



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

January 27, 2022

Mr. 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 45661

SUBJECT: AMERICAN CENTRIFUGE PLANT – INTEGRATED INSPECTION REPORT
07007004/2021009

Dear Mr. Snider:

From July 12, 2021, through December 30, 2021, the U.S. Nuclear Regulatory Commission (NRC) performed the initial phase of readiness review inspections at the American Centrifuge Plant (ACP) and discussed the results of these inspections with Ms. K. Fitch, Licensing Manager, 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,

/RA/

Robert E. Williams, Jr., 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
07007004/2021009 Dated January 27, 2022

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DATE	01/26/2022	01/27/2022			

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

Docket Number: 07007004

License Number: SNM-2011

Report Number: 07007004/2021009

Enterprise Identifier: I-2021-009-0000

Licensee: American Centrifuge Operating, LLC

Facility: American Centrifuge Plant

Location: Piketon, Ohio

Inspection Dates: July 12, 2021 to December 30, 2021

Inspectors: B. Adkins, Sr. Fuel Facility Projects Inspector
N. Pitoniak, Sr. Fuel Facility Project Inspector
L. Pitts, Sr. Fuel Facility Projects Inspector
T. Sippel, Fuel Facility Inspector
T. Vukovinsky, Sr. Fuel Facility Project Inspector
R. Womack, Fuel Facility Inspector

Approved By: Robert E. Williams, Jr., 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, effluent control and environmental protection, and permanent plant modifications at American Centrifuge Plant. The readiness review inspections documented in this report represent the initial on-site review of selected licensee programs at the American Centrifuge Plant. The readiness reviews documented in this report do not represent authorization nor approval of any of the licensee's programs reviewed. Additional readiness review inspections are planned to be performed by the NRC prior to authorization of licensed activities within the programs reviewed in this report.

List of Violations

No violations of more than minor significance were identified.

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
WER	07007004/2021-002-00	Notification concurrent to the OEPA notification (EN55276)	88045	Closed
WER	07007004/2021-003-00	Notification [to NRC] concurrent to the OEPA notification (EN55288)	88045	Closed

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 (NCS) 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, 70.50, 70.61, 70.64, and Appendix A; 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 assumptions and calculations, to verify compliance with 10 CFR 70 and applicable sections of the license application, including 5.1.1, 5.4.2, and 5.4.5. Specifically, the inspectors interviewed licensee staff and reviewed the following:

- NCSE-CAS-001, "Nuclear Criticality Safety Evaluation for the Cascade," Revision (Rev.) 1, including the review of the what-if analysis, normal, credible abnormal, and non-credible accident sequences; and selected items relied on for safety (IROFS) credited with preventing criticality
- NCSE-GEN-003, "Nuclear Criticality Safety Evaluation for Portable Container Handling, Storage, and Transportation," Rev. 1, including the review of the double contingency analysis, controlled parameters, and supporting SCALE model calculation
- EE-3101-0013, "NCS Code Validation of SCALE 6.2.3 and Cross Section Set v7-252 for keff Calculations," Rev. 0, which was reviewed because it contained the calculations and evaluation that established the upper-subcritical limit (USL) and area of applicability used in other calculations
- records of the "Verification of NCS Software" used to perform calculations

Criticality Implementation (IP Section 02.02)

The inspectors interviewed licensee staff and reviewed the following activities and management measures that are associated with NCS IROFS:

- interviewed licensee NCS engineers and reviewed records and the licensee procedure (ACP2-EG-017) concerning how NCS verifies passive and administrative IROFS
- reviewed IROFS Surveillance Evaluation No.: IS-H-029, Rev. 0

- reviewed design calculation DAC-3101-0046, "SGC and SVC Storage Rack Structural Analysis," Rev. 0, to determine if the racks were seismically qualified, as stated in the NCSE
- reviewed BDD-H-109-16, "American Centrifuge Plant IROFS Boundary Definition, Building X-3001, Small Container Handling and Storage," Rev. 0
- reviewed ACP2-WM-001, "Generation, Handling, Transportation, and Storage of Fissile Waste, 05/24/21 (Draft), to determine if administrative IROFS were properly flowed down into plant procedures

Criticality Operational Oversight (IP Section 02.03)

The inspectors assessed the NCS staff's oversight of plant operators, procedures, and operations of systems involving special nuclear material to verify compliance with 10 CFR 70 and applicable sections of the license application, including 5.2.1, 5.3.4, and 11.3.1.4. Specifically, the inspectors performed the following activities:

- reviewed NCS-related operator training material and plans including ACP02.02.25, "NCSE Training Module for Portable Containers," Rev. 0, and ACP08.02.01, "Basic Nuclear Criticality Safety," Rev. 3
- interviewed licensee NCS engineers concerning the conduct and scheduling of NCS walk-through reports
- interviewed NCS engineering staff regarding the plans for NCSE verifications prior to operations turnover

Criticality Programmatic Oversight (IP Section 02.04)

The inspectors reviewed NCS program procedures, audits, and NCS staff qualifications to verify compliance with 10 CFR 70 and applicable sections of the license application, including 5.2.1, 5.2.2, 5.3.4 and 11.5. Specifically, the inspectors performed the following:

- reviewed the most recent revision to licensee procedures governing the NCS program, including TDAG-3905-0002 and ACD2-TP-0002, which governs NCS engineer training and qualification
- reviewed ACD2-EG-010, NCS Program, which governs and defines many aspects of the licensee's NCS program
- reviewed ACP3-EG-701, "Nuclear Criticality Safety Engineering," Rev. 6, which describes the duties of the NCS engineers including calculations, engineering walk-downs, audits, and criticality accident alarm system (CAAS) design
- reviewed EP-3905-0001, "Writer's Guide for NCS Documents," which describes how NCS documents are created, reviewed, and approved
- reviewed ACP4-EG-703, "Nuclear Criticality Safety Calculations," which provides instructions specific to the development, documentation, review, and verification of NCS calculations
- reviewed ACP 03.03.01 - U00261, "Nuclear Criticality Safety Engineer Qualification," which is the qualification card for NCS engineers - completed qualification records for selected NCS engineers were also reviewed

- reviewed ACP 03.03.02 - U00262, "Senior Nuclear Criticality Safety Engineer Qualification," which is the qualification card for NCS engineers - completed qualification records for selected senior NCS engineers were also reviewed
- reviewed the recent external audit (readiness review) of the licensee's NCS program which was documented in ACP-IRR-2021-04, "Independent Readiness Review of the Nuclear Criticality Safety and Fire Protection Programs, Final Report," dated June 9, 2021
- reviewed Management Assessment Report - Nuclear Criticality Safety Program, November 23, 2020
- interviewed the Director of Nuclear Safety to discuss various aspects of the ACP NCS program, including engineering training, audits, use of contractors, operator training, and incident response

Criticality Incident Response and Corrective Action (IP Section 02.05)

The inspectors reviewed the licensee's CAAS and corrective action program (CAP) to verify compliance with 10 CFR 70 and applicable sections of the license application, including, 5.4.4. Specifically, the inspectors performed the following:

- reviewed various recent NCS-related CAP items, including those related to recent criticality computer code issues, and those related to issues the licensee identified during review of NCSEs
- reviewed DAC-3100-0001, which documents the evaluation of the required CAAS detector placement and minimum evacuation distances
- interviewed NCS engineers concerning NCS evacuation and drills, NCS support for emergency response, and NCS emergency response and reviewed ACP4-EG-704, "Nuclear Criticality Safety Incident Response"
- reviewed drawings and walked down the locations of the CAAS detectors and many horns
- observed post installation testing of the CAAS

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 3, "Integrated Safety Analysis and Integrated Safety Analysis Summary," of the facility's license application, and applicable licensee procedures.

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

The inspectors selected specific process areas for inspection based on the safety basis information of the facility, the risk/safety significance of the process areas, the description of plant changes submitted to the NRC, and past plant performance documentation. For the process areas of interest, the inspectors selected a sample of accident sequences in nuclear criticality safety, radiation safety, fire safety, and/or chemical safety, based on the information provided in the integrated safety analysis (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:

- Chapter 3.0, "Integrated Safety Analysis and Integrated Safety Analysis Summary," of the license application
- Chapter 11.0, "Management Measures," of the license application
- ISA Summary Chapter 7, "Selected Controls"
- ISA Summary Appendix C, "Hazard Evaluation Tables"
- ISA Summary Appendix D, "Consequence Tables"
- ISA Summary Appendix E, "Event Frequency Development"
- ISA Summary Appendix F, "Risk Reduction - Preventative and Mitigative Value of IROFS"
- ISA Summary Events:
 - HD1-1
 - HD1-3
 - HD6-4
 - HD3-22
 - HD1-8
 - HD6-3
 - HD6-13
 - HD7-5

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, 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 if implemented as described, the controls or IROFS would be available and reliable to perform their intended safety functions. Physical installation of IROFS in the field were not available during this inspection and are planned to be inspected during future readiness reviews.

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's 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, 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 IROFS 7.3.1.3
- interviewed vendor fire protection test support personnel

Preventative Controls (IP Section 02.02)

The inspectors interviewed licensee staff, reviewed documentation, and conducted plant walk-downs to verify the licensee's controls for combustibles, ignition sources, and inert atmospheres met the license requirements and applicable requirements in 10 CFR 70.

Fire and Gas Detection and Alarm Systems (IP Section 02.03)

The inspectors reviewed selected fire or gas detection devices to verify that detection and alarm systems were able to detect the minimal fire within the required time and initiate the safety function credited in the license application, or the ISA Summary. Specifically, the inspectors conducted the inspection activities listed below:

- reviewed fire detection system testing records and interviewed licensee fire protection personnel
- conducted walk-downs of the site fire department facilities, interviewed personnel, and conducted walk-through of fire alarm response with fire response personnel

Suppression Systems and Activities (IP Section 02.04)

The inspectors interviewed license staff, reviewed fire protection program documents, and conducted plant walk-downs to verify that suppression systems were capable of performing the safety function credited in the license application or the ISA Summary. Specifically, the inspectors reviewed the following:

- High-Assay Low-Enriched Uranium (HALEU) Fire Hazard Analysis DCA-3012-FP-0100
- pre-fire plans for areas X-3001, 3012, 7725, 7726, and 7727
- suppression system requirements and conducted walk-downs of equipment (note: additional modifications were still required and not yet complete for the required HALEU suppression system at the time of the inspection)

Passive Fire Protection Features (IP Section 02.05)

The inspectors reviewed selected passive fire protection features to verify these were in a proper material condition to perform the safety function credited in the license application, or the ISA Summary. Specifically, the inspectors performed the following activities:

- conducted walk-downs of fire barriers, fire doors, and dampers applicable to HALEU activities

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:

- reviewed combustible control program
- reviewed hot work control program

- reviewed fire impairment program, fire impairment logs, and interviewed personnel regarding current and recent fire impairments
- reviewed Authority Having Jurisdiction (AHJ) requirements and qualifications and interviewed the AHJ
- reviewed General Employee Training fire protection training plans and current qualifications
- reviewed Department of Energy fire response personnel training and qualification requirements and current qualification records

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, and 70; Chapter 4, "Radiation Protection," of the facility's license application; and applicable licensee procedures.

Radiation Protection Program Implementation (IP Section 02.01)

The inspectors interviewed licensee staff and reviewed licensee procedures and other documentation related to the implementation of the RP programs to verify compliance with 10 CFR 20.1101(a), other regulations, and applicable sections of the license application. Specifically, the inspectors reviewed documents and interviewed licensee staff concerning the following:

- Chapter 4 of the license application
- RP procedures located in the enclosure to this report
- qualification justification for RP managers

Radiation Protection Program Review (IP Section 02.02)

The inspectors reviewed the licensee's as low as reasonably achievable (ALARA) procedure to verify compliance with 10 CFR 20.1101(c). Specifically, the inspectors reviewed the following documents:

- ACD2-HP-001, "ALARA Program"
- Section 11.5 of the license application

Training (IP Section 02.04)

The inspectors reviewed RP related training records and training material to verify compliance with 10 CFR 19.12, 19.13, and 70.61(f)(2). Specifically, the inspectors observed postings and reviewed documents concerning the following:

- posting of notices to radiation workers
- training material for radiation workers

Safety-Significant Events (IP Section 02.05)

The inspectors reviewed the licensee's process for review of safety-significant events to verify compliance with 10 CFR 20.2201, 20.2202, 20.2202(a), 20.2202(b), 20.2203, 70.50, 70.52, 70.74, Part 70 Appendix A, and Section 11.6 of the license application. Specifically, the inspectors reviewed documents concerning the following:

- Criteria for reporting events to the NRC

Instrument Calibration (IP Section 02.07)

The inspectors reviewed licensee procedures for RP instrument calibration to verify compliance with 10 CFR 20.1501(b), 70.24, and Section 4.8.4 of the license application. Specifically, the inspectors reviewed documents concerning the following:

- instrument use and calibration procedures listed in the enclosure to this report
- Table 4.8-2, "Radiological Protection Instrumentation and Capabilities," in the license application

Instruments and Equipment (IP Section 02.08)

The inspectors interviewed licensee staff and reviewed the licensee's procedures for use of radiation detecting instruments and equipment to verify compliance with 10 CFR 20.1501(a), 70.24(b), and Sections 4.7 and 4.8 of the license application. Specifically, the inspectors reviewed documents concerning the following:

- instrument use and calibration procedures listed in the enclosure to this report
- Table 4.7-1, "Routine Contamination Survey Frequencies," in the license application
- Table 4.8-2, "Radiological Protection Instrumentation and Capabilities," in the license application

Posting (IP Section 02.09)

The inspectors reviewed the licensee's process for the posting of radiation areas and radioactive material storage areas to verify compliance with 10 CFR 20.1902, 20.1903 and Sections 4.7 and 4.8 of the license application. Specifically, the inspectors reviewed documents concerning the following:

- Table 4.7-4, "DAC and Airborne Radioactivity Posting Levels," in the license application
- Table 4.8-1, "Posting Criteria," in the license application

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:

- NRC Form 3, "Notice to Employees," posted in a conspicuous location at the entrance to the controlled area

Access Control (IP Section 02.12)

The inspectors reviewed the licensee's procedures for access control measures to high and very high radiation areas to verify compliance with 10 CFR 20.1502(a)(4), 20.1601, 20.1602, and Section 4.8 license application. Specifically, the inspectors reviewed documents and interviewed licensee staff concerning the following:

- Section 4.8.2.1, "Access to Restricted Areas," in the license application
- RP program procedures listed in the enclosure to this report.

Radiation Surveys (IP Section 02.14)

The inspectors interviewed licensee staff and reviewed the licensee's procedures for external radiation surveys to verify compliance with 10 CFR 20.1501(a), 20.1501(b), 20.1902, 20.2103, and Chapter 4, "Radiation Protection," of the license application. Specifically, the inspectors interviewed staff and reviewed documents related to the following:

- RP program procedures related to the implementation of Chapter 4, "Radiation Protection," of the licensee application
- Section 4.7, "Radiation Surveys and Monitoring Program," of the license application
- Section 11.7, "Records Management and Document Control," of the license application

Contamination Control (IP Section 02.15)

The inspectors reviewed procedures of the licensee's contamination control measures to verify compliance with 10 CFR 20.1501(a), 20.1501(b), and Chapter 4, "Radiation Protection," of the license application. Specifically, the inspectors reviewed documents related to the following:

- Table 4.6-1, "Contamination Levels," in the license application
- Table 4.7-1, "Routine Contamination Survey Frequencies," in the license application
- RP program procedures related to the implementation of contamination control listed in the enclosure to this report

Sealed Sources (IP Section 02.16)

The inspectors reviewed the licensee's procedures for storage and control of NRC licensed sealed sources to verify compliance with 10 CFR 20.1903(c) and Section 4.8.3, "Radioactive Source Control," of the license application. Specifically, the inspectors reviewed the following:

- RP procedures related to the use, storage, control, and leak testing of sealed source access listed in the enclosure to this report
- the proposed sealed source container

Occupational Dose Results (IP Section 02.17)

The inspectors reviewed procedures for the assigning of the occupational doses assigned to workers to verify compliance with 10 CFR 20.1201, 20.1207, and 20.1208. Specifically, the inspectors reviewed the following:

- Section 4.7.2, "Personnel Monitoring," of the license application
- Section 4.7.3, "External," of the license application
- Section 4.7.4, "Internal," of the license application
- RP program procedures related to the calculation and assigning of internal and external occupation doses to workers listed in the enclosure to this report

Exposure Controls (IP Section 02.18)

The inspectors reviewed the engineering controls used to keep doses ALARA by controlling the concentration of radioactive material in air or limiting intake to verify compliance with 10 CFR 20.1101(b), 20.1701, and 20.1702. Specifically, the inspectors reviewed documents related to the following:

- Section 4.6, "Ventilation and Respiratory Protection Programs," in the license application

Bioassay Program (IP Section 02.19)

The inspectors reviewed the bioassay program to verify compliance with 10 CFR 20.2103(b)(3). Specifically, the inspectors reviewed documents related to the following:

- Section 4.7.4, "Internal," of the license application
- Table 4.7-2, "Bioassay Program," of the license application
- Table 4.7-3, "Internal Dosimetry Program Action Levels," of the license application
- Section 11.7, "Records Management and Document Control," of the license application

Dosimetry (IP Section 02.21)

The inspectors interviewed licensee staff, observed dosimetry being used, and reviewed dosimetry records to verify compliance with 10 CFR 20.1501(d), and 0.1502(a). Specifically, the inspectors interviewed licensee staff, and reviewed documents related to the following:

- National Voluntary Laboratory Accreditation Program accreditation for external dosimetry provided to workers
- RP procedures related to the distribution, use, and evaluation of dosimetry

88045 - Effluent Control and Environmental Protection

The inspectors evaluated selected aspects of the licensee's environmental protection program to verify compliance with selected portions of 10 CFR Parts 20, 61, and 70 and the facility's license application.

Program Implementation (IP Section 02.01)

The inspectors reviewed the effluent control and environmental protection program in order to verify the environmental protection program was being implemented in compliance with license requirements. Specifically, the inspectors reviewed the following:

- Chapter 9, "Environmental Protection," of the license application

Audits and Quality Assurance (IP Section 02.03)

The inspectors reviewed the licensee's processes associated with the conduct of audits and assessments to verify compliance with license application requirements. Specifically, the inspectors reviewed the following:

- Section 11.5.1, "Audits," of the license application

Event Review (IP Section 02.04)

The inspectors reviewed the licensee's processes for the evaluation of safety-significant events in the area of environmental protection to verify compliance with 10 CFR 20. Specifically, the inspectors reviewed the following:

- Section 11.6, "Incident Investigations," of the license application

Training (IP Section 02.05)

The inspectors reviewed the licensee's training program in the area of environmental protection to verify compliance with license application requirements. Specifically, the inspectors reviewed the following:

- Section 9.2.1.4, "Waste Minimization," of the license application

Radioactive Liquid Effluents (IP Section 02.06)

The inspectors reviewed the licensee's sample collection and analysis processes to verify compliance with aspects of 10 CFR 20.2103 and the license application. Specifically, the inspectors reviewed the following:

- Section 9.2.2.2, "Liquid Effluent Monitoring," of the license application

Municipal Sanitary Sewer (IP Section 02.07)

The inspectors reviewed records related to the release of liquid effluents to sanitary sewers to verify compliance with 10 CFR 20.2003 and the license application. Specifically, the inspectors reviewed the following:

- Section 9.2.2.2.1, "Anticipated Effluent Levels," related to the Liquid Effluent Collection tank in the license application

Radioactive Airborne Effluents (IP Section 02.08)

The inspectors reviewed the licensee's sample collection and analysis processes and discussed the radioactive airborne effluent results with licensee staff to verify compliance with aspects of 10 CFR 20.1101 and 10 CFR 20.2103. Specifically, the inspectors reviewed the following:

- Section 9.2.1.1, "Radiological ALARA Goals for Effluent Control," in the license application
- Section 9.2.1.2.1, "Control of Airborne Effluents," in the license application
- Section 9.2.2.1, "Airborne Effluent Monitoring Levels," in the license application

Effluent Monitoring (IP Section 02.09)

The inspectors reviewed IROFS to verify compliance with Subpart H of 10 CFR 70 and the license application. Specifically, the inspectors reviewed the following:

- Section 9.2.1.2, "Effluent Controls," in the license application

Semiannual Effluent Reports (IP Section 02.10)

The inspectors reviewed the licensee's process for submitting effluent monitoring reports to verify compliance with the requirements of 10 CFR 70.59. Specifically, the inspectors reviewed the following:

- Section 9.2.2.1.2, "Demonstration of Compliance," of the license application

Quality Control of Analytical Measurements (IP Section 02.11)

The inspectors reviewed the licensee's sample methods to verify compliance with the quality control requirements in the license application. Specifically, the inspectors reviewed the following:

- Section 9.2.2.5, "Laboratory Standard," in the license application

Public Dose Analysis (IP Section 02.12)

The inspectors reviewed the licensee's processes associated with dose assessment records and associated reports to verify compliance with 10 CFR 20.1301, 10 CFR 20.1302, and the

reporting requirements of 10 CFR 20.2107. Specifically, the inspectors reviewed the following:

- Section 9.2.2.1.2, "Demonstration of Compliance," of the license application

Environmental Sampling (IP Section 02.13)

The inspectors reviewed the licensee's processes for environmental sampling of surface water, soil, and vegetation to verify compliance with 10 CFR 20.1501 and the license application. Specifically, the inspectors reviewed the following:

- Section 9.2.2.4.2, "Soil and Vegetation," of the license application
- Section 9.2.2.4.3, "Surface Water," of the license application

Radioactive Waste Classification, Characterization, and Storage (IP Section 02.15)

The inspectors reviewed documentation of facility activities and observed posting and labeling of storage areas and containers to verify compliance with the requirements of 10 CFR 61.55 and the license application. Specifically, the inspectors reviewed the following documents:

- Section 9.2.1.4, "Waste Minimization," of the license application
- Section 9.2.2.3.1, "Waste Segregation and Collection," of the license application
- Section 9.2.2.3.1, "Waste Packaging and Labeling," of the license application

FACILITY SUPPORT

88070 - Permanent Plant Modifications

The inspectors conducted a review to verify the licensee had established and implemented a configuration management system to evaluate, implement, and track changes to the facility in accordance with the applicable requirements in 10 CFR 70.72 and the license application, Chapter 11, "Management Measures." The inspectors' review also verified the licensee had established management measures for changes to the facility in accordance with 10 CFR 70, Subpart H and the license application, and that modifications involving new processes met the requirements in 10 CFR 70.64.

Sample Selection (IP Section 02.01)

The inspectors reviewed licensing documents, changes the licensee determined did not require pre-NRC approval under 10 CFR 70.72, and changes that affected the ISA Summary to select changes/modifications to review. To assess whether the licensee conducted evaluations according to their established configuration management system, the inspectors selected the following plant modifications to review:

- ESO-3100-0005, Process Gas System, QL-1 Structural Steel
- ESO-3100-0007, Nitrogen
- ESO-3100-0010, Mass Spec

- ESO-3100-0019, Portable Carts, Pump Down Cart, Chemical Trap Height
- ESO-3100-0023, Fissile Material Storage Area

Facility Change/Modification Process (IP Section 02.02)

The inspectors reviewed the selected modifications listed above to verify the licensee established a configuration management system in accordance with 10 CFR 70.72 and the conditions of the license. Specifically, the inspectors conducted the inspections activities listed below:

- reviewed the following procedures to verify the configuration management system was documented in written procedures and the procedures addressed the aspects in 10 CFR 70.72(a):
 - ACD2-EG-002, "Configuration Management Program"
 - ACD2-EG-009, "Processing Modification and Project Changes"
 - ACD2-EG-012, "Construction and Installation Management"
 - ACD2-EG-407, "Test Plans"
 - ACD3-EG-205, "Engineering Evaluations"
- interviewed licensee staff, performed walk-downs of the Mass Spectrometer, and reviewed the following configuration management packages to verify the licensee's evaluation of changes provided valid technical bases to determine whether an amendment to the license was required based on the criteria in 10 CFR 70.72(c).
 - ESO-3100-0010, Mass Spec
- observed Test Plan execution, TP-3101-0015, "Checkout of Machine Cooling Water System"

Management Measures (IP Section 02.03)

For the selected modifications, the inspectors reviewed the management measures established for affected IROFS (or credited safety controls) to verify the management measures ensured the IROFS (or credited safety controls) were available and reliable to perform their intended function as required by 10 CFR 70.61 and the license. Specifically, the inspectors conducted the inspection activities listed below:

- interviewed licensee staff and reviewed change management procedures to verify the licensee implemented the aspects described in configuration management system procedures and the license application
- interviewed licensee staff and reviewed affected procedures to verify the licensee followed the procedure control process in accordance with the license
- interviewed licensee staff and reviewed training records to verify the staff involved in facility changes were qualified in accordance with the license and plant procedures

New Processes at Existing Facilities (IP Section 02.05)

The licensee had not implemented any new facility processes at the time of the inspection. Therefore, the inspectors' review did not include evaluations of whether the licensee addressed the baseline design criteria and defense-in-depth as stipulated in 10 CFR 70.64.

Records Retention (IP Section 02.06)

The inspectors reviewed a sample of plant documents impacted by the selected modifications to verify the licensee-maintained records of facility changes in accordance with the license requirements and 10 CFR 70.72. The sample of documents included:

- system drawings
- ISA and ISA Summary
- license application

INSPECTION RESULTS

WER (Closed)	Notification concurrent to the OEPA notification (EN55276) WER 07007004/2021-002-00	88045
Description: EN Revision Imported Date: 5/27/2021		
EN Revision Text: REPORT OF OFFSITE NOTIFICATION		
The licensee notified the NRC that a settling pond piping failure caused an exceedance of the Total Suspended Solids NPDES [National Pollution Discharge Elimination System] permit limit at Outfall 013. The licensee filled out an Ohio EPA [Environmental Protection Agency] 24 Hour non-compliance notification form and sent it to the Ohio EPA NPDES inspector. The Ohio EPA reviewed the information related to this notification and did not identify any significant concerns.		
The Event Report was reviewed. No violations of NRC requirements were identified.		

WER (Closed)	Notification [to NRC] concurrent to the OEPA notification (EN55288) WER 07007004/2021-003-00	88045
Description: EN Revision Imported Date: 6/7/2021		
EN Revision Text: REPORT OF OFFSITE NOTIFICATIONS		
The licensee notified the NRC that a settling pond piping failure caused an exceedance of the Total Suspended Solids NPDES [National Pollution Discharge Elimination System] permit limit at Outfall 013. The licensee filled out an Ohio EPA [Environmental Protection Agency] 24 Hour non-compliance notification form and sent it to the Ohio EPA NPDES inspector. The Ohio EPA reviewed the information related to this notification and did not identify any significant concerns.		
The Event Report was reviewed. No violations of NRC requirements were identified.		

EXIT MEETINGS AND DEBRIEFS

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

- On July 15, 2021, the inspectors presented the preliminary NCS inspection results to John Corrado, Director of Nuclear Safety, and other members of the licensee staff.
- On December 30, 2021, the inspectors presented the integrated inspection results to Kelly Fitch, Licensing Manager, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
88015	Calculations	DAC EE-3101-0013	NCS Code Validation of SCALE 6.2.3 and Cross Section Set v7-252 for keff Calculations	12/04/2019
	Corrective Action Documents	Condition Notification # 9344, 9633, 9837, 9838, 9914, 9916,	NCS-Related Condition Notifications	Various
	Corrective Action Documents Resulting from Inspection	Condition Notification # 10047, 10048		Various
	Drawings	DX-390-0044-M-2	Storage Rack, SGC	A
		X-3001-9591-ME-Z	Layout, Fissile Storage	A
	Engineering Evaluations	BDD-H-109-16	American Centrifuge Plant IROFS Boundary Definition, Building X-3001, Small Container Handling and Storage	0
		DAC-3100-0001	MCNP6.2 Evaluation of X-3001, X-7726 and X-7727H to Establish CAAS Detector Placement and Evacuations Distances	Rev. 0
		DAC-3101-0010	4-inch Safe Geometry Container Study	0
		ESO-3100-0023	Design Team Approval Matrix	0
		NCSE-CAS-001	Nuclear Criticality Safety Evaluation for the Cascade	Rev. 1
		NCSE-GEN-003	Nuclear Criticality Safety Evaluation for Portable Container Handling, Storage, and Transportation	1
	Miscellaneous		Samples of NCS IROFS surveillance evaluations completed by NCS engineers for passive and administrative NCS IROFS	
			Five samples of completed qualification cards for NCS engineers and senior NCS engineers	Various
		ACP 03.03.01 - U00261	Nuclear Criticality Safety Engineer Qualification	
		ACP 03.03.02 - U00262	Senior Nuclear Criticality Safety Engineer Qualification	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		ACP 08.02.01 - U00154	Basic Nuclear Criticality Safety	Rev. 3
		ACP 08.02.02 - U00156	Nuclear Criticality Safety for Managers	Rev. 3
		ACP02.02.25	NCSE Training Module for Portable Containers	0
		Verification of NCS Software		Various
	Procedures	AC1-MP-001	Lead Cascade and American Centrifuge Plant Operational Policy Manual	19
		ACD2-EG-007	ISA Methodology and Change Process	06/30/2021
		ACD2-TP-002	Training Program	25
		ACP08.02.01	Basic Nuclear Criticality Safety	U00154/3
		ACP2-EG-0010	Nuclear Criticality Safety Program	06/21/2021
		ACP2-EG-010	Nuclear Criticality Safety Program	6
		ACP2-EG-017	IROFS Surveillance Program	04/07/2021
		ACP2-TP-002	Training Program	03/18/2021
		ACP2-WM-001	Generation, Handling, Transportation, and Storage of Fissile Waste (Draft)	05/24/2021
		ACP3-EG-701	Nuclear Criticality Safety Engineering	06/21/2021
		ACP4-EG-703	Nuclear Criticality Safety Calculations	06/21/2021
		ACP4-EG-704	Nuclear Criticality Safety Incident Response	06/21/2021
		EP-3905-0001	Writer's Guide for Nuclear Criticality Safety Documents	06/21/2021
		IS-H-029	IROFS Surveillance Evaluation	Rev. 0
		TDAG-3905-0002	Training Development and Administrative Guide for the Nuclear Criticality Safety Engineer Training Program	Rev. 1
	Self-Assessments		Management Assessment Report - Nuclear Criticality Safety Program	11/23/2020
ACP-IRR-2021-04		Independent Readiness Review of the Nuclear Criticality Safety and Fire Protection Programs Final Report	06/09/2021	
88020	Corrective Action Documents	AC 14578	NCSE Implementation Discrepancies	
	Procedures	ISA Summary Addendum 1	Appendix C, Hazard Evaluation Tables	May 2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		ISA Summary Addendum 1	Appendix D, Consequence Tables	05/2021
		ISA Summary Addendum 1	Appendix E, Event Frequency Development	05/2021
		ISA Summary Addendum 1	Appendix F, Risk Reduction - Preventative and Mitigative Value of IROFS	05/2021
88030	Procedures	AC4-HP-002	Shipment and Receipt Surveys of Radioactive Material Packages	Rev. 2
		ACD2-HP-001	As Low As Reasonably Achievable (ALARA) Program	Rev. 6
		ACD2-HP-002	Radiological Protection Training and Qualification	Rev. 2
		ACD2-HP-003	Radiation Protection Instrumentation	Rev. 2
		ACD2-HP-004	Conduct of Radiological Operations	Rev. 7
		ACD2-HP-005	Radiological Work Permit	Rev. 8
		ACD2-HP-006	Dosimetry Program Standards	Rev. 5
		ACD2-HP-007	Urinalysis Program	Rev. 8
		ACD2-HP-008	Distribution of Dosimetry	Rev. 8
		ACD2-HP-009	Monitoring and Decontamination of Personnel for Radioactive Contamination	Rev. 3
		ACD2-HP-010	Measurement of Airborne Radioactivity	Rev. 4
		ACD2-HP-012	Radioactive Source Control	Rev. 3
		ACD2-HP-013	Radiation Protection Program Self-Assessments	Rev. 0
		ACD2-SH-007	Respiratory Protection Program	Rev. 6
		ACD4-HP-001	Radiological Surveys	Rev. 4
ACD4-HP-013	Walkdowns of Radiological Areas and Activities	Rev. 2		
88045	Procedures	AC2-SH-001	Actions To Be Taken During a UF6 or Other Hazardous Materials Release	Rev. 15
		ACD2-SH-003	Monitoring of Airborne Hydrogen Fluoride (HF) with Gastec Detector Tubes	Rev. 3
		ACD2-SH-029	Ventilation System Program	Rev. 2
88055	Calculations	DAC-3012-FP-0100	Fire Hazard Analysis X-3012	Rev. 2
	Procedures	ACP2-FS-001	Combustible Material Control Program	Rev. 0
88070	Procedures	TP-3101-0015	Test Plan for Checkout of Machine Cooling Water	Rev. 0