075,146	117,938,719	7.3
Netherlands	22,032,648	40,893,545	30,122,777	3,066,429	96,115,399	5.9
United Kingdom	41,839,468	0	35,401,566	38,366,469	115,607,503	7.1
Uzbekistan	0	6,744,268	10,755,298	0	17,499,566	1.1
Australia	0	0	861,397	2,167	863,564	0.1
China	0	1,224,633	0	29,359,402	30,584,035	1.9
Canada	1,683,381	0	6,120,237	0	7,803,618	0.5
Ukraine	0	0	942,417	0	942,417	0.1
Niger	0	4,076,537	0	0	4,076,537	0.3
Sweden	0	0	0	2,947,448	2,947,448	0.2
Total	513,573,764	367,025,251	647,325,310	95,429,591	1,623,353,916	100.0

Source: USDOC (HTS 2844.20.0020). [conversion factor: kg * 0.67618 = kg U]

D-5

Table D-4
Enriched uranium oxides, nitrates, and metals: U.S. imports, by source, 1996-98 and Jan. - Mar. 1999

Source	1996	1997	1998	Jan-Mar 99	Total period	
	Quantity (kg U)				Quantity (kg U)	Share (%)
Kazakhstan	0	105,588	41,381	0	146,969	52.3
France	21,289	11,672	0	0	32,961	11.7
Russia	7	29,349	43	7	29,407	10.5
Sweden	23,530	0	5,369	0	28,899	10.3
Uzbekistan	0	13,348	0	0	13,348	4.8
Germany	11,626	119	391	210	12,346	4.4
United Kingdom	0	0	5,565	1,452	7,017	2.5
Canada	0	0	0	4,502	4,502	1.6
Australia	0	2,921	0	0	2,921	1.0
Belgium	0	2,458	0	0	2,458	0.9
Netherlands	0	56	27	0	84	0.0
Total	56,452	165,512	52,777	6,170	280,911	100.0
	LDP value ($)				LDP value ($)	Share (%)
Kazakhstan	0	33,199,018	18,992,166	0	52,191,184	27.1
France	14,158,953	12,366,261	0	0	26,525,214	13.8
Russia	6,967	29,249,447	45,481	7,028	29,308,923	15.2
Sweden	19,204,674	0	41,671,322	0	60,875,996	31.6
Uzbekistan	0	12,519,190	0	0	12,519,190	6.5
Germany	1,836,370	20,099	22,667	28,876	1,908,012	1.0
United Kingdom	0	0	4,189,494	498,431	4,687,925	2.4
Canada	0	0	0	1,960,892	1,960,892	1.0
Australia	0	2,706,018	0	0	2,706,018	1.4
Belgium	0	54,525	0	0	54,525	0.0
Netherlands	0	6,000	12,772	0	18,772	0.0
Total	35,206,964	90,120,558	64,933,902	2,495,227	192,756,651	100.0

Source: USDOC (HTS 2844.20.0010 & 2844.20.0030). [conversion factor: kg * 0.88149 = kg U]

D-6

Table D-5
Other uranium: U.S. imports, by source, 1996-98 and Jan. - Mar. 1999

Source	1996	1997	1998	Jan-Mar 99	Total period	
	Quantity (kg)				Quantity (kg)	Share (%)
Kazakhstan	0	388,832	86,048	0	474,880	32.4
South Africa	309,675	0	0	0	309,675	21.1
Russia	0	57,697	0	177,833	235,530	16.1
Uzbekistan	0	0	167,163	0	167,163	11.4
Canada	53	2,289	10,677	152,833	165,852	11.3
Australia	0	0	0	109,116	109,116	7.4
Sweden	0	0	0	4,286	4,286	0.3
United Kingdom	3	281	1	0	285	0.0
Germany	272	10	2	0	284	0.0
Switzerland	2	1	0	0	3	0.0
Total	310,005	449,110	263,891	444,068	1,467,074	100.0
	LDP value ($)				LDP value ($)	Share (%)
Kazakhstan	0	8,947,687	2,404,503	0	11,352,190	32.9
South Africa	9,314,648	0	0	0	9,314,648	27.0
Russia	0	1,342,031	0	3,372,529	4,714,560	13.6
Uzbekistan	0	0	3,510,058	0	3,510,058	10.2
Canada	7,472	92,579	329,789	516,773	946,613	2.7
Australia	0	0	0	4,159,865	4,159,865	12.0
Sweden	0	0	0	484,898	484,898	1.4
United Kingdom	1,775	27,491	4,097	0	33,363	0.1
Germany	14,560	4,781	6,889	0	26,230	0.1
Switzerland	2,840	2,466	0	0	5,306	0.0
Total	9,341,295	10,417,035	6,255,336	8,534,065	34,547,731	100.0

Source: USDOC (HTS 2844.10.1000, 2844.10.2055, & 2844.10.5000).

D-7

APPENDIX E

EFFECTS OF IMPORTS ON PRODUCERS' EXISTING DEVELOPMENT AND PRODUCTION EFFORTS, GROWTH, INVESTMENT, AND ABILITY TO RAISE CAPITAL

E-1

The Commission requested U.S. producers to describe any actual or anticipated negative effects of imports of uranium from Kazakhstan on their return on investment or their growth, investment, ability to raise capital, existing development and production efforts (including efforts to develop a derivative or more advanced version of the product), or their scale of capital investments undertaken as a result of such imports. Their responses are as follows:

* * * * * * *

E-3