USEC
A Global Energy Company

March 20, 2006
AET 06-0041

Mr. Jack R. Strosnider
Director, Office of Nuclear Material Safety and Safeguards
Attention: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

American Centrifuge Plant
Docket Number 70-7004
Submittal of Additional Information for the American Centrifuge Plant Related to Depleted Uranium Disposal Costs (TAC Nos. L32306, L32307, and L32308)

Dear Mr. Strosnider:

During a telephone conference call between the U.S. Nuclear Regulatory Commission (NRC) and USEC Inc. (USEC) that was conducted on March 8, 2006, the NRC staff requested that USEC revise the USEC-Specific Analysis of Depleted Uranium Disposal Costs Utilizing the U.S. Department of Energy/LMI Methodology for the American Centrifuge Plant as submitted by Reference 1. This revised analysis is being submitted by Enclosure 1 of this letter.

If you have any questions regarding this matter, please contact Peter J. Miner at (301) 564-3470.

Sincerely,

Steven A. Toelle
Director, Regulatory Affairs

cc: Y. Faraz, NRC HQ
B. Smith, NRC HQ

Enclosure: As Stated

Reference

1. USEC letter AET 06-0036 from Steven A. Toelle to Jack R. Strosnider (NRC), Submittal of Additional Information for the American Centrifuge Plant Related to Depleted Uranium Disposal Costs (TAC Nos. L32306, L32307, and L32308), dated February 28, 2006.

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NMSS01

Enclosure 1 of AET 06-0041

USEC-Specific Analysis of Depleted Uranium Disposal Costs Utilizing the DOE/LMI Methodology for the American Centrifuge Plant

Revision 1

USEC-SPECIFIC ANALYSIS OF DEPLETED URANIUM DISPOSAL COSTS UTILIZING THE DOE/LMI METHODOLOGY

for the American Centrifuge Plant

Revision 1

Prepared by: USEC Inc.
March 2006

USEC-SPECIFIC ANALYSIS OF DEPLETED URANIUM DISPOSAL COSTS UTILIZING THE DOE/LMI METHODOLOGY for the American Centrifuge Plant Revision 1

By letter dated December 8, 2005 (Reference 1), USEC Inc. (USEC) requested that that U.S Department of Energy (DOE) provide USEC with a cost estimate for disposal of tails from the American Centrifuge Plant with a similar level of detail as was provided to the Louisiana Energy Services (LES) in support of its application for the National Enrichment Facility (NEF). In a letter dated December 12, 2005 (Reference 2), the DOE provided a cost breakdown of the four principal cost components for disposal of depleted uranium and confirmed that $4.83/kilogram (kg) uranium (U) ($3.26/kg depleted uranium hexafluoride [DUF_6]) was a reasonable unit cost for the purposes of decommissioning funding for the American Centrifuge Plant.

Subsequently, during a telephone conference call that was conducted on December 19, 2005 between USEC, the DOE, and the U.S. Nuclear Regulatory Commission (NRC), the NRC staff requested that DOE "develop and provide USEC a cost estimate and supporting basis for dispositioning the depleted uranium that USEC would generate at its proposed American Centrifuge Plant." The telephone conference call was documented in Reference 3. Subsequently, USEC requested in a letter dated December 27, 2005 (Reference 4), that DOE provide such a report. On February 10, 2006, DOE provided its response to our request (Reference 5).

The DOE response contained a redacted report prepared by DOE's consultant LMI (LMI report, Reference 6), detailing its methodology for estimating the unit cost of disposal of depleted uranium. The report was initially prepared by DOE in response to a request by LES but the methodology and underlying information is applicable to the American Centrifuge Plant with only minor adjustments.

Utilizing the methodology and data contained in the LMI report, USEC prepared an analysis of the estimated depleted uranium disposal costs specific to the American Centrifuge Plant. The analysis is attached as Table 1.

USEC reviewed Scenarios 1 – 4 from the LMI report for the LES NEF (referred to as the "new uranium enrichment facility" in the LMI Report) and chose to utilize Scenario 2, which establishes a disposal cost for LES depleted uranium at the Portsmouth conversion plant, as the base case for estimating a disposal cost specific to the American Centrifuge Plant. Choosing Scenario 2 is conservative, since Scenario 1, the base case for the Paducah conversion plant, shows a cost estimate lower than the Portsmouth conversion plant. The analysis of Scenarios 3 and 4 from the LMI report were identical to Scenarios 1 and 2, respectively, with the exception that DOE delayed processing the new uranium enrichment facility depleted uranium until after the existing backlog was processed. The result was that a reasonable price for DOE to charge the firm is the same as under Scenarios 1 and 2, respectively. USEC did not reanalyze Scenarios 5 and 6 from the LMI report since the report identified that the costs would be less than comparable Scenarios 1 – 4. Thus, the analysis utilizing Scenario 2 is conservative for determining the upper bound for depleted uranium disposal costs.

Decontamination and decommissioning (D&D) costs have been conservatively calculated at a higher unit cost within USEC's analysis to reconcile the LMI methodological assumptions with the DOE's December 12, 2005 estimate and the statements made by LMI personnel during the December 19, 2005 telephone conference call where the unit cost for disposal (including D&D) was assumed to be $0.55/kg DUF_6. The result is $0.18/kg DUF_6 for D&D equivalent uniform annual costs in the USEC analysis versus $0.04/kg DUF_6 in the LMI report. The higher unit cost for D&D has increased the conservatism of USEC's analysis for the American Centrifuge Plant compared with LMI's analysis for the new uranium enrichment facility.

In Table 1, USEC first provides the analysis for Scenario 2, the new uranium enrichment facility (New Firm). Two other scenarios are subsequently addressed in Table 1. The first (USEC w/o New Firm) addresses the USEC-specific cost estimate for disposal of the depleted uranium from the American Centrifuge Plant utilizing LMI Scenario 2 (Portsmouth conversion plant) as the basis, with adjustment for USEC's volume of tails, which is more than the new uranium enrichment firm analyzed in the LMI report. The resulting estimated cost is \$3.20/kg DUF_6 (\$4.73/kgU). This estimated cost is less than the assumption utilized in the estimate for decommissioning funding for the American Centrifuge Plant in the Decommissioning Funding Plan. The cost for disposal utilizing Scenario 1 (Paducah conversion plant) would be less than the presented scenario, thus utilizing Scenario 2 is conservative for determining the upper bound for depleted uranium disposal costs.

The second scenario (USEC w/New Firm) addresses the case where both USEC and the new uranium enrichment facility have their depleted uranium converted at the same facility. This scenario is based on utilizing the Portsmouth conversion plant (Scenario 2), which has a higher cost than the Paducah option. The resulting estimated cost is \$3.11/kg DUF_6 (\$4.61/kgU). The \$4.83 kgU utilized by USEC in its estimate for decommissioning funding liability for the American Centrifuge Plan is more conservative than this unit cost estimate.

During the December 19, 2005, conference call, the NRC noted that the management of empty cylinders needed to be discussed in the analysis. In the Final Environmental Impact Statement for the conversion facility (Reference 7), it states that the contractor proposes to use the emptied cylinders as disposal containers to the extent practicable. Thus, there would be no additional cost for disposal of the cylinders.

Accordingly, USEC's analysis confirms that the \$4.83/ kgU that USEC has assumed in the estimate for decommissioning funding for the American Centrifuge Plant is a conservative upper bound.

References:

1. Philip G. Sewell (USEC) letter to Mr. Larry Brown (DOE), dated December 8, 2005.
2. Larry Brown (DOE) letter to Mr. Philip Sewell, Conversion and Disposal of Depleted Uranium Hexafluoride (DUF6) Generated by USEC at the American Centrifuge Plant in Piketon, Ohio, dated December 12, 2005.
3. Yawar Faraz (NRC) Memorandum to James W. Clifford (NRC), December 19, 2005, Telephone Meeting Summary: USEC Inc. Depleted Uranium Disposition Cost Estimate, dated January 11, 2006.
4. Philip G. Sewell (USEC) letter to Mr. Larry Brown (DOE), dated December 27, 2005.
5. Larry W. Brown (DOE) letter to Mr. Phil Sewell, Conversion and Disposal of Depleted Uranium Hexafluoride (DUF6) Generated by USEC at the American Centrifuge Plant in Piketon, Ohio, dated February 10, 2006.
6. LMI Government Consulting, Report DE523T1, An Analysis of DOE's Cost to Dispose of DUF_6, Revision 1, July 2005 [Redacted January 31, 2006].
7. U.S. Department of Energy, Office of Environmental Management, *Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio, Site (DOE/EIS-0360)*, June 2004.

Table 1

Scenario 2: Process at Portsmouth in "Base" Plant
Based on "An Analysis of DOE's Cost to Dispose of DUF6 - Revision 1", LMI, July 2005

	New Firm		USEC w/o New Firm		USEC w/ New Firm	
Investment costs						
Plant construction ($000)	$ 133,800		$ 133,800		$ 133,800	
Life of the plant (years)	35		38		55	
Plant start	2009		2009		2009	
Start receiving non-DOE tails	2011		2011		2011	
DOE DUF6 (MT)	245,700		245,700		245,700	
New Firm DUF6 (MT)	222,000				222,000	
USEC-ACP DUF6 (MT)			265,300		265,300	
New Firm pro rata share	47%					
USEC pro rata share			52%		36%	
New Firm pro rata investment cost	$ 63,510					
USEC pro rata investment cost			$ 69,466		$ 48,427	
Investment cost in equivalent annual value	$ 3,175		$ 3,333		$ 1,996	
Investment equivalent annual cost per kg		$ 0.50		$ 0.48		$ 0.41
Annual operating costs						
Plant operations		$ 1.76		$ 1.76		$ 1.76
Plant recapitalization costs		$ 0.33		$ 0.33		$ 0.33
Transportation to Portsmouth costs		$ 0.11		$ -		$ -
Product disposal		$ 0.37		$ 0.37		$ 0.37
Surveillance and maintenance costs		$ 0.003		$ 0.003		$ 0.003
Decon & Decommissioning						
Plant D&D cost ($000)	$ 47,600		$ 47,600		$ 47,600	
New Firm pro rata share	47%					
USEC pro rata share			52%		36%	
New Firm pro rata D&D cost	$ 22,594					
USEC pro rata D&D cost			$ 24,713		$ 17,228	
Equivalent uniform annual cost	$ 1,130		$ 1,186		$ 710	
Equivalent annual cost per kg		$ 0.18		$ 0.17		$ 0.15
Federal administrative charge		$ 0.09		$ 0.09		$ 0.09
New Firm - annual cost per Kg DUF6		**$ 3.34**				
New Firm - annual cost per Kg DU		**$ 4.94**				
USEC-ACP - annual cost per Kg DUF6				**$ 3.20**		**$ 3.11**
USEC-ACP - annual cost per Kg DU				**$ 4.73**		**$ 4.61**

Assumptions:

1. Plant remains in operation until the DOE backlog and 30 years of the New Firm and/or USEC-ACP DUF6 are processed.
2. USEC-ACP DUF6 is treated when received, concurrently with the DOE backlog DUF6, and New Firm DUF6 if applicable.
3. Discount rate 3.50%