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CERTIFICATE NUMBER: GDP-1

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

SUBJECT: COMPLIANCE EVALUATION REPORT FOR PART 76
CERTIFICATE TERMINATION FOR THE UNITED STATES
ENRICHMENT CORPORATION, PADUCAH GASEOUS
DIFFUSION PLANT

1.0 PROPOSED ACTION

The United States Enrichment Corporation (USEC), a subsidiary of Centrus Energy Corp. (formerly USEC Inc.), plans to terminate all of its U.S. Nuclear Regulatory Commission (NRC) regulated activities at the gaseous diffusion plant in Paducah, Kentucky (the PGDP). Such activities are authorized under Certificate of Compliance (CoC) GDP-1, issued by the NRC pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 76 (Certification of Gaseous Diffusion Plants). By letter dated August 1, 2014 (Agencywide Documents Access and Management System [ADAMS] Accession Number ML14216A384), USEC submitted its notification of intent to terminate all PGDP activities authorized under the CoC, and requested termination of its CoC for the PGDP, pursuant to 10 CFR 76.66(b). (USEC's August 1, 2014, submittal is referred to below as the CoC Termination Request). Prior to the requested termination of the CoC, all facilities at the PGDP site will be returned (i.e., de-leased) back to the U.S. Department of Energy (DOE), in accordance with the 1993 lease referenced in the Background section below.

2.0 BACKGROUND

By letter dated June 3, 2013 (ADAMS Accession Number ML13176A151), USEC notified the NRC of its decision to cease uranium enrichment activities at the PGDP. In its letter, USEC also stated that it would take steps to prepare the PGDP site for return to the DOE.

USEC's letter to the NRC dated December 19, 2013 (ADAMS Accession Number ML14015A136), discussed its plans for managing depleted uranium (DU) at the PGDP site. In this regard, USEC referenced its June 12, 2012 Cooperative Agreement with the DOE, providing for the transfer of the title and responsibility for dispositioning from USEC to DOE of up to 39,200 metric tons (MT) of DU. USEC stated that as of December 2013, the transfer of 38,317 MT of DU to DOE had been accomplished under the 2012 Cooperative Agreement, leaving a balance of up to 883 MT of DU that could later be transferred to DOE under the 2012 Agreement. USEC also stated that, in conjunction with the shutdown and evacuation of the cascades [completed in July 2013, and February 2014, respectively], it had withdrawn DU from the cascades and that this withdrawn DU amounted to approximately 234 MT. USEC stated that all of this DU was to be returned to DOE under the terms of the 2012 Cooperative Agreement.

The NRC staff reviewed the 2012 Cooperative Agreement to evaluate the 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 this Agreement provided for the transfer of the title and responsibility for

Enclosure

disposition of DU from USEC to DOE. DOE's assumption of DU title and liability is detailed in Article 8 of the 2012 agreement (i.e., Funding, Acceptance, Transfer and Delivery), which discusses the maximum amount of liability assumed by DOE from USEC. Under the 2012 agreement, DOE committed to accept title and disposal responsibilities for up to 39,200 MT of DU.

As stated above, as of February 2014, USEC had withdrawn approximately 234 MT of DU from the cascades for return to the DOE. Transfer of a total of 322 MT of DU to the DOE was completed on May 29, 2014, as documented in USEC's May 30, 2014, letter to the NRC (ADAMS Accession Number ML14177A469). The 322 MT amount includes the 234 MT of DU that USEC had withdrawn from the cascades as of February 2014. Adding the 322 MT amount to the 38,317 MT of DU that had already been transferred to the DOE as of December 2013 totals 38,639 MT of DU. This amount is below the 39,200 MT of DU that the DOE had committed to accept under the 2012 Cooperative Agreement, and represents all of USEC's DU inventory at the PGDP site.

By letter dated June 17, 2014 (ADAMS Accession Number ML14176A081), USEC requested the NRC to review and approve its plans to de-lease the PGDP facilities and terminate USEC's NRC-certified operations at the PGDP. In this regard, USEC stated that, on June 17, 2014, it had signed a "Framework Agreement" with DOE, establishing a process governing the return of all leased facilities at the PGDP site to DOE. This June 17, 2014, agreement established October 1, 2014, as the tentative date for returning the facilities to DOE. Meeting this return date was made subject to the conditions in the June 17, 2014, agreement, the conditions in USEC's Final Plan to Meet the Lease Turnover Requirements for the PGDP (the Turnover Plan), and to all turnover requirements in the July 1, 1993, lease.

The NRC staff evaluated USEC's plans and found that they were appropriate (see the NRC response letter dated July 8, 2014 (ADAMS Accession Number ML14176B021)). The NRC staff requested USEC to provide a copy of the June 17, 2014, agreement with DOE, which USEC did as part of its CoC Termination Request. USEC also provided a copy of the Turnover Plan. Following the NRC staff's initial review of the CoC Termination Request, the NRC staff requested USEC to provide copies of Attachments 2, 6, 11, 12, and 13 of the Turnover Plan. Due to its proprietary nature, the information in the Turnover Plan and its attachments is not discussed in this Compliance Evaluation Report (CER).

Additional background information relevant to particular issues is provided in Section 3 below.

3.0 DISCUSSION

Introduction

In its CoC Termination Request, USEC stated that it had ceased uranium enrichment at the PGDP in May 2013, and that its current operations at the PGDP site included surveillance and maintenance of leased facilities, operating site utilities, maintaining and monitoring safety systems and shipping USEC-generated waste offsite. USEC also stated that repackaging of all USEC-owned uranium hexafluoride (UF₆) feed material and low enriched uranium (LEU), and the shutdown of all UF₆ processing facilities and operations, was completed in April 2014.

USEC further stated that all UF₆ feed material and special nuclear material (generally referred to below as LEU) to which USEC had title had been relocated to offsite licensed facilities as of April 2014. Further, USEC reiterated that all of its remaining DU for which USEC had disposal responsibility had been transferred to the DOE on May 29, 2014, and that all remaining low-level radioactive waste for which it had disposal responsibility was scheduled to be off-site before September 30, 2014. Waste disposal issues are discussed further below.

USEC in its CoC Termination Request listed the leased facilities having nuclear safety significance that would be returned to DOE. The facilities being de-leased by USEC, in conjunction with the CoC termination action, include the following: the UF₆ Feed Facilities (C-333-A and C-337-A); the Product and Tails Withdrawal Facilities (C-310 and C-315); the Enrichment Cascade Facilities (C-331, C-333, C-335, and C-337); the C-400 Cleaning Building; the C-409 Stabilization Building; the C-710 Technical Services Building; the C-720 Maintenance and Stores Buildings; the C-720-C Converter Shop Addition; the C-745-X Equipment Storage; and the C-746-Q-1 High Assay Waste Storage. All of the USEC-leased facilities providing utilities, support and administrative services to the PGDP are also being de-leased. Following the de-lease, DOE will be in full possession of the de-leased facilities, and will be responsible for regulatory oversight of the PGDP.

In addition to the statements and commitments made in USEC's CoC Termination Request and in related submittals referenced in Section 2 above, the NRC staff's findings in this CER are based, in part, on recent NRC site inspections. More specifically, the NRC staff conducted inspections of USEC's material control program at the PGDP site during the week of August 18-22, 2014 (see Inspection Report Number 2014-0401, ADAMS Accession Number ML14262A063). The NRC staff also conducted a separate inspection of the PGDP's protection of classified matter program on August 25-28, 2014. The results of these August 2014 inspections are discussed further in CER sections below.

Financial Assurance

In its letter dated December 19, 2013 (ADAMS Accession Number ML14015A136), USEC submitted to the NRC an updated Decommissioning Funding Program (DFP) description, in accordance with 10 CFR 76.35(n), for calendar year (CY) 2014. In its submittal, USEC provided a description of the PGDP's decommissioning cost estimate of approximately \$3.79 million, which represented 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 NRC staff reviewed USEC's DFP and determined that USEC's decommissioning cost estimate of \$3.79 million for CY 2014 was based on reasonable and documented assumptions and that it adequately estimated the cost for the disposal of low-level radioactive waste and mixed wastes in CY 2014. The NRC staff therefore concluded that USEC remained in compliance with the decommissioning funding requirements in 10 CFR 76.35(n) (see ADAMS Accession Number ML14218A701).

Material Control

The NRC staff reviewed USEC's CoC Termination Request and conducted inspections at the PGDP to verify USEC's compliance with the NRC's 10 CFR Part 74 (Material Control and

Accounting of Special Nuclear Material) requirements, and to ensure that adequate control of source, byproduct, and LEU material would be maintained until regulatory responsibility for these materials is transferred to DOE oversight. USEC committed to continue implementing all of the requirements of the NRC-approved fundamental nuclear material control plan (FNMCP) for the PGDP until the transfer of regulatory authority to DOE, and stated that its nuclear materials control and accountability (NMC&A) program provides program controls over all accountable nuclear material at the PGDP, including both USEC and DOE-owned material. In this regard, USEC stated that the performance work statement in the DOE task order for the deactivation contractor requires the DOE contractor to accept transfer of the site's existing NMC&A program. USEC also stated that it has been working with DOE's current PGDP site infrastructure contractor to move the data in USEC's computerized database to another computerized database that will be used by the DOE contractor, and that at de-lease, the new contractor [Fluor] will accordingly manage and conduct a centralized NMC&A program for all accountable nuclear material on the PGDP site.

During the August 18-22, 2014, inspections, the NRC staff was notified that the current USEC personnel implementing the NMC&A Program will be transferred to Fluor, to ensure continuity of material control at the PGDP site. The NRC staff has confirmed that Fluor has offered to employ the current USEC employees implementing the NMC&A program after the CoC is terminated.

In its CoC Termination Request, USEC stated that (1) it no longer had possession of UF₆ feed material, (2) the LEU to which USEC had title had been relocated to offsite licensed facilities, and (3) this LEU and the UF₆ feed material thus no longer appears on the PGDP site inventory. During the August 18-22, 2014, inspections, the NRC staff confirmed the accuracy of these statements.

As indicated in Section 2 above, the CoC Termination Request included a copy of USEC's June 17, 2014, agreement with the DOE, in which the DOE agreed to accept the transfer of certain LEU and UF₆ feed material that will still be onsite when the PGDP facilities are returned to the DOE's regulatory oversight. This material is contained within a large number of 30 and 48 inch cylinders (also known as 30B cylinders, and either 48G, 48X or 48Y cylinders). The 30B cylinders contain residual quantities of LEU, while the 48 inch cylinders contain residual quantities of either UF₆ feed material or LEU. An attachment to the June 17, 2014, agreement sets forth DOE commitments, including those regarding the transfer of the USEC-owned nuclear material in these cylinders to DOE when the de-lease occurs. These DOE commitments are discussed below.

In accordance with commitment number 3, at the time of de-lease, the DOE will accept the return of up to nine thousand of these 30B and/or 48G, 48X or 48Y cylinders. The 30B cylinders may each contain "25 pounds or less" of LEU, while the 48 inch cylinders may each contain "50 pounds or less" of UF₆ feed material. Also in accordance with commitment 3, the DOE agreed to accept three 30B cylinders "that are nominally 25 pounds (highest being 49 pounds)," and 62 48Y cylinders "that are nominally 50 pounds (highest being 252 pounds)." During the August 18-22, 2014, inspections, the NRC staff determined that residual quantities of LEU at the PGDP site were only associated with 30B cylinders, with each such cylinder containing up to 0.8 kg of LEU enriched up to 4.9 percent in the U-235 isotope. Through

discussions with USEC's MC&A staff at the PGDP, the NRC staff later confirmed that each 48 inch cylinder contains residual quantities of 50 pounds or less of either LEU or UF₆ feed material, and that all such cylinders will be transferred to the DOE when the de-lease occurs.

Under commitment number 4, the DOE will accept the return of 19 USEC "Swiss Feed" Cylinders containing off-spec UF₆ feed material (i.e., UF₆ that contains other metallic contaminants, such as Technetium 99 and naturally occurring uranium-decay products that have to be filtered out prior to use) that meets the American Society for Testing and Materials (ASTM) requirements for reprocessed uranium. The NRC staff confirmed during its August 2014 inspections that the DOE will accept this off-spec UF₆ when the de-lease occurs.

With regard to the 1S and 2S sample containers that are used for quality assurance testing purposes and which respectively have 1kg and 2kg capacities, the DOE, under its June 2014 commitment number 6, agreed to accept the return of (1) up to 975 empty, full or partially full 1S sample containers; and (2) up to 700 empty, full or partially full 2S sample containers. During the August 18-22, 2014, inspections the NRC staff determined that the 1S and 2S sample containers contain residual quantities of LEU ranging from 8 to 23 grams. The NRC staff confirmed that DOE will accept this LEU from USEC when the de-lease occurs.

During its August 2014 on-site inspections, the NRC staff confirmed that, as stated in the June 17, 2014, agreement, DOE had taken title to all residual quantities of LEU and that, at the time the de-lease occurs, there will be no USEC-owned LEU on site. The NRC staff confirmed that USEC is transferring its remaining LEU to DOE, which is being documented via Form 741. Form 741 is generally used to report quantities of NRC-licensed materials to the DOE's Nuclear Materials Management and Safeguards System (NMMSS) data base. During the inspections, USEC also stated that (1) transfer of residual quantities of LEU, UF₆ feed material, and DU will continue through September 2014, and (2) at the time the CoC is terminated, USEC will submit a final Form 327 ("Special Nuclear Material (SNM) and Source Material (SM) Physical Inventory Summary Report"). USEC's final Form 327 will show zero (0) inventory of LEU, UF₆ feed material, and DU, and will also document the absence of any low-level radioactive waste and mixed waste generated by USEC's past operations at the PGDP site.

Based on its review of the information provided by USEC in its CoC Termination Request, and on the August 2014 inspection findings, the NRC staff concludes that USEC has adequately met its commitment to control all regulated materials by maintaining, following, and complying with its current NRC-approved FNMCP. Further, there is sufficient basis to conclude that USEC will continue to fully control all source, byproduct, and LEU in its possession, and will meet all applicable NRC recordkeeping and reporting requirements, until the CoC is terminated. The NRC staff also concludes that when the CoC is terminated, transferring the current USEC personnel implementing the NMC&A Program to Fluor, the new DOE contractor for the PGDP, will ensure adequate program continuity.

Radioactive Waste Disposal

During its August 18-22, 2014, on-site inspections, the NRC staff noted that low-level radioactive waste (i.e., materials contaminated by radioactive materials, such as personal items, parts, and metal pieces) and "mixed" waste (hazardous material contaminated by radioactive

materials) packaging and shipping operations were still ongoing. The NRC staff noted that the waste cubic feet were significantly reduced from the amounts USEC reported in its December 19, 2013, updated DFP. Any remaining low-level radioactive waste and mixed waste generated by USEC's past operations at the PGDP will be shipped off-site by no later than October 19, 2014.

Depleted Uranium Disposition

As indicated above in Section 2 of the CER, USEC's letters to the NRC dated December 19, 2013, and May 30, 2014, discussed the dispositioning of DU at the PGDP site, and referenced in this regard the June 12, 2012, Cooperative Agreement with the DOE. Under this Cooperative Agreement, DOE had accepted title and disposal responsibility for a total of 38,639 MT of DU, which represented the totality of USEC's DU inventory at the PGDP site.

Accordingly, the DOE has title to and responsibility for dispositioning the DU that remains at the PGDP site. Based on the terms of the 2012 Cooperative Agreement, before DOE takes custody and possession of the DU, USEC remains financially responsible for its safe and secure storage. The NRC staff re-confirmed this information during its August 18-22, 2014, on-site inspections.

Based on (1) the information provided by USEC in its December 19, 2013, and May 30, 2014, letters, (2) the review of the June 12, 2012, Cooperative Agreement, and (3) the August 18-22, 2014, inspection findings, the NRC staff finds that USEC has appropriately transferred to DOE, and DOE has accepted title and decommissioning responsibility for USEC's entire DU inventory. Therefore, when the de-lease occurs, USEC will have neither DU ownership nor decommissioning liability for the disposition of the remaining DU at the PGDP site.

Physical Security

On June 17, 2002, the NRC issued an Order to USEC after the events of September 11, 2001. This 2002 Order included Interim Compensatory Measures (ICMs) requiring implementation of certain security measures at the PGDP. In response to the 2002 Order, USEC evaluated its operations and established a hazardous material release threshold that, when exceeded, would result in defined off-site consequences. USEC identified certain facilities where an adversary's action could result in a hazardous material release exceeding this established threshold. These specific facilities were deemed sensitive and protective security measures were established to thwart possible adversary actions, as required by ICMs A. and B. The NRC evaluated USEC's release threshold criteria and conducted on-site inspections of USEC's protective security measures, and determined that USEC's response to the ICMs was appropriate. The NRC staff, therefore, approved USEC's response for implementing the ICMs.

In a letter to the NRC dated January 24, 2014 [non-public, security-related information], USEC stated that there no longer were any sensitive facilities at the PGDP site that would exceed the established release threshold due to the termination of enrichment activities there, and that its UF₆ feed material and LEU were being shipped off-site. Based on NRC Region II staff inspections conducted from January 1 through March 31, 2014 (see Inspection Report Number 70-7001/2014-002, ADAMS Accession Number ML14119A027), the NRC confirmed that no

uranium enrichment was occurring at the PGDP site, and that USEC's UF₆ feed material and LEU were being transferred into cylinders and shipped offsite. The NRC also confirmed that these UF₆ and LEU transfers were being performed at a rate that had allowed PGDP transfer facilities to be operated such that these facilities no longer contained sufficient material capable of exceeding the hazardous material release threshold criteria. Therefore, given the absence of such facilities, the NRC found that ICMs A. and B. at the PGDP were no longer necessary, and that the associated PGDP commitments could be suspended. USEC, however, was required to retain its commitments in the PGDP physical security plan for the protection of its SNM of low strategic significance, including the commitments associated with the regulatory requirements in 10 CFR 73.67 and ICMs C. and D. of the June 17, 2002, Order. The above NRC findings are stated in the staff's letter to USEC dated February 14, 2014 (non-public, security-related information).

As discussed in the Material Control section above, only residual quantities of LEU and UF₆ feed material remain at the PGDP site. Based on the August 18-22, 2014 inspections, the NRC staff determined that the relative security risk of this residual nuclear material is very low. However, during the inspections, the NRC staff confirmed that, as stated in Enclosure 5 to its CoC Termination Request, USEC will continue to implement all of the requirements of the NRC Certificate Physical Security and Classified Matter Security Plans until the CoC is terminated, at which point USEC will transfer all responsibility for physical and classified matter security to the DOE. The NRC staff noted that the performance work statement in a DOE task order for the deactivation contractor requires the deactivation and infrastructure contractors to establish a site security program for access control, nuclear material protection measures, protective force, personnel security measures, and security condition measures. The NRC staff also confirmed that the DOE is already coordinating with USEC and taking actions to establish a DOE site security program to ensure there is adequate physical security and classified matter security at the PGDP site after the CoC is terminated. The NRC staff therefore concludes that the remaining residual quantities of material at the PGDP site will remain adequately protected. This conclusion is based on (1) the information provided in USEC's CoC Termination Request, (2) the results of the August 18-22, 2014, NRC staff inspection, and (3) USEC's commitment to continue implementing all of the requirements of the NRC Certificate Physical Security and Classified Matter Security Plans until the de-lease of the PGDP facilities and termination of the COC, at which time the DOE will assume full regulatory responsibility for physical security at the site.

Information Security and Protection of Classified Matter

The NRC staff conducted an onsite inspection of the PGDP's protection of classified matter program on August 25-28, 2014, for the purpose of terminating the NRC's facility security clearance (FCL) for the PGDP, and as part of the CoC termination process. An additional purpose of this inspection was to evaluate USEC's compliance with the NRC's FCL and safeguarding of national security and restricted data information.

During its inspections, the NRC staff determined that all of the PGDP's classified assets at the site had been accounted for and that these were ready to be turned over to DOE. However, the NRC staff determined that a close out inspection of PGDP's classified supplier General Dynamics Global Imaging Technologies, Inc., in Cullman, Alabama, still needs to be conducted

by the NRC staff, and that the PGDP's FCL can only be terminated if no security issues are identified by the inspection in Alabama (scheduled for October 17, 2014). The NRC staff also determined, during its inspections at the PGDP, that all NRC non-possessing FCLs and each non-possessing interests associated with the PGDP should be terminated before the CoC is terminated. In addition, the NRC staff determined that USEC will need to provide the NRC the associated "Contract Security Classification Specification" forms. The NRC staff also determined that USEC must ensure that all personnel security clearances associated with the PGDP under the CoC are either terminated or transferred by DOE to its new contractor (since it is DOE who holds the PGDP's clearances). The NRC staff determined that all these actions need to be completed prior to the termination of the CoC.

Environmental Considerations

The NRC staff has determined that under these circumstances it is not necessary to prepare an environmental assessment or environmental impact statement to support the termination of the PGDP CoC issued to USEC for the Paducah facility. This proposed action amounts to an amendment of a license under the 10 CFR 51.22(c)(19) categorical exclusion, and to a direct transfer of a license under the 51.22(c)(21) categorical exclusion. DOE, which already owns this facility, is not required to obtain an NRC license to operate or decommission the PGDP.

A categorical exclusion "...means a category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal agency...and for which, therefore, neither an environmental assessment nor an environmental impact statement is required..." (40 CFR 1508.4). The NRC's list of categorical exclusions is found at 10 CFR 51.22(c).

USEC ceased enrichment operations at the PGDP in May 2013. Upon termination of the CoC, all responsibility for the site will return to DOE. Operations at the site will be under DOE's control and will not be regulated by the NRC. DOE, which already owns this facility, will be responsible for decommissioning of the PGDP facilities. Furthermore, DOE prepared an environmental impact assessment in 1982 for the PGDP and has subsequently conducted additional environmental reviews of this site. The NRC staff has not identified any impacts of USEC's operation of PGDP that are not encompassed by the previous DOE evaluations.

In addition, the return of the facilities to DOE's regulatory oversight, and termination of the PGDP CoC, does not approve any site clean-up or decommissioning actions to be taken by DOE. This proposed action does not authorize any change that would amount to a significant increase in individual or cumulative occupational and public radiation exposure, no significant construction impact, and no significant increase in the potential for or consequences from radiological accidents.

Therefore, the NRC has determined that neither an environmental assessment nor an environmental impact statement is required or necessary for this action.

4.0 CONCLUSION

The staff concludes that this action will not significantly increase risk to workers at the PGDP site, and that adequate protection of public health, safety, safeguards, security, and the environment will continue to be provided. The staff finds that USEC has adequately demonstrated compliance with all applicable NRC regulations, and has sufficiently addressed associated regulatory and technical issues. The NRC staff thus concludes that a sufficient basis exists to terminate the CoC, as requested.

Therefore, a final CoC termination letter will be issued by the NRC once the NRC has received USEC's certification of non-possession with respect to its classified holdings, and upon USEC's written notification that (1) all PGDP facilities have been de-leased and are under DOE regulatory authority; (2) ownership and possession of all NRC-regulated material has been transferred to DOE; (3) all material transfer documentation and updates to the Nuclear Material Management and Safeguards System (NMMSS) database are complete; (4) all security inspections and resolution of findings have been completed (including a close out inspection of PGDP's classified supplier General Dynamics Global Imaging Technologies, Inc., in Cullman, Alabama), and the NRC's FCL for the PGDP has been terminated; (5) USEC has provided the NRC the associated "Contract Security Classification Specification" forms; and (6) all personnel security clearances associated with the PGDP under the CoC have been terminated or transferred by DOE to its new contractor.

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