November 2, 2023
ACO 23-0054

ATTN: Document Control Desk
John W. Lubinski, Director
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

American Centrifuge Lead Cascade Facility; Docket Number 70-7003; License Number SNM-7003

License Amendment Request to Terminate American Centrifuge Operating, LLC's Materials License, License Application, and Supporting Documents for the American Centrifuge Lead Cascade Facility

INFORMATION TRANSMITTED HEREWITH IS PROTECTED FROM PUBLIC DISCLOSURE AS SECURITY-RELATED INFORMATION PURSUANT TO 10 CFR 2.390 AND INFORMATION TRANSMITTED HEREWITH IS PROTECTED FROM DISCLOSURE PURSUANT TO 10 CFR PART 810

Dear John Lubinski:

In accordance with 10 *Code of Federal Regulations* (CFR) 70.38(d)(4), no principal radiological activities have been conducted within the American Centrifuge Lead Cascade Facility (Lead Cascade) in Piketon, Ohio for a period of over 24 months, thus, not affecting the previous U.S. Nuclear Regulatory Commission's (NRC)-approved decommissioning efforts. Therefore, American Centrifuge Operating, LLC's (ACO) requests the final termination of the Lead Cascade NRC Materials License SNM-7003, License Application, and Supporting Documents.

ACO's decommissioning efforts were completed during calendar year 2017, with the NRC's approvals following in 2018 (References 1 and 2). These approvals concluded the items needed for ACO to request termination of the NRC Materials License for the Lead Cascade and request

NMSS20
Q004
NMSS

American Centrifuge Operating, LLC
3930 U.S. Route 23 South – P.O. Box 628
Piketon, OH 45661

cancellation of the financial surety instruments associated with the Decommissioning Funding Plan on August 9, 2018 (Reference 3). However, on May 31, 2019, ACO and the DOE entered into a contract to deploy a cascade of centrifuges to demonstrate production of high-assay, low-enriched uranium (HALEU) fuel for advanced reactors. To support the HALEU program, on June 27, 2019 (Reference 4) ACO formally withdrew the original request to terminate the Lead Cascade NRC Materials License (SNM-7003) in order to design, construct, amend the license, and complete the required operational readiness reviews needed under the American Centrifuge Plant License Application and Supporting Documents. The NRC-approved Lead Cascade programs were used throughout the NRC's review period and final approval of the American Centrifuge Plant amendment on June 11, 2021 (Reference 5).

During Phase I of the new DOE contract that began in November 2022, ACO completed the final Region II operational readiness reviews, supporting the NRC's authority to introduce uranium hexafluoride into the HALEU Demonstration Cascade modules of the American Centrifuge Plant on June 12, 2023 (Reference 6).

This authorization marked the formal implementation of the American Centrifuge Plant License Application and Supporting Documents; therefore, the Lead Cascade NRC Materials License SNM-7003, License Application, and Supporting Documents can be terminated.

Enclosure 1 provides a detailed description, justification, and ACO's significance determination for the proposed changes. Enclosure 2 provides the proposed changes to NR-3605-0003, *Quality Assurance Program Description for the American Centrifuge Plant*. Enclosure 3 provides the proposed changes to NR-3605-0010, *Transportation Security Plan for Classified Matter Shipments for the American Centrifuge Plant*. Enclosure 4 provides the proposed changes to SP-3605-0041, *Security Plan for the Protection of Classified Matter at the American Centrifuge Plant*.

Proposed changes from the previously NRC-approved documents are noted with revision bars in the right-hand margin. Based upon the 10 CFR 70.32 and 70.72 evaluations, not all proposed changes described warrant the NRC's review and approval; however, are provided for completeness to assist in the review efforts.

Enclosures 3 and 4 contain Security-Related Information. Additionally, Enclosure 3, in accordance with the guidance provided by the U.S. Department of Energy (DOE), contains Official Use Only Information. Therefore, ACO requests these enclosures be withheld from public disclosure pursuant to 10 CFR 2.390(d)(1). Enclosure 4 has also been determined, in accordance with the guidance provided by the DOE, to contain Export Controlled Information and must be protected from disclosure per the requirements of 10 CFR Part 810.

This License Amendment Request is not required to support continued facility operations under the American Centrifuge Plant Materials License. Therefore, ACO requests NRC review and approval at your earliest convenience, but no later than January 31, 2024.

If you have any questions regarding this matter, please contact me at (740) 897-3859.

Sincerely,

Kelly L Fitch

Kelly L. Fitch
Regulatory Manager

Enclosures: As stated

References:

1. NRC letter from C. Roman to S.A. Toelle (Centrus) regarding Final Environmental Assessment for the Review and Approval of the American Centrifuge Lead Cascade Facility Updated Decommissioning Plan (Docket Number: 70-7003), dated August 3, 2018

2. NRC letter from C.G. Erlanger to S.A. Toelle (Centrus) regarding Approval of Decommissioning Plan for the American Centrifuge Lead Cascade Facility (Enterprise Project Identifiers L-2018-DDP-0000 and L-2017-DDP-0101), dated August 7, 2018

3. ACO 18-0024 letter to M.L. Dapas (NRC) from L.B. Cutlip regarding Termination of American Centrifuge Lead Cascade Facility NRC Materials License, dated August 9, 2018

4. ACO 19-0008 letter to J.W. Lubinski (NRC) from K.L. Wiehle regarding Withdrawal of Request to Terminate the American Centrifuge Lead Cascade NRC Materials License, dated June 27, 2019

5. NRC letter from J. Zimmerman (NRC) to K.L. Fitch (ACO) regarding Centrus Energy Corp. American Centrifuge Operating, LLC – License Amendment 13 – Approval to Operate Sixteen Centrifuges to Demonstrate Production of High-Assay Low-Enriched Uranium in Piketon, Ohio Until May 31, 2022 (EPID-L-2020-LLA-0085), dated June 11, 2021

6. NRC letter from L. Dudes (NRC) to M. Snider (ACO) regarding American Centrifuge Operating, LLC – American Centrifuge Plant – Docket No. 70-7004, Authorization to Introduce Uranium Hexafluoride into the High-Assay Low-Enriched Uranium Demonstration Cascade Module, dated June 12, 2023

cc (without enclosures, unless otherwise noted):
C. Blanton, DOE
Y. Faraz, NRC HQ (Enclosures)
A. Ford, DOE Idaho
J. Hutson, Contract Support (Enclosures)
J. Lingard, DOE Idaho
L. Pitts, NRC Region II (Enclosures)
M. Reim – DOE
J. Tobin, NRC HQ (Enclosures)
T. Vukovinsky, NRC Region II
D. Woodyatt, NRC HQ (Enclosures)

Enclosure 1 of ACO 23-0054

Detailed Description, Justification, and Significance Determination

Information Contained Within
Does Not Contain
Export Controlled Information

Reviewing Official: #171, ACO

Date: 10/31/2023

Detailed Description, Justification, and Significance Determination

Detailed Description of Change

The following documents are being terminated:

- SNM-7003, U.S. Nuclear Regulatory Commission (NRC) Materials License for American Centrifuge Operating, LLC's (ACO) American Centrifuge Lead Cascade Facility (Lead Cascade) – Docket Number 70-7003
- DP-2605-0001, *Decommissioning Plan for the American Centrifuge Lead Cascade Facility*
- LA-2605-0001, *License Application for the American Centrifuge Lead Cascade Facility*
- LA-2605-0002, *Environmental Report for the American Centrifuge Lead Cascade Facility*
- LA-2605-0003, *(U) Integrated Safety Analysis Summary for the American Centrifuge Lead Cascade Facility*
- LA-2605-0003U, *(U) Integrated Safety Analysis Summary [Redacted] for the American Centrifuge Lead Cascade Facility*
- LA-2605-0004, *(U) Integrated Safety Analysis for the American Centrifuge Lead Cascade Facility*
- NR-2605-0001, *USEC Inc. Gas Centrifuge Quality Assurance Program Description*
- NR-2605-0003, *Fundamental Nuclear Material Control Plan for the American Centrifuge Lead Cascade Facility*
- NR-2605-0004, *Decommissioning Funding Plan for the American Centrifuge Lead Cascade Facility*
- NR-2605-0008, *Auditable Safety Analysis – Spinning Centrifuge Machines in X-3001 (U)*
- NR-3605-0004, *(U) Security Program for the American Centrifuge Plant* [Note: this document has been replaced by SP-3605-0041 and SP-3605-0042 supporting the American Centrifuge Plant]
- USEC-02, *Portsmouth Gaseous Diffusion Plant (PORTS) Emergency Plan*

Based upon the fact that the entire document is being terminated, no proposed changes are provided for the documents listed above.

The following documents were written to cover the elements of both the Lead Cascade (Docket No. 70-7003 / Materials License SNM-7003) and American Centrifuge Plant (Docket No. 70-7004 / Materials License SNM-2011), thus are being revised to remove or amend discussion of the Lead Cascade historic information where needed. Additionally, minor editorial changes were also made to these documents.

- NR-3605-0003, *Quality Assurance Program Description for the American Centrifuge Plant* (Enclosure 2)
- NR-3605-0010, *Transportation Security Plan for Classified Matter Shipments for the American Centrifuge Plant* (Enclosure 3)
- SP-3605-0041, *Security Plan for the Protection of Classified Matter at the American Centrifuge Plant* (Enclosure 4)

Additionally, the following security plans currently appear on the Lead Cascade Materials License SNM-7003. These documents were reviewed and no changes were identified; therefore, remain unchanged.

- 331-06-161, *American Centrifuge Program Operations Security Plan*
- SEC-18-0002, *American Centrifuge Operating, LLC (ACO) Information System Security Plan (ISSP) for Oak Ridge, TN; Piketon, OH, and Bethesda, MD*
- NR-SP-ACO-OR-0001, *Security Program for American Centrifuge Operating, LLC at Oak Ridge, Tennessee*
- PLD1-SP-024PD, *American Centrifuge Operating – Oak Ridge (ACO-OR) Operations Security Plan*
- SP-3605-0018, *High Assay Low Enriched (HALEU) Cascade Engineering, Procurement, and Construction (EPC) Temporary Security Plan*, was previously cancelled on October 29, 2020
- SP-3605-0039, *American Centrifuge Classified Cyber System Security Plan (SSP)*, was previously cancelled on April 26, 2022

Terminating the Lead Cascade Materials License SNM-7003 does not impact the continued use of the NRC-approved documents under the American Centrifuge Plant Materials License SNM-2011 and will remain in use as written.

Based upon the 10 *Code of Federal Regulations* (CFR) 70.32 and 70.72 evaluations, not all proposed changes described warrant the NRC's review and approval; however, are provided for completeness to assist in the review efforts. The proposed changes contained within Enclosures 2 through 4 are identified by the following method:

- ~~Blue Strikeout~~ - Identifies text to be removed
- Red underline – Identifies text to be added

Justification

In accordance with 10 CFR 70.38(d)(4), the termination of the Lead Cascade Materials License (SNM-7003), License Application, and Supporting Documents requires the NRC's prior review and approval.

The Lead Cascade operated from 2007 to 2016. On March 2, 2016, the Licensee, ACO, notified the NRC of the decision to permanently cease operation at the Lead Cascade and to terminate the Lead Cascade Materials License (SNM-7003) following decontamination and decommissioning activities. On December 23, 2016, the NRC approved the removal of "enrichment" from the authorized uses of NRC-regulated materials at the Lead Cascade and subsequently removed ACO's 10 CFR Part 171 annual fee.

The Final Status Survey Report was completed and submitted to the NRC for approval on April 19, 2018. This report presented the results of the final status radiological surveys for the Lead Cascade decommissioning efforts that occurred during March 2017 and continued for ten months

with the final shipment to the Nevada National Security Site (NNSS) in December 2017. During this 10-month period, contaminated equipment and piping installed in the Lead Cascade was removed, containerized, and shipped to NNSS. After contaminated items were removed, the areas were cleaned, the survey plan commenced with a goal to ensure residual contamination levels were less than 10 CFR Part 20 free release criteria and the Lead Cascade License Application limits. During May 21-25, 2018, the NRC and Oak Ridge Institute for Science and Education performed independent confirmatory surveys of selected areas within the Lead Cascade, with no violations of NRC requirements being identified and confirmed compliance with the release criteria for unrestricted use.

On August 3, 2018, the NRC completed their final Environmental Assessment for the Lead Cascade Decommissioning Plan, issuing a Finding of No Significant Impact as well as an approval of the Decommissioning Plan on August 7, 2018. This final NRC approval concluded the items needed for ACO to request termination of the NRC Materials License for the Lead Cascade and request cancellation of the financial surety instruments associated with the Decommissioning Funding Plan on August 9, 2018. All NRC-regulated material had been disposed of at an approved U.S. Department of Energy (DOE) classified burial site or transferred to DOE and the YGO (reporting identification symbol) inventory report from the Nuclear Materials Management and Safeguards System (NMMSS) identified that there was no nuclear material in ACO's possession under the Lead Cascade NRC Materials License.

However, on May 31, 2019, ACO and the DOE entered into a letter contract and on October 31, 2019, ACO signed a three-year contract with the DOE to deploy a cascade of centrifuges to demonstrate production of high-assay, low-enriched uranium (HALEU) fuel for advanced reactors. The HALEU Demonstration Program commenced on June 1, 2019. In support of this program, on June 27, 2019, ACO formally withdrew the request to terminate the Lead Cascade NRC Materials License (SNM-7003) in order to design and construct the HALEU cascade under NRC oversight. In April 2020, ACO amended the American Centrifuge Plant License Application and Supporting Documents for review and approval to allow HALEU production. Existing NRC-approved Lead Cascade programs were used throughout the NRC's review period and final approval of the American Centrifuge Plant amendment on June 11, 2021.

The demonstration of HALEU production was on schedule to produce between 200 kg and 600 kg of HALEU using 16 AC100M centrifuges by June 1, 2022, at the Piketon, Ohio, facility owned by DOE. However, the demonstration was affected by COVID-19 related supply chain cost and schedule issues near the completion of the work. The HALEU Demonstration contract was initially planned to conclude on May 31, 2022; however, the contract was adjusted to allow for a competition for the continuation of the demonstration program through November 2022. These adjustments were necessary to acknowledge COVID-19 supply chain disruptions and out of contract scope requirements for a Category II Special Nuclear Material storage area. Therefore, DOE extended the initial three-year HALEU contract with ACO to allow for continuation under revised milestones to bridge the gap between the current activities and the DOE's planned new contract that would be a competitive award to complete the program to demonstrate the production of HALEU.

On November 10, 2022, the DOE announced an approximately $150 million cost-shared award to ACO, a subsidiary of Centrus Energy Corp., to complete and operate a cascade of 16 centrifuges to produce HALEU which is used in many of the advanced reactor designs under development. The HALEU Operations contract is intended to support DOE's near-term HALEU needs and will build upon DOE's three-year HALEU Demonstration Program contract with ACO that ended on November 30, 2022. On March 30, 2023, the NRC approved the amendment to extend the HALEU contract period through December 31, 2024. This new HALEU performance-based operations contract has three phases. During Phase I of the new contract, ACO completed the final steps of centrifuge assembly and successfully completed the required Region II operational readiness reviews, supporting the NRC's final authority to introduce uranium hexafluoride into the HALEU Demonstration Cascade modules of the American Centrifuge Plant on June 12, 2023. Additionally, on September 21, 2023, NRC provided the final authorization to commence enrichment operations in the HALEU Demonstration Cascade module to produce category II quantities of special nuclear material at the American Centrifuge Plant located in Piketon, Ohio.

Therefore, based upon the NRC's authorization to commence with introduction of uranium hexafluoride into the HALEU cascade as the initial step into implementing the American Centrifuge Plant License Application and Supporting Documents, the Lead Cascade NRC Materials License SNM-7003, License Application, and Supporting Documents can be terminated.

The proposed change to terminate the Lead Cascade Materials License SNM-7003, License Application, and Supporting Documents, will not: 1) decrease the ability of the management measures in the American Centrifuge Plant License Application to ensure the availability and reliability of Items Relied on for Safety (IROFS); 2) decrease the effectiveness of the design basis as described in the American Centrifuge Plant License Application; 3) result in a departure from a method of evaluation described in the American Centrifuge Plant License Application used in establishing the design bases for the evaluation of HALEU Demonstration Criticality Events; and 4) have an adverse effect on compliance with applicable regulatory requirements.

LA-3605-0003A, Addendum 1 of the Integrated Safety Analysis Summary (ISAS) for the American Centrifuge Plant – HALEU Demonstration, provides the NRC-approved safety analysis basis and IROFS needed to support the safe operation of the HALEU cascade, which was similar in nature to the previously operated Lead Cascade. Future commercial use of Low Enriched Uranium (LEU) or HALEU needs will be conducted in accordance with the conditions NRC Material License (SNM-2011) for the American Centrifuge Plant.

Significance Determination for Proposed Conforming Changes

Based upon the justification described above and the NRC's authorization to introduce gas into the HALEU cascade as the initial step into implementing the American Centrifuge Plant License Application and Supporting Documents, the Lead Cascade NRC Materials License SNM-7003, License Application, and Supporting Documents are no longer needed and can be terminated. ACO has reviewed the proposed changes and provides the following Significance Determination.

1. **No significant change to any conditions to the License.**

   The proposed change to terminate the Lead Cascade Materials License SNM-7003, License Application, and Supporting Documents, is not prohibited by 10 CFR Part 70, license condition, or orders. On June 12, 2023, ACO received NRC's final authority to introduce uranium hexafluoride into the HALEU cascade, thereby successfully transitioning into the American Centrifuge Plant Materials License SNM-2011, License Application, and Supporting Documents. ACO will continue amending this NRC Materials License moving forward with any LEU or HALEU future needs.

2. **No significant increase in the probability of occurrence or consequences of previously evaluated accidents.**

   The proposed change to terminate the Lead Cascade Materials License SNM-7003, License Application, and Supporting Documents does not remove or change an IROFS that is listed in the American Centrifuge Plant ISAS or Addendum 1 of the ISAS. The proposed termination does not alter any IROFS listed in the American Centrifuge Plant ISAS or Addendum 1 of the ISAS, that is the sole item preventing or mitigating an accident sequence that exceeds the performance requirements of 10 CFR 70.61.

3. **No new or different type of accident.**

   The proposed change to terminate the Lead Cascade Materials License SNM-7003, License Application, and Supporting Documents, does not create new types of accident sequences that, unless mitigated or prevented, would exceed the performance requirements of 10 CFR 70.61 and that have not previously been described in the American Centrifuge Plant ISAS or Addendum 1 of the ISAS. Addendum 1 of the ISAS provides the safety analysis needed to support the continued safe operation of the HALEU Demonstration Cascade.

4. **No significant reduction in the margins of safety.**

   The proposed change to terminate the Lead Cascade Materials License SNM-7003, License Application, and Supporting Documents, does not decrease the margin of safety associated with any IROFS being credited under the American Centrifuge Plant ISAS or Addendum 1 of the ISAS to ensure the performance requirements of 10 CFR 70.61 are met.

5. **No significant decrease in the effectiveness of any programs or plans contained in the licensing documents.**

   - Only administrative, non-substantive changes were required for the Piketon security plans SP-3605-0041 and NR-3605-0010 under this amendment, as well as the termination of NR-3605-0004. The proposed changes and termination will not decrease the overall level of security performance needed to protect against the loss or compromise of classified matter or special nuclear material (SNM), while in use or in storage, nor classified matter in transit. The control of classified storage areas or vaults, training of classifiers, documentation of classification of matter will be maintained at an equivalent level. No transportation of

SNM will occur under the existing scope of the existing DOE contract for the HALEU Demonstration Cascade; therefore, the proposed changes to NR-3605-0010 do not affect the tracking, protection of SNM in transit, documentation of processes or transfers.

No changes are required for security plan SEC-18-0002, *American Centrifuge Operating, LLC (ACO) Information System Security Plan (ISSP) for Oak Ridge, TN; Piketon, OH; and Bethesda, MD,* which provides for the protection of cyber systems, maintaining the necessary computer security requirements at an equivalent level as previously approved by the NRC. Additionally, no changes are required for the currently NRC-approved security plan SP-3605-0042, *Security Plan for the Physical Protection of Special Nuclear Material at the American Centrifuge Plant in Piketon, Ohio*, which provides for the protection of Category II and III SNM supporting the continued safe operations of the HALEU cascade.

- No changes are required for the American Centrifuge Plant Fundamental Nuclear Material Control Plan (FNMCP) or Addendum 1 of the FNMCP; therefore, the proposed termination of the Lead Cascade FNMCP will have no effect on the American Centrifuge Plant FNMCP or Addendum 1 of the FNMCP meeting the applicable requirements of 10 CFR Parts 70 and 74 and does not affect the function or process to control nuclear material supporting the HALEU Demonstration Cascade.

- The proposed termination of USEC-02 does not result in a decrease in effectiveness of the approved ACP Emergency Plan. For HALEU Cascade Operations, no Emergency Plan as discussed under 10 CFR 70.22(i) is required. Likewise, the proposed termination will not decrease the abilities of the DOE reservation Responses Organization to mitigate accident consequences or reasonably assure the adequate protection of the health and safety of the off-site and on-site personnel in the event of an emergency.

- The proposed termination only resulted in administrative changes to the Quality Assurance Program Description to remove discussion of the Lead Cascade from this dual-use document; thereby, does not represent a relaxation of a requirement of Quality Assurance Program Description.

Based on the above, the proposed change to terminate the Lead Cascade Materials License SNM-7003, License Application, and Supporting Documents will not result in a decrease in the effectiveness of the Security Programs/Plans, FNMCP, Emergency Plan, or the Quality Assurance Program Description contained within the American Centrifuge Plant licensing documents.

6. The proposed change does not result in undue risk to: 1) public health and safety; 2) common defense and security; and 3) the environment.

The proposed change to terminate the Lead Cascade Materials License SNM-7003, License Application, and Supporting Documents does not change the response to accidents or events associated with licensed material. Generation of hazardous material quantities continue to be controlled under the American Centrifuge Plant License Application and Supporting Documents to eliminate impacts to the public health and safety. The proposed termination has no impact to the plant boundary protection, documentation of patrols, performance of rounds,

or training of protective force personnel. The proposed termination will not increase the likelihood classified matter or SNM will be accessible to unauthorized personnel. Physical protection methods for SNM remain unchanged for the HALEU Demonstration Cascade. Therefore, the proposed changes do not result in undue risk to public health and safety, the environment, or to the common defense and security.

7. **There is no change in the type or significant increases in the amounts of any effluents that may be released off-site.**

   The proposed change to terminate the Lead Cascade Materials License SNM-7003, License Application, and Supporting Documents does not result in any new or unusual sources of hazardous substances, hazardous waste, or new waste streams that could be generated or used in unacceptable levels that exceed applicable regulatory requirements. In addition, there is no change in the type or significant increases in the amounts of any effluents that may be released off-site. Effluents continue to be controlled under the American Centrifuge Plant License Application and Supporting Documents.

8. **There is no significant increase in individual or cumulative occupational radiation exposure.**

   The proposed termination of USEC-02 does not result in a decrease in effectiveness of the approved American Centrifuge Plant Emergency Plan, which remains approved, but unimplemented. USEC-02 was previously replaced by the DOE's plant-wide emergency plan that remains in effect providing any needed emergency response to the reservation tenants. Therefore, there is no significant decrease in the effectiveness of the Emergency Plan such that adequate protection of the health and safety of the off-site public and on-site personnel in the event of an emergency cannot be provided.

   For HALEU Cascade Operations, no Emergency Plan as discussed under 10 CFR 70.22(i) is currently needed for the HALEU Demonstration Program. DAC-3901-0005, *Evaluation of No Need for an Emergency Plan for the HALEU Demonstration*, provides the evaluation stipulated in 10 CFR 70.22(i)(l)(i) to demonstrate that no Emergency Plan is required for the HALEU Demonstration Program. The evaluation shows that the maximum dose to a member of the public offsite due to a release of radioactive materials would not exceed 1 roentgen equivalent man (rem) effective dose equivalent or an intake of 2 milligrams (mg) of soluble uranium (U).

9. **There is no significant construction impact.**

   The Piketon HALEU cascade and storage construction activities have been completed. The proposed change to terminate the Lead Cascade Materials License SNM-7003, License Application, and Supporting Documents is merely an administrative effort for both the NRC and ACO. Therefore, there are no foreseen construction impacts related to these termination activities.

Enclosure 2 of ACO 23-0054

Proposed Changes for NR-3605-0003, *Quality Assurance Program Description for the American Centrifuge Plant*

Information Contained Within
Does Not Contain
Export Controlled Information

Reviewing Official: Lori A. Hawk, ACO

Date: 10/31/2023

NR-3605-0003

Quality Assurance Program Description

for the American Centrifuge Plant in Piketon, Ohio

Proposed Change

Docket No. 70-7004
~~**Docket No. 70-7003**~~

November 2023

NR-3605-0003

QUALITY ASSURANCE PROGRAM DESCRIPTION FOR THE AMERICAN CENTRIFUGE PLANT

in Piketon, Ohio

Docket No. 70-7004
~~Docket No. 70-7003~~

Proposed Change

ACRONYMS

ACP	American Centrifuge Plant
ASL	Approved Suppliers List
ASME	American Society of Mechanical Engineers
CFR	*Code of Federal Regulations*
EDMS	Electronic Document Management System
IROFS	Items Relied on for Safety
ISTP	Integrated Systems and Test Plans
~~Lead Cascade~~	~~American Centrifuge Lead Cascade Facility~~
M&TE	Measuring and Test Equipment
NRC	U.S. Nuclear Regulatory Commission
QA	Quality Assurance
QAPD	Quality Assurance Program Description
QL	Quality Level
UF_6	uranium hexafluoride

1.0 INTRODUCTION

The Quality Assurance Program Description (QAPD) described herein applies to the design, procurement, refurbishment/construction, manufacturing, testing, start-up, operation, inspection, maintenance, modification, and future decommissioning of the ~~American Centrifuge Lead Cascade Facility (Lead Cascade) and the~~ American Centrifuge Plant (ACP) and meets 10 *Code of Federal Regulations* (CFR) 70.64 (a)(1).

The ~~Lead Cascade and~~ ACP ~~are~~ is located in Piketon, Ohio. The QAPD is applied using a graded approach as described in Section 2.0 of this QAPD.

1.1 Organization

The Licensee maintains overall responsibility for design, procurement, refurbishment/construction, manufacturing, testing, start-up, operation, maintenance, and future decommissioning of the ~~Lead Cascade and the~~ ACP.

Figure 2.1-1 of the License Application shows the American Centrifuge organization. The organization is managed by Licensee staff and operated by a combination of Licensee personnel, contractor, supplier-provided augmented staff, and consultants where appropriate.

1.2 Responsibilities

The Senior Vice President, Field Operations reports to the President and Chief Executive Officer, and has overall responsibility for the safe operation and the deployment of American Centrifuge Project(s), including facility design; process equipment procurement; machine design, testing, and manufacturing; enrichment plant refurbishment/construction; testing of facilities; and turn-over to operations. The Senior Vice President provides strategic leadership and direction for the enrichment operations organization, including the functions of operations; maintenance; project support; engineering; system(s) testing; transportation; procurement; materials handling and storage; industrial, radiological, and nuclear safety; conduct of operations; and future decommissioning.

The Senior Vice President is responsible for the quality assurance (QA) program and for determining the status, adequacy, and effectiveness of the QAPD. The Senior Vice President has designated the Director, QA the responsibility for ensuring that the project achieves its quality targets and meets its regulatory driven quality commitments. This director is responsible for QA for the operations, including future decommissioning as applicable, at the Piketon, Ohio and Oak Ridge, Tennessee facilities; for vendors and suppliers; and for construction and manufacturing activities, both for internal and external customers.

The Senior Vice President has designated the Director, Engineering, Procurement, and Construction, during the refurbishment/construction of the American Centrifuge facilities, the responsibilities for providing technical administration and direction to the Engineering, Procurement, and Construction contractor(s); providing the primary interface with the refurbishment/construction contractor(s) who are building out the licensed facilities, and

managing the execution of the Balance of Plant work which the Licensee self performs for the deployment of the ACP.

The Senior Vice President has designated the Enrichment Operations Plant Manager the responsibility for the day-to-day safe operation and associated support activities for the American Centrifuge Project(s). The Enrichment Operations Plant Manager is responsible for the American Centrifuge Program and overall responsibility for implementation of the QAPD. The QAPD is binding on all Licensee and contractor personnel involved with the American Centrifuge Project(s), as identified in contractual documents.

The Director, Regulatory Affairs provides American Centrifuge project-level regulatory/licensing strategies and policies and is the primary day-to-day interface with the NRC on matters of regulatory compliance and inspection. This director may delegate responsibility for this day-to-day interface to the Regulatory Manager. The Director, Regulatory Affairs is also responsible for the technical oversight and direction for developing and implementing the Nuclear Safety and Nuclear Materials Control and Accountability (NMC&A) programs. This director advises and provides strategic guidance to the Senior Vice President, Field Operations on regulatory compliance and matters of nuclear safety and safeguards and ensures appropriate independent oversight of project activities are conducted. The Director, Regulatory Affairs is independent from production, plant operating costs, and production schedule concerns.

The Nuclear Safety Manager reports to the Director, Regulatory Affairs who is matrixed directly to the Enrichment Operations Plant Manager. This manager is responsible for developing and implementing the nuclear safety program, including technical oversight of nuclear safety, including nuclear criticality safety and maintenance of the Integrated Safety Analysis, safety analysis training, review of procedures involving fissile material operations, and assessments of program implementation.

The Piketon Engineering Manager reports to the Director, Engineering and is the delegated design authority for Piketon operations and is matrixed directly to the Enrichment Operations Plant Manager. This manager is responsible for Piketon engineering activities in support of operations and future decommissioning, which includes maintaining the configuration management program; systems and design engineering; review of design and modifications of items relied on for safety (IROFS); and supporting procurement services. This manager is also responsible for development of the Integrated Systems and Test Plans (ISTPs) and acceptance test coordination, including test control; and approving disposition of nonconforming items when dispositioned as "repair" or "use-as-is."

The Operations Manager reports to the Enrichment Operations Plant Manager and is responsible for fissile material operations, centrifuge operations, and shift operations. This manager is responsible for directing activities of the Cascade / Recycle and Assembly Operations Shift Supervisors in operation of the cascade, feed and withdrawal, and gas test. This includes centrifuge assembly, drying, transportation, and installation in the cascade; safe operation of the uranium hexafluoride (UF_6) processes in accordance with approved procedures; proper receipt, storage, handling, and onsite transportation of UF_6; execution of the ISTPs, initial start-up, and operation of the centrifuges, equipment, and support systems. Other activities include select

repair of centrifuges; classified equipment control; accountable property inventory, segregation, and disposition; contractor support; integrated planning and scheduling; caretaker activities; materials management support; and future decommissioning and disposal activities, ensuring activities are performed in accordance with approved programs, processes, and procedures.

The Integrated Systems Test/Start-up Manager reports to the Operations Manager and is responsible for assisting in the development and execution of the ISTPs which demonstrate the proper operation of completed systems to ensure that the systems meet their intended design functions. This manager is also responsible for the acceptance of turnover from Engineering, Procurement, and Construction or from turnover from contractors/vendors to the Licensee; initial acceptance testing; and initial start-up of equipment and support systems.

The Maintenance Manager reports to the Enrichment Operations Plant Manager. This manager is responsible for the day-to-day safe and reliable maintenance of the facilities, plant equipment, utilities processes, balance of plant, and grounds. This manager is responsible for identification and capture of facility deficiencies using preventive, predictive, and corrective maintenance techniques. This includes equipment and system troubleshooting and repair. The Maintenance Manager is also responsible for maintaining configuration management for assigned systems and components; integrated planning and scheduling; contractor support; caretaker activities; overseeing the maintenance backlog; execution of preventative maintenance; materials management support; and future decommissioning and disposal activities, ensuring activities are performed in accordance with approved programs, processes, and procedures.

Maintenance Work Center Supervisor reports to the Maintenance Manager. The Maintenance Work Center Supervisor is responsible for directing activities of the Maintenance Shift Supervisors in the performance of preventive, predictive, and corrective maintenance and to provide support services on facilities and equipment within approved programs, processes, procedures and personnel training limitations. These activities may include maintenance of electrical equipment; electronic and pneumatic instrumentation and controls; computers and programmable controllers; and mechanical maintenance, such as valve, pump, and mechanical equipment repair and replacement.

The Production Support Manager reports to the Enrichment Operations Plant Manager and is responsible for fire safety; emergency management; radiation protection, which includes chemical process safety, health physics, industrial hygiene, and environmental/waste management; and training and procedures, which includes records management/document control.

The Training and Procedures Manager reports to the Production Support Manager and is responsible for development and implementation of programs for indoctrination and training identified in Section 2.0 of this QAPD. Also, this manager is responsible for the program for development, review, approval, and issuance of procedures and the records management and document control program.

The Business Services Manager reports to the Enrichment Operations Plant Manager and is responsible for procurement; packaging, transportation, and materials management; finance; and information technology in support of the American Centrifuge Project(s).

The Procurement Manager reports to the Director, Procurement and Contracts and is responsible for providing support services to the Business Services Manager for procurement and providing procurement material control services (including supplier qualification coordination, purchasing, contracting). This manager is also responsible for supply strategy and development of qualified long-lead-time and complex-system suppliers.

The Regulatory Manager reports to the Director, Regulatory Affairs and is responsible for regulatory oversight functions and commitment management. The Regulatory Manager, as delegated by the Director, Regulatory Affairs, maintains the day-to-day interface with U.S. Nuclear Regulatory Commission (NRC) representatives on matters of regulatory compliance. This manager has responsibility for maintaining the plant change process and ensuring the plant change reporting requirements are met. The Regulatory Manager is also responsible for implementing the Corrective Action Program; ensuring incident investigations are performed and providing management with data to assure that corrective actions and commitments are properly addressed and managed to facilitate compliance with the implementing policies and procedures.

The Piketon QA Manager reports to and receives technical direction for QA matters from the Director, Quality Assurance and is matrixed directly to the Enrichment Operations Plant Manager. The Piketon QA Manager is responsible for independent oversight of American Centrifuge Project(s) activities covered by this QAPD. This includes maintenance and programmatic administration of the QAPD, policies, and procedures and for assessing its effective implementation. This includes the responsibility and authority for:

- Formulating the program described in the Quality Assurance Program Description for the American Centrifuge Plant;
- Review and approval of QAPD implementing procedures;
- Review and approval of contractor and supplier QA programs;
- Monitoring the implementation of the QAPD and assessing the effectiveness of the QAPD through audits and assessments;
- Investigating any aspect of the QAPD to identify problems with execution and to verify that corrective action is taken in a timely manner;
- Stopping unsatisfactory work or controlling further processing when warranted for safety considerations;
- Attending status meetings, interacting directly with line management, and staying abreast of day-to-day activities to ensure adequate oversight; and

performance, alternates, and exceptions; as well as commercial, cost, and schedule considerations, as applicable.

7.5 Supplier Performance Evaluation

Measures are established to interface with the supplier and to verify supplier's performance, as necessary. The purchaser's verification activities; however, do not relieve the supplier of their responsibilities for verification of quality achievement. The measures include:

- Establishing an adequate understanding between the Licensee and the supplier on the provisions and specifications of the procurement documents;
- Requirements for the supplier to identify the methods and processes to be used by the supplier in fulfilling the requirements of the procurement;
- Reviewing the supplier documents generated or processed during activities fulfilling procurement requirements;
- Identifying and processing necessary change information;
- Establishing methods for exchange of information with the supplier; and
- Establishing the extent of source surveillance and inspection activities for subtier suppliers.

Activities to verify conformance to requirements in procurement documents are recorded as specified in procedures. Source surveillances, inspections, audits, receiving inspections, Condition Notifications, Material Condition Reports, Contractor Deficiency Notices, dispositions, waivers, conditional releases, and corrective actions are all documented. These records are evaluated during performance evaluations to ensure suppliers are effectively implementing their QA programs.

7.6 Control of Supplier Generated Documents

Supplier-generated documents required for submittal are reviewed for acceptability. Measures ensure that submittal of these documents is accomplished as required by the procurement documents. Evaluation depends on the type of documents submitted. The three categories are: engineering documents requiring technical approval (e.g., shop drawings and test procedures); verification documents (e.g., test reports and inspection reports); and information documents (e.g., external manuals and parts lists).

7.7 Acceptance of Items and Services

Acceptability verification activities are based on quality level, complexity, and quantity of items or services provided.

Acceptance of items, including spare and replacement parts, includes one or more of the following methods:

- **Certificate of Conformance** — When this method is utilized during receipt inspection, the following minimum criteria are met:
  - The certificate identifies the purchased material or equipment or purchase order number.
  - The certificate identifies the specific procurement requirements met.
  - The certificate identifies any procurement requirements that were not met and approved waiver.
  - The certificate is authenticated by a person responsible for this QA function.
  - The procedures used for the preparation, review, and approval of the certificate, are described in the supplier's quality assurance program or the purchase order.
  - The validity of the supplier's certificates and effectiveness of certification system is verified, and the interval of verification is based on the supplier's past quality performance.
- **Source Verification** — When this method is utilized, it is performed at intervals consistent with the quality level and complexity of the item or service. This method provides plans to perform inspections, examinations, or tests at predetermined points. Source inspection may be performed at lower tier suppliers when necessary. Results may be utilized at receiving inspection.
- **Receiving Inspection** — When this method is utilized, purchased items are inspected to verify conformance to procurement documents. This method verifies by objective evidence such features as proper configuration; identification; dimensional, physical, or other characteristics; freedom of damage from shipping; cleanliness, and review of supplier documentation when procurement documents require the documentation to be furnished.
- **Post-Installation Testing** — When this method is utilized, post-installation test requirements and acceptance documentation are established in conjunction with the supplier.

Documented evidence of acceptability must be complete prior to placing an item in service. Controls are established for conditional release, such as for post-installation testing.

Acceptance of services is based on one or more of the following methods:

- Technical verification of data produced;

The responsibility and authority for the evaluation and disposition of nonconforming items is defined. The personnel performing evaluations to determine the dispositions have demonstrated competence in the specific area they are evaluating, have an adequate understanding of the requirements, and have access to pertinent background information. The disposition of nonconforming items is identified and documented as required to carry out the disposition. Technical justification for the acceptability of nonconforming items dispositioned "repair" or "use-as-is" is documented and subject to design control measures as described in Section 3.0 of this QAPD. The disposition process includes consideration of the need for design documents to be "as-built" to facilitate operations, maintenance, or modification. The as-built records, if the disposition determines such records to be required, reflect the accepted deviation.

Repaired items are re-examined in accordance with applicable procedures and with the original acceptance criteria unless the nonconforming item disposition has established alternate acceptance criteria. Reworked items are re-examined in accordance with applicable procedures and with the original acceptance criteria.

Nonconformance documentation identifies the nonconforming item; describes the nonconformance; contains the disposition and any re-inspection requirements; and contains the signature(s) approving the disposition.

16.0 CORRECTIVE ACTION

Conditions adverse to quality are identified and corrected promptly. In the case of a significant condition adverse to quality, the cause of the condition is determined, and corrective action is taken to preclude recurrence. Significant conditions, their causes, and corrective actions are documented, reported to appropriate levels of management, and follow-up action is taken to verify implementation of corrective actions. Additional requirements associated with corrective actions are found in Chapter 11, Section 11.6, of the License Applications.

17.0 QUALITY ASSURANCE RECORDS

The QA records system ensures that records are specified, prepared, and maintained in a manner to provide protection and retrievability. Design specifications, procurement documents, test procedures, operational procedures, or other documents specify the records to be generated, supplied, or maintained.

Procedures are established to ensure QA records are complete, legible, traceable to item and activities, maintained, and retrievable. Documents are considered valid records only if stamped, initialed, or signed and dated by authorized personnel or otherwise authenticated. Electronic records will be authenticated with identification found on the media or with authentication information contained within or linked to the document itself. Records are entered into record storage after receipt or validation.

QA records are classified in accordance with NQA-1-2008, Part I, Requirement 17, Section 401 *Lifetime Records*. The applicable document that specifies the record indicates those to be forwarded to the Electronic Document Management System (EDMS) or other location/system approved for record storage. In the case of specified records produced by suppliers, an agreement for records turnover is established.

Lifetime records are retained for the life of the item to which they apply or as required by a regulatory agency. An indexing system ensures the record can be retrieved. Storage is in a central location unless the applicable procedure specifies otherwise. Records may be originals, copies, or electronic format.

Nonpermanent records are those required to show evidence that an activity was performed in accordance with applicable requirements. Nonpermanent records are retained per the Retention Schedule and in accordance with the records management process–.

Corrections to records are approved by the originating organization. The corrections include the date and the identification of the individual authorized to issue the correction.

Custodianship responsibility is assigned for quality records storage. Custodianship includes receipt and status control; storage; preservation; and safekeeping using hard copy, electronic media or EDMS.

Storage facilities protect against the risk of loss or deterioration of quality records. Hard copy or microfilm storage facilities meet the requirements of NQA-1-2008, Part I, Requirement 17, Section 600 *Storage*. For electronic storage, backups, or duplicate files are generated. Lost or damaged records are replaced, unless deemed impractical with the concurrence of the QA organization.

Single copy records are checked out of storage only if they cannot be copied and then only for a limited period. Temporary protection in such cases is provided by prudent business practices (e.g., record of custody, office environment, and workplace security).

18.0 AUDITS

Planned and scheduled audits are performed by the QA organization to verify compliance with the aspects of the QA program and to determine its effectiveness.

18.1 Internal Audits

Internal audits of organizational units performing quality program activities are performed at a frequency commensurate with the status and importance of the activity. Regularly scheduled audits are supplemented by additional audits/assessments of specific subjects. The system of audits and assessments is designed to ensure comprehensive program oversight at least once every three years. The three-year cycle provides for flexibility to maximize effectiveness of QA resources by targeting areas of weakness using supplemental

20.0 REFERENCES

1. 10 CFR 70.4, *Definitions*

2. 10 CFR 70.72, *Facility Changes and Change Process*

3. American Society of Mechanical Engineers (ASME) standard NQA-1, *Quality Assurance Requirements for Nuclear Facility Applications*, 2008 edition with the NQA-1a-2009 addenda

4. SNT-TC-1A, *The American Society for Nondestructive Testing Recommended Practice,* June 1980 Edition

5. 10 CFR Part 21, *Reporting of Defects and Noncompliance*

6. CMP-3603-0001, *Graded Approach to Configuration Management and Quality Assurance*

~~7. LA-2605-0001, *License Application for the American Centrifuge Lead Cascade Facility*~~

~~8.~~7. LA-3605-0001, *License Application for the American Centrifuge Plant*