



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE RD. SUITE 210
LISLE, ILLINOIS 60532-4352

January 26, 2018

David A. Fosson
General Manager, American Centrifuge Plant
American Centrifuge Operating, LLC
Lead Cascade Facility and American Centrifuge Plant
3930 U.S. Route 23 South
P.O. Box 628; Mail Stop 7560
Piketon, OH 45661

SUBJECT: NRC INSPECTION REPORT NO. 07007003/2017006 (DNMS) –
AMERICAN CENTRIFUGE OPERATING, LLC, LEAD CASCADE FACILITY

Dear Mr. Fosson:

On January 10, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed onsite inspection activities for August 2017 through January 10, 2018, at the American Centrifuge Operating, LLC, Lead Cascade Facility in Piketon, Ohio. The purpose of the inspection was to determine whether decommissioning activities were conducted safely and in accordance with NRC requirements. The enclosed report presents the results of this inspection, which were discussed with you and members of your staff on January 10, 2018.

During the inspection period, the NRC inspectors reviewed the following aspects of onsite activities: radiation protection, closeout inspection and survey, transportation activities, management organization and controls, effluent control, environmental protection, and radioactive waste management. The inspection consisted of an examination of activities at the site as they relate to safety and compliance with the Commission's rules and regulations. Areas examined during the inspection are identified in the enclosed report. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observation of work activities, and interviews with personnel.

Based on the results of this inspection, no violations of NRC requirements were identified.

This letter and its enclosure 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 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Michael A. Kunowski, Chief
Materials Control, ISFSI, and
Decommissioning Branch
Division of Nuclear Materials Safety

Docket No: 70-7003
License No: SNM-7003

Enclosure:
IR No. 07007003/2017006(DNMS)

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Letter to David A. Fosson from Michael A. Kunowski dated January 26, 2018

SUBJECT: NRC INSPECTION REPORT NO. 07007003/2017006 (DNMS) –
AMERICAN CENTRIFUGE OPERATING, LLC, LEAD CASCADE FACILITY

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| DATE | 01/24/2018 | | 01/26/2018 | | | | | |

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 070-07003

License No: SNM-7003

Report No.: 07007003/2017006

Licensee: American Centrifuge Operating, LLC

Facility: American Centrifuge Lead Cascade Facility

Location: Piketon, OH

Dates: August 1, 2017, through January 10, 2018

Inspectors: Matthew C. Learn, Reactor Engineer
Bill C. Lin, Health Physicist

Approved by: Michael A. Kunowski, Chief
Materials Control, ISFSI, and
Decommissioning Branch
Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

American Centrifuge Operating, Lead Cascade Facility NRC Inspection Report 07007003/2017006 August 1, 2017 through January 10, 2018

The American Centrifuge Operating, Lead Cascade Facility (LCF) is located on the Department of Energy Portsmouth Gaseous Diffusion Plant (PORTS) reservation. The licensee began operating the LCF on June 6, 2007. On February 19, 2016, the licensee made the decision to cease operations at the LCF and pursue termination of its Materials License from the U.S. Nuclear Regulatory Commission (NRC) following decommissioning activities.

Currently, the LCF is shut-down and is undergoing decommissioning.

Radiation Protection

- Radiation Work Permit (RWP) and As Low As Is Reasonably Achievable (ALARA) reviews provided contamination controls and dose reduction measures appropriate for the work activities. Workers adhered to the radiological controls provided in the RWPs and ALARA plans and followed Radiation Protection (RP) staff instructions.
- Decommissioning activities were executed in general alignment with planning documents and as provided in RWPs and ALARA reviews. Radiation surveys were performed adequately to identify the hazards present. (Section 1.0)

Closeout Inspection and Survey

- The licensee performed final surveys in accordance with the submitted Decommissioning Plan (DP) that is currently under review by the NRC. (Section 2.0)

Radioactive Waste Management and Transportation

- The licensee planned and performed radioactive waste shipments in accordance with NRC and Department of Transportation regulations. (Section 3.0)

Decommissioning Inspection Procedure for Materials Licensees

- The inspectors determined that the licensee and supplemental workforce conducted decommissioning activities in a manner that protected the health and safety of workers and the general public. The inspectors determined that decommissioning activities were being conducted in accordance with NRC requirements. (Section 4.0)

Management Organization and Controls

- The inspectors determined that the licensee was implementing programs to identify conditions adverse to quality and ensured these issues were elevated to management review. (Section 5)

Environmental Protection

- The inspectors determined that the licensee's environmental protection program is in accordance with the requirements of 10 *Code of Federal Regulations* (CFR) Part 20 and in compliance with the license requirements. (Section 6.0)

Report Details

Summary of Facility Activities

During the inspection period, the licensee took actions to decommission the facility. Major onsite activities included packaging of internally contaminated equipment from the X-3001 building, modification of centrifuge casing for final disposal, shipment of internally contaminated equipment offsite and facility final surveys.

1.0 Radiation Protection (Inspection Procedure (IP) 83822)

1.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel to assess the performance of the licensee's radiation protection program.

1.2 Observations and Findings

The inspectors reviewed multiple self-assessments to verify that the program performance was being reviewed, at least annually, to comply with 10 CFR 20.1101. The inspectors reviewed organization charts and interviewed licensee staff to determine the radiation protection function's responsibilities and independence from operations. The inspectors reviewed a selection of procedures to determine that changes in the radiological protection procedures made since the last inspection were consistent with regulatory and license requirements.

The inspectors reviewed instrument calibration records and verified that the performance of radiation protection instruments and equipment was in accordance with license requirements and procedures.

The inspectors reviewed the Total Effective Dose Equivalent results and determined that they were less than the regulatory limit of 5 rem per year.

The inspectors toured the facility and verified that radiological signs and postings accurately reflected radiological conditions within the posted area. Areas were posted in accordance to 10 CFR Part 20. The inspectors verified that the Notice to Employees, NRC Form 3, was posted in a high traffic area in accordance with 10 CFR 19.11.

The inspectors reviewed a sample of records of survey conducted in 2017, and determined that the surveys adequately evaluated the magnitude and extent of radiation levels in accordance with 10 CFR 20.1501.

The inspectors reviewed the ALARA meeting minutes and determined that staffing levels, meeting frequency, and topics of discussion were in accordance with license application requirements. The inspectors evaluated the ALARA principle during dose result reviews and plant tours and determined that management was maintaining a commitment to ALARA.

No findings were identified.

1.3 Conclusions

RWP and ALARA reviews provided contamination controls and dose reduction measures appropriate for the work activities. Workers adhered to the radiological controls provided in the RWPs and ALARA plans and followed the RP staff instruction.

Decommissioning activities were executed in general alignment with planning documents and as provided in RWPs and ALARA reviews. Radiation surveys were performed adequately to identify the hazards present.

2.0 **Closeout Inspection and Survey (IP 83890)**

2.1 Inspection Scope

The inspectors conducted document reviews, observations, and interviews with plant personnel:

- to verify that final surveys were conducted as stated in the licensee's DP currently under review, and
- to verify that the areas onsite had been decontaminated to acceptable radiological levels for unrestricted or restricted use.

2.2 Observations and Findings

The inspectors reviewed the licensee's procedures regarding the performance of the final surveys. The inspectors reviewed survey results of completed areas. The inspectors also observed licensee performance of surveys of the X-3001 floor drain inlets, X-3001 building columns, X-3001 ventilation units, and X-3001 train area floors. The licensee performed these surveys in accordance with the submitted DP. The inspectors also performed a sample of informational surveys of the X-3001 floor drains, X-3001 train area floors, X-3001 building columns, X-3001 mezzanine and utility bay floors, X-7226 floors, X-7226 work platforms, and contaminated tool storage areas. The survey results were similar to the results obtained by the licensee in those areas.

No findings were identified.

2.3 Conclusions

The licensee performed the final surveys in accordance the submitted DP. Licensee's survey results were within the expected range. The licensee used the instrumentation stated in the procedures to perform the various surveys.

3.0 **Radioactive Waste Management and Transportation (IPs 84850 and 86740)**

3.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel:

- to determine whether the licensee as a waste generator, in accordance with 10 CFR Part 20, Appendix G, had established and was maintaining adequate management controlled procedures and quality assurance that reasonably ensured compliance with the requirements of 10 CFR Part 20 and 10 CFR Part 61 applicable to low-level radioactive waste form, classification, characterization, stabilization, and shipment manifests/tracking, and
- to determine whether the licensee had established and was maintaining an effective management-controlled program, to ensure radiological and nuclear safety in the receipt, packaging, delivery to a carrier and, as applicable, the private carriage of licensed radioactive materials; and to determine whether transportation activities were in compliance with the applicable NRC and Department of Transportation regulations.

3.2 Observations and Findings

The inspectors evaluated the licensee procedures and quality assurance programs and verified compliance with the requirements of 10 CFR Part 20 and Part 71 and 49 CFR Part 173 applicable to low-level radioactive waste form, classification, and shipment.

The inspectors reviewed the licensee's engineering evaluations which provided the justification for the uranium values assigned to individual shipping containers. Shipments were generally categorized as centrifuges within their sealed centrifuge casing, large components within an intermodal freight transport container (IFT), or small components within a standard waste box (B-25).

The inspectors reviewed a sample of shipping papers prepared for shipments.

The inspectors performed walk-downs of selected radioactive material storage areas and observed material that had been prepared for pending shipment.

No findings were identified.

3.3 Conclusions

The licensee planned and performed radioactive waste shipments in accordance with NRC and Department of Transportation regulations.

4.0 **Decommissioning Inspection Procedure for Materials Licensees (IP 87104)**

4.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel:

- to determine if licensed decommissioning activities were being conducted in a manner that protected the health and safety of workers and the general public, and
- to determine if licensed decommissioning programs were being conducted in accordance with NRC requirements.

4.2 Observations and Findings

The inspectors determined through the plant tours and activities observed that the licensee conducted activities in accordance with the regulatory requirements and plant procedures.

No findings were identified.

4.3 Conclusions

The inspectors determined that the licensee and supplemental workforce conducted decommissioning activities in a manner that protected the health and safety of workers and the general public. The inspectors determined that decommissioning activities were being conducted in accordance with NRC requirements.

5.0 **Management Organization and Controls (IP 88005)**

5.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel to assess the licensee's performance in the following areas:

- the licensee has implemented an organization in accordance with license requirements with defined qualifications, responsibilities, and functions to administer the safety programs,
- the licensee has implemented governing policies for plant safety programs and management/staff understand their responsibilities and authorities under these policies,
- the licensee has implemented a system of operating procedures that ensured the use of only approved and current procedures, and that approved procedures existed for all plant functions affecting safety,
- the licensee has implemented a system of internal reviews, self-assessments, and audits to identify, prioritize, and correct deficiencies related to regulated activities. The licensee has implemented a program for review of safety-significant events that met license requirements,
- onsite and offsite plant safety committees (or their equivalents) were effective and functioning in accordance with license requirements, and
- the licensee was implementing a program for ensuring the quality and integrity of items relied on for safety (IROFS) and other equipment and systems important to safety.

5.2 Observations and Findings

The inspectors reviewed plant organization to ensure that organizational positions necessary for safe decommissioning operations were staffed by qualified individuals.

The inspectors reviewed the corrective action program and associated corrective action documents to ensure that the licensee was effectively identifying and correcting facility conditions adverse to quality. Conditions adverse to quality were identified and subsequently documented at an appropriate threshold. Management reviews of corrective action documents were performed as needed.

The inspectors reviewed the licensee's safety committee program. Safety committee meetings were conducted at regular intervals since the previous inspection and issues identified during safety committee meetings were being entered into the licensee's corrective action program.

The inspectors reviewed the licensee's self-assessment program. The inspectors reviewed the upcoming schedule for self-assessments and self-assessments since the last inspection. Issues identified during self-assessments were documented in the corrective action program.

The inspectors reviewed the licensee's change management program. The inspectors reviewed both facility and programmatic changes to ensure prior NRC was not required before implementation.

No findings were identified.

5.3 Conclusions

The inspectors determined that the licensee was implementing programs to identify conditions adverse to quality and to elevate these issues to management review, as appropriate.

6.0 **Environmental Protection (IP 88045)**

6.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel to determine if the licensee's performance in implementing its environmental protection program was in accordance with the requirements of 10 CFR Part 20 and the license.

6.2 Observations and Findings

The inspectors reviewed procedures related to the conduct and implementation of the effluent and environmental monitoring programs.

The inspectors reviewed the 2016 and 2017 Radiological Discharge Monitoring Reports. In addition, the inspectors reviewed records of liquid and airborne effluents. The inspectors reviewed the public dose assessment and determined that the average annual effluent concentrations released since December 2016 did not exceed the values specified in Appendix B of 10 CFR Part 20.

No findings were identified.

6.3 Conclusions

The inspectors determined that the licensee's environmental protection program met the requirements of 10 CFR Part 20 and the license.

7.0 **Exit Meeting**

The inspectors presented the results of the inspection to Mr. Fosson and other members of the licensee staff at an onsite exit meeting on January 10, 2018. The licensee acknowledged the results presented and did not identify any of the information discussed as proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

K. Wiehle, Regulatory Affairs Manager
J. Thomspson, Radiation Protection Manager

INSPECTION PROCEDURES USED

| | |
|----------|--|
| IP 83822 | Radiation Protection |
| IP 83890 | Closeout Inspection and Survey |
| IP 84850 | Radioactive Waste Management |
| IP 86740 | Transportation |
| IP 87104 | Decommissioning Inspection Procedure for Materials Licensees |
| IP 88005 | Organization and Controls |
| IP 88045 | Environmental Protection |

ITEMS OPENED, CLOSED, AND DISCUSSED

| <u>Opened</u> | <u>Type</u> | <u>Summary</u> |
|---------------|-------------|----------------|
|---------------|-------------|----------------|

None

| <u>Closed</u> | <u>Type</u> | <u>Summary</u> |
|---------------|-------------|----------------|
|---------------|-------------|----------------|

None

| <u>Discussed</u> | <u>Type</u> | <u>Summary</u> |
|------------------|-------------|----------------|
|------------------|-------------|----------------|

None

PARTIAL LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

AC4-HP-014; Ludlum Model 239-1 Floor Monitor; Revision 1
ACD2-HP-004; Conduct of Radiological Operations; Revision 7
ACD2-HP-005; Radiological Work Permit; Revision 7
ACD2-HP-011; Operation of Ludlum Model 12 Survey Meter with Ludlum Model 44-9 or Ludlum Model 43-5 Probe; Revision 3
ACD4-HP-001; Radiological Surveys; Revision 3
ACD4-HP-007; Operation of the Ludlum 2224; Revision 5
Annual Summary Report of Facility Changes; January 2017
Corrective Action Report Documents; 2017-2018
Department of Transportation Shipping Manifests; 2017
EE-2101-0067; Technical Basis for Assigning Uranium Values to Containers Shipped to NNSS; November 3, 2017
Facility Change Evaluations; 2017-2018
Final Closeout Survey Maps; 2017-2018
General Survey Maps; 2017-2018
LA-2605-0003U; Integrated Safety Analysis Summary
License Application for the American Centrifuge Lead Cask Facility; Revision 61
Materials Control and Accountability Balance Forms; 2017
Memorandum – Radiological Review – Lead Cascade Decommissioning; July 14, 2016
NR-3605-003; Quality Assurance Program Description; Revision 22
Radiation Work Permits; 2017
Radiological Discharge Monitoring Reports; 2016-2017
Safety Committee Meeting Minutes; 2016-2017
Self-Assessments; 2016-2017
USEC-02; Emergency Plan; Revision 212
Work Instruction for Calibration of Ludlum 2224-1/Bicron DP-6CD; September 7, 2006
Work Instruction for Calibration of Ludlum 2224-1/Ludlum 43-98 Probe; July 11, 2008

LIST OF ACRONYMS USED

| | |
|-------|---|
| ADAMS | Agencywide Documents Access and Management System |
| ALARA | As Low As Is Reasonably Achievable |
| CFR | Code of Federal Regulations |
| DNMS | Division of Nuclear Materials Safety |
| DP | Decommissioning Plan |
| IP | Inspection Procedure |
| LCF | Lead Cascade Facility |
| NRC | U.S. Nuclear Regulatory Commission |
| PORTS | Portsmouth Gaseous Diffusion Plant |
| RP | Radiation Protection |
| RWP | Radiation Work Permit |