



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

May 9, 2023

Mathew Snider
General Manager/Operations Manager
American Centrifuge Operating, LLC
3930 U.S. Route 23 South
P.O. Box 628 Mail Stop 7560
Piketon, OH 45661water

SUBJECT: AMERICAN CENTRIFUGE PLANT – INTEGRATED INSPECTION REPORT
07007004/2023007

Dear Mathew Snider:

From April 3, 2023, through April 12, 2023, the U.S. Nuclear Regulatory Commission (NRC) performed the implementation phase of readiness review inspections for Operational Safety, Radiation Protection, Nuclear Criticality Safety, Permanent Plant Modification, and Fire Protection at the American Centrifuge Operating (ACO) American Centrifuge Plant (ACP) and discussed the results of these inspections with L. Cutlip, Senior Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

No violations of more than minor significance were identified during this inspection.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

A handwritten signature in cursive script that reads "Tim Sippel".

Signed by Sippel, Timothy
on 05/09/23

Tim Sippel, Acting Chief
Projects Branch 1
Division of Fuel Facility Inspection

Docket No. 07007004
License No. SNM-2011

Enclosure:
As stated
cc w/ encl: Distribution via LISTSERV

SUBJECT: AMERICAN CENTRIFUGE PLANT – INTEGRATED INSPECTION REPORT
07007004/2023007 DATED May 09, 2023

DISTRIBUTION:

- A. Masters, RII
- R. Williams, RII
- L. Pitts, RII
- T. Vukovinsky, RII
- K. Womack, RII
- T. Sippel, RII
- Y. Faraz, NMSS
- J. Tobin, NMSS
- S. Soto-Lugo, NMSS
- R2EICS
- Public

ADAMS ACCESSION NUMBER: ML23128A350

<input checked="" type="checkbox"/> SUNSI Review		<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive		<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available	
OFFICE	RII/DFFI	RII/DFFI			
NAME	L. Pitts	T. Sippel			
DATE	05/09/2023	05/09/2023			

OFFICIAL RECORD COPY

**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Number: 07007004

License Number: SNM-2011

Report Number: 07007004/2023007

Enterprise Identifier: I-2023-007-0002

Licensee: American Centrifuge Operating, LLC

Facility: American Centrifuge Plant (ACP)

Location: Piketon, Ohio

Inspection Dates: April 03, 2023, to April 12, 2023

Inspectors: J. Grice, Fuel Facilities Inspector
L. Pitts, Sr. Fuel Facility Projects Inspector
J. Raudabaugh, Fuel Facility Inspector
T. Shewmaker, Fuel Facility Inspector
T. Sippel, Sr. Fuel Facility Project Inspector
T. Vukovinsky, Sr. Fuel Facility Project Inspector
R. Womack, Physical Security Inspector

Approved By: Tim Sippel, Acting Chief
Projects Branch 1
Division of Fuel Facility Inspection

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) conducted readiness review inspections in the areas of nuclear criticality safety, operational safety, fire protection, radiation protection, and permanent plant modifications at ACP. The readiness review inspections documented in this report represent an on-site review of items relied on for safety and management measures for selected licensee programs at the ACP. The readiness reviews documented in this report do not represent authorization nor approval of any of the licensee's programs reviewed. Additional readiness review activities are planned to be performed by the NRC prior to authorization of licensed activities within the programs reviewed in this report. Refer to <https://www.nrc.gov/materials/fuel-cycle-fac.html> for more information.

List of Violations

No violations of more than minor significance were identified.

Additional Tracking Items

None.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

SAFETY OPERATIONS

88015 - Nuclear Criticality Safety

The inspectors evaluated selected aspects of the licensee's Nuclear Criticality Safety program to verify compliance with selected portions of Title 10 of the U.S. Code of Federal Regulations Section 70 (10 CFR 70), including 70.24, 70.61, 70.62, Chapter 5, "Nuclear Criticality Safety," of the facility's license application, and applicable licensee procedures.

Criticality Analysis (IP Section 02.01)

The inspectors interviewed licensee staff and reviewed nuclear criticality safety evaluations (NCSEs), and associated supporting calculations, to verify compliance with 10 CFR 70 and applicable sections of the license application. Specifically, the inspectors interviewed licensee staff and reviewed the following NCSEs and criticality related calculations:

- NCSE-FWS-002, "Withdrawal Operations," Revision (Rev.) 4, including the review of credible accident sequences involving too many Uranium Hexafluoride (UF₆) cylinder at the product withdrawal station, and the review of incredible sequences involving the wrong type (e.g., too large) of UF₆ cylinder
- NCSE-CAS-003, "Evacuation Vacuum and Purge Vacuum Systems," Rev. 4, including the review of the what-if analysis, normal conditions, and credible accident sequences
- NCSE-GEN-006, "Utilities," Rev. 6, including the review of the what-if analysis, normal conditions, and credible accident sequences
- DAC-3101-0008, "NCS Study of 30 Inch UF₆ Cylinder Storage," Rev. 0; which contains a variety of criticality calculations for the storage of 30B cylinders; including enrichment and moderation upsets
- EE-3101-0013, "NCS Code Validation of SCALE 6.2.3 and Cross Section Set v7-252 for k_{eff} Calculations," Rev. 1, which was reviewed because it contained benchmark descriptions, calculations, and the evaluation that established the upper subcritical limit (USL) used when performing NCS calculations using SCALE 6.2.3, and includes updates to the area of applicability of the USL

Criticality Implementation (IP Section 02.02)

The inspectors selected controls from the licensee's integrated safety analysis (ISA) summary to verify proper implementation through a review of process and system descriptions, plant walkdowns, and licensee interviews to verify compliance with 10 CFR 70

and applicable sections of the license application. Specifically, the inspectors interviewed licensee NCS staff and reviewed the following related to NCS controls, and their management measures:

- Items relied on for safety (IROFS) Surveillance IS-H-040 Rev. 2; which documents the verification of IROFS related to piping and inline component spacing, geometry and volume; including IROFS G.7.3.6.1.1.17, G.7.3.6.1.1.18, 7.3.6.2.1.5.1, 7.3.6.2.1.6, 7.3.6.11.1.1 and 7.3.6.11.1.2
- IROFS Surveillance IS-H-057 Rev. 1; which documents the verification of IROFS related to vacuum pumps and centrifuge oils; including IROFS G.7.3.6.1.1.15, G.7.3.6.1.1.16, 7.3.6.2.1.8, 7.3.6.11.1.5, 7.3.6.11.1.8, 7.3.6.11.1.16, and 7.3.6.12.1.4.4
- ACP 04.02.72 / U01037, "NCSE Training Module for the EV/PV Systems," Rev. 0; which provides training to operators on the IROFS established in NCSE-CAS-003
- ESDS-AC-0313, "EV/PV Pump Replacement Oil and Oil Exchange Kit," Rev. 0; which contains oil procurement specifications that implement IROFS established in NCSE-CAS-003
- IC-NCSE-CAS-003R4, "NCSE Implementation Checklist for NCSE-CAS-003 Rev. 4;" which documents the implementation of NCS IROFS from NCSE-CAS-003, including IROFS 7.3.6.2.1.1, 7.3.6.2.1.2, 7.3.6.2.1.3, 7.3.6.2.1.4.1, 7.3.6.2.1.5.2, 7.3.6.2.1.5.3, 7.3.6.2.1.5.4 and 7.3.6.2.18
- discussed controls on heating UF₆ with NCS engineers; these include 7.3.6.11.1.13 and 7.3.6.11.2.4
- and walked down a number of passive and active engineered controls associated with the cascade, withdrawal stations, and utilities; including the passive controls on the product withdrawal station and active engineered control valves on the Nitrogen supply

Criticality Operational Oversight (IP Section 02.03)

The inspectors assessed the NCS staff's oversight of plant operators and operations of systems involving special nuclear material to verify compliance with 10 CFR 70 and applicable sections of the license application. Specifically, the inspectors performed the following activities:

- reviewed ACP08.04.01 / U00155, "Basic Nuclear Criticality Safety Refresher, Rev. 2
- reviewed AC-736, "Fissile Material Operations Assessment Checklist," dated July 1, 2021
- interviewed licensee NCS staff concerning how long-term accumulations were addressed through monitoring or prevention
- interviewed a licensee NCS engineer concerning the conduct of NCS Walk-Throughs and reviewed the most recent NCS Walk-Through Report (NCS-WTR-22-001)

Criticality Programmatic Oversight (IP Section 02.04)

The inspectors reviewed NCS program procedures, audits, and assessments to verify compliance with 10 CFR 70 and applicable sections of the license application. Specifically, the inspectors interviewed licensee NCS staff and reviewed the following documents:

- ACP 03.02.03 / U01091, "NCS Response to CAAS Alarm and Criticality Accident," Rev. 0; which is training for licensee NCS engineers in their role in supporting emergency response activities following a CAAS activation
- recent annual management assessments of the licensee's NCS program which are documented in ACP-MA-2022-23, "Management Assessment Nuclear Safety Program," and 761-GM-21-066, "Management Assessment Report – Nuclear Criticality Safety Program Background"
- the most recent revision to NCS program procedures, including:
 - ACP2-EG-010, "Nuclear Criticality Safety Program," Rev. 9
 - ACP3-EG-701, "Nuclear Criticality Safety Engineering," Rev. 9
 - ACP4-EG-704, "Nuclear Criticality Safety Incident Response," Rev. 0

Criticality Incident Response and Corrective Action (IP Section 02.05)

The inspectors reviewed the licensee's criticality accident alarm system (CAAS) and corrective action program (CAP) to verify compliance with 10 CFR 70 and applicable sections of the license application. Specifically, the inspectors observed equipment, reviewed documents, and interviewed licensee staff concerning the following:

- Reverse Work Authorization No. 902093, "Fire Services/Emergency Management/PSS Support for High-Assay Low-Enriched Uranium (HALEU);" which describes the emergency services that the Department of Energy will provide
- DAC-3100-0002, "Dose at Site Boundary due to Airborne Releases from a Criticality Event," which evaluates the dose from the postulated largest credible criticality for use in emergency response
- X-3001-FEP-001, "Facility Emergency Packet X-3001," Rev. 8; which provides guidance on emergency response and reentry pertinent to a criticality event
- Drill Planning Outline Packet FY23-EM-DE-32, "X-3001 CAAS Evacuation Drill," dated March 23, 2023
- Drill & Exercise Program After Action Report (AAR) FY23-EM-DE-32, "X-3001 CAAS Evacuation Drill," dated March 23, 2023
- the monitoring station and equipment that use to monitor for radiation at the rally point after a criticality event
- the emergency response vehicle to observe the equipment (e.g., dosimetry) that would be used during a criticality event
- procedures that would be used during a criticality event, including:
 - ACD2-HP-006, "Dosimetry Program Standards," dated March 22, 2023
 - ACP2-SH-002, "ACO Site Response Actions," Rev. 2
 - FBP-EM-PRO-00023, "Monitoring Station," Rev. 10
 - FBP-EM-PRO-00041, "Criticality and Radiation Emergencies," Rev. 6
- "Nuclear Criticality Safety Duty List," dated March 30, 2023; which lists the licensee NCS engineers who are on-call to support emergency response

- CAP items: Issue 10722, 10987, 10662, 10652, 10644 11023, 10490, 10651 10660, 10483, 10655, and 10658; which included issues identified by licensee NCS during walkdowns and self-assessments, as well as issues raised by licensee staff

88020 - Operational Safety

The inspectors evaluated selected aspects of the licensee's Operational Safety program to verify compliance with selected portions of 10 CFR 70, including 70.24, 70.61, 70.62, and Chapter 11, "Management Measures," of the facility's license application, and applicable licensee procedures.

Identification of Safety Controls and Related Programs (IP Section 02.01)

The inspectors selected from IROFS from all process areas for the inspection based on the safety basis information of the facility, the risk/safety significance of the process areas, and the description of plant changes submitted to the NRC. The inspectors selected a sample of accident sequences in nuclear criticality safety, radiation safety, fire safety, and chemical safety based on the information provided in the ISA summary. The inspectors conducted a general plant tour of each major plant operating area. The process areas and accident sequences selected for review are listed below:

- HD1-1a Small fire in Process Building
- HD1-2 Large fire in the Process Building results in a release of UF₆ from damaged process equipment, centrifuges, cylinders, cold traps, chemical traps or headers
- HD1-2a Large fire in the Interplant Transfer Corridor / Recycle / Assembly Building / CTF results in a release of trace amounts of UF₆ and contamination by-products from damaged centrifuges, chemical traps, and/or other contaminated items
- HD1-3 Fire in the Area Control Room (ACR) results in evacuation of the ACR
- HD1-4 Fire near the chemical traps results in damaged equipment and releases of UO₂F₂ from chemical traps
- HD1-5 Fire on the centrifuge transporter cart while transporting or loading centrifuge(s) removed from service to be taken from (or back to) the Process Building results in sufficient damage to the centrifuge(s) or other contaminated items to release contamination or trace amounts of UF₆
- HD1-6 Large fire in the Process Building due to ongoing construction activities results in a release of UF₆ from damaged process equipment, centrifuges, cylinders, cold traps, chemical traps or headers
- HD1-7 Samples, standards, vent traps, contaminated equipment or waste, or other miscellaneous contaminated items are involved in a fire due to an on-site transportation accident or any mechanism such as natural phenomena
- HD1-8 Fire on a forklift while transporting a feed cylinder results in a release of UF₆
- HD2-1 Explosion in battery charging room damages centrifuges or process headers resulting in a release of UF₆
- HD2-1a Explosion in battery charging room damages cylinders, cold traps, chemical traps or headers resulting in a release of UF₆

- HD2-2 Explosion from wrecked centrifuge following backfill with air results in a release of contamination
- HD2-3 Battery explosion on the centrifuge transporter cart
- HD2-3a Battery explosion on the centrifuge transporter cart impacts cylinders
- HD3-1 Leak in centrifuge(s) process piping or coupling to centrifuge(s) or process piping results in a release of UF₆
- HD3-2 Leak in cylinder process piping or pigtail to feed, product or tails cylinder, cold trap, or chemical trap flange connection results in a release of UF₆
- HD3-3 Leak in feed, product or tails cylinder, cold trap or chemical trap results in a release of UF₆
- HD3-5 A centrifuge is dropped while being handled, creating a hole or crack in the casing, and resulting in a release of trace quantities of contamination from wreck by-products (wrecked machine)
- HD3-5a A centrifuge is dropped while being handled, impacting a cylinder with a resultant release of UF₆
- HD3-5b A centrifuge falls onto an array of feed, tails, and/or product cylinders during handling or transport, or due to impact resulting in a release of UF₆
- HD3-6 A loaded feed, product or tails cylinder is dropped or impacts another object shearing off the valve or breaching the cylinder and resulting in a release of UF₆
- HD3-6a A loaded feed, product or tails cylinder is dropped or impacts another cylinder shearing off the valve or breaching the cylinder and resulting in a release of UF₆
- HD3-7 Samples, standards, vent traps, contaminated equipment or waste, or other miscellaneous contaminated items are breached due to an on-site transportation accident or any mechanism such as natural phenomena or explosion
- HD3-8 A centrifuge being positioned by the overhead bridge crane impacts multiple operating centrifuges. The mid-height casings of the centrifuges have a hole or crack created by the impact and releases UF₆. Alternatively, the centrifuge could impact and breach associated process system piping releasing UF₆
- HD3-9 Centrifuges or associated process piping is impacted by a forklift, creating a hole or crack in the casing and/or breaching the process piping resulting in a release of UF₆
- HD6-1 Forest or brushfire impacts Process Building / Interplant Transfer Corridor / Recycle / Assembly Building / CTTF leading to a fire within and a release of UF₆ from damaged process equipment, centrifuges, cylinders, cold traps, chemical traps or headers
- HD6-2 Fire from an adjacent building spreads to the Process Building/ Interplant Transfer Corridor / Recycle / Assembly Building / CTTF leading to a fire within and a release of UF₆ from damaged process equipment, centrifuges, cylinders, cold traps, chemical traps or headers
- HD6-3 Fire from vehicle parked or traveling adjacent to the Process Building/ Interplant Transfer Corridor / Recycle / Assembly Building / CTTF spreads to become a fire within and a release of UF₆ from damaged process equipment, centrifuges, cylinders, cold traps, chemical traps or headers

- HD6-5 Fire from diesel fuel storage tank outside Process Building impacts Process Building, damages process equipment, centrifuges, cylinders, cold traps, chemical traps or headers resulting in a release of UF₆
- HD6-11 Airplane impact into Process Building / Interplant Transfer Corridor / Recycle / Assembly Building / CTTF results in damage to damaged process equipment, centrifuges, cylinders, cold traps, chemical traps or headers resulting in a release of UF₆
- HD6-12 Helicopter impact into Process Building / Interplant Transfer Corridor / Recycle / Assembly Building / CTTF results in damage to damaged process equipment, centrifuges, cylinders, cold traps, chemical traps or headers resulting in release of UF₆
- HD7-2 Earthquake strikes site and Process Building / Interplant Transfer Corridor / Recycle / Assembly Building / CTTF causing a large follow-on fire, which results in a release of UF₆
- HD7-4b High winds (e.g., microbursts, large storms), beyond design basis, strike site and Process Building damaging the facility and the process equipment, centrifuges, cylinders, cold traps, chemical traps or headers with a large follow-on fire resulting in a release of UF₆

Review of Safety Controls and Related Programs (IP Section 02.02)

The inspectors reviewed information related to administrative, engineered, and passive safety controls or IROFS for the accident sequences selected above, including the identification of the licensee's assumptions and bounding cases as they apply to each of the selected accident sequences, safety controls, or IROFS. This review was performed to verify that the controls or IROFS were available and reliable to perform their intended safety functions and that the design basis assumptions were reflected in the actual conditions in the field. The specific safety controls selected for review are listed below:

- IROFS 7.3.1.1, Buildings and Equipment Constructed of Noncombustible Material
- IROFS 7.3.1.2, Combustible Material Control Program – Inside Buildings
- IROFS 7.3.1.3, Limitations on Fossil Fueled Vehicles Used in American Centrifuge Plant Buildings
- IROFS 7.3.1.4, Combustible Material Control Program
- IROFS 7.3.2.1, Fire Suppression Systems
- IROFS 7.3.6.3.1.4, Wasson-ECE Passive Design Features
- IROFS 7.3.6.4.2.3, Cold Box Fan Disconnect
- IROFS 7.3.6.4.2.4, Cold Box Temperature
- IROFS 7.3.6.11.2.1, Nitrogen Line Fail-Safe Isolation Valve
- IROFS 7.3.6.11.2.2, Nitrogen Line 2nd Independent Fail-Safe Isolation Valve
- IROFS 7.3.6.11.2.3, Plant Air Fail-Safe Isolation Valve
- IROFS 7.3.6.11.2.5, Low pressure Nitrogen Boundary Isolation Valve
- IROFS 7.3.7.1, Structures Designed for 1000-Year Return Period Seismic Event
- IROFS 7.3.7.2, Centrifuge Mountings Designed for 1,000-Year Return Period Seismic Event
- IROFS 7.3.7.3, Structures Designed for a 100 mph or 20,000-Year Return High Straight-Line Wind Event

- IROFS 7.3.7.4, Structures Located Well Above 10,000-Year Return Period Flood Level
- IROFS 7.3.7.5, Building Finished Floor Elevation Above Storm Drainage Swales
- IROFS 7.3.7.7, Structures Designed for a 90 mph or 3,000-Year Return High Straight-Line Wind Event
- IROFS 7.3.8.1, Emergency Response Actions
- IROFS 7.3.8.2, Alarm, Notification, and Protective Actions
- IROFS 7.3.8.3, Trained Operator Actions
- IROFS 7.3.9.1, Inventory Control Program
- IROFS 7.3.9.2, On-Site Transportation Inventory Control Program

Implementation of Safety Controls (IP Section 02.03)

For the selected safety controls listed above, the inspectors reviewed management measures to verify proper implementation in accordance with 10 CFR 70 and applicable sections of the license application. This review was performed to verify that selected safety controls or IROFS were present, available, and reliable to perform their safety function and that the design basis assumptions were reflected in the actual conditions in the field. The inspectors conducted the following activities to verify the implementation of selected safety controls:

- observed IROFS surveillance Testing and Calibration for the following IROFS:
 - 7.3.2.1, Fire Suppression System
 - 7.3.6.4.2.3, Cold Box Fan Disconnect
 - 7.3.6.4.2.4, Cold Box Temperature
 - 7.3.6.11.2.1, 7.3.6.11.2.2, 7.3.6.11.2.5 HALEU Nitrogen System
 - 7.3.6.11.2.4, Cold Box Fan Control
- walk-downs performed to verify implementation of the IROFS:
 - 7.3.1.1, Buildings and Equipment Constructed of Noncombustible Material
 - 7.3.1.2, Combustible Material Control Program – Inside Buildings
 - 7.3.1.3, Limitations on Fossil Fueled Vehicles Used in American Centrifuge Plant Buildings
 - 7.3.1.4, Combustible Material Control Program
 - 7.3.6.3.1.4, Wasson-ECE Passive Design Features
 - 7.3.6.4.2.3, Cold Box Fan Disconnect
 - 7.3.6.4.2.4, Cold Box Temperature
 - 7.3.6.11.2.4, Cold Box Fan Control
 - 7.3.6.11.2.1, Nitrogen Line Fail-Safe Isolation Valve
 - 7.3.6.11.2.2, Nitrogen Line 2nd Independent Fail-Safe Isolation Valve
 - 7.3.6.11.2.5, Low pressure Nitrogen Boundary Isolation Valve
 - 7.3.7.1, Structures Designed for 1000-Year Return Period Seismic Event
 - 7.3.7.2, Centrifuge Mountings Designed for 1,000-Year Return Period Seismic Event
 - 7.3.7.3, Structures Designed for a 100 mph or 20,000-Year Return High Straight-Line Wind Event
 - 7.3.7.4, Structures Located Well Above 10,000-Year Return Period Flood Level

- 7.3.7.5, Building Finished Floor Elevation Above Storm Drainage Swales
- 7.3.7.7, Structures Designed for a 90 mph or 3,000-Year Return High Straight-Line Wind Event
- 7.3.8.1, Emergency Response Actions
- 7.3.8.2, Alarm, Notification, and Protective Actions
- 7.3.8.3, Trained Operator Actions

Safety Control Support Programs (IP Section 02.04)

The inspectors assessed additional licensee's measures that support the availability and reliability of the selected safety controls to verify these were implemented in accordance with 10 CFR 70. Specifically, the inspectors conducted the following:

- Reviewed CAP entry 11000 associated with ACP3-OP-002, "Pump Down Cart Operation"
- Reviewed ACP-IRR-2023-01, "Final Report of the Independent Readiness Review of the Startup of the High Assay Low Enrichment Uranium Plant"

88055 - Fire Protection

The inspectors evaluated selected aspects of the licensee's fire protection program to determine whether the operational status, material condition and design of fire protection systems met the applicable requirements of 10 CFR 70, Chapter 7, "Fire Protection," of the facility's license application, and applicable licensee procedures.

Selection of Inspection Samples (IP Section 02.01)

The inspectors reviewed licensing documents to select a sample of fire protection features in risk-significant areas/processes, including IROFS and their respective management measures (where applicable). The inspectors also selected licensee activities that support the implementation of the fire protection program based on the program description included in the license application. Specifically, the inspectors reviewed the completed surveillances and performed walkdowns for the following IROFS:

- 7.3.1.1, Buildings and Equipment Constructed of Noncombustible Material
- 7.3.1.2, Combustible Material Control Program – Inside Buildings
- 7.3.1.3, Limitations on Fossil Fueled Vehicles Used in American Centrifuge Plant Buildings
- 7.3.1.4, Combustible Material Control Program
- 7.3.2.1, Fire Suppression Systems

Suppression Systems and Activities (IP Section 02.04)

The inspectors interviewed license staff, reviewed fire protection program documents, and conducted plant walk-downs of the service module and UF₆ storage areas to verify the associated suppression systems were capable of performing the safety function credited in the license application, fire hazard analysis (FHA), and the ISA Summary.

Fire Protection Program Elements (IP Section 02.06)

The inspectors reviewed selected fire protection program elements to verify compliance with the license requirements. Specifically, the inspectors completed the following activities:

- interviewed members of the site's emergency response organization to verify the fire protection organization met the license requirements
- interviewed licensee staff, reviewed program documents, and walked down the process buildings to verify emergency lighting systems were being maintained as required to meet the license requirements and National Fire Protection Association (NFPA) 101, Life Safety Code

RADIOLOGICAL CONTROLS

88030 - Radiation Protection

The inspectors evaluated selected aspects of the licensee's radiation protection (RP) program to verify compliance with selected portions of 10 CFR 19, 20, 40, 61 and 70, Chapter 4, "Radiation Protection," of the facility's license application, and applicable licensee procedures.

Radiation Protection and Radioactive Waste Procedures (IP Section 02.03)

The inspectors assessed the licensee's review of RP related changes to procedures to verify compliance with 10 CFR 70.72. Specifically, the inspectors completed the following activity:

- Reviewed changes to the radiation protection program and procedures made following the licensee's Internal Readiness Review

Instruments and Equipment (IP Section 02.08)

The inspectors interviewed licensee staff and reviewed the licensee's use of radiation detecting instruments and equipment to verify compliance with 10 CFR 20.1501(a). Specifically, the inspectors completed the following activity:

- Reviewed radiation detection equipment capabilities and readiness following the licensee's Internal Readiness Review

Posting of Notices (IP Section 02.11)

The inspectors observed the Posting of Notices to verify compliance with 10 CFR 19.11. Specifically, the inspectors observed the following notices:

- NRC Form 3

INSPECTION RESULTS

No violations of more than minor significance were identified during this inspection.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On April 12, 2023, the inspectors presented the integrated inspection results to Larry Cutlip and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
88015	Drawings	X-3001-9500-ME-Z	HALEU 16-Machine Cascade Process Gas System Piping and Instrumentation Diagram	Rev. 7
	Engineering Evaluations	BDD-H-101-1a	IROFS for NCSE-CAS-001 Passive Design Features for the Centrifuge Cascade - Casing	06/11/2021
		BDD-H-101-1b	IROFS for NCSE-CAS-001 Passive Design Features for the Centrifuge Cascade - Layout	06/11/2021
		BDD-H-101-1c	IROFS for NCSE-CAS-001 Passive Design Features for the Centrifuge Cascade - USA	06/11/2021
		BDD-H-101-1d	IROFS for NCSE-CAS-001 Passive Design Features for the Centrifuge Cascade - Column	06/11/2021
		BDD-H-101-1e	IROFS for NCSE-CAS-001 Passive Design Features for the Centrifuge Cascade - LSA	03/08/2022
		BDD-H-101-1f	IROFS for NCSE-CAS-001 Passive Design Features for the Centrifuge Cascade - Total Oil	6/03/2021
		BDD-H-101-1g	IROFS for Vacuum Pumps and Centrifuge Oils	10/24/2022
		BDD-H-101-1h	IROFS for the NCSE-CAS-001 Passive Design Features for the Centrifuge Cascade - Header	Rev. 2
		DAC-3100-0002	Dose at Site Boundary due to Airborne Releases from a Criticality Event	Rev. 0
		EE-3101-0013	NCS Code Validation of SCALE 6.2.3 and Cross Section Set v7-252 for k_{eff} Calculations	Rev. 1
	Fire Plans	X-3001-FEP-001	Facility Emergency Packet X-3001	Rev. 8
	Miscellaneous	ACP03.02.03 / U01091	NCS Response to CAAS Alarm and Criticality Accident	Rev. 0
		ACP04.02.68 / U01019	Criticality Accident Alarm System (CAAS)	Rev. 0A
		ACP08.04.01 / U00155	BASIC NUCLEAR CRITICALITY SAFETY REFRESHER	Rev. 2
		EC7274	Bomb Threat, Criticality and Radiation Emergencies, & Natural Phenomena	Rev. 1
		Reverse Work Authorization No.	Fire Services/Emergency Management/PSS Support for HALEU	12/22/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Procedures	902093		
		ACP2-EG-010	Nuclear Criticality Safety Program	Rev. 9
		ACP2-SH-002	ACO Site Response Actions	Rev. 2
		ACP3-EG-701	Nuclear Criticality Safety Engineering	Rev. 9
		ACP4-EG-704	Nuclear Criticality Safety Incident Response	Rev. 0
	FBP-EM-PRO-00023	Monitoring Station	Rev. 10	
	Self-Assessments	AC-721	IROFS Surveillance No. IS-H-040	10/24/2022
		ACP-MA-2022-23	Management Assessment Nuclear Safety Program	08/30/2022
		NCS-WTR-22-001	NCS Walk-Through Report.	06/01/2022
88020	Corrective Action Documents	Condition Notifications (CNs) 11000, 10828	Various	Various
	Corrective Action Documents Resulting from Inspection	Condition Notification (CN) 11098	NRC inspector observations	04/06/2023
	Engineering Evaluations	AC-721	IS-H-001 for ESO-3100-0007 (Nitrogen)	Rev. 2
		BDD-H-011	Boundary Definition Document for IROFS 7.3.7.2, Centrifuge Mountings Designed for 1,000-Year Return Period Seismic Event (IC)	10/20/2020
		BDD-H-021	IROFS Boundary Definition Document for IROFS 7.3.9.2 On Site Transportation Inventory Control Program	Rev. 0
		BDD-H-104-1d	Boundary Definition Document for IROFS NCSE-FWS-002 Active Design Features for Product and Tails Withdrawal	Rev. 3
		BDD-H-111-1b	Boundary Definition Document for IROFS for NCSE-GEN-006, Active Design Features for Utilities	Rev. 1
		EE-3901-0022	IROFS Boundary Determination for ISA section 7.3.7.2, Centrifuge Mountings Designed for 1,000-Year Return Period Seismic Event (IC)	Rev. 1
		EE-3901-0032	IROFS Boundary Definition for ISA section 7.3.9.2, On-Site Transportation Inventory Control Program	Rev. 0
	EE-3901-0083	Initial Verification of IROFS Surveillances IS-H-10, IS-H-012, IS-H-013, IS-H-014, and IS-H-016	Rev. 0	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Procedures	ACD2-MP-007	Conduct of Operations	Rev. 9
		ACD3-FO-002	Operability Determinations and IROFS System, Structure, and Component Tracking (Formerly AC3-FO-002)	Rev. 3
		ACD4-ON-073	Loss of Nitrogen	Rev. 1
		ACP2-EG-017	IROFS Surveillance Program	Rev. 3
		ACP3-FO-004	Initial Operability of IROFS for HALEU Operation	Rev. 0
		ACP3-ST-001	HALEU Nitrogen System IROFS Surveillance Testing and Calibration	Rev. 3
		ACP3-ST-004	HALEU Product Cold Box IROFS Surveillance Testing and Calibration	Rev. 6
	Self-Assessments	AC-271	IROFS Surveillance Evaluation NO. IS-H-013	04/03/2023
		AC-721	IROFS Surveillance Evaluation No. IS-H-012	04/03/2023
		AC-721	IROFS Surveillance Evaluation No. IS-H-010	04/03/2023
		AC-721	IFROFS Surveillance Evaluation No. IS-H-019	03/18/2022
		AC-721	IROFS Surveillance Evaluation No. IS-H-018	08/02/2022
		AC-721	IROFS Surveillance Evaluation No. IS-H-017	03/22/2023
		AC-721	IROFS Surveillance Evaluation No. IS-H-011	12/15/2022
		AC-721	IROFS Surveillance Evaluation No. IS-H-001	03/13/2023
		AC-721	IROFS Surveillance Evaluation NO. IS-H-016	04/03/2023
		AC-721	IROFS Surveillance Evaluation No. IS-H-014	04/03/2023
		AC-721	IROFS Surveillance Evaluation No. IS-H-021, Rev. 1	03/23/2023
		ACP-IRR-2023-01	Final Report of the Independent Readiness Review of the Startup of the High Assay Low Enriched Uranium Plant	04/04/2023
88030	Corrective Action Documents	Condition Notifications (CNs) 10990, 10995, 10949, 11028, 16453, 16534, 16559, 16560, 16561	Various	Various
	Corrective Action Documents Resulting from Inspection	Condition Notifications (CNs) 11120, 11121	Various	04/12/2023

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
88055	Engineering Evaluations	BDD-H-001	Boundary Definition Document for ISA section 7.3.1.1 Building and Equipment Constructed of Noncombustible Materials (IC)	Rev. 1
		BDD-H-002	Boundary Definition Document for IROFS 7.3.1.2, Combustible Material Control Program - Inside Buildings	Rev. 0
		BDD-H-003	Boundary Definition Document for IROFS 7.3.1.3, Limitations on Fossil Fueled Vehicles Used in ACP Buildings (IC)	Rev. 0
		BDD-H-003	Boundary Definition Document for IROFS 7.3.1.3, "Limitations on Fossil Field Vehicles Used in ACP Buildings (IC)	Rev. 0
		BDD-H-004	Boundary Definition Document for IROFS 7.3.1.4, Combustible Material Control Program - Outside Buildings (IC)	Rev. 1
		DAC-3001-FP-0100	Fire Hazard Analysis for Building X-3001	Rev. 4
		DAC-3101-0024	Analysis of Postulated Forklift Fire Exposure to a 30B Cylinder	Rev. 1
		DAC-3101-0025	Fire Scenario Document for X-3001 Building	Rev. 0
		DAC-3101-0025	Fire Scenario Document for X-3001 Building	Rev. 0
		DAC-3101-0300	HALEU Cascade Service Module Sprinkler System Analysis	Rev. 0
		EE-3901-0012	IROFS Boundary Definition Document for ACP ISA section 7.3.1.1 Buildings and Equipment Constructed of Non-combustible Materials (IC)	Rev. 1
	Procedures	ACD2-FO-003	Vehicle Control Within ACP Facilities	Rev. 4
		ACP2-FS-001	Combustible Material Control Program	Rev. 2
		ACP2-FS-002	Flammable and Combustible Liquids	Rev. 1
	Self-Assessments	AC-721	Management Assessment Surveillance Evaluation for Combustible Material Control Program, Inside Buildings IROFS, 7.3.1.2	09/15/2021
		AC-721	Management Assessment Surveillance Evaluation for Combustible Material Control Program, Outside Buildings IROFS, 7.3.1.4	09/15/2021
		AC-721	Management Assessment Surveillance Evaluation for Limitations of Fossil Fuel Vehicles used in ACP Buildings	09/15/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			IROFS, 7.3.1.3	
		AC-721	IROFS Surveillance Evaluation No. IS-H-006 Rev. 0	04/21/2022
		AC-721	IROFS Surveillance No. IS-H-006 Rev. 0	04/14/2022