



Department of Energy
Washington, DC 20585

January 25, 2008

Ms. Susan D. Sawtelle
Managing Associate General Counsel
United States Government Accountability Office
Washington, D.C. 20548

Dear Ms. Sawtelle:

This responds to your January 11, 2008 letter requesting documents relating to the Department's legal authorities to manage its depleted uranium inventory. The following responses reflect the numbered categories contained in your letter.

1. We have identified the following responsive document:
 - March 16, 2005 Memorandum from Marvin Shaw to Ben McRae
2. We have not yet identified any responsive documents.
3. We have identified the following responsive document:
 - May 10, 2005 Memorandum from Stephen J. Wright to the Deputy Secretary
4. We have not yet identified any responsive documents. We note this issue did not arise in the BPA transaction because the transaction only involved the transfer of depleted uranium and involved no re-enrichment by or for the Department.
5. We have identified the following responsive documents relating to the continuing availability to the Department of the authority in section 314 of the Energy and Water Development Appropriations Act, 2006:
 - December 16, 2005 e-mail from Susan Beard to David Krentel
 - March 1, 2006 e-mail from William Grant to Mary Egger and Susan Beard
 - May 30, 2007 e-mail from William Grant to David R. Hill, Susan Beard and Mary Egger

We have not yet identified any documents relating to the question whether re-enrichment of depleted uranium would constitute "remediation" under section 314 of the Energy and Water Development Appropriations Act, 2006.



We are continuing to search for responsive documents and will provide them to you as promptly as circumstances permit. If you have any questions, please call me at (202) 586-5281.

Sincerely,

A handwritten signature in black ink, appearing to read "Eric J. Fygi". The signature is fluid and cursive, with a large initial "E" and a long horizontal stroke at the end.

Eric J. Fygi
Deputy General Counsel

Enclosures

TO: Ben McRae
Assistant General Counsel for Civilian Nuclear Programs
FROM: Marvin L. Shaw
Attorney-Advisor
DATE: March 16, 2005

SUBJECT: Legal Review of Uranium Tails Pilot Project involving Bonneville Power Administration (BPA), the Department of Energy (DOE) Office of Environmental Management (EM) and Energy Northwest (EN)

FACTS: Energy Northwest (EN) approached the Bonneville Power Administration (BPA) about engaging the Department of Energy (DOE) in recycling DOE uranium tails for use in the Columbia Generating Station's (CGS) nuclear fuel cycle. These tails are depleted uranium hexafluoride (UF₆) that was generated at the Portsmouth and Paducah Gaseous Diffusion Plant (GDP) sites. DOE's Office of Environmental Management (EM) has expressed favorable interest in establishing a Pilot Program, which would reduce its obligations for conversion and disposal of the tails.

ISSUE: The Secretary's office informally requested the Office of General Counsel (OGC) to determine DOE has the statutory authority to support the proposed Pilot Project in which DOE would transfer depleted uranium hexafluoride tails to Energy Northwest/Bonneville Power Administration.

BRIEF ANSWER: The statutory provisions addressing Departmental authority do not specifically address the transfer of depleted uranium hexafluoride tails. Section 3112 of the USEC Privatization Act, the provision most directly related to the sale or transfer of uranium, does not directly address the transfer of such depleted uranium. Nevertheless, a reasonable argument can be made that the Department has the authority to facilitate such transfers of depleted uranium under the general authority of Atomic Energy Act, particularly sections 161m and 82.

DISCUSSION: The transfer of uranium is addressed in the USEC Privatization Act. Specifically, section 3112(a) states that "the Secretary shall not provide enrichment services or transfer or sell any uranium (including natural uranium concentrates, natural uranium hexafluoride, or enriched uranium in any form) to any person except as consistent with this section."

As a threshold question, internal DOE discussion has raised concerns about whether depleted uranium hexafluoride of the type contemplated in the DOE/BPA/EN transfer is covered by this section. Subsection (a) lists several examples of uranium to be covered by this section including natural uranium concentrates, natural uranium hexafluoride, any enriched uranium in any form. Section 3112(a) does not list depleted uranium hexafluoride as an example. Nevertheless, it is relatively clear that this provision is applicable to depleted uranium given that it states "any uranium." The examples of types of uranium are merely a listing and should not be interpreted as a limitation to the broader phrase "any uranium."

Section 3112(a) further specifies that any sale or transfer is prohibited unless it is "consistent with this section." To determine whether such a transfer is consistent with section 3112, it is necessary to review section 3112's other subsections. Section 3112 sets forth four categories of sales or transfers, including sales or transfers involving Russian HEU in subsection b, the United States Enrichment Corporation (USEC) in subsection c, inventory sales in subsection d, and government transfers in subsection e. None of these categories of transfers appear relevant to the type of transaction contemplated in the DOE/BPA/EN Pilot Project. It is clear that neither the Russian HEU nor USEC provisions are applicable. Similarly, the inventory sales provision is inapplicable because it applies to the sale of natural or low-enriched uranium from DOE's stockpile. The government transfers provision is also inapplicable because it applies to "enriched uranium."

Even though section 3112 does not appear to be directly applicable to the DOE/BPA transfer of depleted uranium, this situation may be interpreted in one of two ways. The first interpretation would be that subparts (b) through (e) serve as a limitation to subsection (a). Under that interpretation sales or transfers would only be permitted if they fell squarely into one of these categories. The second interpretation would be that nothing in section 3112 is intended to limit or prevent the exercise of DOE's broader authority to facilitate the sale or transfer of uranium under the Atomic Energy Act, particularly the General Authority provisions in section 161m of that Act. That provision states

the Commission is authorized to...enter into agreements with persons licensed under section(s)...[of the Act] (1) to provide for the processing, fabricating, separating, or refining in facilities owned by the Commission of source, byproduct, or other material or special nuclear material owned by or made available to such licensees and which is utilized or produced in the conduct of the licensed activity, and (2) to sell, lease, or otherwise make available to such licensees such quantities of source or byproduct material...

Support for this second interpretation may be found from the legislative history to the USEC Privatization Act. I found nothing in that legislative history intended to limit the general authority related to the transfer of depleted uranium. Rather, the Senate Report stated that "the administration sought legislative direction for the transfer of specified amounts of surplus enriched uranium and uranium hexafluoride feed material." Senate Report 104-173 USEC Privatization Act, November 16, 1995 at page 14 (see also pages 28-29). Most of the discussion related to the transfer of uranium involved the US-Russian HEU Agreement and the discussion of the other subparts merely restate the statutory language. The only reference to uranium hexafluoride tails was in the disposal of such material as low level waste from enrichment activities. It is reasonable to conclude that any legislative intent to curtail the Department's general authority to facilitate the sale or transfer of nuclear material would have been expressly discussed in the Privatization Act, given the purpose of that Act is to enhance the uranium enrichment industry.



MAY 10 2005

Department of Energy

Bonneville Power Administration
 P.O. Box 3621
 Portland, Oregon 97208-3621

EXECUTIVE OFFICE

MEMORANDUM FOR THE DEPUTY SECRETARY

THROUGH:

DAVID K. GARMAN 
 ASSISTANT SECRETARY, ENERGY EFFICIENCY
 AND RENEWABLE ENERGY

FROM:

STEPHEN J. WRIGHT 
 ADMINISTRATOR AND CHIEF EXECUTIVE
 OFFICER, BONNEVILLE POWER
 ADMINISTRATION

Charles E. Anderson 
 PRINCIPAL DEPUTY ASSISTANT SECRETARY FOR
 ENVIRONMENTAL MANAGEMENT

SUBJECT:

ACTION: Approve Uranium Tails Pilot Project involving
 Bonneville Power Administration, the Department of
 Energy Office of Environmental Management and
 Energy Northwest

ISSUE:

The Bonneville Power Administration (BPA), in
 coordination with Energy Northwest (EN), has entered
 into discussions with the Office of Environmental
 Management (EM) regarding the potential for recycling
 two specific lots of uranium tails.

DISCUSSION:

EN is a joint operating agency organized under
 Washington State law. Approximately eighteen months
 ago, EN approached BPA expressing an interest in
 engaging the Department of Energy (DOE) about
 recycling some of the DOE uranium tails for use in the
 Columbia Generating Station's (CGS) nuclear fuel cycle.
 BPA has acquired all of the generating capacity of CGS.
 These tails are depleted uranium hexafluoride (DUF₆)
 that were generated by DOE at the Portsmouth and
 Paducah Gaseous Diffusion Plant (GDP) sites. Over
 700,000 metric tons (MT) of DUF₆ were generated during
 the fifty years that the government controlled the uranium
 enrichment enterprise, and the DUF₆ is currently in the
 custody of EM.

Subsequent discussions between EN and EM have identified the following areas of common interest:

- EM has an interest in re-using the tails in a Uranium Tails Pilot Project (Pilot Project), which, if successful, will reduce EM's obligations for conversion and disposal of tails and improve its planning ability by confirming such reuse is practical.
- EN has an interest in commercial enrichment of the tails for use in the CGS fuel cycle, provided that enrichment can be done in an economically viable manner to benefit CGS and BPA's ratepayers.

Consequently, a small-scale Pilot Project to assess the feasibility and benefits of commercial use of the DOE tails is proposed by BPA and EM. Enrichment of about 8,500 MT of DUF_6 produces enough equivalent natural UF_6 for about four fuel reloads (eight years) for CGS. This is estimated to provide a reduction in CGS future fuel costs of \$50 million, based on current uranium prices, which otherwise would be recovered in BPA rates.

The Secretary has the statutory authority under section 161m of the Atomic Energy Act to approve the transfer of the depleted uranium. Section 3112 of the USEC Privatization Act, which restricts the sale or transfer of certain DOE natural and enriched uranium stockpiles, does not apply to the transfer of the depleted uranium (tails).

On April 1, 2005, BPA executed a categorical exclusion for this proposal which exempts it from further National Environmental Policy Act review based upon two regulatory provisions: 10 C.F.R. Part 1021, Subpart D, Appendix B3.6, which exempts, among other things, "small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions" and 10 C.F.R. Subpart D, Appendix A7, which exempts the "[t]ransfer, lease, disposition or acquisition of interests in personal property (e.g., equipment and materials) or real property (e.g., permanent structures and land), if the property use remains unchanged; i.e., the type and magnitude of impacts would remain essentially the same."

This Pilot Project is planned to commence when USEC begins with the enrichment of the first delivery of DUF_6 to USEC and is expected to end within two years of that date. Any decision by DOE to continue enrichment beyond the duration of the Pilot Project will be based upon appropriate NEPA review.

DOE's inventory of depleted uranium is surplus to defense needs and below commercial specification in the content of the isotope U^{235} . The domestic and international uranium industry is experiencing a resurgence that has witnessed the price of natural uranium more than double since 2003. The Office of Nuclear Energy, Science and Technology (NE) commissioned a market study to examine the impact upon the commercial uranium industry of the Pilot Project and other planned sales/transfers of the Department's uranium inventory, including down-blended Highly Enriched Uranium belonging to the National Nuclear Security Administration (NNSA). Based on this market study, NE prepared an analysis (attached) of the proposed depleted uranium transfer to BPA. NE has concluded that the Pilot Project combined with other known Department plans for placing uranium inventories into the commercial market will have insignificant impact on the domestic uranium mining, conversion, or enrichment industries. In fact, the inclusion of this material in the market is expected to increase the demand for enrichment services and should be beneficial to the enrichment industry.

Unless an innovative approach such as the one proposed herein is adopted, the fair market value of DOE's DUF_6 inventory is negative because DOE would otherwise pay for its disposition. The material is being transferred based on the negotiated value that represents a fair trade-off by each party of the expected cost savings/avoidance and risk, considering the fair market value. In addition, the Pilot Project would advance one of DOE's top priorities of "pursuing nuclear power and the resolution of nuclear waste disposal ... and environmental cleanup issues."

The Pilot Project will be memorialized through a Letter of Agreement (05GS-75180) signed on DOE's behalf by the Manager, Portsmouth Paducah Project Office (PPPO).

PPPO is the appropriate DOE office because it has been tasked with dispositioning DOE's entire tails inventory, and other uranium inventories stored at the DOE sites in Portsmouth and Paducah. Custodial and administrative responsibility for the DUF_6 shall pass, and delivery shall be deemed made from EM to BPA upon acceptance of the material for processing by the United States Enrichment Corporation (USEC) at the USEC Paducah Enrichment Plant. Title to the tails will pass to EN upon commencement of tails processing by USEC. EN will pay EM or its agent a nominal fee for the handling of the cylinders and a subsequent fee for any uranium that is successfully processed by USEC. Due to the Miscellaneous Receipts Act, DOE is precluded from retaining such fees, although DOE may retain fees in an amount equal to the direct costs and reasonably related indirect costs incurred by DOE to transfer the cylinders to EN. In spite of the limitation imposed by the Miscellaneous Receipts Act, the transaction will result in the disposition of DUF_6 with a net reduction in EM funding requirements estimated to be as much as approximately \$40 million.

EN will enter into contractual agreements with USEC for the enrichment of the tails from 0.4 percent to 0.7 percent uranium 235 (U^{235}). Estimates for USEC's enrichment services and fees to EN are in the range of \$88 million for the Pilot Project. EN will use a line of credit and bond financing to support the cash flows required for the Pilot Project.

In support of the Pilot Project the following actions are being completed:

- BPA has proposed an agreement (attached) with EM for the transfer of the uranium tails.
- EN is finalizing an enrichment contract with USEC for processing of the tails material. In the past, DOE and USEC have expended considerable time and resources to resolve disputes over contaminated cylinders. Agreement between EN and USEC should be clear that DOE will incur no cost obligation if USEC rejects a cylinder.

Following completion of the above actions, the transfer and enrichment of the uranium tails will begin. This Pilot Project is an opportunity to determine the feasibility of enriching depleted uranium and for all parties involved to gain financial benefits while accomplishing a reduction in the nation's depleted uranium tails inventory.

SENSITIVITIES:

The reduction of DOE tails inventory may be viewed with concern by both the Kentucky and Ohio Congressional delegations because it reduces the inventory of feed for the DOE conversion facilities under construction in Portsmouth and Paducah. The reduction of inventory would reduce the operational life at these plants and thereby impact employment. Members of the Ohio and Kentucky delegations are likely to believe that if the Pilot Project is successful, DOE will expand it, thus further reducing inventory of feed for the new DOE conversion plants. This will be offset by the increased demand for enrichment services at Paducah and may be further neutralized by the fact that the resultant secondary tails will likely be processed at a DOE facility. Members of the New Mexico Congressional delegation may also view this proposed Pilot Project with great skepticism. Louisiana Energy Services (LES) is working to build a uranium enrichment facility in New Mexico with strong support from the community. The Congressional delegation may view the Pilot Project as benefiting USEC in the future at the expense of potential competition from LES.

Members of the Oregon, Washington, Idaho, and Montana delegations are likely to be highly appreciative of the \$50 million benefit to ratepayers through BPA rates.

The uranium mining, conversion and enrichment industry is very concerned with the impact of DOE uranium inventories competing in the commercial uranium market. Although this Pilot Project will increase demand for enrichment at the Paducah GDP, there will be a slight reduction in demand for natural uranium. The House version of the Energy Bill as currently drafted, H.R. 6, would annually limit the "[t]otal amount of uranium transferred [by DOE] ... for consumption by commercial nuclear power end users." The amount of material

covered by the Pilot Project alone would be within the limit allowed for under H.R. 6.

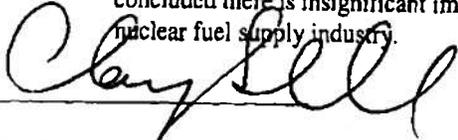
If it becomes law, H.R. 6 would limit federal transfers of uranium to three million pounds of U3O8 equivalent per year for the period FY 2005-09. Other planned sales or transfers in combination with the Pilot Project could exceed the annual limit for uranium transfers set forth in H.R. 6. Specifically, a proposed sale of low-enriched uranium derived from 17 MT of highly-enriched uranium (HEU) by NNSA: 0 M lbs in 2005; 2.3 M lbs in 2006; 3.0 M lbs in 2007 and 2.3 M lbs in 2008. BPA will work with EM, EN and USEC to accelerate planned 2005 transfers under the Pilot Project toward the 3.0 M lbs limit, and to have part of the DUF₆ Pilot Project deferred starting in FY 2006, if necessary. BPA will consult and coordinate on a continuing basis with NNSA to adjust BPA transfers during the two year term of the Pilot Project so as not to conflict with actual NNSA transfers should a uranium transfer limit, such as the one set forth in H.R. 6, be enacted. However, members of the Senate and House Armed Service Committees are likely to express concerns that the Pilot Project will negatively affect the ability of NNSA to transfer uranium if the H.R. 6 limit on uranium transfers is signed into law.

If approved, DOE should enter into discussions with the uranium mining industry to assure them that DOE will remain sensitive to the price of uranium and ensure that DOE's huge tails inventory will be managed to avoid any impact to market prices. Unfortunately, the price may continue to rise or drop independent of any DOE action, but the industry may blame DOE for any price drop. Members of the Nebraska and Wyoming Congressional delegations (where uranium mining still occurs) are likely to strongly oppose the Pilot Project.

If the Pilot Project is successful, the Tennessee Valley Authority may propose a similar arrangement to transfer DUF₆ to support their needs connected to tritium production and the requirement for U.S. origin uranium (foreign source uranium is generally restricted by agreement to non-defense purposes).

POLICY IMPACT: None

RECOMMENDATION: Approve the Pilot Project Agreement (Attachment 1) based on the market analysis (Attachment 2) that has concluded there is insignificant impact to the domestic nuclear fuel supply industry.

Approval: 

| | | | |
|--------------|--------------------------------|----|---------|
| CONCURRENCE: | Chief Financial Officer/ME-1 | S/ | 5/16/05 |
| | Nuclear Energy/NE-1 | S/ | 5/16/05 |
| | General Counsel/GC-1 | S/ | 5/16/05 |
| | National Nuclear Security/NA-1 | S/ | 5/16/05 |
| | Congressional Affairs/CI-1 | S/ | 5/16/05 |

2 Attachments

cc: I. Kolb - S-1
L. Brown - S-3
K. Kolevar - TD-1
E. Nicoil - CI-20
W. Murphie - PPPO
S. Wright - BPA



Department of Energy

Bonneville Power Administration
Mail Drop 1399
P.O. Box 968
Richland, Washington 99352-0968

POWER BUSINESS LINE

May 6, 2005

In reply refer to: PGC/Richland

Letter of Agreement No. 05GS-75180

Mr. William Murphie, Manager
United States Department of Energy
Portsmouth/Paducah Project Office
1017 Majestic Drive, Suite 200
Lexington, KY 40513

Dear Mr. Murphie:

Bonneville Power Administration (BPA), an agency of the U.S. Department of Energy (DOE), in coordination with Energy Northwest (EN), a joint operating agency organized under Washington State law, and the Environmental Management Office (EM) of DOE have agreed to implement a PILOT project to determine the usability of a portion of DOE's depleted uranium hexafluoride (DUF₆) inventory. The DUF₆, as identified below, may contain enough uranium (U²³⁵) for practical use in a nuclear power production reactor, after enrichment.

If successful, this interdepartmental PILOT project will result in the avoidance by EM of as much as approximately \$40 million in disposal costs and save a projected \$50 million in future nuclear fuel costs for EN's Columbia Generating Station, the generating project capacity of which BPA has heretofore acquired. In order to implement this PILOT project, EN, in coordination with BPA, will assume responsibility for funding the PILOT project (enrichment and uranium fees), estimated to cost approximately \$88 million.

To commence the PILOT project work, and as consistent with interdepartmental property transfers, BPA requests delivery of DUF₆ from EM to BPA on the following basis:

1. DUF₆ cylinders from two DOE Lots will be delivered by EM to U.S. Uranium Enrichment Corporation (USEC) on a schedule mutually agreed upon by the parties hereto.
2. Lot 1 is defined as 165 Type 48G DUF₆ cylinders with a minimum assay between 0.400 to 0.4399 wt% U²³⁵ and containing approximately 1,405,620 KgU as DUF₆ located in Paducah, Kentucky.
3. Lot 2 is defined as 507 Type 48G DUF₆ cylinders with a minimum assay of 0.440 wt% U²³⁵ and containing approximately 4,314,400 KgU as DUF₆ located in Paducah, Kentucky.

4. Delivery by EM to USEC will be at USEC's Paducah, Kentucky, Enrichment Plant ("delivery point"). Title to the DUF₆ shall pass and delivery shall be deemed made from EM to BPA upon acceptance for processing by USEC at the USEC Paducah Enrichment Plant. Following acceptance, title shall thereafter pass without further condition from BPA to EN upon commencement of processing by USEC.

5. Any DUF₆ cylinders that are transferred to delivery point but not accepted for processing by USEC at the Paducah plant ("rejected cylinders") shall be exchanged with a cylinder of equivalent assay. The rejected cylinder shall be returned to EM who shall make all necessary arrangements therefore.

6. Either BPA or EM, in its sole discretion, may terminate transfers of cylinders to the delivery point under this Agreement at any time. Such termination shall be in the form of written notice and shall be effective upon receipt. As promptly as practicable after such notice, EM shall undertake on BPA's behalf, and under arrangements to be made by EM, to return any unprocessed cylinders from the delivery point. Title and future liability for any cylinders deemed delivered and returned under this item 6 will transfer back to EM upon return.

7. EM shall be reimbursed its cost of transferring each cylinder to the delivery point hereunder, at \$2,200.00 (Two Thousand Two Hundred Dollars) per cylinder. Such payments shall be made to EM, or its designated agent, within thirty days of the date of invoicing. For each cylinder successfully processed under this PILOT project as provided herein, EM shall be paid a fixed fee of \$10,450.00 (Ten Thousand Four Hundred and Fifty Dollars) per cylinder. Unless otherwise agreed to by the parties, such payments shall be made to EM, or its designated agent, in cash or in-kind as designated in writing by EM, within thirty days of the conclusion (whether by completion or termination) of the PILOT project.

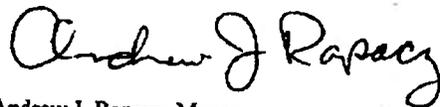
8. For each cylinder that is returned to EM under item 5 or item 6, EM shall be paid its cost of transferring each cylinder from the delivery point back to EM, at \$2,200.00 (Two Thousand Two Hundred Dollars) per cylinder, which shall be considered EM's full, complete, and total compensation per cylinder for any and all such cylinders so returned. Payment of such transfer charge will be made to EM, or its designated agent within thirty days of the date of invoicing.

9. BPA and EM intend to pursue the reuse of additional uranium inventories at the conclusion of the PILOT project on a schedule and terms to be mutually agreed upon. BPA has a significant financial stake in the PILOT project and if such project successfully meets the expectations of both parties, EM agrees to work with BPA to make additional quantities of DUF₆ available for reuse. BPA further agrees to make a good faith effort to assist EM in the reutilization of other surplus uranium.

10. EM shall accept any payments hereunder from BPA or BPA's designee, which designee may include EN.

Please indicate your concurrence with this Agreement by executing one of the two included duplicate originals of this Agreement. Please return one executed original to me in the stamped, pre-addressed envelope.

Sincerely,



Andrew J. Rapacz, Manager
Contract Generating Resources
Bonneville Power Administration

ACCEPTED

By _____
Manager, Portsmouth & Paducah Sites

Name _____
(Print/Type)

Date _____

cc:
Mr. Scott W. Oxenford – Energy Northwest, PE04
Mr. Dale K. Atkinson – Energy Northwest, PE08
Ms. Pamela R. Bradley – Energy Northwest, PE13
Mr. Eric K. Rockett – Energy Northwest, PE26

ANALYSIS OF PROPOSED DEPLETED URANIUM HEXAFLUORIDE TRANSFER¹

Proposal

Bonneville Power Administration (BPA), an agency of the Department of Energy, in conjunction with Energy Northwest (EN), a company that owns and operates the Columbia Generating Station nuclear plant, and the Office of Environmental Management (EM) have proposed to implement a Pilot Project to determine the usability of a portion of the Department's depleted uranium hexafluoride (DUF₆)² inventory. The proposed Pilot Project would require the transfer of approximately 8,534 metric tons of high assay DUF₆ over a two year period.

In order to help assess the relative impacts of the proposed transfer on domestic industry, an analysis of the nuclear fuel market is provided below:

Market Analysis

Uranium Market

The uranium market has undergone major changes during the past several years, and has evolved from a buyer's market (as characterized by excess supply) into a seller's market (as characterized by limited supply and rising prices). Market price has sharply increased for uranium concentrates (U₃O₈). The end-of-month April 2005 price for natural uranium of approximately \$24 is about 240 percent of the \$9.90 per pound price in April 2002. The long-term contract price for uranium has increased from \$18.00 per pound in May 2004³ to \$28 per pound in April 2005 – a 55 percent increase over ten months. Among the causes of this increase have been a series of events that included a uranium processing facility fire in Australia, a uranium mine flood in Canada, and the commercial dispute between two Russian entities that resulted in an interruption of supply to a significant number of U.S. nuclear power plants. Uranium prices have increased to a level where it is economic to restart old mines and expand existing uranium mines.

As the substantial stocks of uranium inventory (both commercial and government) are drawn down during this decade, primary production of U₃O₈ will have to expand at existing mines and new mines will have to be developed in order to supply existing

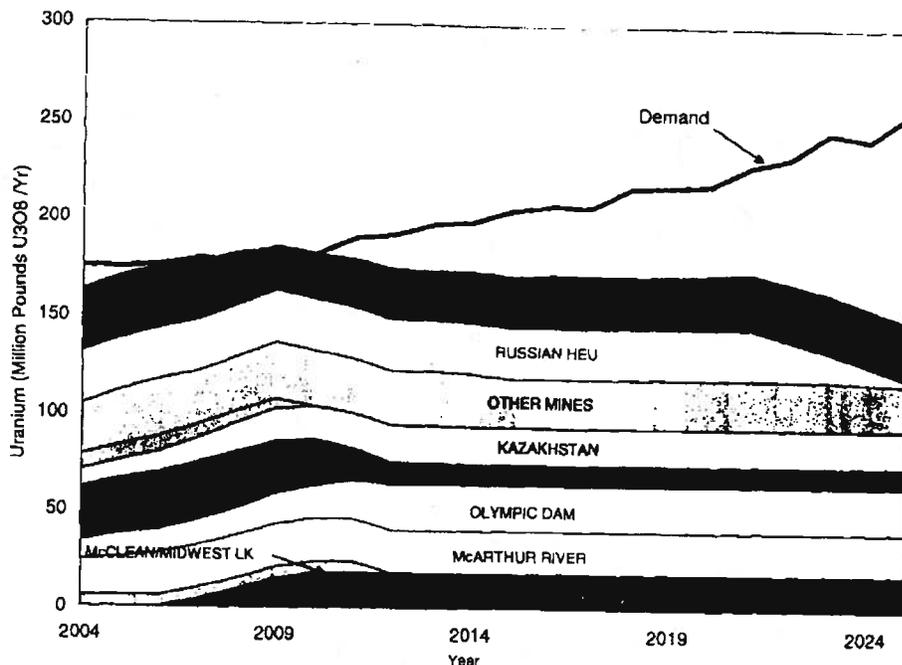
¹ All supply data and U.S. demand data referenced in this report are sourced to Energy Resources International, Inc. (ERI) unless otherwise specified; world demand data is sourced to the World Nuclear Association (WNA).

² A glossary for all terms can be found in Appendix A.

³ May 2004 was the first publication of long-term price indicators. All pricing data is from publically available data published by Ux Consulting.

demand. While overall supply is sufficient to meet current U_3O_8 requirements as shown in Figure 1, increased investment is required to expand present mine capacity, and begin exploration to identify new ore deposits.

Figure 1. World Supply and Demand for Uranium



World annual uranium requirements are expected to increase from current levels of about 175 million pounds U_3O_8 per year to 182 million pounds by 2010 and then rise almost linearly to 257 million pounds per year by 2025. U.S. requirements are expected to increase from 52 million pound per year today to approximately 55 million pounds per year by 2025.

Mine production and uranium inventories are expected to meet approximately 70% and 30%, respectively, of world cumulative requirements during the remainder of this decade, and 75% and 25%, respectively, during the next 15 years, assuming that the HEU Agreement, which represents 24 million pounds U_3O_8 , is extended beyond 2013. Four countries are expected to provide about 91% of Western world mine production during this decade: Canada, Australia, Namibia, and Niger. These four countries along with Russia, Kazakhstan, and Uzbekistan are projected to provide about 93% of total world mine production through 2010.

Mine production is projected to rise from 105 million pounds in 2004 to about 225 million pounds by 2025. Uranium inventories are projected to provide supply annually that declines gradually from about 59 million pounds in 2004 to approximately 33 million pounds by 2025.

Uranium Conversion Services Market

Until recently, the market for conversion services (*i.e.*, to convert uranium concentrate to uranium hexafluoride) had been characterized by more than adequate capacity in the presence of a relatively flat market demand. This situation changed dramatically in November 2003 when the Russian government trading company, Tenex⁴, announced that it would no longer honor contracts to supply its U.S. marketing agent GNSS with either U₃O₈ or UF₆. This situation was further exacerbated when the operation of ConverDyn uranium conversion plant located in Metropolis, Illinois, was disrupted in both September and December 2003. These shutdowns resulted in an immediate tightening of the conversion market. At the same time, many fuel managers began purchasing uranium and conversion for inventory to avoid future supply disruption thereby placing additional demand in the market.

Presently there are five primary commercial suppliers of uranium conversion services. Two of these suppliers (Cameco Corporation in Canada and ConverDyn in the U.S.) are located in North America. The other suppliers are in the United Kingdom, France and Russia. The BNFL plant in the U.K. that was to have been shutdown in 2006, has been contracted to Cameco through 2016, boosting Cameco's conversion capacity by approximately 50%.

As reflected in Figure 2, world annual requirements for conversion services are projected to rise gradually from 64 million kilograms in 2004 to 94 million kilograms by 2025. U.S. requirements are projected to remain relatively constant at approximately 20 million kilograms through 2025.

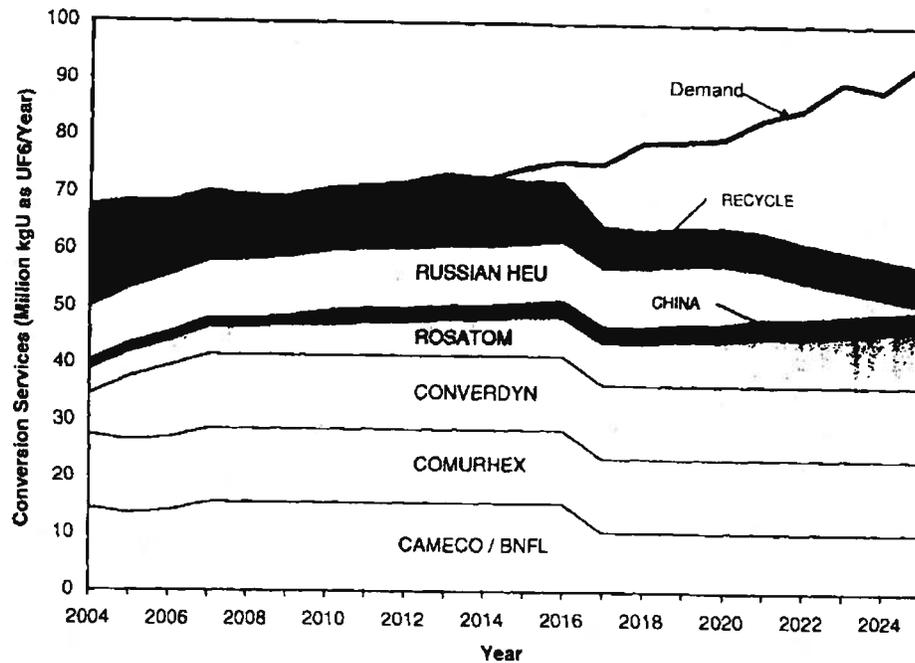
Production of conversion services and available inventories of natural uranium hexafluoride will provide an adequate supply of conversion through the middle of the next decade. However, the supply margins are extremely thin, and any future interruption in supply would have a significant impact on the nuclear fuel market.

Production by the world's five primary suppliers of conversion services met approximately 63% of world requirements during 2004, and UF₆ associated with the conversion component of the HEU Agreement, inventories, enrichment of depleted uranium, and recycle savings in Europe met the remainder of requirements. Conversion

⁴ Joint Stock Company Technobexport (Tenex) – wholly owned company of the Russian Government, controlled by the Federal Atomic Energy Agency, that acts as Russia's executive agent for implementing the HEU Agreement.

capacity will rise from a current level of about 44 million kilograms to approximately 50 million kilograms by the end of the decade through plant expansion. The difference between these levels of production capacity and requirements is covered by the conversion component of the HEU Agreement deliveries, inventories, as well as depleted uranium upgrading in Russia, and recycle savings. Inventory supply could collectively provide the equivalent of at least 20,000 MTU of UF₆ per year through the middle of the next decade.

Figure 2. World Supply and Demand for Conversion Services



ConverDyn's shut down and loss of eight months production caused the North American spot market price which was \$5.00 per kilogram of uranium (kgU) as UF₆ at the end of March 2003, to jump to \$12, its current price level (April 2005) – a 140 percent increase in two years.

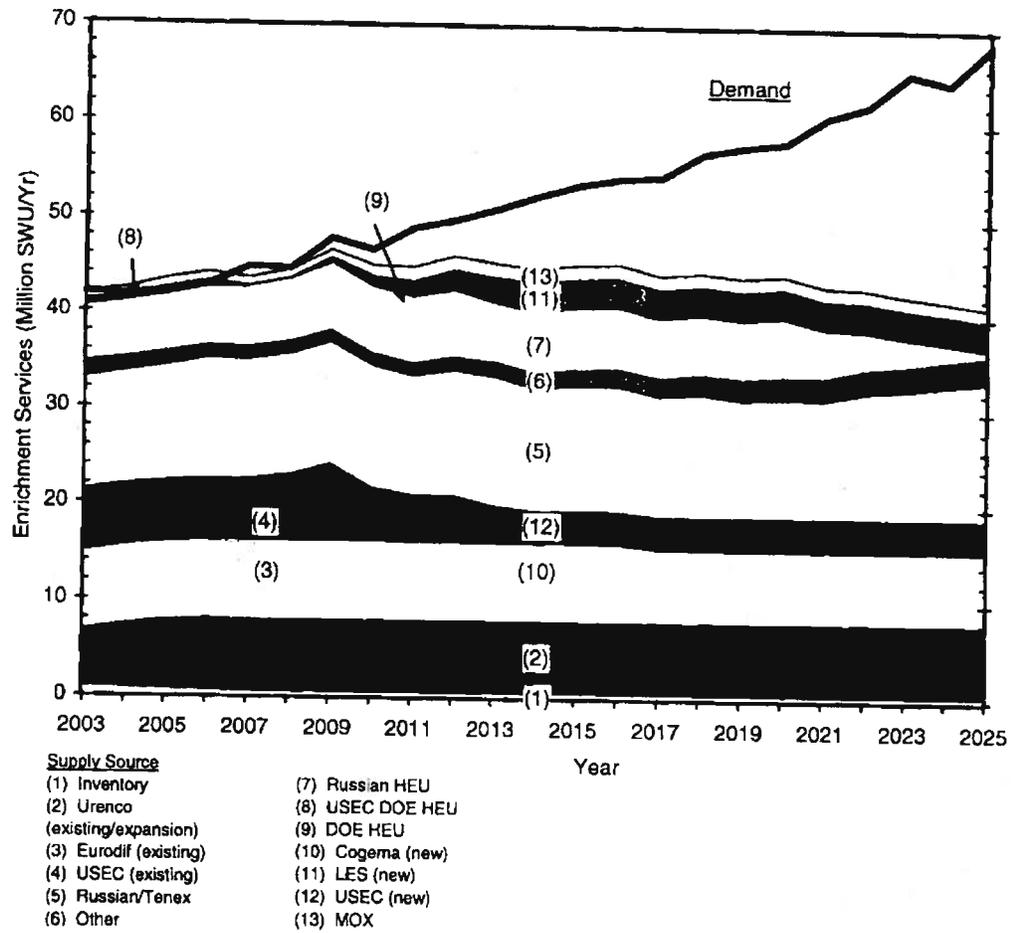
Enrichment Services Market

Supply in the uranium enrichment market is adequate. Louisiana Energy Services (LES) has announced plans to build a new 3 million Separative Work Units (SWU) per year uranium enrichment plant, the National Enrichment Facility, in Eunice, New Mexico, using Urenco's gas centrifuge technology. It expects to bring the new plant into operation beginning in 2008 and to achieve full capacity in 2013. LES filed a commercial plant license application with the Nuclear Regulatory Commission (NRC) in December 2003. USEC has also announced plans to deploy a new 3.5 million SWU per year gas centrifuge uranium enrichment plant by the end of 2010. On August 23, 2004, USEC submitted a license application to the NRC to build and operate its American Centrifuge Plant in Piketon, Ohio.

Under the HEU Agreement, USEC has agreed to purchase from Tenex 5.5 million SWU each year to total 500 metric tons of highly enriched uranium by 2013. The 5.5 million SWU per year is equivalent to approximately 45 percent of the annual U.S. requirements for enrichment services. Even with planned new enrichment capacity, the HEU Agreement will remain an essential source of supply for the foreseeable future.

In addition, EURODIF SA. has announced plans to replace its existing uranium enrichment plant with a new 7.5 million SWU per year plant that also utilizes Urenco's gas centrifuge machines. The new plant, which is expected to begin operation in 2007 and achieve full production by 2016, will be located in Tricastin, France, at the site of the existing enrichment plant.

Figure 3. World Supply and Demand for Enrichment Services



As reflected in Figure 3, annual world enrichment services requirements are projected to rise from 42 million SWU in 2004 to 47 million SWU by 2010 and to 54 million SWU by 2015. Enrichment services requirements are forecast to rise to 69 million SWU per year by 2025.

The published long-term base price for uranium enrichment services rose over 23%, from \$85 per SWU in December 2000 to \$105 per SWU in November 2001. Since then, the long-term price has risen to \$110 per SWU (April 2005). Little in the way of excess enriched uranium product (EUP) inventories are available to the spot market.

Assessment of Market Impact from the Proposed Transfer to EN

For purposes of assessing the impact of the proposed transfer of 8,534 metric tons of depleted uranium hexafluoride, the Office of Nuclear Energy, Science and Technology contracted with Energy Resources International, Inc. (ERI) to conduct a detailed analysis of potential market impacts from the introduction of all Department uranium transfers or sales under consideration that could result in the displacement of material that would have been sold by a commercial supplier in the 2005 – 2012 period.

The market study includes the Department's planned sales and transfers such as the nuclear material that was authorized under previous government agreements with the Tennessee Valley Authority (TVA) and with USEC prior to its privatization. Since this material has long been accounted for by industry in the commercial markets, it is included in ERI's market base assumptions. The analysis also includes the 15 to 17.4 metric tons of HEU that the Department announced in October 2004 to be down blended and sold into the commercial market beginning in 2006.

The Potential Impact of Known and Proposed Sales and Transfers from the Department's Uranium Inventories

This section reviews the government's proposed disposition schedule for the BPA Pilot Project in terms of natural uranium, conversion services, enrichment services and the potential impact of the proposed transfer, if any, on each of the three market sectors. In addition, as shown in these tables, it was assumed that other proposed projects using Department inventories could be sold or transferred into the commercial market between 2005 and 2012.

Table 1 presents the total uranium inventory that the Department is considering for sale or transfer between 2005 and 2012. The table separates the uranium that the market has already taken into account (ERI's base assumptions) from the incremental uranium that is the subject of the present market analysis. The quantities are given in millions of pounds of uranium concentrate equivalent (we have calculated and estimated amounts of U_3O_8) for DUF_6 and LEU in order to consider the impact on all three markets (uranium, conversion and enrichment).

| TABLE 1 GOVERNMENT URANIUM & URANIUM-EQUIVALENT MATERIAL TO BE SOLD/TRANSFERRED BETWEEN 2005 AND 2012 (MILLION POUNDS U3O8) | | | | | | | | | | |
|--|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| MATERIAL IDENTITY | RESPONSIBLE ORGANIZATION | YEAR | | | | | | | | |
| | | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | TOTAL |
| Material Already Accounted for in Market: | | | | | | | | | | |
| 50 MT HEU To USEC | NNSA | 2.30 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.50 |
| TVA Off-Spec. HEU | NNSA | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 10.40 |
| Research Reactors HEU | NNSA | 0.20 | 0.20 | 0.10 | 0.20 | 0.30 | 0.10 | 0.10 | 0.30 | 1.50 |
| 15 to 17.4 MT HEU | NNSA | 0.00 | 2.30 | 3.00 | 2.30 | 0.00 | 0.00 | 0.00 | 0.00 | 7.60 |
| Total Material Accounted for by the Market: | | 3.80 | 4.00 | 4.40 | 3.80 | 1.60 | 1.40 | 1.40 | 1.60 | 22.00 |
| Material to be Disposed in Market | | | | | | | | | | |
| BPA Pilot Project | EM | 2.50 | 2.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 |
| Other Proposed Projects | Multiple | 1.75 | 2.50 | 2.60 | 1.80 | 4.10 | 3.60 | 3.10 | 0.70 | 20.15 |
| Total Material Proposed to be Disposed: | | 4.25 | 5.00 | 2.60 | 1.80 | 4.10 | 3.60 | 3.10 | 0.70 | 25.15 |
| Total Material Disposal During 2005-2012: | | 8.05 | 9.00 | 7.00 | 5.60 | 5.70 | 5.00 | 4.50 | 2.30 | 47.15 |

Table 2 presents the equivalent conversion services quantities that the DOE is considering to dispose of between 2005 and 2012. The quantities are given in millions of kilograms of UF_6 .

| TABLE 2 GOVERNMENT CONVERSION SERVICES-EQUIVALENT MATERIAL TO BE SOLD/TRANSFERRED BETWEEN 2005 AND 2012 (MILLION kgU as UF6) | | | | | | | | | | |
|---|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| MATERIAL IDENTITY | RESPONSIBLE ORGANIZATION | YEAR | | | | | | | | |
| | | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | TOTAL |
| Material Already Accounted for in Market: | | | | | | | | | | |
| 50 MT HEU To USEC | NNSA | 0.88 | 0.08 | 0 | 0 | 0 | 0 | 0 | 0 | 0.96 |
| TVA Off-Spec. HEU | NNSA | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 3.98 |
| Research Reactors HEU | NNSA | 0.08 | 0.08 | 0.04 | 0.08 | 0.11 | 0.04 | 0.04 | 0.11 | 0.57 |
| 15 to 17.4 MT HEU | NNSA | 0 | 0.88 | 1.15 | 0.88 | 0 | 0 | 0 | 0 | 2.91 |
| Total Material Accounted for by the Market: | | 1.45 | 1.53 | 1.68 | 1.45 | 0.61 | 0.54 | 0.54 | 0.61 | 8.42 |
| Material to be Disposed in Market | | | | | | | | | | |
| BPA Pilot Project | EM | 0.96 | 0.96 | 0 | 0 | 0 | 0 | 0 | 0 | 1.91 |
| Other Proposed Projects | Multiple | 0.67 | 0.96 | 1.00 | 0.69 | 1.57 | 1.38 | 1.19 | 0.27 | 7.71 |
| Total Material Proposed to be Disposed: | | 1.63 | 1.91 | 1.00 | 0.69 | 1.57 | 1.38 | 1.19 | 0.27 | 9.62 |
| Total Material Disposal During 2005-2012: | | 3.08 | 3.4 | 2.7 | 2.1 | 2.2 | 1.9 | 1.7 | 0.9 | 18.04 |

Table 3 presents the equivalent enrichment services quantities that the DOE is considering to dispose of between 2005 and 2012. The U_3O_8 e quantities were converted to Separative Work Unit equivalent (SWUe) for conversion and enrichment market analyses.

| MATERIAL IDENTITY | RESPONSIBLE ORGANIZATION | YEAR | | | | | | | | |
|--|--------------------------|--------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | TOTAL |
| Material Already Accounted for in Market: | | | | | | | | | | |
| 50 MT HEU To USEC | NNSA | 0.63 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.68 |
| TVA Off-Spec. HEU | NNSA | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 2.62 |
| Research Reactors HEU | NNSA | 0.07 | 0.07 | 0.03 | 0.07 | 0.10 | 0.03 | 0.03 | 0.10 | 0.50 |
| 15 to 17.4 MT HEU | NNSA | 0.00 | 0.66 | 0.85 | 0.66 | 0.00 | 0.00 | 0.00 | 0.00 | 2.16 |
| Total Material Accounted for by the Market: | | 1.02 | 1.10 | 1.22 | 1.05 | 0.43 | 0.36 | 0.36 | 0.43 | 5.96 |
| Material to be Disposed in Market | | | | | | | | | | |
| BPA Pilot Project | EM | -0.25 | -0.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.50 |
| Other Proposed Projects | Multiple | 0.01 | 0.00 | 0.00 | 0.00 | 0.09 | 0.17 | 0.20 | 0.20 | 0.67 |
| Total Material Proposed to be Disposed: | | -0.24 | -0.25 | 0.00 | 0.00 | 0.09 | 0.17 | 0.20 | 0.20 | 0.17 |
| Total Material Disposal During 2005-2012: | | 0.78 | 0.85 | 1.22 | 1.05 | 0.52 | 0.53 | 0.56 | 0.63 | 6.13 |

Potential Impact on the Uranium Concentrates Market

Table 4 presents the total annual uranium-equivalent government sales/transfer material that the Department is considering to dispose of between 2005 and 2012, and the projected annual world and domestic supply and demand for uranium. ERI has concluded that there will be no world market impact if the proposed sales/transfers are projected to be less than 3% of world demand and less than 10% of domestic demand. As the domestic market is part of the global market, there is really only one market in which all suppliers and consumers participate. The Department's sales/transfers of uranium include not only the BPA Pilot Project transfers of DUF_6 , but also other proposed sales or transfers. These sales and transfers together represent material that the market may not yet have taken into consideration in future price formation.

Total world supply and demand is projected to be almost in balance, with cumulative demand during the eight-year period being approximately 32 million pounds greater than supply, an annual average shortfall of supply of about 4 million pounds. The quantity of equivalent uranium from the BPA Pilot Project, which is approximately 2.5 million pounds U_3O_8 equivalent per year as shown in Table 1, represents only 4.8 percent of U.S. demand in 2005 and 2006 and 1.5 percent of world demand.

Since production of uranium over the 2005 through 2012 timeframe is estimated to be approximately 70 percent of global uranium demand, new production is required to meet expected demand. Towards this end, the Department's proposed uranium sales/transfers can help bridge the gap between current production levels and the time when more supply becomes available in the future.

Specific to the proposed BPA Pilot Project, the transfer of approximately 5 million pounds U_3O_8 (e) planned during the 2005 and 2006 timeframe is unlike other Department transfers or sales because it will only be used to meet the specific reactor requirements of EN and not sold into the market. Furthermore, because additional processing is required before it can be useable as fuel, this uranium will not be used in EN's reactor until 2009 and beyond.

| SUPPLY & DEMAND | YEAR | | | | | | | | TOTAL |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | |
| SUPPLY: | | | | | | | | | |
| TOTAL MINE PRODUCTION (a) | 111.7 | 117.2 | 121.3 | 128.9 | 137.5 | 132.3 | 128.4 | 121.9 | 999 |
| TOTAL AMU (b) | 58.5 | 57.5 | 55.7 | 53.2 | 48.1 | 49.4 | 50.9 | 52.4 | 426 |
| TOTAL WORLD SUPPLY | 170.2 | 174.7 | 177 | 182.1 | 185.6 | 181.7 | 179.3 | 174.3 | 1425 |
| DEMAND: | | | | | | | | | |
| TOTAL WORLD DEMAND (c) | 174.7 | 176.0 | 179.2 | 178.3 | 185.0 | 181.5 | 190.1 | 192.0 | 1457 |
| TOTAL U.S. DEMAND (d) | 52.2 | 53.5 | 53.0 | 52.9 | 52.9 | 52.9 | 52.7 | 52.6 | 423 |
| WORLD SUPPLY-DEMAND DIFFERENCE: | -4.5 | -1.3 | -2.2 | 3.8 | 0.6 | 0.2 | -10.8 | -17.7 | -32 |
| DOE PROPOSED DISPOSITION (e): | 4.3 | 5.0 | 2.6 | 1.8 | 4.1 | 3.6 | 3.1 | 0.7 | 25 |

(a) World uranium production based on mine nameplate capacity.
 (b) World already-mined uranium (inventories in all forms and plutonium recycle in Europe and Japan).
 (c) World Nuclear Association demand projection of April 2005.
 (d) ERI U.S. demand projection of April 2005.
 (e) DOE disposition of uranium in various forms; see Table 1.

Potential Impact on the Conversion Services Market

Table 5 presents the total annual conversion services-equivalent sales/transfers that the Department proposes to sell or transfer between 2005 and 2012, the projected annual world and U.S. demand for conversion services, and the projected world production. It can be seen that the proposed disposition is projected to offset the very thin margin between projected supply and projected demand.

| TABLE 5 | | | | | | | | | |
|--|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| PROJECTED WORLD CONVERSION SERVICES SUPPLY AND DEMAND, AND PROPOSED MATERIAL DISPOSITION (MILLION kgU AS UF ₆ /YEAR) | | | | | | | | | |
| SUPPLY, DEMAND, & DOE SALE | YEAR | | | | | | | | TOTAL |
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | |
| SUPPLY: | | | | | | | | | |
| PROJECTED WORLD PRODUCTION (a) | 43.50 | 45.50 | 48.00 | 48.00 | 48.50 | 49.50 | 50.00 | 50.00 | 383.00 |
| PROJECTED INVENTORY SUPPLY (b) | 22.52 | 22.16 | 21.44 | 20.50 | 18.55 | 19.00 | 19.57 | 20.18 | 163.91 |
| TOTAL WORLD SUPPLY | 66.02 | 67.66 | 69.44 | 68.50 | 67.05 | 68.50 | 69.57 | 70.18 | 546.91 |
| DEMAND: | | | | | | | | | |
| TOTAL WORLD DEMAND (c) | 63.62 | 63.95 | 65.15 | 64.67 | 67.20 | 66.15 | 69.42 | 70.18 | 530.35 |
| TOTAL U.S. DEMAND (d) | 19.99 | 20.46 | 20.28 | 20.24 | 20.23 | 20.23 | 20.18 | 20.13 | 161.74 |
| WORLD SUPPLY-DEMAND DIFFERENCE: | 2.40 | 3.71 | 4.29 | 3.82 | -0.15 | 2.35 | 0.14 | -0.01 | 16.56 |
| DOE PROPOSED DISPOSITION (e) | 1.63 | 1.91 | 1.00 | 0.69 | 1.57 | 1.38 | 1.19 | 0.27 | 9.62 |

(a) Western world production based on 93% of conversion plant nameplate capacity.
(b) World inventories in all forms and plutonium recycle in Europe and Japan.
(c) World Nuclear Association demand projection of April 2005
(d) ERI U.S. demand projection of April 2005.
(e) DOE proposed disposition of uranium in various forms; see Table 2.

As shown in Table 5 implementation of all the Department's proposed material dispositions would result in a total of 9.6 million kgU(e) of conversion services being introduced into the market between 2005 and 2012. This is an average of approximately 1.2 million net kgU(e) per year of conversion services equivalent. However, the proposed transfers and sales would offset the projected shortfall, and thus, there would essentially be no impact on the market as a result of the proposed sales/transfers.

The proposed BPA Pilot Project alone would result in the transfer of uranium containing conversion services amounting to approximately 0.96 million kgU per year or 4.7 percent of U.S. demand (or about 1.5 percent of world demand) in 2005 and 2006. ConVerDyn, the only domestic convertor, is producing to make up an 8 million kgU loss of production from its NRC mandated shutdown last year. Consequently its conversion capacity until 2008 is believed to be committed. ERI's analysis notes that the conversion industry worldwide is vulnerable to supply shortages and therefore the proposed Department transfer will provide needed supply that will be quickly absorbed by utilities to relieve pressure on the fuel processing chain and to increase inventories.

Potential Impact on the Enrichment Services Market

Table 6 presents the total annual enrichment services-equivalent that the Department proposes to sell or transfer between 2005 and 2012, the projected annual world and U.S. demand for enrichment services, and the projected U.S. production.

As shown in Table 6, implementation of the proposed material disposition schedule would result in little impact on the enrichment market. Under the proposed BPA Pilot

Project, new enrichment demand of approximately 508,000 SWU will actually be created over a two year period in order to enrich the DUF₆ up to the assay of natural uranium. The BPA Pilot Project transfer represents 1.9 percent of domestic enrichment demand and 0.6 percent of world demand.

TABLE 6

**PROJECTED WORLD ENRICHMENT SUPPLY AND DEMAND, AND PROPOSED MATERIAL DISPOSITION
(MILLION SWU)**

| SUPPLY & DEMAND | YEAR | | | | | | | | TOTAL |
|--|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | |
| SUPPLY: | | | | | | | | | |
| TOTAL PRODUCTION (a) | 34.32 | 35.65 | 35.23 | 36.41 | 37.42 | 39.47 | 35.07 | 36.25 | 289.82 |
| PROJECTED INVENTORY SUPPLY (b) | 8.42 | 8.51 | 8.70 | 8.63 | 8.00 | 8.23 | 8.52 | 8.55 | 67.56 |
| TOTAL WORLD SUPPLY | 42.74 | 44.16 | 43.93 | 45.04 | 45.42 | 47.70 | 43.59 | 44.80 | 357.38 |
| DEMAND: | | | | | | | | | |
| TOTAL WORLD DEMAND (c) | 42.07 | 42.86 | 44.72 | 44.59 | 47.82 | 46.62 | 48.95 | 49.84 | 367.47 |
| TOTAL U.S. DEMAND (d) | 13.01 | 13.36 | 13.28 | 13.29 | 13.33 | 13.37 | 13.36 | 13.36 | 106.37 |
| WORLD SUPPLY-DEMAND DIFFERENCE: | 0.67 | 1.30 | -0.79 | 0.45 | -2.40 | 1.09 | -5.36 | -5.04 | -10.09 |
| DOE PROPOSED DISPOSITION (e): | -0.24 | -0.25 | 0.00 | 0.00 | 0.09 | 0.17 | 0.20 | 0.20 | 0.17 |

(a) World production based on economic capacity.
 (b) World inventories in various forms and plutonium recycle in Europe and Japan.
 (c) World Nuclear Association demand projection of April 2005
 (d) ERI U.S. demand projection of April 2005.
 (e) DOE proposed disposition of uranium in various in various forms; see Table 3

Market Implications and Conclusions

It is believed that the quantities of uranium, conversion services, and enrichment services that would be introduced into the commercial nuclear fuel market are so small over the 2005 through 2012 timeframe that they would have a minimal impact on the domestic and world markets and, therefore, it should not deter any future uranium exploration and development plans, conversion facility expansion or enrichment supplier plans to construct new enrichment facilities.

In the past, nuclear fuel companies were very sensitive to government inventories entering the nuclear fuel markets as the transfers or sale was perceived to depress prices. Since the current uranium market is characterized by a primary supply shortfall and prices have been rising for the past year with other markets (conversion) showing tightening as well as rising prices, we believe this transfer would have little impact on the market, and may in fact represent necessary supply to mitigate an even more rapid rise in price.

Appendix A

Glossary

Cameco Corporation – A Canadian corporation that is the world's largest supplier of uranium and one of the largest suppliers of uranium conversion services. Cameco is one of the three members of the Western Consortium under the Commercial Feed Agreement.

COGEMA – A French company owned by Areva that is active in all phases of the nuclear fuel cycle including uranium enrichment production. Cogema is one of the members of the Western Consortium under the Commercial Feed Agreement.

Commercial Feed Agreement – An agreement between members of the Western Consortium and Russia whereby the natural uranium feed component associated with the Russian LEU delivered under the 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.

ConverDyn – The only U.S. convertor of uranium hexafluoride.

conversion – The process whereby natural uranium in the form of an oxide is converted to uranium hexafluoride (see uranium hexafluoride or UF_6) gas by the addition of fluorine.

depleted uranium hexafluoride (DUF_6)– Uranium that is fluorinated 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.

down blended – 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.

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.)

enriched uranium product (EUP) – Uranium that has been converted to UF_6 by adding fluorine and the U-235 level has been enriched greater than natural uranium (0.711 Percent U-235).

Energy Resources International, Inc. (ERI) – Internationally recognized nuclear fuel cycle consultants and authors of the independent assessment of market impacts of government sales and transfers on the uranium, conversion and enrichment industries.

EURODIF SA. –The operating company for the Georges Besse gaseous diffusion uranium enrichment plant in France that AREVA, a French integrated nuclear fuel supply and services company, has majority ownership interest.

Executive Agent – Under the HEU Agreement, these are the commercial companies responsible for implementing the HEU Agreement on behalf of the U.S. (USEC) and Russia (Tenex) Governments.

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

gas centrifuge - A uranium enrichment process that uses centrifuges to spin uranium hexafluoride in gaseous form at high speeds and separate uranium-235 isotopes from the uranium-238 isotopes based on their difference in atomic weight.

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

GNSS – Global Nuclear Supply and Services, Inc. was until 2004 Tenex's U.S. marketing agent for the sale of natural uranium from the HEU Agreement.

HEU Agreement – *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* 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 converted to commercial grade low-enriched uranium from the Russian Federation. This agreement is also referred to as the U.S.-Russian Highly Enriched Uranium Purchase Agreement.

highly enriched uranium or HEU – Uranium whose content of the fissile isotope uranium-235 has been increased through enrichment to 20 percent or more (by weight). The Russian HEU that is down blended under the HEU Agreement has an enrichment level of above 90 percent uranium-235.

kgU – Kilograms of uranium.

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

Louisiana Energy Services (LES) – A partnership between Urenco, Westinghouse Electric Company (a subsidiary of British Nuclear Fuels plc), and three U.S. nuclear utilities (Duke Energy, and Exelon), was formed to construct and operate a 3 million SWU uranium enrichment plant (called the National Enrichment Facility) in Lea County, New Mexico. LES proposes to utilize Urenco gas centrifuges for the new enrichment plant. LES plans to install 1 million SWU of capacity by 2009, increasing to 3 million SWU by 2013.

low-enriched uranium or LEU – 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.

natural uranium component – The feed material provided to a uranium enricher for producing enriched uranium and uranium tails. The natural uranium feed component consists of U_3O_8 from the mining industry and U_3O_8 to UF_6 conversion.

Nuclear Regulatory Commission (NRC) – The federal agency responsible for licensing and regulation of nuclear safety, safeguards and security of commercial nuclear facilities.

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

Portsmouth Gaseous Diffusion Plant – A shutdown uranium enrichment plant maintained in cold standby and located in Piketon, Ohio.

Privatization Act - On April 26, 1996, the USEC Privatization Act, Public Law 104-134 (42 U.S.C. 2297h) was enacted.

RWE Nukem – A German company that is a trader of uranium and other nuclear fuel supply materials and services in the international market. RWE Nukem is one of the members of the Western Consortium under the Commercial Feed Agreement.

separative work units or 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 nuclear fuel materials and services delivered within 6 months of the purchase date.

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

Tenex – Joint Stock Company Techsnabexport – a company that is wholly owned by the Russian Government and controlled by the Federal Atomic Energy Agency, Russian Federation, that acts as Russia's executive agent on the HEU Agreement.

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 hexafluoride.)

Uranium Antidumping Suspension Agreement – In October 1992, the U.S. Department of Commerce signed agreements with six republics of the former Soviet Union whereby imports of uranium and enrichment would be restricted from end use in the United States.

uranium hexafluoride or UF₆ – The form of uranium that is the end product of the uranium conversion process. The UF₆ can then be fed through a uranium enrichment process, either diffusion or centrifuge.

United States Enrichment Corporation (USEC, Inc.) – Currently, the only enricher of uranium operating in the United States and operator of the Paducah Gaseous Diffusion Plant. USEC is also the U.S. executive agent on the HEU Agreement. USEC, which was formerly a wholly owned government corporation, was privatized in 1998.

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

World Nuclear Association (WNA) – The World Nuclear Association is the global organization that seeks to promote the peaceful worldwide use of nuclear power as a sustainable energy resource for the coming centuries. Specifically, the WNA is concerned with nuclear power generation and all aspects of the nuclear fuel cycle, including mining, conversion, enrichment, fuel fabrication, plant manufacture, transport, and the safe disposition of spent fuel.

Beard, Susan

From: Beard, Susan
Sent: Friday, December 16, 2005 3:10 PM
To: Krentel, David
Subject: Re: Sec 314 Barter Sales

My gut is that it is not permanent. Please talk to Mary

-----Original Message-----

From: Krentel, David <David.Krentel@hq.doe.gov>
To: Beard, Susan <Susan.Beard@hq.doe.gov>
Sent: Fri Dec 16 15:00:54 2005
Subject: Sec 314 Barter Sales

Susan -

According to the REDBOOK, the basic rule is that a provision in an annual appropriation is not permanent unless the language used or the nature of the provision makes it clear that Congress intended it to be permanent. Language indicating futurity or a provision of general character bearing no relation to the object of the appropriation can overcome the presumption that the provision is not permanent.

There are six additional factors used in determining if the provision is permanent:

1. The repeated inclusion of a provision in yearly appropris acts indicates that it is not intended to be permanent.
2. The inclusion of a provision in the United States Code indicates permanence.
3. Legislative history is relevant, but usually is used to support a conclusion based on words of futurity.
4. If the provision bears no direct relationship to the appropriation act in which it appears, this is an indication of permanence..
5. The phrasing of a provision as positive authorization is an indication of permanence, but usually is considered in conjunction with words of futurity.
6. A provision is permanent if construing it as temporary would render it meaningless or produce an absurd result.

Factors 1, 2, 3, and 5 have never been used as the sole basis of finding permanence without words of futurity.

In terms of section 314, factor 5 is clearly present: the provision is a positive authorization. However, factor 5 needs to be supplemented by words of futurity. The REDBOOK states that "Addition of the phrase 'with respect to any fiscal year' makes the provision permanent. B-230110, April 11, 1988." Section 314 contains the phrase 'without fiscal year limitation' which is very similar, but the phrase modifies "to use any proceeds...to remediate uranium inventories" so I would construe that to mean that the receipts we get from the barter are to be treated as no year funds, not that the provision is permanent.

In short, I think this is grayer than I expected, but I don't think it is permanent.

Let me know what you think and then I will get with Mary Egger and then back to budget on this.

Thanks!

David N. Krentel
Deputy Assistant General Counsel for Legal Counsel United States Department of Energy
GC-77
Room 6A-211
202-586-6721

Beard, Susan

From: Grant, William
Sent: Wednesday, March 01, 2006 11:10 AM
To: Egger, Mary; Beard, Susan
Subject: RE: Section 314 of EWD '06

Mary,

I believe if we've sold the material and we have the cash in hand by 9/30/06, we'd still be able to use the funds until they were fully expended. If we do not receive the cash until after 9/30/06, however, we'd have to deposit any proceeds into the general Treasury because our authority to retain the proceeds expires with the appropriations bill come 9/30/06.

Will Grant
General Counsel/General Law
(202) 586-6965, Rm. 6A-228

-----Original Message-----

From: Egger, Mary
Sent: Wednesday, March 01, 2006 11:05 AM
To: Beard, Susan; Grant, William
Subject: FW: Section 314 of EWD '06
Importance: High

Larry Brown asked me whether GC has formed a view on this question yet. Have you had a chance to consider?

-----Original Message-----

From: Egger, Mary
Sent: Thursday, February 23, 2006 6:03 PM
To: Beard, Susan; Grant, William
Subject: Section 314 of EWD '06

I was in a meeting today on the development of DOE's uranium sales strategy that's been promised to Domenici and the upcoming DOE sale under section 314.

A legal issue came up with respect to the authority granted that affects the sales strategy. DOE needs to sell about 200 metric tons to get us through the rest of the fiscal year. Since we don't know that 314 will be reenacted (and I'm assuming we'd need it to retain the revenues) the question came up whether we could enter into a long term contract for the deliver of uranium in 2007 and 2008, with payment occurring upon delivery. Could we still retain the proceeds under a contract entered into in this fiscal year when we had 314 if the authority was not reenacted (or if it changed in some other substantive way)?

What saith you ??

Beard, Susan

From: Grant, William
Sent: Wednesday, May 30, 2007 5:44 PM
To: Hill, David R.; Beard, Susan; Egger, Mary
Subject: RE: Tc99 package

I just spoke with Terri Lee. Scott referenced a conversation he had with CBO in which they felt that section 314 had not moved forward into 07 or they would have scored it in the Revised CR.

From: Hill, David R.
Sent: Wednesday, May 30, 2007 4:24 PM
To: Grant, William; Beard, Susan; Egger, Mary
Subject: RE: Tc99 package

I know Scott doesn't like section 314. But he didn't like it in FY 2006 either. That he doesn't like it is different from saying that he (or anybody else) thinks that as a legal matter, it wasn't extended by the CR through the end of FY 2007. Before we say in the action memo that congressional staff disagree with us as on a legal matter (which is what the current version of the action memo says), I just want to be clear that is true. If all we know for sure is that Scott or others have problems with section 314 itself and don't like us using it, then we should say that instead.

From: Grant, William
Sent: Wednesday, May 30, 2007 4:21 PM
To: Beard, Susan; Hill, David R.; Egger, Mary
Subject: RE: Tc99 package

I believe Scott O'Malia has expressed surprise that 314 was continued under the CR.

From: Beard, Susan
Sent: Wednesday, May 30, 2007 4:20 PM
To: Hill, David R.; Egger, Mary; Grant, William
Subject: RE: Tc99 package

I think GC staff is in agreement that we have the authority. I am not aware of what Hill staffers think otherwise.

From: Hill, David R.
Sent: Wednesday, May 30, 2007 4:14 PM
To: Egger, Mary; Beard, Susan; Grant, William
Subject: Tc99 package

I note that this action memo says that some congressional staff disagree with the view that the CR continued the section 314 authority into FY 2007. Really? I thought the CR was crystal clear in extending the authorities of the FY06 act into FY07, except as specifically provided otherwise in the CR -- and the CR did provide otherwise as to several different things, just not as to the section 314 authority.

