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CERTIFICATE HOLDER: United States Enrichment Corporation
Paducah Gaseous Diffusion Plant
Paducah, Kentucky

SUBJECT: COMPLIANCE EVALUATION REPORT REGARDING REVISION TO DECOMMISSIONING FUNDING PROGRAM DESCRIPTION AND DEPLETED URANIUM MANAGEMENT PLAN AND FINANCIAL ASSURANCE FOR CALENDAR YEAR 2014 (TECHNICAL ASSIGNMENT CONTROL NO. L36029)

BACKGROUND

By letter dated December 19, 2013 (Agencywide Documents Access and Management System [ADAMS] Accession Number ML14015A136), the United States Enrichment Corporation (USEC) submitted to the U.S. Nuclear Regulatory Commission (NRC) an updated Decommissioning Funding Program Description (DFP) and Depleted Uranium Management Plan (DU Plan) in accordance with the waste management and financial assurance requirements discussed below. The DFP and DU Plan (Enclosures 1 and 2, respectively to USEC's December 19, 2013, letter) are for calendar year (CY) 2014, and pertain to the Paducah Gaseous Diffusion Plant (PGDP) that USEC leases from the U.S. Department of Energy (DOE). Enclosures 1 and 2 updated USEC's CY 2013 DFP and DU Plan for the Paducah Gaseous Diffusion Plant (PGDP) dated December 18, 2012 (ADAMS Accession Number ML12363A029), which was subsequently supported by USEC's March 21, 2013, responses (ADAMS Accession Number ML130920110) to the NRC staff's request for additional information (RAI) (ADAMS Accession Number ML13067A232). With its December 19, 2013, submittal, USEC also provided draft financial assurance documents associated with the changes to the DFP.

The framework under which the NRC regulates the PGDP was established by the Energy Policy Act of 1992. The 1992 legislation amended the Atomic Energy Act to establish a new government-owned corporation (then known as the U.S. Enrichment Corporation) for the purpose of taking over from DOE the responsibility for enriching uranium using the gaseous diffusion process at the PGDP (and at the Portsmouth plant in Ohio, over which the DOE resumed regulatory authority in 2011). In 1994, the NRC published a final rule establishing in Title 10 of the *Code of Federal Regulations* (10 CFR) a new Part 76 ("Certification of Gaseous Diffusion Plants"). Part 76 implements the relevant provisions contained in the Energy Policy Act of 1992.

The Federal government began operating the PGDP and the Portsmouth Gaseous Diffusion Plant in the 1950s, and the DOE was the last Federal agency operator. The DOE and USEC entered into a lease agreement covering various commercial aspects of the plants' operations, and the lease governs the eventual return of the plants to the DOE.

In 1996, Congress enacted the USEC Privatization Act (Pub. Law No. 104-134), which led to the U.S. Enrichment Corporation being privatized as USEC in July 1998. As relevant here, in accordance with Section 3109(a)(3) of the USEC Privatization Act, all liabilities arising from the disposal of DU generated by USEC between July 1, 1993 and July 28, 1998 (the privatization

date) are the DOE's responsibility. In general, absent agreement otherwise with DOE, USEC is responsible for DU disposal costs regarding DU generated by USEC after July 28, 1998.

DISCUSSION: USEC'S COMPLIANCE WITH PART 76 WASTE MANAGEMENT AND FINANCIAL ASSURANCE REQUIREMENTS

Pursuant to the waste management provisions of 10 CFR 76.35(m), USEC must describe its program for the processing, management, and disposal of mixed and radioactive wastes and DU generated by its operations, including: (1) a description of the waste streams generated by enrichment operations; (2) estimated annual volumes of DU and waste; (3) identification of radioisotopes contained in the waste; (4) physical and chemical forms of the DU and waste; (5) plans for managing the DU and waste; and (6) plans for the ultimate disposition of the DU and waste. The required descriptions are limited to activities conducted during USEC's operation of the PGDP under its lease with the DOE.

Pursuant to the financial assurance provisions of 10 CFR 76.35(n), USEC, as the Part 76 certificate holder, must establish financial surety arrangements to ensure that for any plant clean-up costs that are USEC's financial responsibility, sufficient funds will be available for: (1) the ultimate disposal of waste and DU; and (2) decontamination and decommissioning activities. The 10 CFR 76.35(n) requirements further state that USEC's funding program over the duration of the lease must contain a basis for cost estimates used to establish funding levels, and must contain means of adjusting cost estimates and associated funding levels. Additionally, a condition of the Part 76 Certificate of Compliance (CoC) for the PGDP requires USEC to submit a revised financial instrument by December 31st of each year, if the current funding level requires revision.

EVALUATION OF CY 2014 DFP

The NRC staff evaluated USEC's DFP for CY 2014 to verify that USEC remains in compliance with the 10 CFR 76.35(n) financial assurance requirements. USEC's DFP provides a description of PGDP's decommissioning cost estimate of approximately $3.79 million, which represents a decrease in decommissioning liability of $1.14 million relative to the 2013 decommissioning cost estimate ($4.93 million) approved by the NRC staff in April 2013. The net decrease in the total decommissioning cost estimate results from the following changes to the DFP:

- Updated volumes and unit disposal costs for low level radioactive waste and mixed wastes. A database and spreadsheet (Enclosures 3 and 4 to the December 19, 2013, letter) were used to estimate PGDP's disposal costs for 2014. The database and spreadsheet contained the most likely disposal outlet, generated volumes and disposal costs for each waste stream. These costs accounted for pricing, taxes, fees, and transportation. One-year generation data was used to reflect the recent effects of facility shutdown and cleanouts. An estimate of the cost for trap mix in USEC's inventory that requires repackaging prior to disposal was included with the low-level radioactive waste (LLRW) estimate.

  Labor costs associated with disposal of LLRW and mixed waste were updated with 2014 labor costs using the methodology described in USEC letter GDP 11-0015 to the NRC dated June 16, 2011.

- USEC will have no remaining decommissioning liability for disposition of DU in 2014 upon return of USEC's remaining DU to DOE under the June 12, 2012, Cooperative Agreement (see discussion below).

In its December 2013 filing, USEC estimated the costs associated with the disposal of LLRW and mixed waste and the disposition of DU generated by its operations. The estimated costs were as follows:

LLRW and mixed waste disposal:	$ 2.30 million
DU disposition:	$ 0.00 million
Labor:	$ 0.73 million
	$ 3.03 million
	+ .76 million (25 percent contingency)
CY2014 Total Cost:	$ 3.79 million

USEC's methods of estimating each of these cost elements is as follows.

LLRW and mixed waste disposal ($ 2.30 million)

USEC's LLRW and mixed waste decommissioning liability is calculated as the sum of the liability associated with the cost of disposal of that amount of waste estimated to be generated during the CY plus the liability associated with the estimated amount of waste that remains in storage at the end of the CY. Disposal costs include an additional percentage to cover taxes, processing fees, and transportation costs, but do not include labor, which is estimated separately. The CY's estimated waste generation volumes are based on historical waste generation. Similarly, disposal costs are based on existing contract prices and historical costs of containers and transportation.

DU disposal ($ 0.00 million)

The June 12, 2012, "*Cooperative Agreement Between the U.S. Department of Energy and USEC Inc. and American Centrifuge Demonstration, LLC Concerning the American Centrifuge Cascade Demonstration Test Program*" (the Agreement) to support continued development and demonstration of the American Centrifuge Cascade Demonstration Test Program provided for the transfer of the title and responsibility for disposition from USEC to DOE of up to 39,200 MT of DUF_6. USEC previously transferred 38,317 MT DUF_6 to DOE under two transfers. There is a remaining balance of up to 883 MT DUF_6 that can be transferred to DOE under the Agreement. Converting MT of DUF_6 to MT of uranium (MTU) results in approximately 597 MTU available under the DOE maximum limit. USEC has withdrawn tails in conjunction with the shutdown and evacuation of the cascade. The inventory of tails, including the withdrawal of the remaining material in the cascade, is approximately 234 MTU. This material will be returned to DOE under the terms of the Agreement in 2014. USEC, therefore, will have no remaining decommissioning liability for disposition of DU.

Labor ($ 0.73 million)

Labor costs were based on the 2014 PGDP labor rates. USEC adjusted these labor rates to account for the additional cost of work being performed by a third party. Specifically, the labor

costs within the decommissioning cost estimate include an overhead rate on direct staff labor of 110 percent, plus 15 percent profit on labor and its overheads.

To account for uncertainties associated with the cost estimate, USEC applied a 25 percent contingency factor to the estimate, which is consistent with the recommendations in the NRC's guidance on preparing DFPs (NUREG-1757, Volume 3, Rev. 1). Although by its terms the guidance contained in NUREG-1757, Volume 3, "Consolidated NMSS Decommissioning Guidance: Financial Assurance, Recordkeeping, and Timeliness," dated February 2012 is not applicable to the financial assurance requirements under 10 CFR Part 76, USEC nonetheless relied on this guidance with respect to its use of a 25 percent contingency factor and the form of its funding instruments discussed below. The NRC staff finds USEC's reliance on this guidance acceptable because the staff evaluates all other decommissioning cost estimates for fuel cycle facilities using NUREG-1757, Vol. 3. Therefore, it is appropriate for the staff to use the guidance in NUREG-1757, Vol. 3 as one means to evaluate USEC's DFP. With a 25 percent contingency, the total projected decommissioning funding liability for PGDP in CY 2014 was estimated at $3.79 million.

In evaluating whether USEC's method of estimating its decommissioning liability was acceptable, the NRC staff identified additional information that was needed to approve the CY 2014 DFP. Accordingly, by letter dated April 16, 2014 (ADAMS Accession Number ML14099A187), the NRC staff issued a request for additional information (RAI) to USEC requesting USEC to:

1. Confirm the amount of waste that remains in storage at PGDP which will require disposal and ensure that the DFP reflects the costs associated with disposing of that amount of waste. This information was requested to determine and ensure the reasonableness of the cost estimate.

2. Provide an explanation justifying why special nuclear material (SNM) charges are no longer included in the calculation of the unit cost of LLRW disposal. This information was requested to ensure that the full cost of LLRW disposal was included in the cost estimate.

USEC provided its responses to the RAI by letter dated May 14, 2014 (ADAMS Accession Number ML14142A021). In its response to RAI #1, USEC stated that there was approximately 1,300 cubic feet of waste generated in 2013 that remained onsite at PGDP. The RAI response did not identify the waste as LLRW or mixed waste. The decommissioning cost estimate in the DFP only included costs for the LLRW (61,201 cubic feet) and mixed waste (93 cubic feet) expected to be generated in CY 2014.

The NRC staff evaluated responses to the RAI and determined that USEC did not include the costs associated with disposal of the 1,300 cubic feet of waste generated in 2013 that remained onsite at the PGDP were in the decommissioning cost estimate. The RAI response stated that the estimated cost for disposal of LLRW and mixed waste in the DFP was adequate because the cost estimates were based "upon a typical, full year's generation even though it was known that all UF_6 processing facilities would be completely shut down in early 2014 with a target de-lease of PGDP to DOE on October 1, 2014." Furthermore, in its response, USEC stated that "[a]s of May 1, 2014, the total amount accrued for the wastes backlog (LLRW and Mixed), including the wastes generated in 2013, was approximately $1.3 million. This leaves

approximately $1.0 million to address the remaining waste generation. USEC believes this should be adequate." In effect, the RAI response indicated that the cost associated with disposing of the CY 2014 waste was over-estimated, which compensated for the cost associated with disposing of the residual 1,300 cubic feet of waste from CY 2013. Based on its evaluation of USEC's response to RAI #1, the NRC staff determined that although it was possible that the $2.3 million cost estimate for LLRW and mixed waste disposal costs was sufficient, without a revised waste generation estimate for LLRW and mixed waste in CY 2014 and disclosure of the amount of LLRW and the amount of mixed waste from CY 2013 that is in storage, the NRC staff could not confirm that current funding was sufficient to cover the costs associated with the CY 2013 wastes. The NRC staff, therefore, issued a second request for additional information requesting USEC to clarify its response to RAI #1 (see discussion below).

In its response to RAI #2, USEC stated that the estimated SNM charges in the 2012 and 2013 forecasts were related to a specific waste population that was a backlog of waste oil containers with a very high U_{235} content that required splitting and repackaging to meet the U.S. Department of Transportation's and waste facility's requirements. USEC further stated that the SNM charge was forecast for the disposition of this specific waste, which was completed in 2013. The NRC staff evaluated the response to this RAI and determined that USEC's response provided sufficient detail and, as such, the response was acceptable.

<u>NRC's Second RAI</u>

By letter dated July 1, 2014 (ADAMS Accession Number ML14177A620), the NRC staff issued a second RAI. This RAI was issued based on the NRC staff's determination that USEC's response to the April 16, 2014, RAI #1 did not adequately address the cost associated with disposal of 1,300 cubic feet of waste generated in 2013 that remained onsite at the PGDP. In its July 1, 2014, letter, the NRC staff requested USEC to update the estimate of the amount of LLRW and the amount of mixed waste to be generated during CY 2014 and specify the portion of waste in storage that is LLRW and mixed waste to show that the $2.3 million cost estimate is sufficient to cover the sum of the liability associated with the cost of disposal of the amount of waste estimated to be generated during CY 2014 plus the liability associated with the estimated amount of waste that is in storage from CY 2013. In its letter, the NRC staff also provided a draft table for USEC to provide the requested information and ensure that all of the necessary data was provided. By letter dated July 16, 2014 (ADAMS Accession Number ML14203A346), USEC provided its response to the July 1, 2014, RAI. In its response, USEC also provided the executed originals of the financial assurance documents associated with the changes to the DFP for calendar year 2014 (Enclosures 1 and 2).

In its response to the NRC staff's second RAI, USEC stated that, in preparation for de-lease of the PGDP to DOE, it has been identifying, preparing and shipping USEC's waste off site, and that the cleanout of waste from the PGDP facilities has substantially been completed. USEC also stated that further identification of its waste should be limited and estimated volumes of waste to be dispositioned should be reasonably accurate. USEC further stated that all waste for which it has disposal responsibility is scheduled to be off site before September 30, 2014. In its response, USEC provided a table describing the estimated total cost for disposal of the low level and mixed waste for which it has responsibility. The total cost was based on a combination of the actual inventory as of June 30, 2014, and a projected generation rate for the 3 months remaining until facility turnover. The actual volume included the 1,313 ft^3 of low level waste on site as of January 1, 2014. This projected volume was based on historical rates and should be

conservative based on USEC's current state of operations. The estimated cost is within the $2.30 million forecasted in the 2014 DFP.

The NRC staff evaluated USEC's July 16, 2014, response to the July 1, 2014, RAI and determined that USEC provided sufficient detail to satisfy RAI #1. Specifically, the additional information validated that the $2.3 million cost estimate for LLRW and mixed waste disposal costs were sufficient to cover the disposal costs associated with residual CY 2013 waste. Therefore, the NRC staff concluded that USEC's response to this RAI was acceptable.

Based on its review of USEC's DFP for CY 2014, the spreadsheets provided by USEC in response to the NRC staff first and second RAI, which contained USEC's justification for the updated data used to estimate the volumes and unit disposal costs of LLRW and mixed waste, and the evaluation of the executed financial assurance documents, the NRC staff determined that USEC's updated cost estimate for the PGDP CY 2014 of $3.03 million ($3.79 including the 25 percent contingency) is reasonable and adequately supported. The NRC staff accordingly concludes that USEC's financial assurance instruments covering its costs for decommissioning the PGDP comply with the requirements in 10 CFR 76.35(n).

EVALUATION OF CY 2014 DU PLAN

Estimated DU volumes are discussed in USEC's DU Plan for CY 2014. Section 3.0 of the DU Plan provides USEC's description of how it manages and dispositions the DU it generates. The NRC staff evaluated USEC's changes to the CY 2014 DU Plan to verify that USEC remains in compliance with the 10 CFR 76.35(m) waste management requirements pertaining to DU. The NRC staff noted that the only change to the plan was on the information in Table 1 of the DU Plan to reflect that there is no DU remaining at the PGDP in CY 2014 (i.e., a "0" amount of DU for CY 2014 - a change from 64 MTU in CY 2013).

In its December 19, 2013, submittal, USEC stated that, in conjunction with the shutdown and evacuation of the cascade, it has also withdrawn tails and that this material, in conjunction with USEC's tails' inventory, is approximately 234 MTU. USEC then stated that all this material would be returned (transferred) to DOE under the terms of the June 12, 2012, Agreement. USEC stated that it would provide the NRC with the DOE/NRC Form 741 documenting the transfer and that, as a result of the transfer, it will have no remaining decommissioning liability for disposition of DU in 2014. Accordingly, by letter dated May 30, 2014 (ADAMS Accession Number ML14177A469), USEC provided the NRC with the DOE/NRC Form 741 documenting the transfer of DU from USEC to DOE. The NRC staff evaluated the information in the NRC/DOE Form 741 and noted that, based on the information in the form, on May 29, 2014, USEC shipped 35 cylinders to DOE containing 322.375 $MTDUF_6$ (equal to 234 MTU). The NRC staff confirmed, through DOE, that this transaction had, indeed, been completed (see ADAMS Accession Number ML14218A688).

The NRC staff reviewed the June 2012 Cooperative Agreement to evaluate DOE's commitment with regard to the transfer of the title and responsibility for disposition of DU at the PGDP. The NRC staff noted that the Agreement provided for the transfer of the title and responsibility for disposition of DUF_6 from USEC to DOE. The Agreement was entered into by the parties to support USEC's continued development and demonstration of the American Centrifuge Cascade Demonstration Test Program. Article 8 of the agreement (i.e., Funding, Acceptance, Transfer and Delivery) discusses the maximum amount of liability assumed from USEC by

DOE, which is made available through DOE's assumption of DUF_6 title and liability. The NRC staff noted that, under the agreement, DOE would accept title and disposal responsibilities for up to 39,200 MT of DUF_6, which USEC and DOE agreed to treat as DOE providing $87,670,184 in funds for the American Centrifuge Cascade Demonstration Test Program. Based on the information provided by USEC in its December 19, 2013, and May 30, 2014, letters, the NRC staff determined that, under the Agreement, DOE accepted title and disposal responsibility for a total of 38,639 MTDUF_6. This represents the totality of USEC's DUF_6 inventory at the PGDP. As such, the NRC determined that with the transfer of title of this material, DOE, and not USEC, now possesses the title to all DUF_6 present at the PGDP, and that DOE is now responsible for the disposition of all DUF_6 present on site. In addition, based on the terms of the Agreement, after title is transferred to DOE, USEC shall remain responsible for the custody, possession and the safe and secure storage of the transferred Material at USEC's own expense, and in accordance with USEC's procedures and applicable NRC regulatory requirements, until DOE takes custody and possession of the material. Based on the information provided by USEC in its December 19, 2013, and May 30, 2014, and the NRC staff evaluation of the June 12, 2012, Cooperative Agreement, the NRC staff determined that USEC has appropriately transferred to DOE, and DOE has accepted title and decommissioning responsibility to, USEC's entire DUF_6 inventory. The NRC staff also determined that, as a result of these transactions, USEC now has no remaining decommissioning liability for disposition of DU at the PGDP.

Based on the information provided, the NRC staff determined that USEC's DU Plan for CY 2014 continues to adequately describe the waste streams generated by enrichment operations, the annual volumes of DU expected, the physical and chemical forms of the DU, the plans for managing the DU, and the plans for ultimate disposition of the DU before turnover of the PGDP to DOE under the terms of the lease agreement between USEC and DOE. Accordingly, the NRC staff finds that USEC's DU Plan for CY 2014 for the PGDP continues to adequately describe its DU waste management program, in accordance with 10 CFR 76.35(m).

Evaluation of Draft Financial Assurance Instruments

With its December 19, 2013, submittal, USEC provided draft financial assurance documents associated with the changes to the DFP for 2014. The NRC staff evaluated USEC's draft financial assurance documents associated with the changes to the DFP for calendar year 2014 and determined that, to provide financial assurance coverage of $3.79 million, USEC: (1) continues to provide two separate surety bonds issued by Westchester Fire Insurance Company in the amount of $1 million each ($2 million for both bonds); (2) reduced the existing surety bond issued by Argonaut Insurance Company from $2,930,000 to $1,790,000; and, (3) updated Schedules to its Standby Trust Agreement reflecting these changes, thus reducing USEC's financial assurance to $3,790,000.

ENVIRONMENTAL REVIEW

Approval of the requested changes is subject to the categorical exclusion provided in 10 CFR 51.22(c)(19). The NRC has previously found, as stated in 10 CFR 51.22(a), that this is a category of action that does not individually or cumulatively have a significant effect on the human environment. Therefore, in accordance with 10 CFR 51.22(b), neither an Environmental Assessment nor an Environmental Impact Statement is required for the proposed action.

CONCLUSION

The NRC staff determined that USEC's December 19, 2013, filing made no changes to its previously-approved Radioactive Waste Management Plan describing how it processes, manages and disposes the mixed and radioactive wastes it generates. Therefore, based on its review of the DU Plan for CY 2014, together with USEC's previously-approved Radioactive Waste Management Plan, the NRC staff determined that USEC has adequately described its overall waste management program, including the processing, management, and disposal of DU at the PGDP. The NRC staff therefore concludes that USEC remains in compliance with 10 CFR 76.35(m).

Based on its review of the revised DFP for 2014, USEC's responses to the April 16, 2014, and July 1, 2014, RAIs, respectively, the May 30, 2014, letter providing the DOE/NRC Form 741 documenting the transfer of DU from USEC to DOE, and the NRC staff evaluation of the June 12, 2012, Cooperative Agreement between USEC and DOE, the NRC staff determined that USEC's decommissioning cost estimate of $3.79 million for CY 2014 is based on reasonable and documented assumptions, and that it adequately estimates the cost, at this time, for the disposal of LLRW and mixed wastes. The staff also determined that USEC appropriately transferred to DOE, and DOE has accepted title to and decommissioning responsibility for, USEC's entire DUF_6 inventory and that, as a result of these transactions, USEC now has no remaining decommissioning liability for disposition of DU at the PGDP. Accordingly, the NRC staff concludes that USEC remains in compliance with the 10 CFR 76.35(n) financial assurance requirements.

The NRC staff also determined that, as the decommissioning cost estimate is being reduced by $1.14 million relative to the 2013 decommissioning cost estimate, it is acceptable to reduce the existing financial instruments by a corresponding amount, as an appropriate amount of financial assurance will still be provided. Therefore, based on its evaluation of the information provided by USEC, the NRC staff concludes that the financial instruments discussed above are acceptable. However, the NRC staff recommends requesting USEC to resubmit a revised Schedule A for its Standby Trust Agreement to reflect the date on which the revised cost estimate was approved. The staff also recommends that, once the revised Schedule A is received, the NRC proceed to sign the executed documents to affect USEC's reduced liability for decommissioning the PGDP.

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