Report on the Effect the Low Enriched Uranium delivered under the Russian HEU Agreement has on the Domestic Uranium Mining, Conversion, and Enrichment Industries, and the Operation of the Gaseous Diffusion Plant

2002

Information Date: December 31, 2002

Introduction

The *Agreement Between the Government of the United States and the Government of the Russian Federation Concerning the Disposition of Highly Enriched Uranium Extracted from Nuclear Weapons* (HEU Agreement) was signed on February 18, 1993.

The HEU Agreement provides for the purchase over 20 years (1993–2013) of 500 metric tons of weapons-origin highly enriched uranium (HEU) converted to commercial grade, low-enriched uranium (LEU) from the Russian Federation (Russia). The Russian LEU is sold in the U.S. nuclear fuel market to power commercial nuclear power plants. The low-enriched uranium resulting from the HEU Agreement represents the equivalent of almost 400 million pounds of natural uranium and 92 million separative work units, enough to satisfy about 9 years of demand for uranium and separative work units in the United States. Because the uranium is in the form of enriched uranium hexafluoride, it also represents over 150,000 metric tons of conversion.

Purpose

On April 26, 1996, the USEC Privatization Act (Privatization Act), Public Law 104-134 (42 U.S.C. 2297h) was enacted. It requires the President to "report to the Congress not later than December 31 of each year on the effect the low-enriched uranium delivered under the HEU Agreement is having on the domestic uranium mining, conversion, and enrichment industries, and the operation of the gaseous diffusion plants."[2]

Report Layout

This report, consistent with the legislative requirement, includes a review of the implementation and status of the HEU Agreement deliveries, events impacting the HEU Agreement over the past year, and the effects of the HEU Agreement on domestic industries including the uranium, conversion and enrichment industries. The report also provides its conclusions and a description of actions taken or proposed to be taken to prevent or mitigate any material adverse impact on such industries or any loss of employment at the gaseous diffusion plants as a result of the HEU Agreement.

The Department's reports for the last three years can be found at http://nuclear.gov/reports/reports-soon.html

Implementation of the HEU Agreement

The contractual arrangements for implementing the objectives of the HEU Agreement are carried out by the parties' respective Executive Agents. A contract implementing terms of the HEU Agreement was signed on January 14, 1994, with USEC Inc.'s predecessor, the United States Enrichment Corporation, acting as the Executive Agent on behalf of the United States, and Techsnabexport (Tenex)[3] representing Russia.

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[2] Section 3112(b)(10). In addition, the Privatization Act directed the transfer of title to DOE of an amount of uranium hexafluoride equivalent to the natural uranium feed component contained in the 1995 and 1996 deliveries (Section 3112(b)(1)) and its eventual sale (Section 3112(b)(2)), and set quotas for sales of the Russian origin natural uranium feed component into the U.S. commercial nuclear fuel market (Section 3112(b)(5)).

[3] Tenex is owned by the Russian Ministry of Atomic Energy.

The HEU Agreement is a key element of U.S. nonproliferation policy and serves mutual U.S. and Russian interests. The HEU Agreement provides incentives for Russia to take fissile material in the form of HEU from its nuclear warheads and blend it down into low-enriched uranium for use and sale as commercial reactor fuel. The revenue stream from the Agreement helps provide an ongoing incentive for reducing Russia's inventory of HEU derived from surplus nuclear weapons.

The HEU Agreement also provides a structured mechanism permitting the sale of Russian enrichment and uranium into an otherwise restricted U.S. domestic market.

Status of Deliveries – To date, over 170 metric tons of HEU have been converted to LEU and delivered to the United States. This is approximately 22 percent more than originally planned for this point in time and results from accelerated deliveries from 1997 to 2000.

The cumulative amount of HEU actually blended down and delivered under the HEU Agreement in each year through 2002 compared to the original plan is shown in Table 1 shows the estimated number of warheads dismantled, quantities of HEU and low-enriched uranium contained in the warheads, and their equivalent natural uranium, conversion , and separative work units (enrichment component) delivered to date.

Events Impacting the HEU Agreement During 2002

U.S./Russian Approval of an Amendment to the Implementing Contract - On June 19, 2002, the U.S. and Russian governments approved the latest amendment to the contract between USEC and Tenex that implements the HEU Agreement. Under this new amendment (number 16), beginning in January 2003, a market-based pricing structure will be used for the remaining 12

Figure 1. HEU Agreement Deliveries

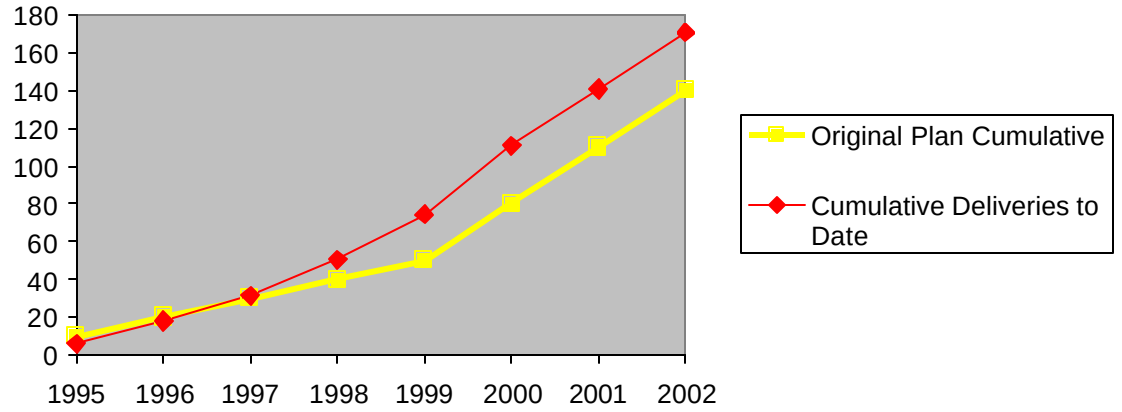

Figure 1. Deliveries of low-enriched uranium from 30 metric tons of HEU were delivered during 2000, 2001, and 2002. To reach the total goal of 500 metric tons, deliveries of low-enriched uranium from 30 metric tons of HEU are scheduled to continue from 2003 to 2012, and the final 20 metric tons of HEU in 2013.

years of the Agreement. The Amendment also notes that Russia is expected to earn at least $7.5 billion over the 20-year agreement period. A previous amendment set the separative work unit (SWU) price for calendar years 1997 to 2001 at a fixed initial price of $82.50, with annual adjustments for inflation. Because no agreement was reached prior to the start of 2002, the 2001 price of $90.42 per SWU was automatically rolled over for the year 2002.

The new market-based pricing formula includes a fixed discount from a weighted average of international and U.S. indexes, including long-term and spot prices, over the previous 3 years. Future revenue to Russia may vary, increasing or decreasing with market prices.

Effect of the HEU Agreement on Domestic Industries

Table 1. Status of Deliveries Under the HEU Agreement

Contracted Year	Estimated Dismantled Warheads	Highly Enriched Uranium (MTU)	Low-Enriched Uranium (MTU)	Natural UF_6 Feed Component (million lb. U_3O_8(e))	Natural UF_6 Conversion Component (million kgU)	Separative Work Units (million SWU)
1995	244	6.1	186.0	4.8	1.8	1.1
1996	479	12.0	371.0	9.5	3.7	2.2
1997	536	13.4	358.5	10.2	3.9	2.4
1998	764	19.1	571.5	15.0	5.7	3.5
1999	968	24.2	718.5	19.1	7.4	4.5
2000	1,464	36.6	1,038	28.3	10.9	6.7
2001	1,200	30	904.2	23.7	9.1	5.5
2002	1,200	30	879.0	23.5	9.0	5.5
Total Delivered through 2002	6,855[A]	171.4[B]	5,026.7[C]	134.1[D]	51.5	31.4

A Based on IAEA's definition of significant quantities (1987 IAEA Safeguards Glossary).

B The HEU Agreement allowed for up to 30 MTU of HEU to blend down to LEU for delivery in 1999. However, only 21.3 MTU (14.7 MTU in CY 1999 and 6.6 MTU in CY 2000) of the 1999 order was actually delivered. The remaining 8.7 MTU of HEU will be scheduled for blending down in future years.

C Minor fluctuations in quantities of LEU are due to product assay differences.

D Minor fluctuations in quantities of natural uranium are due to product assay differences.

The following sections discuss the state of the market and domestic uranium mining, conversion, and enrichment industries.

Uranium Mining[4]

[4] All data provided in this section related to supply, demand and pricing is sourced to The Ux Consulting Company, LLC, 2002.

While final information regarding actual uranium supply and demand in 2002 was not available at the time of report preparation, world uranium demand in 2002 is expected to have been approximately 173 million pounds U_3O_8, down slightly from 174 million pounds U_3O_8 in 2001. World uranium production is expected to have been about 92.5 million pounds U_3O_8 in 2002, a decrease of 2.2 million pounds in 2001.

U.S. demand in 2002 is also expected to have declined slightly to 53.8 million pounds U_3O_8 from 54.1 million pounds U_3O_8 in 2001. U.S. uranium production is equivalent to only about 4.3 percent of the uranium loaded into U.S. commercial nuclear power reactors.

For the first eleven months of 2002, the average spot market price was about $9.85 per pound U_3O_8. Prices began the year at $9.60 per pound, but stabilized at the $9.90 per pound level for much of the year. While uranium prices have increased the past two years, they remain far below the $11.46 per pound average market price level in 1995, the year that the HEU Agreement deliveries began.

World uranium production only satisfies about 55 percent of world demand. Consequently, the natural uranium feed component from the HEU Agreement, as well as other secondary supplies such as from the reprocessing of spent fuel in the European Union and re-enrichment of depleted uranium (tails) in Russia, have been and are expected to play a key role in filling the production shortfall.

The domestic uranium industry has been affected by entry into the market of the natural uranium feed component[5] resulting from the HEU Agreement as well as other contributing factors such as secondary market inventories from utilities, suppliers and the government. Until 1999 the vast majority of the natural uranium feed component deliveries were either returned to Russia or purchased by the U.S. Government.[6] Since 1999, the Western Consortium (three western uranium suppliers: Cameco, COGEMA, and RWE NUKEM) has purchased the portion that was not returned to Russia under the Commercial Feed Agreement and the market has factored it in as a source of supply.

While the HEU Agreement has been a factor in the low uranium market prices and production levels, a larger contributing factor to the domestic uranium and conversion industries market condition is the continued supply of uranium inventories from utilities, suppliers, and the remaining previously Government owned stockpiles. While this lower price has adversely affected the domestic uranium and conversion industries, it has helped lower costs for users of these products such as utilities and ultimately, all consumers of electricity.

Status of the Commercial Feed Agreement

The 2002 deliveries under the HEU Agreement contained a natural uranium feed component amounting to 23.6 million

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[5] The natural uranium feed component consists of U_3O_8 from the mining industry and U_3O_8 to UF_6 conversion.

[6] A majority of the Russian uranium feed component was purchased between the years 1995 and 1998 by the U.S. Government to facilitate continuation of the HEU Agreement.

pounds U_3O_8(e).[7] Section 3112 of the USEC Privatization Act, however, established an annual quota that limits the the amount of Russian origin uranium that may be sold to end users in the United States. In 2002, the quota was 10 million pounds of U_3O_8[8]. Within the quota level, the Western Consortium and Russia's agent under the Commercial Feed Agreement, Globe Nuclear Supply Services, are apportioned a share of the quota.[9]

In 2002, the Western Consortium purchased its share of the Privatization Act quota, and it is expected that Globe Nuclear Supply Services will also purchase its share as well. As a result, Russia will be able to obtain revenues for the full 10 million pound U_3O_8(e) quota. The value of the natural uranium component quota in the U.S. is estimated to be over $110 million.

Under the terms of the Commercial Feed Agreement signed in 1999 and amended in November 2001, the members of the Western Consortium committed to exercise their options to purchase quantities of natural uranium at least equal to their respective quota shares each year for the period 2002 through 2013. The shares total approximately 53 million pounds for both Cameco and COGEMA, and 18 million pounds for RWE NUKEM. Meanwhile, Tenex has retained its agent, Globe Nuclear Supply Services, to sell approximately 83 million pounds over the time period.

Conversion

During 2002, the price of conversion remained at or above $5 per kilogram. By way of comparison, the price of conversion bottomed at $2.25 per kilogram in July 2000. However, the conversion market price remains below the 1995 price average of $5.85 per kgU, the first year of the HEU Agreement deliveries.

This year saw the world supply of conversion nearly balanced with demand. However, British Nuclear Fuels Limited (BNFL), in early 2001, announced that it would cease conversion operations after March 2006. In the interim, BNFL's uncommitted capacity has been sold to Cameco, another major Western converter. With the closure of BNFL's plant, the worldwide capacity will decrease by almost 10%. As a result of these industry adjustments, conversion coming from secondary sources, such as the HEU Agreement, will increase in importance.

Uranium Enrichment

In February 2002, the U.S. Department of Commerce imposed an antidumping duty order on low enriched uranium from France, Germany, the Netherlands, and the United Kingdom.

To remedy the unfair trade practices identified in these cases, the Department of Commerce has imposed final duties in the Eurodif case of 32.10 percent and in the Urenco case, 2.23 percent. Using the industry standard unit of measurement for uranium enrichment, the SWU, this is equivalent to estimated duties on the value of Eurodif SWU of 53.50 percent and on the value of Urenco SWU of 3.72 percent.

[7] U_3O_8(e) is a term that reflects relative quantity (equivalence) of material in another form such as uranium hexafluoride (UF6) to natural uranium ore U_3O_8.

[8] The Privatization Act quota increases annually to a level of 20 million pounds in 2009.

[9] Section 3112(b)(9) of the USEC Privatization Act requires the Secretary of Commerce to administer and enforce the limitations established by the law. On August 6, 1999, the Department of Commerce established its final rule of administration. Article D of the notice provides Russia the ability to determine its allocation of the quota limits.

The combination of two events: (1) the trade action and (2) the cessation of uranium enrichment activities at the Portsmouth Gaseous Diffusion Plant in May 2001, which decreased worldwide enrichment capacity by 16 percent, contributed to an upward trend in market prices.

Spot market prices for enrichment increased from $99 per SWU at the end of December 2001 to $107 by the end of February 2002, an 8 percent increase over the two month period. For most of 2002, however, the SWU price held steady at $107 to $108 per SWU. This is significantly higher than the 1995 average spot price for uranium enrichment of $93 per SWU when deliveries under the HEU Agreement first began.

In June 2002, agreement was reached between DOE and USEC on a variety of outstanding issues. The U.S. Government also approved an amendment to the implementing contract to the HEU Agreement. These two events have helped achieve the Department's objectives of (1) ensuring the successful implementation of the HEU Agreement, (2) maintaining reliable, long-term U.S. supply of enrichment and (3) ensuring the future deployment of a domestic commercial advanced enrichment technology.

The agreement between DOE and USEC also ensured an appropriate future for the Paducah and Portsmouth sites, thus recognizing the contributions the surrounding communities have made to the Nation's energy and national security needs.

Effect of Future Nonproliferation Initiatives on the Domestic Uranium Mining, Conversion and Enrichment Industries

In their May 2002 Summit in Moscow, President Bush of the United States and President Putin of the Russian Federation agreed to establish a joint experts group to work out proposals on near- and long-term bilateral and multilateral means to reduce inventories of HEU and plutonium.

In a June 2002 announcement regarding the establishment of the joint experts group, Secretary of Energy Abraham and his Russian counterpart, Minister Rumyantsev stipulated that the group's efforts "will not adversely affect existing agreements or the commercial uranium markets."

In September, 2002, Secretary Abraham and Russian Minister Rumyantsev issued a joint statement summarizing the results of the joint expert's group study. The joint expert group identified several areas where cooperation could lead to reductions of HEU over-and-above commitments already in place under existing agreements. These recommendations are listed in the attached appendix.

The joint experts group is now evaluating mechanisms for implementing these options. The quantity, timing and process for eliminating additional weapons-grade material are yet to be determined. The expert group will continue to study additional options that could be relevant in the future, taking into account the required financial resources, the option's technical feasibility, and the potential impact on commercial nuclear fuel markets and the domestic uranium industries.

Conclusions

Uranium Mining and Conversion Industries

Entry of Russian LEU into the domestic uranium market under the HEU Agreement has had limited impact on domestic uranium and conversion industries. This is in part the result of steps taken by Congress, the Administration and industry to minimize potential effects on domestic industries. These steps include the quota limits established by Congress for marketing the Russian natural uranium component in the U.S.; the purchase and storage by the U.S. Government from 1995 through 1998 of a majority of the natural uranium feed component; as well as the Western Consortium's purchase and placement of material into the market in a stable and predictable fashion.

The greatest source of competition for the domestic uranium and conversion industries has been the continued supply of uranium inventories from utilities, suppliers, and previously Government owned stockpiles. This competition has been beneficial to downstream industries such as electric utilities and ultimately to consumers.

Enrichment Industry

Since 1995, LEU deliveries from the HEU Agreement, along with other factors such as competitor penetration into the U.S. market and changing USEC management decisions, have been a contributing factor in the reduced level of U.S. enrichment production.

The most significant competition for the U.S. domestic enrichment industry has been lower cost European SWU that has captured U.S. market share. However, the ITC's decision in favor of USEC's position in the trade case resulted in increased market prices.

DOE Actions

DOE acted in 2002 to mitigate any potential impacts from HEU Agreement implementation on the domestic uranium mining, conversion and enrichment industries. The Department preserved infrastructure and human capital at the Portsmouth site by maintaining cold standby and deposit removal activities at the dormant GDP in FY 2002. The Department also preserved experienced human capital when it extended operations for an additional fifteen months at the Portsmouth Shipping and Transfer facility to restore out-of-spec uranium inventories. The Department withheld the sale of its uranium inventories to avoid depressing market prices although this means that the Department now faces sales of large amounts of uranium with correspondingly large potential market implications. And the Department has crafted policy initiatives for further fissile materials disposition that avoid adverse impacts on domestic uranium industries. Specifically:

- **DOE/USEC Agreement** - On June 17, 2002, the Department and USEC signed an agreement to meet the objectives of maintaining the U.S./Russia HEU Agreement, maintaining domestic enrichment capabilities, and replacing gaseous diffusion with a new advanced enrichment technology. The Agreement specifies that a future enrichment technology demonstration (lead centrifuge cascade) facility be sited at either the Portsmouth or Paducah GDP sites (In December 2002, USEC chose the Portsmouth site). Furthermore, the Agreement requires that any future plant

be sited at one of those two locations. The Agreement also requires USEC to operate the Paducah Gaseous Diffusion Plant at a minimum level of 3.5 million SWU until 6 months before the deployment of new technology and continue operating the Portsmouth shipping and transfer facility until September 2003. USEC has committed to commercially deploy advanced enrichment technology at Portsmouth by 2010 or at Paducah by 2011.

- DOE purchased the majority of the natural uranium feed component from the 1995, 1996, 1997 and 1998 HEU Agreement deliveries and witheld its entry into the market to avoid depressing market prices.

- Prior to 2002, all HEU Agreement deliveries from Russia were received at the Portsmouth Gaseous Diffusion Plant for further shipment. Recently all operations at the Portsmouth Shipping and Transfer facility were consolidated at the Paducah, Kentucky plant. Recognizing the service that the Portsmouth Shipping and Transfer facility could provide by using the equipment to remove contaminants from out-of-spec inventory, the Department negotiated a continuation of operations for 15 additional months. The continued operation of the shipping and transfer facility provides a means to remove fission by-products (technetium) from former-DOE-inventories currently held by USEC. Further operation, beyond the 15-month period, is under consideration for the cleanup of additional former-DOE-inventories, and current Department uranium inventories.

Recommendations

- Section 3112 of the USEC Privatization Act be amended to modify the timing of the requirement for the near-term sale of the Department's remaining inventories associated with the 1995 and 1996 natural uranium component of the HEU Agreement deliveries. This action would lift the requirement to sell, by April 2003, approximately 8.6 million pounds of natural UF_6.

- Enact legislation to permit the exchange of the 1995 and 1996 natural uranium component of the HEU Agreement deliveries for 8.6 million pounds of uranium currently held by USEC that was formerly in the Department's inventory and is high in concentrations of technetium. This action would be consistent with the first recommendation, above, and enable the Department "to replace any out-of-specification uranium hexafluoride (up to 9,550 MTU) not meeting the … ASTM Specification transferred by DOE to USEC …" as provided for in the DOE / USEC June 17, 2002 Agreement.

HEU Report Glossary

advanced enrichment technology – The use of advanced technologies such as centrifuges or lasers to separate the uranium-235 isotope from the more common uranium-238 isotope to create enriched uranium. In this sense, advanced means in comparison to the currently used gaseous diffusion technology.

blending or blend down – The term used to describe the process whereby highly enriched uranium is mixed with depleted, natural, or low enriched uranium to create low enriched uranium. For example, one ton of highly enriched uranium can be mixed or blended with approximately 30 tons of natural or low enriched uranium to create 31 tons of commercial grade low enriched uranium.

Cameco – A Canadian company that is the world's largest supplier of uranium and one of the largest suppliers of uranium conversion services. One of the members of the Western Consortium under the Uranium Feed Agreement.

COGEMA – A French company that is active in all phases of the nuclear fuel cycle including uranium production. One of the members of the Western Consortium under the Uranium Feed Agreement.

centrifuge - A device that can spin at extremely high speeds and separate materials of different densities. For uranium, centrifuges working in series are able to separate the uranium-235 isotopes from the uranium-238 isotopes based on their difference in atomic weight but because the difference is so small it requires highly classified processes to achieve success.

Commercial Feed Agreement – An agreement between members of the Western Consortium and Russia whereby the natural uranium feed component associated with the Russian low enriched uranium delivered under the Russian HEU Agreement after 1998 is purchased for resale in the commercial uranium market. Sales of this natural uranium in the United States is subject to quotas set forth in the USEC Privatization Act.

conversion – The process whereby natural uranium in the form of an oxide is converted to uranium hexafluoride (see below).

depleted uranium – Uranium whose content of the fissile isotope uranium-235 is less than the 0.7 percent (by weight) found in natural uranium, so that it contains more uranium-238 than found in natural uranium.

deposit removal – The process of removing uranium deposits from piping and tanks in a non-operating uranium enrichment plant.

enriched uranium – Uranium whose content of the fissile isotope uranium-235 is greater than the 0.7 percent (by weight) found in natural uranium. (See uranium, natural uranium, and highly enriched uranium.)

Executive Agent – Under the Russian HEU Agreement (see below), these are the commercial companies responsible for implementing the Agreement on behalf of the United States (USEC) and Russia (Tenex).

fissile material – Any material fissionable by thermal (slow) neutrons. The three primary fissile materials are uranium-233, uranium-235, and plutonium-239.

GNSS – Globe Nuclear Supply Services. The U.S. subsidiary of Tenex. Represents

Russia for marketing the natural uranium component of the Russian HEU Agreement under the Uranium Feed Agreement.

gaseous diffusion – A uranium enrichment process where uranium hexafluoride in gaseous form is forced through a series of semiporous membranes to increase the concentration of uranium-235 isotopes.

highly enriched uranium – Uranium whose content of the fissile isotope uranium-235 has been increased through enrichment to 20 percent or more (by weight). (See natural uranium, enriched uranium, and depleted uranium.)

kgU – Kilograms of uranium.

long-term price – In the context of this report, refers to the price paid for uranium that will be delivered more than one year after the contract is signed.

low-enriched uranium – Uranium whose content of the fissile isotope uranium-235 has been increased through enrichment to more than 0.7 percent but less than 20 percent by weight. Most nuclear power reactor fuel contains low-enriched uranium containing 3 to 5 percent uranium-235.

MTU – Metric tons of uranium.

mixed oxide fuel – Reactor fuel consisting of a blend of different fissionable materials, such as uranium oxide and plutonium oxide.

natural uranium component – The feed material provided to a uranium enricher for producing enriched uranium and uranium tails.

Paducah Gaseous Diffusion Plant – The only remaining operating uranium enrichment plant in the United States, located in Paducah, Kentucky.

plutonium – A heavy, radioactive, metallic element with the atomic number 94. It is produced artificially by neutron bombardment of uranium. Plutonium has 15 isotopes with atomic masses ranging from 232 to 246 and half-lives from 20 minutes to 76 million years.

plutonium-238 – An isotope with a half-life of 87.74 years used as the heat source for radioisotope power systems. When plutonium-238 undergoes radioactive decay, it emits alpha particles and gamma rays.

plutonium-239 – An isotope with a half-life of 24,110 years and is the primary radionuclide in weapons-grade plutonium. When plutonium-239 decays, it emits alpha particles.

Portsmouth Gaseous Diffusion Plant – A decommissioned uranium enrichment plant that still performs some shipping and transfer functions for USEC in Piketon, Ohio.

reactor core – The fuel assemblies, fuel and target rods, control rods, blanket assemblies, and coolant/moderator. Fissioning takes place in this part of the reactor.

RWE Nukem – A German company that is a leading trader of uranium in the international market. One of the members of the Western Consortium under the Uranium Feed Agreement.

separative work units (SWU) – The unit of measurement for the effort needed to enrich uranium.

spot market price or spot price – In the context of this report, refers to the price paid for uranium that will be delivered soon after the contract is signed.

tails – Refers to depleted uranium produced during the uranium enrichment process.

Tenex - Tekhsnabeksport, Inc. A Russian company owned by the Russian Ministry of Atomic Energy that acts as Russia's Executive Agent on the Russian HEU Agreement. Also reprocesses spent fuel from reactors outside Russia and exports natural uranium, HEU, and radioisotopes.

uranium – A radioactive, metallic element with the atomic number 92; one of the heaviest naturally occurring elements. Uranium has 14 known isotopes, of which uranium-238 is the most abundant in nature. Uranium-235 is commonly used as a fuel for nuclear fission. (See natural uranium, enriched uranium, highly enriched uranium, and depleted uranium.)

uranium hexafluoride or UF_6 – The form of uranium that is the end product of the uranium conversion process. This compound can be easily transformed into a gaseous state at relatively low temperatures to allow the uranium to feed through a uranium enrichment process, either gaseous diffusion or gas centrifuge.

USEC – Currently the only enricher of uranium operating in the United States; the Paducah uranium enrichment plant. USEC is also the United States' Executive Agent on the Russian HEU Agreement. It was privatized as a result of the USEC Privatization Act of 1996. Formerly a part of the Department of Energy.

Western Consortium – A group of three Western uranium suppliers (Cameco, COGEMA, Nukem) that has signed an agreement with Russia to buy and then market most of the natural uranium associated with the Russian HEU Agreement under the Commercial Feed Agreement.

APPENDIX 1

U.S./Russian Nuclear Arms Treaty

On May 24, 2002, Presidents Bush and Putin signed the Moscow Treaty on Strategic Offensive Reductions. Under this treaty, the United States and Russia agreed to reduce strategic nuclear warheads by nearly two-thirds, to the level of 1,700 to 2,200 by December 31, 2012. In addition, in a Joint Declaration, both countries agreed to continue cooperative threat reduction programs and expand efforts to reduce weapons-grade fissile material. In support of this declaration, joint expert groups were established to study (1) cooperation on advanced nuclear technologies and (2) proposals for additional nuclear materials reductions.

U.S./Russia Joint Experts Group on Advanced Nuclear Technologies - The purpose of this group was to identify areas for collaborative research on advanced, proliferation-resistant nuclear reactor and fuel cycle technologies to reduce stocks of plutonium and HEU as well as waste from civilian reactors. The Joint Experts Group on advanced nuclear technologies submitted its report in May 2002 to the U.S. Secretary of Energy and his Russian counterpart.

The Group developed recommendations on joint scientific research and design efforts in the area of advanced technologies for nuclear reactors and their fuel cycles. In addition, the report outlined national strategies for development of the nuclear power industry, common objectives and possible spheres of U.S.-Russian cooperation in the area of advanced nuclear technologies.

U.S./Russia Joint Experts Group on Nuclear Materials Reduction – The purpose of this working group was to identify initiatives that could lead to reductions in excess weapons-grade plutonium and HEU beyond the obligations stipulated in existing agreements such as the HEU Agreement. The initial report of this Joint Experts Group was presented to the U.S. Secretary of Energy and the Russian Minister of Atomic Energy on September 16, 2002.

The Expert Group identified several areas where joint cooperation could lead to reductions of HEU and Plutonium over-and-above commitments already in place under existing agreements. The HEU reduction options include:

- Creation of a LEU stockpile in the United States from Russian HEU down blended into Low Enriched Uranium (LEU);

- Increasing the rate and quantity of HEU converted to LEU under the Nuclear Material Consolidation and Conversion Project;

- Use of LEU down blended from Russian HEU to fuel reactors in Western countries;

- Use of Russian HEU to fuel selected United States research reactors, until cores are converted to LEU, and

- In parallel, work on accelerated development of LEU fuel for both Soviet-designed and United States-designed research reactors.