



June 17, 2020
ACO 20-0025

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

American Centrifuge Plant; Docket Number 70-7004; License Number SNM-2011

Resubmittal of Enclosure to License Amendment Request for American Centrifuge Operating, LLC's License Application and Supporting Documents for the American Centrifuge Plant

Dear Mr. Lubinski:

The purpose of this letter is to resubmit Enclosure 1 of ACO 20-0010 (Reference 1) to the U.S. Nuclear Regulatory Commission for continued review and approval of the proposed amendment for American Centrifuge Operating, LLC's (ACO) License Application and Supporting Documents for the American Centrifuge Plant in Piketon, Ohio (Materials License SNM-2011).

Previously this enclosure had been withheld as Security-Related Information and Proprietary Information. ACO conducted a second review of the information and it is being released from withholding. Therefore, Enclosure 1 of this letter resubmits ACO's detailed description, justification, and significance determination for the proposed changes contained within Reference 1.

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

Sincerely,

Kelly L. Wiehle
Regulatory Manager

Enclosure: As stated

Reference:

1. ACO 20-0010 from K. Wiehle to J. Lubinski (NRC) regarding License Amendment Request for American Centrifuge Operating, LLC's License Application and Supporting Documents for the American Centrifuge Plant, dated April 22, 2020

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cc (without enclosures, unless otherwise noted):

M. Bartlett, NRC HQ (Enclosures)
Y. Faraz, NRC HQ (Enclosures)
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J. Hutson, Pro2Serve (CONTR), NE-ORSO
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L. Pitts, NRC Region II (Enclosures)
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Enclosure 1 of ACO 20-0010

Detailed Description, Justification, and Significance Determination

**Information Contained Within
Does Not Contain
Export Controlled Information**

Reviewing

Official: #1014

Date: 06/11/2020

Detailed Description, Justification, and Significance Determination

Detailed Description of Change

LA-3605-0001, *License Application for the American Centrifuge Plant*, is being revised to evaluate the operation of a 16-centrifuge High Assay Low Enriched Uranium (HALEU) demonstration cascade. The HALEU cascade is operated at less than 20 weight (wt.) percent uranium-235 (^{235}U). Enrichment levels up to 25 wt. percent ^{235}U are authorized to permit for process fluctuations which can create small amounts of higher weight percent material. Additionally, corrections, clarifications, grammatical, and administrative/editorial changes were made throughout the documents as well as revisions to align with NUREG-1520, *Standard Review Plan for Fuel Cycle Facilities License Applications* (Revision 2).

Based upon the 10 *Code of Federal Regulations* (CFR) 70.32 and 70.72 evaluations performed, not all proposed changes depicted within the enclosures warrant the NRC's review and approval; however, are provided for completeness to assist in the review efforts. The following summarizes the primary changes for LA-3605-0001:

Chapters / Appendices	Description
1.0	Chapter was updated to include HALEU cascade/process specifics, discussion of the AC-100M centrifuge, the phased modular expansion plan for future American Centrifuge Plant (ACP) deployment, HALEU organizational changes, new possession limit and authorized use tables for HALEU which note the 25 wt. percent assay limit, Section 1.2.2 financial assurance update with corresponding license condition revision, Section 1.2.5 addition of license condition exemption requests, Section 1.1.8 revised phased ACP deployment descriptions (with corresponding proposed license conditions), and revision to several codes and standards. Additionally, the last sentence in section 1.4 was deleted ("Should this design change, the Licensee will obtain prior NRC approval for the applicable guidance and standards."), as there is no NRC requirement to have such a commitment. (see detailed discussion below and Enclosure 2 of this letter).
2.0	HALEU organizational changes were previously implemented; however, minor changes were identified for consistency with the corresponding programmatic proposed changes (provided for information only purposes, see Enclosure 2 of this letter).
3.0	General description of the methodology utilized for evaluating criticality events for HALEU Demonstration was incorporated into the Integrated Safety Analysis (ISA) Summary. Criticality event analysis methodology for HALEU Demonstration was performed in accordance with the deterministic, parameter-based approach described in Chapter 5 of NUREG-1520, Revision 2. The original, approved methodology is used for all other events which follows NUREG-1520, Revision 0 guidance. The ISA methodology is robust, conservative, and yields results that are safe and compliant. The chapter was also updated to incorporate clarifications from NUREG-1520, Revision 2 concerning what constitutes a credible event. The statement that the Licensee will provide the Commission with a revised ISA Summary 180 days prior to introduction of UF_6 in the ACP was deleted. This internal commitment is not captured on the NRC's Materials License; therefore, was removed from Section 3.5. (see Enclosure 2 of this letter).
4.0	Minor changes were made throughout to make consistent with current practice and industry changes since original licensing. Additionally, reference made to Addendum 1 of the ISA

Chapters / Appendices	Description
	Summary to differentiate HALEU from Commercial Plant (provided for information only purposes, see Enclosure 2 of this letter).
5.0	<p>Added statement concerning the increase in enrichment due to HALEU. Revised the description for how nuclear criticality events are analyzed in support of the ISA to include Nuclear Criticality Safety Evaluations (NCSEs) and included a reference to the applicable section in Chapter 3.0 of the license application for designating Nuclear Criticality Safety (NCS) controls are items relied on for safety (IROFS). Deleted the allowance to use work packages/instructions to implement administrative NCS controls. NCSE administrative controls will be implemented in procedures. Changed the specific description that the criticality accident alarm system (CAAS) detect "neutron" radiation levels to allow for use of gamma detectors, specify coverage is provided by at least one detection unit, and specify that facilities within 125 feet of a building with CAAS coverage have evacuation horns. These changes are based on the CAAS detector and evacuation analyses performed for HALEU Demonstration documented in DAC-3100-0001, <i>MCNP6.2 Evaluation of X-3001, X-7726, and X-7727H to Establish CAAS Detector Placement and Evacuation Distances</i>. Specified that postings and labels used to supplement procedures are proposed, reviewed, and approved during the NCSE implementation process, rather than specified in the approved NCSE. Clarified that NCS engineers are involved in evaluating NCS non-compliances. Added a statement that explicit NCS controls are used as the preferred approach over reliance on natural and credible course of events and deleted the requirement to obtain prior NRC review and approval when natural and credible course of events or other means is used in lieu of specific administrative or engineered controls for double contingency protection. Updated the description for the preferred design approach to be consistent with NUREG-1520, Revision 2.</p> <p>Updated the parameter discussion to reflect changes due to HALEU. The use of computer calculations was updated to reflect the new validation, and deletion of the separate MMS of 0.05 in k_{eff} for above 5 wt. percent ^{235}U. NCS validation report justifies use of a single MMS of 0.02 for all k_{eff} calculations at all ^{235}U enrichments (see Enclosure 2 of this letter). Reference NCS Code Validation of SCALE 6.2.3 and Cross Section Set v7-252 for K_{eff} Calculations documented in EE-3101-0013 R0 previously submitted by ACO 19-0030, dated January 19-0030.</p>
6.0	Minor changes were made throughout to make consistent with current practice and industry changes since original licensing. Additionally, reference made to Addendum 1 of the ISA Summary to differentiate HALEU from Commercial Plant (provided for information only purposes, see Enclosure 2 of this letter).
7.0	Minor changes were made throughout to segregate HALEU Demonstration from the Commercial Plant with respect to fire plans, response, and buildings/facilities. Additionally, reference made to Addendum 1 of the ISA Summary throughout. (see Enclosure 2 of this letter).
8.0	Changes made to discuss future modular deployment of the ACP and the potential future need of NR-3605-0008, <i>Emergency Plan for the American Centrifuge Plant</i> . For HALEU Demonstration, discussion and reference to the conclusions made in DAC-3901-0005, <i>Evaluation of No Need for an Emergency Plan for the HALEU Demonstration</i> , were made as well as how Fluor-BWXT Portsmouth LLC, a U.S. Department of Energy (DOE) site contractor, will still provide emergency response services. Lastly, a section on nuclear criticality was added to discuss CAAS and the response due to CAAS activation to complete the linkage to Chapter 5.0 of the License Application. As part of the translation of CAAS requirements from chapter 5 to chapter 8, deleted the CAAS design requirement to provide a historical log of events and the capability to monitor and record the criticality accident for

Chapters / Appendices	Description
	managing the post-accident situation. Per Section 1.4.1, the CAAS is designed per ANSI/ANS-8.3-1997 and criticality emergency planning is based on ANSI/ANS-8.23-2007. (see Enclosure 2 of this letter).
9.0	Minor changes were made throughout to make consistent with current practice and reservation changes since original licensing (provided for information only purposes, see Enclosure 2 of this letter).
10.0	This chapter was revised to define the HALEU Demonstration Program contractual requirements with DOE assuming all liability for the decontamination and decommissioning of such facilities and equipment installed, and any work performed, under the Demonstration Contract with the Department including any materials or environmental hazards on the site; and no financial assurance for any liability or lease turnover conditions shall be required from the Corporation (Licensee). Additionally, the parties agree that any work performed under the HALEU Demonstration Contract on the leased premises shall be considered a permitted use; any alterations or changes to the premises pursuant to the Demonstration Contract with the DOE shall be a permitted change to the premises; and any liabilities of the Corporation (Licensee) arising from or incident to the performance of work under the Demonstration Contract with the DOE shall be governed solely by such contract and any financial protection afforded to the Corporation (Licensee) as a person indemnified under the Act. Title to depleted uranium hexafluoride (UF ₆) by-product (tails) from the HALEU enrichment process has yet to be determined. However, should the DOE determine that the licensee owns the tails material, the Licensee commits to the submittal to the NRC of a license amendment request to provide the required decommissioning surety required by 10 CFR 30.35, 40.36, and 70.25 for prior review and approval. (see Enclosure 2 of this letter).
11.0	Minor changes were made throughout to make consistent with current practice and align with other changes made in the License Application. Additionally, reference made to Addendum 1 of the ISA Summary to differentiate HALEU from Commercial Plant. Changes made to single and dual records storage definition based upon verbatim usage from NQA-1 2008; thereby removing NFPA requirements (provided for information only purposes, see Enclosure 2 of this letter).
Appendix A	Removed an inaccurate UCNI cover page (not being provided within this submittal).
Appendix B	Two figures updated to reflect current plant configuration/status. Indicated which figures were for commercial plant only (provided for information only purposes, see Enclosure 3 of this letter).
Appendix C	Removed initial phase deployment discussion to align with current modular phasing plans discussed within Section 1.1.8 of the License Application (not being provided within this submittal).
Appendix D	Appendix was previously deleted, being reused to withhold Security-Related Information contained within the License Application, Chapter 1.0 (See Enclosure 8 of this letter).
Appendix E	Removed reference to USEC from the header/footer markings (not being provided within this submittal).
Appendix F	Added new appendix to withhold Official Use Only and Proprietary Information contained within the License Application, Chapter 5.0 (see Enclosure 9 of this letter)

As discussed above under Chapter 1.0, in accordance with the commitment contained within Section 1.4 of the License Application, proposed changes to the following codes and standards are being submitted for the NRC's review and approval as part of this License Amendment Request:

Code / Standard No.	Title	Previous Commitment	New Commitment
ANSI/ANS-8.1	<i>Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors</i>	1998	2014
ANSI/ANS-8.19	<i>Administrative Practices for Nuclear Criticality Safety</i>	1996	2014
ANSI/ANS-8.23	<i>Nuclear Criticality Accident Emergency Planning and Response</i>	1997	2007
ANSI/ANS-8.24	<i>Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations</i>	N/A	2017
ANSI N14.1	<i>Nuclear Materials - Uranium Hexafluoride - Packaging for Transport</i>	2001	2012
ANSI/ASME NQA-1	<i>Quality Assurance Requirements for Nuclear Facility Application</i>	1994	NQA-1-2008 and NQA-1a- 2009 Addenda
ASME B31.3	<i>Process Piping</i>	2004	2018
ASTM C787	<i>Standard Specification for Uranium Hexafluoride for Enrichment</i>	2003	2015
ASTM C996	<i>Standard Specification for Uranium Hexafluoride Enriched to Less than 5 Percent U-235</i>	2004	2015
NFPA 10	<i>Standard for Portable Fire Extinguishers</i>	2002	2018
NFPA 13	<i>Standard for the Installation of Sprinkler Systems</i>	2002	2019
NFPA 15	<i>Standard for Water Spray Fixed Systems for Fire Protection</i>	2001	2017
NFPA 25	<i>Standard for Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems</i>	2004	2002 * typo in original licensing
NFPA 30	<i>Flammable and Combustible Liquids Code</i>	2003	2018
NFPA 51B	<i>Standard for Fire Prevention During Welding, Cutting, and Other Hot Work</i>	2003	2019
NFPA 55	<i>Standard for the Storage, Use, and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks</i>	2005	2020
NFPA 101	<i>Life Safety Code</i>	2003	2018
NFPA 232	<i>Standard for the Protection of Records</i>	2000	Deleted
NFPA 241	<i>Standard Safeguarding Construction, Alteration, and</i>	2000	2019

Code / Standard No.	Title	Previous Commitment	New Commitment
	<i>Demolition Operations</i>		
NFPA 801	<i>Standard for Fire Protection for Facilities Handling Radioactive Materials</i>	2003	2020
ANSI/IEEE 336	<i>ANSI/IEEE Standard Installation Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities</i>	1985	2010
IEEE 7-4.3.2	<i>Standard Criteria for Digital Computers in Safety Systems of Nuclear Power Generating Stations</i>	1993	2003
ANSI/ISA 67.04.01	<i>Setpoints for Nuclear Safety-Related Instrumentation</i>	2000	2018

Additionally, Regulatory Guidance documents were moved to a Section 1.5 of the License Application. The changes to these guidance documents are as follows:

- NUREG-1520 changed from Revision 0 to Revision 2
- NUREG-6698 was deleted. The details for performing criticality code validation are provided in ANSI/ANS-8.24-2017 which was added.
- Regulatory Guide 3.71 changed from Revision 0 to Revision 3
- Replaced Regulatory Guide 5.15, Revision 1 with Regulatory Guide 5.80, Revision 0

As discussed above under Chapter 1.0, there is a change in the Possession Limits needed specifically for the HALEU Demonstration Program for this three-year contract period (expiring May 31, 2022). Table 1.2-1 provides the ACP Possession Limits for NRC Regulated Materials and Substances while a new separate possession limit Table 1.2-2 is provided specific for the HALEU Demonstration Program. Table 1.2-3 provides the ACP Authorized Uses of NRC Regulated Materials while a new separate authorized uses Table 1.2-4 is provided specific for the HALEU Demonstration Program. The program/plan impacted most by these changes are the NCS program and the Fundamental Nuclear Material Control Plan (FNMCP).

- The FNMCP (NR-3605-0005) is being evaluated separately in support of this License Amendment Request and will be provided to the NRC for prior review and approval in subsequent submittal. Additionally, the following corresponding documents, NR-3605-0005B, *Addendum 1 of the Fundamental Nuclear Material Control Plan for the American Centrifuge Plant for HALEU Demonstration*, and NR-3605-0005C, *(U) Program for Precluding and Detecting Unauthorized Production/Enrichment and Diversion Activities for the HALEU Demonstration Centrifuge Facility* are also being evaluated and will be provided to the NRC for prior review and approval in subsequent submittal.
- The NCS program described in Chapter 5.0 of the License Application was updated to include a new NCS code validation that covers the HALEU enrichment ranges (Enclosure 2 of this letter).

The validation is documented in Engineering Evaluation EE-3101-0013, *NCS Code Validation of SCALE 6.2.3 and Cross Section Set v7-252 for k_{eff} Calculations* and was submitted to NRC on January 14, 2020 (Reference ACO 19-0030). Additionally, the methodology for criticality events was updated to align with the guidance in the latest version of NUREG-1520 (Revision 2). Specifically, the criticality events were evaluated using the deterministic, parameter-based approach of NUREG-1520, Chapter 5, Appendix C, *Example Procedure for Subcriticality Evaluation*. This method demonstrates compliance with the requirement of 10 CFR 70.61(d) to ensure that, under normal and credible abnormal conditions, all nuclear processes are subcritical, including an approved margin of subcriticality for safety.

Proposed changes were made to NR-3605-0003, *Quality Assurance Program Description for the American Centrifuge Plant* (Enclosure 4 of this letter) to update program elements from the American Society of Mechanical Engineers (ASME) standard Nuclear Quality Assurance (NQA)-1, *Quality Assurance Requirements for Nuclear Facility Applications*, 1994 edition to the 2008 edition with the NQA-1a-2009 addenda. This proposed change flowed in corresponding changes to the various License Application Chapters 1, 2, and 11. Additionally, as a result of this proposed change, changes are warranted to the NRC's Materials License (SNM-2011) Condition 19.a (Enclosure 7 of this letter). An analysis of the proposed commitment updates did not identify any substantive reduction in Quality Assurance Program Description requirements and align these commitments with more recent ASME direction. This proposed change does not decrease the ability of the management measures discussed in the License Application to ensure the availability and reliability of IROFS.

Proposed changes were made to LA-3605-0003A, *Addendum 1 of the Integrated Safety Analysis Summary for the American Centrifuge Plant – HALEU Demonstration* (Enclosure 6 of this letter) and LA-3605-0003G, *(U) Classified Information Supporting Addendum 1 of the Integrated Safety Analysis* (will be submitted under separate cover [ACO 20-0014]) to safely and conservatively bound operations under the HALEU Demonstration Program. The evaluation of HALEU Demonstration Criticality Events was performed in accordance with the deterministic, parameter-based approach of NUREG-1520, Revision 2, Chapter 5, Appendix C. This method demonstrates compliance with the requirement of 10 CFR 70.61(d) to ensure that, under normal and credible abnormal conditions, all nuclear processes are subcritical, including an approved margin of subcriticality for safety. Although many changes were made throughout the document to address the plant design, increased assay limit, and general updates since the original was written, the changes/analysis were made in a conservative manner to ensure the requirements set forth in 10 CFR 70.61 were maintained. Additionally, corresponding proposed changes were also made to LA-3605-0003, *Integrated Safety Analysis Summary for the American Centrifuge Plant* (Enclosure 5 of this letter) to appropriately posture and bound the Addendum for HALEU Demonstration.

American Centrifuge Operating, LLC (ACO) respectfully requests NRC complete their review and final approval on or before June 2, 2021 to support the 3-year schedule of the HALEU Demonstration Program. ACO is currently in the process of transitioning implementing program procedures and documents over to the ACP, which supports the inspections required by 10 CFR 70.32(k). The anticipated NRC Operational Readiness Review process is requested to begin in July 2021 with final approval to introduce gas requested by September 7, 2021. Following NRC's approval to introduce gas for the HALEU Demonstration Program, ACO intends to request

termination of NRC Materials License SNM-7003 for the Lead Cascade Facility.

The proposed changes contained within Enclosures 2 through 9 are identified by the following method:

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

Justification

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 HALEU fuel for advanced reactors. The two primary objectives of the HALEU Demonstration Program are for ACO to deploy a 16-machine AC-100M HALEU cascade to produce 19.75% ^{235}U enriched product and to demonstrate the capability to produce HALEU utilizing U.S.-origin uranium enrichment technology. Work under the contract includes licensing, constructing, assembling and operating AC-100M centrifuges and related infrastructure in a cascade formation to produce HALEU at the ACP in Piketon, Ohio.

Moving forward under the HALEU program, existing NRC-approved Lead Cascade programs will be transitioned and subsumed into the ACP license. As a result, ACO is amending the ACP license and prepared a license amendment request for the NRC's prior review and approval to allow HALEU production to begin in the fourth quarter of 2021.

The proposed changes discussed above, in accordance with 10 CFR 70.34 and 70.65, require the NRC's prior review and approval. The proposed changes will not decrease the ability of the management measures in the License Application to ensure the availability and reliability of IROFS. The proposed changes do not decrease the effectiveness of the design basis as described in the License Application. However, the proposed changes do result in a departure from a method of evaluation described in the License Application used in establishing the design bases in that the evaluation of HALEU Demonstration Criticality Events was performed in accordance with the deterministic, parameter-based approach of NUREG-1520, Revision 2, Chapter 5, Appendix C. This method demonstrates compliance with the requirement of 10 CFR 70.61(d) to ensure that, under normal and credible abnormal conditions, all nuclear processes are subcritical, including an approved margin of subcriticality for safety. Consequently, this results in no degradation of safety. Lastly, the proposed changes do not have an adverse effect on compliance with applicable regulatory requirements.

Proposed Changes to LA-3605-0002, *Environmental Report for the American Centrifuge Plant*, are currently being evaluated in support of this License Amendment Request and will be submitted to the NRC for prior review and approval in a subsequent submittal. These proposed changes will assist in the support of the development of the required Environmental Assessment required for this License Amendment Request. Currently, there are no foreseen environmental concerns based upon the fact that the HALEU Demonstration Program is being constructed within leased buildings for the previous American Centrifuge Lead Cascade Facility on a much smaller scale. There will be no new building construction planned for this initial deployment phase of the ACP.

As discussed in the revised License Application Section 1.1.8.2, *High Assay Low Enriched Uranium Demonstration Continuation*, to ensure proper transition between phases, the Licensee proposed that the license be conditioned as follows:

- The Licensee will obtain prior NRC review and approval before transitioning to subsequent future phase of operation as discussed in Section 1.1.8 of the License Application.

Based upon clarifications needed within the License Application Section 1.2.2, *Financial Qualifications*, and in order to meet the financial qualifications requirements for construction and operation of future expansion of the facility beyond the cascade funded under the HALEU Demonstration Contract, the Licensee requests a modification to Condition 15. Proposed changes to the Materials License are provided within Enclosure 7 of this letter.

Additionally, the Licensee requests a modification to Condition 19.a which requires ACO's compliance with accepted best practices in software and hardware engineering, including software quality assurance controls as discussed in the Quality Assurance Program Description related to the applicable guidance of the American Society of Mechanical Engineers (ASME) Nuclear Quality Assurance (NQA)-1 standard. Specifically, ACO requests SNM-2011, Condition 19.a. be revised to point to the location in NQA-1-2008 with the NQA-1a-2009 addenda where these requirements are located. Proposed changes to the Materials License are provided within Enclosure 7 of this letter.

Based upon the verbiage of the DOE HALEU Contract, the following new exemptions are being proposed within Section 1.2.5 of the license application as follows:

- **Condition 14:** The Licensee requests an exemption to Condition 14 which requires ACO to provide documentation of any liability insurance required to be obtained by ACO under its lease with the DOE for the ACP. The Licensee proposes an exemption within Section 1.2.5 of the license application to this condition: In support of this HALEU Demonstration Program, DOE amended the GCEP Lease Agreement, in which the parties agree that all work performed under the HALEU Demonstration Contract on leased premises shall be considered a permitted use; any alterations or changes to the premises pursuant to the Demonstration Contract with the DOE shall be a permitted change to the premises; and that any liabilities of the Corporation (Licensee) arising from or incident to the performance of work under the Demonstration Contract with the DOE shall be governed solely by such contract. Therefore, the Demonstration Contract exempts ACO from any financial assurance for any liability insurance during the three-year contract period.

Additionally, corresponding changes were made to the existing exemption request to delineate the difference between the HALEU Demonstration Program and that to support the future expansion of the ACP.

Also noted, by letter dated May 14, 2007 (AET 07-0030) the Licensee provided status of its

efforts to obtain nuclear liability insurance in accordance with NRC License Condition #14. The NRC agreed on July 16, 2007 that the Licensee had satisfied the requirements of this license condition and no further action is required concerning this license condition.

- **Condition 15:** The Licensee requests an exemption to Condition 15 which requires ACO to have long term contracts/funding for five years or more of operations. The Licensee proposes an exemption within Section 1.2.5 of the license application to this condition: In general, the Licensee's financial qualifications to construct and operate the HALEU 16-centrifuge cascade under the Demonstrations' Contract is demonstrated by the contract with DOE and the Selected Financial Data and detailed Consolidated Financial Statements within the latest information filed with the U.S. Securities Exchange Commission by its parent Centrus. Under the HALEU Contract, DOE agreed to reimburse the Company for 80 percent of its costs incurred in performing the contract. The Company's cost share is the corresponding 20 percent and any costs incurred above these amounts. Costs under the HALEU Contract include *program costs*, including direct labor and materials and associated indirect costs that are classified as *Cost of Sales*, and an allocation of corporate costs supporting the program that are classified as *Selling, General, and Administrative Expenses*. Services to be provided over the three-year contract include constructing and assembling centrifuges and related infrastructure in a cascade formation. When estimates of remaining program costs to be incurred for such an integrated construction-type contract exceed estimates of total revenue to be earned, a provision for the remaining loss on the contract is recorded to *Cost of Sales* in the period the loss is determined. Our corporate costs supporting the program are recognized as expense as incurred over the duration of the contract term. The accrued loss on the contract will be adjusted over the remaining contract term based on actual results and remaining program cost projections. The Licensee requests an exemption to this condition during the three-year HALEU Contract period.
- **Condition 16:** The Licensee requests an exemption to Condition 16 which requires ACO to provide copies of proposed financial assurance instruments to the NRC for review at least 6 months prior to planned date for obtaining licensed material. See Condition 17 below.
- **Condition 17:** The Licensee requests an exemption to Condition 17 which requires ACO to provide Decommissioning Funding Plan cost estimates up to full capacity operations. The Licensee proposes an exemption within Section 1.2.5 of the license application to this condition: in support of this HALEU Demonstration Program, as noted in Section 10.1 of this license application, DOE amended the *Appendix 1 Lease Agreement between the U.S. Department of Energy and United States Enrichment Corporation for the Gas Centrifuge Enrichment Plant* (GCEP Lease Agreement). In the amended GCEP Lease Agreement, DOE assumes all liability for the decontamination and decommissioning of such facilities and equipment installed, and any work performed, under the Demonstration Contract with the Department including any materials or environmental hazards on the site. Therefore, exempting ACO from any financial assurance for any liability or lease turnover conditions shall be required from the Corporation (Licensee). Additionally, as stated within the amended GCEP Lease Agreement, the parties agree that should any liabilities of the Corporation (Licensee) arise from or incident to the performance of work under the Demonstration Contract with the DOE shall be governed solely by such contract and any financial protection afforded to the Corporation (Licensee) as a person indemnified under the Act.

Additionally, corresponding changes were made to the existing exemption request to delineate the difference between the HALEU Demonstration Program and that to support the future expansion of the ACP.

Significance Determination for Proposed Conforming Changes

ACO has reviewed the proposed changes and provides the following Significance Determination.

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

The proposed changes provided within this License Amendment Request to implement the HALEU Demonstration Program are not prohibited by 10 CFR Part 70, license condition, or order. However, two conditions are being modified, to clarify the financial qualification needed for future expansion of the ACP and to update Quality Assurance Program Description elements for the Licensee's revised commitment to ASME standard NQA-1 from 1994 edition to the 2008 edition with the NQA-1a-2009 addenda. Additionally, as noted above, based upon the DOE HALEU Demonstration Contract language, exemptions have been requested for certain license conditions.

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

The proposed changes provided within this License Amendment Request to implement the HALEU Demonstration Program do not remove, without at least an equivalent replacement of the safety function, an IROFS that is listed in the ISA Summary and Addendum 1. The proposed changes do not alter any IROFS listed in the ISA Summary or Addendum 1, 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 changes provided within this License Amendment Request to implement the HALEU Demonstration Program do 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 ISA Summary/Addendum 1. All new or modified accident sequences for HALEU demonstration are the same types of sequences previously analyzed.

4. No significant reduction in the margins of safety.

The proposed changes provided within this License Amendment Request to implement the HALEU Demonstration Program do not decrease the margin of safety associated with any IROFS being credited 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.

- The HALEU Demonstration Program requires the possession of classified matter up to Secret-Restricted Data to operate. Therefore, in accordance with 10 CFR Part 95, *Facility Security Clearance and Safeguarding of National Security information and Restricted Data*, SP-3605-0041, *Security Plan for the Protection of Classified Matter at the American Centrifuge Plant*, was previously submitted on March 31, 2020 (ACO 20-0009) to the NRC for prior review and approval. Final approval will allow for a revised Facility Data and Approval Record be provided for Facility Code 8759, American Centrifuge Operating, LLC, to formally change the Importance Rating to Possessing and allow the introduction of classified matter for use. The proposed changes provided within this License Amendment Request to implement the HALEU Demonstration Program will not decrease the overall level of security performance needed to protect against the loss or compromise of classified matter, while in use, in storage, or in transit. The control of classified storage areas or vaults, training of classifiers, documentation of classification of matter, etc. will be maintained at an equivalent level. New security plans SP-3605-0039 and SEC-18-0002 provide for the protection of cyber systems, maintaining the necessary computer security requirements at an equivalent level as previously approved by the NRC.

Additionally, in accordance with the requirements of 10 CFR Part 73, *Physical Protection of Plants and Materials*, SP-3605-0042, *(U) Security Plan for the Physical Protection of Special Nuclear Materials at the American Centrifuge Plant*, is under development in support of this License Amendment Request and will be provided to the NRC for prior review and approval in a subsequent submittal.

- The proposed changes provided within this License Amendment Request to implement the HALEU Demonstration Program does impact the FNMCP (NR-3605-0005); however, will have no effect on the FNMCP meeting the applicable requirements of 10 CFR Parts 70 and 74 for ACP. To support implementation of HALEU Demonstration, the FNMCP, and corresponding documents NR-3605-0005B, *Addendum 1 of the Fundamental Nuclear Material Control Plan for the American Centrifuge Plant for HALEU Demonstration*, and NR-3605-0005C, *(U) Program for Precluding and Detecting Unauthorized Production/Enrichment and Diversion Activities for the HALEU Demonstration Centrifuge Facility*, are being evaluated separately in support of this License Amendment Request and will be provided to the NRC for prior review and approval in subsequent submittal.
- The proposed changes provided within this License Amendment Request to implement the HALEU Demonstration Program do not result in a decrease in effectiveness of the approved ACP Emergency Plan. For HALEU demonstration, no Emergency Plan as discussed under 10 CFR 70.22(i) is required. Likewise, the proposed changes 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.

- Proposed changes were made to the Quality Assurance Program Description to update program elements from the ASME standard NQA-1, Quality Assurance Requirements for Nuclear Facility Applications, 1994 edition to the 2008 edition with the NQA-1a-2009 addenda. These proposed changes do not represent a relaxation of a requirement of Quality Assurance Program Description.

Based on the above, the proposed changes to implement the HALEU Demonstration Program will not result in a decrease in the effectiveness of the Security Programs/Plans, FNMCP, Emergency Plan, or the Quality Assurance Program Description contained in the 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 changes provided within this License Amendment Request to implement the HALEU Demonstration Program do not involve significant quantities of licensed material due to the three-year DOE HALEU Demonstration Contract period and do not change the response to accidents or events associated with licensed material. There will be no generation or increase in hazardous material quantities such that it impacts public health and safety. The proposed changes will not impact the plant boundary protection, documentation of patrols, performance of rounds, or training of protective force personnel. The proposed changes will not increase the likelihood classified matter or Special Nuclear Material will be accessible to unauthorized personnel since the protection requirements are comparable with those previously NRC-approved for use under the Lead Cascade operations and decommissioning activities previously handled by the *Security Program for the American Centrifuge Plant* and *Transportation Security Plan for Classified Matter Shipments for the American Centrifuge Plant*. 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 changes provided within this License Amendment Request to implement the HALEU Demonstration Program do 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 as a result of the proposed changes. In addition, there is no change in the type or significant increases in the amounts of any effluents that may be released off-site.

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

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)(1)(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 rem effective dose equivalent or an intake of 2 mg of soluble U. Therefore, the proposed changes provided within this License Amendment Request to implement the HALEU Demonstration Program will not increase radiological or chemical releases beyond applicable regulatory limits (10 CFR 70.61) and will not create any new or unusual sources of radioactive waste. Likewise, the proposed changes will not result in significant increase in individual or cumulative occupational radiation exposure.

9. There is no significant construction impact.

HALEU Demonstration Program construction activities are currently underway supporting the security upgrades projects required to support the NRC's required Operational Readiness Review inspections required to issue a Possessing Facility Security Clearance in the fourth quarter of 2020. Previously submitted SP-3605-0018 (ACO 20-0009, dated March 31, 2020) establishes the temporary security plan needed to support unclassified construction activities within the Controlled Access Area of the ACP. Currently, there are no foreseen environmental concerns based upon the fact that the HALEU Demonstration Program is being constructed within leased buildings used during the operations of the previous American Centrifuge Lead Cascade Facility; however, on a much smaller scale. There will be no new building construction planned for this initial deployment phase of the ACP.