

# Frequently Asked Questions About the High Assay Low Enriched Uranium (HALEU) Demonstration Program

## **What is American Centrifuge Operating (ACO), a subsidiary of Centrus, requesting in its license amendment request (LAR) from the NRC?**

ACO is requesting authorization from the NRC to demonstrate production of low-enriched uranium up to 20%, also referred to as High Assay Low Enriched Uranium (HALEU) using a cascade of 16 operating centrifuges at the Department of Energy (DOE) reservation in Piketon Ohio. The licensee would operate the HALEU cascade under a 3-year contract with the DOE, that expires on May 31, 2022. If the LAR is approved, ACO will be allowed to produce up to 600 kg of HALEU product at an enrichment up to 20% in the form of UF<sub>6</sub> for DOE. Approval of the LAR would also allow enrichment levels up to 25% for process fluctuations which can create small amounts of higher weight percent material within the cascade. General information about the LAR and centrifuge enrichment technology can be found at [Centrus Gas Centrifuge Enrichment Facility NRC Licensing website](#).

The NRC's safety and environmental review will be documented in the Safety Evaluation Report (SER) and Environmental Assessment (EA).

## **Where will the HALEU Demonstration cascade be located?**

ACO intends to install the 16-centrifuge HALEU cascade in the existing structures previously used for the American Centrifuge Lead Cascade Facility (LCF) on the DOE reservation at Piketon, Ohio. These structures were also meant to be part of the much larger commercial American Centrifuge Plant (ACP) that was licensed by the NRC in 2007. General information regarding the HALEU Demonstration cascade can be found at [Centrus Gas Centrifuge Enrichment Facility NRC Licensing website](#).

## **What was the Lead Cascade Facility (LCF)?**

In February 2004, SNM-7003 was issued to USEC, Inc. to construct and operate a demonstration Lead Cascade Facility (LCF) consisting of up to 240 operating centrifuges. As part of issuing SNM-7003, the NRC issued a Safety Evaluation Report (SER) (ML063320578) and an Environmental Assessment (ML040210751). The objective of the LCF was to obtain data on uranium enrichment using a gas centrifuge process on a limited scale. The license allowed for enrichment of uranium-235 up to 10 percent by weight. General information regarding the LCF can be found at [Centrus Gas Centrifuge Enrichment Facility NRC Licensing website](#).

## **What is allowed by the current license for the ACP?**

The NRC issued Materials License SNM-2011 in 2007 for the commercial ACP located on the DOE reservation in Piketon, Ohio. The license authorized USEC, Inc. (currently Centrus) to construct and operate the commercial ACP using gas centrifuge technology for enrichment of uranium up to 10% uranium-235. The NRC issued a safety evaluation report (SER) (ML062700087) and an environmental impact statement (EIS) (ML061250131, ML061250101) in 2006 for the commercial ACP license. The EIS included a public comment and review period. Since it was licensed, no significant construction activities have taken place for the

commercial ACP. At full capacity, the commercial ACP would utilize about 11,500 operating centrifuges.

**Will the NRC review of the amendment application verify compliance with requirements that protect against nuclear proliferation?**

Yes. The NRC's safety review will evaluate compliance with applicable regulatory requirements in 10 CFR Parts 25, 73 and 74 and 95, which address proliferation concerns by imposing requirements for the protection of sensitive/classified information, technologies and materials. For example, 10 CFR Part 73, "Physical Protection of Plants and Materials," prescribes requirements for the establishment and maintenance of a physical protection system to protect special nuclear material at fixed sites and in transit, and to protect plants where special nuclear material is used, against radiological sabotage, theft and diversion. Requirements to measure, control, detect, and report the loss, theft, attempted theft, or unauthorized production of special nuclear material are included in 10 CFR Part 74, "Material Control and Accounting of Special Nuclear Material." Licensees are required to prevent unauthorized access and to maintain programs for protecting classified National Security Information, Restricted Data, and associated classified technology under 10 CFR Part 25, "Access Authorization," and 10 CFR Part 95, "Facility Security Clearance and Safeguarding of National Security Information and Restricted Data." Additionally, any export of HALEU would be subject to the provisions of 10 CFR Part 110, "Export and Import of Nuclear Equipment and Material," which govern the export and import of nuclear materials and equipment by NRC or Agreement State licensees.

**Why is the NRC preparing an EA instead of an EIS for the HALEU Demonstration Program?**

The NRC staff determined that the ACO license amendment request (LAR) to operate the HALEU cascade did not meet the criteria in 10 CFR 51.20 for licensing actions requiring environmental impact statements. After analyzing the environmental impacts of the HALEU LAR, NRC staff determined that a finding of no significant impact (FONSI) appears to be warranted. Because the HALEU LAR activities would take place in a small portion of an existing building that housed the LCF, involve smaller quantities of material than the previously approved commercial ACP licensing action, and will produce minimal waste, the environmental impacts of the HALEU cascade would be bounded by those considered in the ACP EIS.

The proposed amendment is not similar to actions that normally require an EIS. The 16-centrifuge ACP HALEU demonstration would produce enriched product at the upper end of the low-enriched uranium (LEU) scale using a technology similar to the one approved for both the LCF and the ACP, but on a smaller scale. The staff determined the preparation of an EA was appropriate for the LCF because of the small scope of the proposed activities. The LCF application was for a demonstration facility utilizing up to 240 centrifuges for 5 years. In contrast, the ACP application, for which an EIS was required, was for a commercial facility utilizing about 11,500 operating centrifuges for 30 years. The NRC staff has determined the HALEU demonstration would be more similar in scope to the LCF licensing action because of the limited scope of operations, the small quantities of materials, and the minimal amount of waste generated.

**Why did the NRC decline to issue the Draft EA for the Centrus LAR for public review and comment?**

The NRC staff determined that the Centrus LAR to operate the HALEU cascade did not meet the criteria for publishing a draft FONSI in [10 CFR 51.33\(b\)](#). After analyzing the environmental impacts of the HALEU LAR, NRC staff determined that a FONSI appears to be warranted. Because the HALEU LAR activities would take place in a small portion of an existing building that housed the LCF, involve smaller quantities of material than the previously approved licensing actions, and will produce minimal waste, the environmental impacts of the HALEU cascade would be bounded by those considered in the LCF EA and the ACP EIS. In addition, the HALEU LAR currently being evaluated by the NRC is not without precedent. While the enrichment level is higher for the HALEU cascade, the technology and enrichment process are the same as those previously evaluated and approved for the LCF and ACP, in that uranium enrichment in the HALEU cascade will be conducted in similar centrifuges and piping. The NRC staff has determined that issuance of a draft FONSI for public comment would not further the purposes of NEPA. This finding takes into consideration the staff's lengthy and comprehensive evaluation of the environmental impacts of this technology at the site of the proposed HALEU demonstration. Therefore, for the reasons discussed above, a draft EA was not issued for public comment.