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

October 29, 2020

Dr. Ronald Land
Site Manager
Framatome Inc.
2101 Horn Rapids Road
Richland, WA 99354-0130

SUBJECT: FRAMATOME INC. – U. S. NUCLEAR REGULATORY COMMISSION
INTEGRATED INSPECTION REPORT NUMBER 70-1257/2020-003

Dear Dr. Land:

This letter refers to the inspections conducted from July 1, 2020, through September 30, 2020, at the Framatome Inc., Facility in Richland, Washington. During that period, the U. S. Nuclear Regulatory Commission (NRC) implemented alternative ways to complete the core inspection program for your facility when routine on-site inspections could not be performed due to the public health emergency declared by the Secretary of Health and Human Services on January 31, 2020 (as renewed on April 21, 2020, and July 23, 2020), and the National Emergency declared by the President of the United States on March 13, 2020, concerning the novel coronavirus disease (COVID-19).

The enclosed report presents the results of the inspections, which were conducted through a combination of remote reviews and on-site observations. The inspectors reviewed activities as they relate to public health and safety, the common defense and security, and compliance with the Commission's rules and regulations, as well as the conditions of your license. The inspections covered the areas of safety operations, radiological controls, facility support. Within these areas, the inspectors reviewed procedures and representative records remotely and conducted telephonic interviews with site personnel. The findings were discussed with you and members of your staff at exit meetings held on July 27, August 20, September 24, and September 30, 2020.

Based on the results of these modified inspections, no violations of more than minor significance were identified.

Additionally, the inspectors implemented measures during the inspection period to support the determination of reasonable assurance that the public and the environment will be adequately protected from the hazards related to the operation of your facility. These compensatory measures included activities such as supplemental reviews of licensee-submitted reports (e.g., effluent reports, plant modification reports, and changes to the Integrated Safety Analysis Summary) and increased communications with your staff to discuss the status of plant operations. The compensatory measures did not constitute direct inspection and were intended to address the impact of the COVID-19 public health emergency on the agency’s routine oversight program, particularly on the continuous engagement with your facility via periodic site visits and in-person interactions.

These proactive actions were taken to obtain additional insights into the safe operation of the facility during the COVID-19 public health emergency.

The NRC will continue evaluating the guidelines and recommendations from federal and state authorities, along with the conditions of your facility, to determine how to best conduct inspections until normality can be achieved. In the interim, the NRC will maintain compensatory measures and frequent communications with your staff to discuss regulatory compliance matters and gather information to inform the decisions about future inspections.

In accordance with Title 10 of the *Code of Federal Regulations,* Section 2.390 of the NRC's "Rules of Practice and Procedure," a copy of this letter and enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

Should you have any questions concerning these inspections, please contact Richard Gibson of my staff at 404-997-4718.

Sincerely,

Richard Gibson, for

/RA/

Suzanne K. Dennis, Acting Chief
Projects Branch 2
Division of Fuel Facility Inspection

Docket No. 70-1257
License No. SNM-1227

Enclosure:
NRC Inspection Report 70-1257/2020-003
w/Attachment: Supplemental Information

cc w/ encl: Distribution via LISTSERV

SUBJECT: FRAMATOME INC. – NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORTS 70-1257/2020-003 dated October 29, 2020

DISTRIBUTION:
E. Michel, RII
R. Gibson, RII
G. Goff, RII
K. Ramsey, NMSS
O. Siurano-Perez, NMSS
J. Zimmerman, NMSS
PUBLIC

☒ PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE ☒ NON-SENSITIVE
ADAMS: ☐ Yes ACCESSION NUMBER: **ML20303A251** ☐ SUNSI REVIEW COMPLETE ☐ FORM 665 ATTACHED

OFFICE	RII:DFFI\PB2	RII:DFFI\PB1	RII:DFFI\PB1	RII:DFFI\PB2	RII:DFFI\PB2	RII:DFFI\PB2
NAME	G. Goff	R. Womack	J. Rivera-Ortiz	T. Sippel	P. Glenn	R. Gibson for S. Dennis
DATE	10/23/2020	10/23/2020	10/23/2020	10/23/2020	10/23/2020	10/29/2020
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

INSPECTION REPORT

Docket No.:	70-1257
License No.:	SNM-1227
Report No.:	70-1257/2020-003
EPID No.:	I-2020-003-0042
Licensee:	Framatome Inc.
Facility:	Richland Facility
Location:	Richland, Washington
Dates:	July 1 through September 30, 2020
Inspectors:	G. Goff, Project Inspector (A.1, B.1, B.2, B.3, C.1, C.2) J. Rivera-Ortiz, Senior Project Inspector (A.1) P. Glenn, Project Inspector (A.2) T. Sippel, Project Inspector (A.2) R. Womack, Project Inspector (C.2)
Approved by:	Suzanne Dennis, Acting Chief Projects Branch 2 Division of Fuel Facility Inspection

Enclosure

EXECUTIVE SUMMARY

FRAMATOME INC.
NRC Integrated Inspection Reports 70-1257/2020-003
July 1 through September 30, 2020

An inspection was conducted remotely and subsequently followed up with an on-site visit by regional inspectors in the performance areas of safety operations, radiological controls, and facility support. The inspectors performed a selective examination of licensee activities that were accomplished by interviews and discussions with licensee personnel and a review of facility document.

Safety Operations

- No violations of more than minor significance were identified related to Plant Operations. (Paragraph A.1)

- No violations of more than minor significance were identified related to Criticality Safety. (Paragraph A.2)

Radiological Controls

- No violations of more than minor significance were identified related to Radiation Protection. (Paragraph B.1)

- No violations of more than minor significance were identified related to Environmental Protection. (Paragraph B.2)

- No violations of more than minor significance were identified related to Waste Management. (Paragraph B.3)

Facility Support

- No violations of more than minor significance were identified related to Maintenance/Surveillance. (Paragraph C.1)

- No violations of more than minor significance were identified related to Plant Modifications (Annual). (Paragraph C.2)

Attachment:
Key Points of Contact
List of Items Opened, Closed, and Discussed
Inspection Procedures Used
Documents Reviewed

REPORT DETAILS

Summary of Plant Status

The Framatome facility converts uranium hexafluoride (UF_6) into uranium dioxide (UO_2) for the fabrication of low-enriched fuel assemblies used in commercial light water reactors. During the inspection period, normal production activities were ongoing.

A. Safety Operations

1. Operational Safety (Inspection Procedure 88020)

a. Inspection Scope

The inspectors reviewed the operation of selected processes to verify the licensee operated the plant safely and in accordance with 10 CFR 70 and the license application as incorporated by reference in Safety Condition S-1 of Materials License SNM-1227. The inspectors selected portions of the: (1) Uranium Hexafluoride (UF_6) Cylinder Washing, (2) Ammonium Diuranate (ADU) Precipitation and Drying, and (3) Specialty Fuels Pellet Sintering and Storage Processes for review. The review was focused on verifying that the licensee implemented an operational safety program and applied appropriate management measures to items relied on for safety (IROFS) in accordance with the licensing basis of the facility.

Specifically, the inspectors reviewed operating procedures for the UF_6 Cylinder Washing process to verify that IROFS 816, 818, 822, 906, 1239, and 2215 and their respective safety limits were incorporated into the procedures as described in the Integrated Safety Analysis (ISA) Summary and the license application. Additionally, the inspectors reviewed a sample of functional testing records for IROFS 818 to verify that testing activities ensured this engineered control was available and reliable to perform its function to comply with the performance requirements of 10 CFR 70.61. Inspectors also walked down the IROFS 818 to verify the physical condition and arrangement allowed for this active engineered control to perform its intended safety function.

The inspectors reviewed operating procedures for the ADU Precipitation and Drying processes as well as the specialty fuels pellet sintering and storage process to verify that IROFS 104 was incorporated into the procedures as described in the ISA Summary and the license application. The inspectors evaluated the procedures with respect to operator responses to verify that IROFS safety limits were incorporated into the procedures. The inspectors also reviewed operating procedures and a sample of inspection records for the ADU Precipitation and Drying process to verify that IROFS 6108 was implemented as described in the ISA Summary and licensee procedures. The inspectors also walked down IROFS 3514, 3529, and 6112 to verify that the material condition and arrangement allowed for each to perform its intended safety function. In addition, the inspectors walked down IROFS 6120 to verify the physical condition and arrangement allowed for this active engineered control to perform its intended safety function. Furthermore, the inspectors reviewed the latest maintenance records for IROFS 3514, 3529, 6112, and 6120 to verify the licensee complied with the requirements of Chapter 11 of the licensee application.

The inspectors reviewed recent changes to operating procedures SOP-40292, "Preparing and Removing UF_6 Cylinders," SOP-40297, "Dry Conversion Facility – UF_6 General Information," and SOP-40259, and "UF_6 Cylinder Wash Operation" to verify the changes were evaluated in accordance with 10 CFR 70.72 and Chapter 11 of the license application. The inspectors reviewed organization charts and interviewed licensee personnel to identify changes to the operations organization since the last NRC inspection in this area and verify that organizational changes, if any, were in accordance to the position-specific requirements of the license application.

The inspectors also walked down the NaF (sodium fluoride) and SWUR (solid waste uranium recovery) areas within the Specialty Fuels (SF) building to verify the presence of IROFS and other safety-related equipment (SRE) as per the ISA Summary. The inspectors noticed no material degradation or alignment that would have impaired the functionality of this safety equipment.

The inspectors reviewed training records regarding initial and continuing training programs to verify compliance with the training requirements of the license application. The inspectors reviewed a sample of operator qualification records for IROFS to verify that the individuals were currently qualified on the systems and equipment to which they were assigned. The inspectors interviewed a sample of operators to assess whether the implementation of selected IROFS was consistent with the ISA Summary and procedures.

The inspectors reviewed corrective action program (CAP) procedures to verify that the licensee had a process in place to maintain records of IROFS failures in accordance with 10 CFR Part 70.62(a)(3). The inspectors also reviewed a sample of CAP entries (i.e., condition reports or CRs) from the past 12 months to verify that safety-significant plant issues were entered in the program for resolution and corrective actions were initiated consistent with the CAP description in Chapter 11 of the license application. The review of CAP entries included the implementation of corrective actions and compensatory measures for IROFS-related issues documented in CRs and "Justification of Continued Operation" evaluations. Additionally, the inspectors reviewed a sample of audits in the operations area to verify these were completed at the required frequency and significant audit findings were entered into the CAP for resolution in accordance with Chapter 11 of the license application.

b. Conclusion

No violations of more than minor significance were identified.

2. Criticality Safety (Inspection Procedure 88015)

a. Inspection Scope

Criticality Analysis

The inspectors conducted on-site and remote inspections that evaluated selected aspects of the licensee's Nuclear Criticality Safety program to verify compliance with selected portions of 10 CFR 70, including 70.24, 70.61, and 70.62(d); Chapter 5 of the facility's license application; and applicable licensee procedures.

The inspectors reviewed selected nuclear criticality safety analyses (NCSAs) to verify that they were consistent with the commitments in the license application. These commitments included the licensee's commitment to demonstrate that the double contingency principle is met, to demonstrate that normal and credible abnormal conditions are subcritical, to demonstrate that criticality accidents are at least highly unlikely, and to document an independent peer review of the NCSA as specified in Section 5.3.4 of the license application. The NCSAs reviewed included E04-NCSA-065, "UF_6 Cylinder Washing Operation," Version 11; and E04-NCSA-070, "ADU Line – ADU Process," Version 18; and those listed in Section 4 of the attachment to this report.

The inspectors reviewed the licensee's generation of accident sequences to determine whether the NCSAs systematically identified normal and credible abnormal conditions in accordance with the commitments and methodologies in the license application for the analysis of process upsets. The inspectors reviewed modeling assumptions to verify they were clearly described, appropriately conservative, and matched the calculation input files. The inspectors reviewed accident sequences that the licensee determined to be not credible to determine whether the bases for incredibility were consistent with the commitments, definitions, and methodologies in the license application. The inspectors also reviewed the protection and prevention scores assigned in the accident sequences to determine whether they were consistent with procedural guidance and resulted in the scenario being highly unlikely. This review was conducted for E04-NCSA-065, E04-NCSA-070, and E04-NCSA-360.

No changes were made to the validation report since the last NCS inspection.

Criticality Implementation

The inspectors performed walk-downs of System 065, "UF_6 Cylinder Washing," System 070, "ADU Precipitation and Drying," System 100, "ADU Process Offgas (POG)," and System 360, "Lube Blend Press Feed," to determine whether existing plant configuration and operations were covered by, and consistent with, the process description and safety basis in the selected nuclear criticality safety evaluations (NCSEs) listed above. The inspectors reviewed process and system descriptions, vendor manuals and drawings and interviewed licensee operators and engineers to determine whether existing plant configuration and operations were covered by, and consistent with, the process description and safety basis in the selected NCSAs listed above. The inspectors reviewed drawings and flow calculations to verify that engineered controls established in the NCSAs were included and being implemented as specified. The engineered controls reviewed included, items relied on for safety (IROFS) 803, 819, 6111, 6112, 6120, 3514, and 3529. The inspectors reviewed operating procedures to verify that selected administrative controls established in the NCSAs were included. The administrative controls reviewed included IROFS 104, 822, and 1510, as well as administrative components of selected engineered IROFS including IROFS 819. The inspectors reviewed training records and procedures to verify that administrative actions established in the NCSAs were being implemented in lower level documents as specified in the NCSA. The inspectors interviewed and observed operators to verify that administrative actions established in the NCSEs were understood and implemented as specified.

The inspectors reviewed the Integrated Safety Analysis (ISA) Summary and supporting ISA documentation to determine whether the IROFS listed above were supported by technical bases in the NCSAs.

Criticality Operational Oversight

The inspectors reviewed general NCS training and NCS IROFS-related training material to determine whether operator training included instruction in the criticality controls related to their specific job function and whether NCS staff was involved in the training. The NCS-related training records reviewed included HRR-CMO-000006, HRR-CMO-000021, HRR-CMO-000029, and HRR-CMO-100029. Additionally, the inspectors interviewed operations staff to determine whether they were cognizant of NCS hazards and control methods related to their specific job function.

The inspectors reviewed the maintenance and test records for selected NCS IROFS to determine whether the management measures ensured the availability and reliability of NCS IROFS controls. The records reviewed included Order 13437761, Order 13437762, Order 13449073, Order 13452129, and Order 13452307.

The inspectors reviewed records of NCS monthly audits (for November 2019 to June 2020), interviewed licensee NCS engineers, and accompanied a licensee NCS engineer on a walk-down of systems 70 and 360 to determine whether NCS staff routinely assessed field compliance with established NCS controls. Additionally, the inspectors interviewed NCS management and reviewed procedures and schedules to verify that qualified NCS staff performed these audits monthly, that audits were conducted in accordance with written guidance, and that each area where fissile materials are processed or stored were audited at least biennially as required by Chapter 11 of the license application.

The inspectors walked down gamma detectors that monitor potential buildup on the bottom of some tanks and in sand filters and interviewed an operator about the sampling done to detect uranium accumulation in tank sludge to verify that the licensee had established controls on long-term accumulations.

Criticality Programmatic Oversight

The inspectors reviewed selected NCS program procedures to determine whether the NCS program was enacted in accordance with them. The selected NCS program procedures included, E04-06-002, “Routine Nuclear Criticality Safety Audits,” and E04-06-004, “Preparation & Review of Nuclear Criticality Safety Documents.” The inspectors conducted interviews and observed NCS engineers supporting operation to determine whether NCS staff reviewed new and revised fissile material operations and procedures, including maintenance plans, consistent with program procedures and at a level commensurate with their significance. The inspectors reviewed the NCSAs listed above to verify that they were prepared and independently reviewed by qualified NCS engineers in accordance with licensee procedures and Chapter 5 of the license application.

The inspectors interviewed the NCS manager to verify that NCS engineers were qualified as required by Chapter 2 of the license application; performed only the activities for which they were qualified; and were provided continuing training to maintain their skills in the interpretation of data pertinent to NCS as required by Chapter 5 of the license application.

Criticality Incident Response and Corrective Action

The inspectors reviewed various aspects of the criticality accident alarm system (CAAS) testing records to determine whether the CAAS provided coverage of all areas with two detectors and provided an audible evacuation alarm when the system activates in accordance with the requirements of 10 CFR 70.24 and license commitments in Chapter 5 of the license application. The inspectors walked-down selected CAAS detectors, the CAAS test bench, the CAAS alarm panels, the CAAS power supply cabinet, the CAAS processing cabinet; interviewed licensee engineers; and reviewed test records to determine whether the licensee periodically tested the audibility of alarm signals in the areas required to be evacuated, whether detectors were calibrated, and whether all components were functionally tested. The inspectors reviewed E04-09-001, "HRR Criticality Accident Alarm System Coverage Demonstration," and interviewed licensee staff to verify that the licensee implemented compensatory measures in the event of a CAAS outage in accordance with Chapter 5 of the license application. The records reviewed are listed in Section 4 of the attachment.

The inspectors reviewed drill records and walked down equipment to determine whether the licensee maintained NCS-related emergency response capability consistent with emergency plans and procedures. The inspectors conducted interviews to verify that qualified NCS staff was readily available to advise the licensee in an emergency. The inspectors interviewed licensee staff and reviewed training material and postings to determine whether personnel were instructed to evacuate to accountability points in the event of a CAAS alarm, whether evacuation routes and accountability points were designed to minimize the potential for exposing evacuating personnel to radiation, whether NCS related evacuation drills were conducted consistent with license commitments and 10 CFR 70.24(a)(3). The records reviewed included the "Semi-Annual Criticality Evacuation Drill Results – June 13, 2020," Order 13435276, and Order 13445058.

The inspectors reviewed selected condition reports (CRs) to verify that anomalous NCS conditions were promptly identified and entered into the corrective action program consistent with the license application and program procedures. Additionally, the inspectors reviewed the selected CRs to assess whether the licensee followed regulatory requirements and procedures with regards to reporting plant conditions to the NRC. The inspectors reviewed the CRs and NCS infractions listed in Section 4 of the attachment.

b. Conclusion

No violations of more than minor significance were identified.

B. Radiological Controls

1. Radiation Protection (Inspection Procedure 88030)

a. Inspection Scope

The inspectors conducted an inspection to verify that the licensee's performance in administering the radiation protection program; monitoring exposures; and implementation of controls was in accordance with the requirements of Title 10 of the Code of Federal Regulations (10 CFR) Part 20 and license requirements. The inspectors first reviewed the radiation protection program as part of a modified (remote) inspection in June 2020. The results from that inspection can be procured from inspection report number 70-1257/2020-002. The purpose of this inspection was to perform the on-site portions to supplement the June inspection.

The inspectors observed health and safety technicians (HSTs) perform air filter change-outs on fixed air samplers; air filter preparation for analysis; and documentation of results in order to verify compliance with procedures. The inspectors also observed a pre-job briefing for a radiological task to be performed in the scrap uranium recovery facility (SURF) to observe if communications addressed the hazards of the task and any required personal protective equipment (PPE). Inspectors also observed that licensee personnel implemented a questioning attitude and remained attentive throughout the pre-job briefing. Later, the inspectors walked down the subject area to verify completion of the task.

The inspectors observed the licensee conduct daily response checks on survey meters and perform contamination smears to determine compliance with 10 CFR 20.1501(a) and procedures. The inspectors walked down the iMatics (equipment used for analyzing air sample filters) to verify this equipment was within calibration. Throughout walk-downs of various areas of the site, the inspectors continually observed the calibration stickers on air flow meters, survey meters at step-off pads, and personnel contamination monitors to determine this equipment was within calibration as required by 10 CFR 20.1501(c). The inspectors observed that several gamma meters were re-calibrated by maintenance staff as a result of a questioning attitude by the HSTs.

During walk-downs, the inspectors observed postings of radiological areas and radiological containers were in compliance with 10 CFR 20.1902 - 20.1905. Inspectors also observed the licensee posted notices to workers as per 10 CFR 19.11.

Inspectors walked down the Ammonia Recovery Facility as part of the Focus Area Matrix effort. No radiological concerns were identified, and all equipment observed was within calibration.

b. Conclusion

No violations of more than minor significance were identified.

2. Effluent Control and Environmental Protection (Inspection Procedure 88045)

a. Inspection Scope

The inspectors conducted an inspection to verify that the licensee's performance in administering the environmental protection program was in accordance with the requirements of 10 CFR Part 20 and license requirements. The inspectors first reviewed the environmental protection program as part of a modified (remote) inspection in June 2020. The results from that inspection can be procured from inspection report number 70-1257/2020-002. The purpose of this inspection was to perform the on-site portions to supplement the June inspection.

The inspectors observed the licensee collect air filters from exhaust stacks and then prepare the filters for analysis along with the supporting documentation as per procedure. The inspectors observed that the stack air flow meters were within calibration. The inspectors also observed the licensee obtain and prepare the sewer sample for analysis to verify this activity was conducted in accordance with the procedure and to satisfy the requirement in 10 CFR 20.2003.

The inspectors walked down the HEPA filter housing units serving several areas processing SNM to verify the material condition of these housing and ventilation units was not degraded or impaired. Inspectors noted the flow rate on these units were within the proper range.

The inspectors interviewed the licensee's environmental engineer and reviewed documentation regarding underground plume characterization and minimization of contamination into the sub-surface in order to determine compliance with 10 CFR 20.1406(c).

The inspectors walked down the Cylinder Recertification Facility as part of the Focus Area Matrix effort. No environmental concerns were identified.

b. Conclusion

No violations of more than minor significance were identified.

3. Radioactive Waste Processing, Handling, Storage, and Transportation (Inspection Procedure 88035)

a. Inspection Scope

The inspectors conducted an inspection to verify that the licensee's performance in the processing, handling, and storage of radioactive waste was in accordance with the requirements of 10 CFR Part 20 and 10 CFR Part 61, as applicable, to low-level, radioactive waste form, classification, and stabilization. The inspectors first reviewed the radiological waste program as part of a modified (remote) inspection in June 2020. The results from that inspection can be procured from inspection report number 70-1257/2020-002. The purpose of this inspection was to perform the on-site portions to supplement the June inspection.

The inspectors walked down the storage areas for low level radioactive waste. Inspectors noted that the packaging and container integrity was not compromised and that labeling was in accordance with procedures.

The inspectors also walked down the radiological waste volume reduction area to verify all IROFS and safety-related equipment was within calibration. The inspectors interviewed the operators assigned to this area in order to determine that each of them knew his responsibilities related to nuclear safety and what response to implement in case of a safety issue as per the procedures.

The inspectors performed interviews with operations staff about handling dry combustible (solid) waste, non-combustible (solid) waste, and mixed waste in order to verify compliance with procedures. The inspectors also verified through interviews and walk-downs that waste categorized as dry combustible waste, waste oil, and waste liquid were processed through the incinerator as per procedure. Inspectors also verified through interviews and a review of documents that waste categorized as non-combustible waste, raffinate filter cake (RFC), and mixed fission product non-combustible waste were sent off-site to U.S. Ecology (Hanford site) as per procedure. The inspectors also verified that mixed waste (includes “special” and “dangerous” waste) was shipped to Energy Solutions in Clive, Utah, as per state of Washington regulations.

b. Conclusion

No violations of more than minor significance were identified.

C. Facility Support

1. Maintenance and Surveillance of Safety Systems (Inspection Procedure 88025)

a. Inspection Scope

NRC inspectors performed a maintenance and surveillance (M/S) inspection to verify:

- M/S activities for IROFS and other safety controls were adequate to assure that these controls were available and reliable to perform their safety function;
- compliance with the performance requirements of 10 CFR 70.61;
- that corrective actions were taken when a safety control (and IROFS for Part 70 licensees) failed or had degraded; and
- M/S activities were in accordance with license application requirements.

The inspectors reviewed maintenance control procedures and standard operating procedures (see the attachment) to verify compliance with Chapter 11 of the license application. The inspectors observed that work orders were implemented on schedule and reviewed and approved by supervision prior to returning repaired/recalibrated equipment to service. The inspectors confirmed that the equipment used to perform maintenance or calibrations was calibrated to NIST-traceable standards as per the procedures.

The inspectors reviewed the most recent audit of the M/S program in order to verify compliance with the procedure (see attachment) and Chapter 11 of the license application. Inspectors noted that any observations or findings were placed into the corrective actions program.

The inspectors reviewed corrective actions (see the attachment) to verify that the license was in compliance with Chapter 11 of the license application. The inspectors also interviewed licensee personnel to determine the cause of the non-compliance; how the severity level was determined, and how corrective actions were effective to correct and prevent recurrence of the issue.

The inspectors reviewed any personnel changes in the maintenance and surveillance program organization to verify compliance with position qualification requirements and Chapter 2 of the license application.

Once on-site, the inspectors walked down the focus area, which was the Cylinder Recertification facility. The inspectors observed an internal inspection and a 7-point thickness inspection on 30B cylinders. The 7-point inspection was performed with an ultrasonic thickness gauge that was calibrated in-field with the standard as per procedure. The inspectors reviewed maintenance records and condition reports for any IROFS or safety-related equipment in this facility to determine compliance with 10 CFR 70.61 and 70.62 requirements and Chapter 11 of the license application.

The inspectors attended the daily maintenance meetings to observe communications and discussions of upcoming activities. The inspectors observed the calibration check for an IROFS (a digital scale for mass control) on the U_3O_8 Drum Fill Hood for verify compliance with the work order. The inspectors also observed maintenance performed on safety-related equipment (a cylinder lifting beam) to verify compliance with the work order. The inspectors walked down the storage areas for the primary and secondary calibration standards utilized by the licensee to determine compliance with Chapter 11 of the license application.

b. Conclusion

No violations of more than minor significance were identified.

1. Plant Modifications (Annual) (Inspection Procedure 88070)

a. Inspection Scope

The inspectors reviewed the licensee's configuration management program to determine whether the licensee established a program capable of evaluating, implementing, and tracking modifications to facility processes in accordance with 10 CFR 70.72 and Chapter 11, "Management Measures," of the license application. The inspectors reviewed configuration management procedures and interviewed licensee staff to verify the configuration management program was being implemented in accordance with the requirements.

The inspectors verified pre-job planning and preparation of plant modification design packages were conducted in accordance with Chapter 11 of the license application. Inspectors also verified the program had provisions in place to prevent plant modifications from degrading performance capabilities of IROFS or other safety controls.

The inspectors reviewed a selection of Engineering Change Notices (ECNs) – 8849, 8912, & 8928 – implemented since the last plant modification inspection was conducted. The inspectors reviewed these packages and interviewed licensee staff to verify the change packages were prepared, reviewed, and completed in accordance with Management Control Procedure 30379, *Construction or Modification Change Control*. Specifically, the inspectors verified that the design packages contained the following: 1) the technical basis for the change; 2) the impact of the change on safety and health or on the control of licensed material; 3) the necessary training prior to operations; 4) the authorization requirements for the change; and 5) the impacts of the change to the integrated safety analysis (ISA) or other safety program information developed in accordance with 10 CFR 70.62. The inspectors also reviewed the packages to verify that the licensee performed applicable post-maintenance testing requirements prior to implementing the plant modifications and that completed modifications were reviewed and approved prior to implementation. Inspectors reviewed the 10 CFR 70.72 evaluations to determine whether the licensee accurately evaluated the need for NRC pre-approval of select facility modifications.

Upon arriving on-site, the inspectors performed walk-downs of ECNs 8849 and 8912 to verify that the modifications were installed in accordance with approved design documents, including drawings and technical reports. The inspectors reviewed related on-site documentation, such as the ISA Summary and nuclear criticality safety analyses, to verify that it was updated promptly as required by 10 CFR 70.72(e).

The inspectors reviewed the most recent audit and assessment of the licensee's configuration management program to verify the licensee identified issues and entered them into their corrective action program in accordance with Chapter 11 of the license application. The inspectors also reviewed the licensee's CAP to verify that issues related to the preparation and installation of plant modifications were entered and addressed by the licensee with corrective actions as required by Chapter 11 of the licensee application.

b. Conclusion

No violations of more than minor significance were identified.

D. EXIT MEETING

The inspection scope and results were presented to Dr. Ron Land, Site Manager, and other members of the licensee's staff on July 27, August 20, September 24, and September 30, 2020. Proprietary information was discussed but not included in the report.

Executive Summary Statement

- No violations of more than minor significance were identified related to the Operational Safety Program. (Section A.1)
- No violations of more than minor significance were identified related to the Nuclear Criticality Safety Program. (Section A.2)
- No violations of more than minor significance were identified related to the Radiation Protection Program. (Section B.1)
- No violations of more than minor significance were identified related to the Environmental Protection Program. (Section B.2)
- No violations of more than minor significance were identified related to the Radioactive Waste Management Program. (Section B.3)
- No violations of more than minor significance were identified related to the Maintenance and Surveillance Program. (Section C.1)
- No violations of more than minor significance were identified related to the Plant Modifications (Annual) Program. (Section C.2)

SUPPLEMENTAL INFORMATION

1. KEY POINTS OF CONTACT

Name	Title
G. Antonioli	Lead Technician for Waste Handling/Production Support
K. Biddle	Instrument Technician
J. Bourgeois	Supervisor, Instrument Technicians and Electricians
D. Cooley	Operator, UO_2 Waste Management
R. Cruz	UO_2 Operator
B. Doane	Nuclear Criticality Safety Manager
E. Dodson	Health and Safety Technician
C. Dreyer	Maintenance Manager
M. Durst	Chemical/Electrical Engineering Supervisor
R. Farias	Instrument Technician
B. Flanagan	Packaging Engineer
C. Gooldy	Radiological Safety Manager
T. Harmon	Health and Safety Technician Lead
J. Henn	Supervisor, Millwrights and Pipefitters
J. Hutteball	Technical Specialist, Electrical
J. Jones	Operator, UO_2 Waste Management
C. Kahambwe	Nuclear Criticality Safety Engineer
D. Kessler	Health and Safety Technician
J. Kreitzburg	Nuclear Criticality Safety Engineer
A. Landon	Conversion Engineering Technical Support Supervisor
P. Lee	SAP (Software Application Program) Coordinator for Maintenance
K. Mann	Instrument Technician
C. Manning	Licensing and Compliance Manager
J. Marozzo	Mechanical and Design Engineering Supervisor
R. McGlothlen	Process Waste Engineer
B. Nelson	Nuclear Criticality Analyst/Nuclear Criticality Safety Engineer
J. Perryman	Environmental Engineer, Plant Support, and Waste
S. Powers	Manager, Engineering, Technical Support & Maintenance
J. Ohler	Millwright
V. Sakach	Radiation Safety Officer/Senior Health Physicist
T. Tate	Environmental, Health, Safety, and Licensing Manager
S. Till	Cylinder Recertification Technician
A. Vargas	UO_2 Operator
M. Zaugg	Millwright

2. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

3. INSPECTION PROCEDURES USED

88015	Nuclear Criticality Safety
88020	Operational Safety
88025	Maintenance and Surveillance of Safety Controls
88030	Radiation Protection (Appendix A)
88035	Radioactive Waste Processing, Handling, Storage, and Transportation

88045	Effluent Control and Environmental Protection
88070	Plant Modifications (Annual)

4. **DOCUMENTS REVIEWED**

Records:

Plant Modifications

MMD-19-001, Annual Configuration Control Audit Report – 2019, December 26, 2019

Maintenance/Surveillance

2019 HRR Annual Maintenance Audit, E12-03-064_2019 Maintenance Audit.doc

Work Orders (WOs)

13440979, IRM04073 Gauge, Press 0-200 psig 6 MO IN, 12/01/2019
13444442, IRM04206 Vac Gage Cyl Recert Y2 IN, 01/01/2020
13444836, C005P001 Cyl Rec Sump Pmp & Lvl 6 MO OPUR IRM, 01/01/2020
13463077, IRM04073 Gauge, Press 0-200 psig 6 MO IN, 06/01/2020
13467432, IRM04206 Vac Gage Cyl Recert Y2 IN, 07/01/2020
13467832, C005P001 Cyl Rec Sump Pmp & Lvl 6 MO OPUR IRM, 07/01/2020
C135I003 Scale Burnback Drum Fill Y2 IN US57151-01 IROFS Scale, UO2 157
C761P004-0002, Lifting Beam 12MO MW

Radiological Waste Management

Records for quarterly PM 004991, Container Storage Insp 3 MO OPWA, (3rd Quarter of 2018 to 3rd Quarter of 2020)

Radiation Protection

Survey Instrument response check records (electronic)

Nuclear Criticality Safety

E04-07-201911, NCS Audit/Inspection Report – November 2019, Version 1
E04-07-201912, NCS Audit/Inspection Report – December 2019, Version 1
E04-07-202001, NCS Audit/Inspection Report – January 2020, Version 1
E04-07-202002, NCS Audit/Inspection Report – February 2020, Version 1
E04-07-202003, NCS Audit/Inspection Report – March 2020, Version 1
E04-07-202004, NCS Audit/Inspection Report – April 2020, Version 1
E04-07-202005, NCS Audit/Inspection Report – May 2020, Version 1
E04-07-202006, NCS Audit/Inspection Report – June 2020, Version 1
E04-09-001, HRR Criticality Accident Alarm System Coverage Demonstration, Version 5.1
E04-NCSA-065, UF_6 Cylinder Washing Operation, Version 11
E04-NCSA-070, ADU Line – ADU Process, Version 18
E04-NCSA-360, Lube Blend Press Feed, Version 16
E04-NCSA-100, ADU Process Off-Gas System, Version 13
EMF-94-206(P), Chemical Area Tank Overflow Study – CSCAR #46, dated November 1994

Work Orders (WOs)
Order 13435276, Neutron Probe 5Yr IN, dated October 15, 2019
Order 13437761, C070P005-0001 Dryer Flood 12Mo OPCH, Rev. 2, November 8, 2019
Order 13437762, C070P005-0002 Dryer Flood 12Mo OPCH, Rev. 2, November 8, 2019
Order 13445058, PM005495 Criticality Howlers 6Mo EL, Rev. 1, March 13, 2020
Order 13449073, C000I001-0002 Cylinder Scale 1Yr IN, Rev. 2, February 27, 2020
Order 13452129, C065P007 UF6 CYL Wash Hardware 6Mo OPCH, Rev. 9, April 13, 2020
Order 13452307, C100P001 L2 Overflow/Vents 12Mo PF, Rev. 31, March 18, 2020
Order 13452685, PM005502 CAAS 3S Probe Check 1Mo EL, Rev. 2, March 12, 2020

Operational Safety
C065P007, UF_6 Cylinder Wash IROFS Hardware Functional Test 6MO OPCH, Closed Out on April 14, 2020
C070P005, maintenance record for IROFS 6120
C120DR01, maintenance record for IROFS 3514
C120DR07, maintenance record for IROFS 3529
C950DR01, maintenance record for IROFS 6112
Curriculum HRR-CMO-DCUF6HANDLER (Dry Conversion UF_6 Handler)
Drawing CSA-611065, ADU Process Cylinder Wash P&ID, Rev. 20.
E04-NCSA-820, Criticality Safety - NCSA Dry Conversion Powder Production Process, Version 16.0
E04-NCSS-G01, NCS Guide Rules & Generic Program Requirements, Version 1.0
E04-NCSS-G08, Criticality Safety – NCSS, Plant Wide Chemical Safety IROFS, Version 10.0
ECN 8882 – Upgrade the control system in Ammonia Recovery Facility (ARF) from ABB DCI System Six to Rockwell Automation Controllogix, June 17, 2019
ECN 8901 – Install Tie-In Points for New ADU IX Columns, March 11, 2019
ECN 8908 – Barrel Tumbler Leak Verification Timer, July 31, 2019
ECN 8916 – Barrel Tumbler Shaft/Cradle Upgrades, October 31, 2019
EXAM HRR-CER-100022-007
EXAM HRR-CRT-000065
EXAM HRR-CRT-000070-007
FRM-20185, Controlled Form – Chemical Operations – ADU Conversion, ADU Line 2 Conversion Start of Shift Checklist (Day Shift), dated April 8, 2020
FRM-20185, Controlled Form – Chemical Operations – ADU Conversion, ADU Line 2 Conversion Start of Shift Checklist (Swing Shift), dated April 8, 2020
FRM-20185, Controlled Form – Chemical Operations – ADU Conversion, ADU Line 2 Conversion Start of Shift Checklist (Graveyard Shift), dated April 8, 2020
HRR-CER-000005, On-the-Job Training (OJT) Checklist – Ceramic Operations – Pellet Sintering Furnaces
HRR-CMO-000006, On-the-Job Training (OJT) Checklist – Chemical Operations – Cylinder Wash Station V1
HRR-CMO-100029, Continuing Training Evaluation – UCAR – Cylinder Wash Station V1
HRR-CRT-000615-007 System 615 - Specialty Fuels Pellet Sintering and Storage EXAM
JCO Number: 2019-008 (CR 2019-3174), August 29, 2019
JCO Number: 2019-009, August 29, 2019

JCO Number: 2020-001 (CR 2020-0461), February 28, 2020
STD: 20:003, 2020 Biannual Chemical Safety Audit, Part 1, April 13, 2020
Training Records for Operators P. Carpenter, R. Shipley, V. Mendoza, M. Free, and R. Espinoza

Work Order (WO)
13456288, C820P005, Interlock Check L1 Y2 OPDC, April 1, 2020

Procedures:
Plant Modifications
MCP-30147, Startup Council, Version 6.0
MCP-30379, Construction or Modification Change Control, Version 15.0
MCP-30379 A, Construction or Modification Change Control - Initiation, Version 5.0
MCP-30379 B, Construction or Modification Change Control - Planning, Version 3.4
MCP-30379 C, Construction or Modification Change Control - Execution, Version 8.0
MCP-30379 D, Construction or Modification Change Control - Controlling, Version 6.1
MCP-30379 E, Construction or Modification Change Control - Closure, Version 4.1
MCP-30774, UN Storage Facility (System 720) Controls Design Description, Version 9.0
SOP-40486, Richland Operations General Rules, Version 36.0
SOP-41036, UNB Warehouse & Associated Truck Bay, Version 2.1
SOP-41145, SURF UNB Processing, Version 1.0

Maintenance/Surveillance
1703-76, Issue Evaluation and Causal Analysis Procedure, Revision 026
1703-88, US Fuel Corrective Action Program (Devonway ICAP), Revision 001
MCP-30325, Instrument Repetitive Maintenance (IRM), Version 16.0
MCP-30377, Control and Calibration of Primary Calibration Standards, Version 4.0
MCP-30379, Construction or Modification Change Control, Version 15.0
MCP-30383, Preventive Maintenance, Version 5.3
MCP-31039, Grinder Line (System 390) Controls Design Description, Version 3.0
SOP-40344, UO2and NAF Pellet Grinding and Inspection, Version 46.0
SOP-40486, Richland Operations General Rules, Version 36.0
SOP-40789, Work Order Instructions, Version 18.0
SOP-40791, Maintenance Work Permit (MWP) & Pre-Job Briefing (PJB), Version 17.0
SOP-40839, Instrument Repetitive Maintenance (IRM), Version 14.0
SOP-40841, Preventive Maintenance (PM), Version 11.0
SOP-40847, Control and Calibration of Primary Calibration Standards, Version 4.4
SOP-40920, Items Relied On For Safety (IROFS) and Equipment Essential to Safety, Version 8.0

Radiological Waste Management
SOP-40387, LLRW & Ash Container Handling and Storage, Version 11.0

Environmental Protection
AID-10094, “Reference 101 Dwyer flowmeters for Room Air Samples”, Version 6.0
SOP-40031, “Waste Effluent Monitoring & Sampling”, Version 17.0
SOP-40032, “Radioactive Gaseous Effluent Sampling”, Version 25.0
SOP-40033, “Environmental Dosimetry”, Version 12.0
SOP-40034, “Richland WWTF Sludge Sampling”, Version 9.0

SOP-40035," Forage Sampling", Version 8.0
SOP-40038, "Sampling of Oxides of Nitrogen from Uranium Dissolver Systems", Version 4.4
SOP-40039, "Richland WWTF Sludge Sampling", Version 8.0
SOP-40042, "Routine Fence-line/Building Exterior Radiation Level Surveys", Version 8
SOP-40043, "Ambient Air Sampling for Radioactivity", Version 9.0
SOP-40386, "Special/Mixed/Hazardous/Dangerous Waste Handling and Storage", Version 12.0
SOP-40389," Preparing Low Level Radioactive Waste (LLRW), Special, Mixed and Hazardous Material Shipments", Version 8.0
SOP-41064, "Air Sample Counting"
SOP-41070, "Stack Sample Counting Using the EHS&L Database", Version 4.0

Radiation Protection

SOP-40000, Quality Control of Alpha Survey Instruments, Version 10.0
SOP-40820, Quality Control of Beta/Gamma Survey Instruments, Version 9.0

Nuclear Criticality Safety

E04-06-002, Routine Nuclear Criticality Safety Audits
E04-06-004, Preparation & Review of Nuclear Criticality Safety Documents
E04-06-006, Nuclear Criticality Safety Management System Assessment, Version 6.2
E04-06-007, Routine Nuclear Criticality Safety Walkthroughs, Version 3.3
E04-NCSS-G01, NCS Guide Rules & Generic Program Requirements, Version 22
E08-03-8.13, Criticality Alarm, Version 3
E15-03-001, Revalidation of the ISA Sub-Tier Safety Analyses, Version 4.2
SOP-40259, UF6 Cylinder Wash Operation, Version 42
SOP-40486, Standard Operating Procedure Richland Operations General Rules, Version 36

Operational Safety

E15-03-002, Integrated Safety Analysis Program Standard, Version 10.0
MCP-30037, Management Control Procedure – Breaking & Opening Hazardous Pipelines in Service, Version 7.1
Procedure 1703-76, Issue Evaluation and Causal Analysis Procedure, Rev. 26
Procedure 1703-88, US Fuel Corrective Action Program (DEVONWAY ICAP), Rev. 1
SOP-40020, Standard Operating Procedure - In-Plant Air Sampling, Version 18.1
SOP-40259, UF6 Cylinder Wash Operation, Version 42
SOP-40277, Standard Operating Procedure - Ammonium Diuranate Precipitation and Dryer Operation, Version 9.5
SOP-40281, K-32 Process Offgas (POG) Ventilation System, Version 8.2
SOP-40292, Dry Conversion Facility – Preparing and Removing UF6 Cylinders, Version 21.0
SOP-40297, Dry Conversion Facility – UF6 General Information, Version 10.0
SOP-40486, Standard Operating Procedure - Richland Operations General Rules, Version 36.0
SOP-40841, Preventive Maintenance (PM), Version 11.0
SOP-40920, Items Relied on For Safety (IROFS) and Equipment Essential to Safety, Version 8.0

Condition Reports Written as a Result of the Inspection:

Nuclear Criticality Safety
CR-2020-1518

Condition Reports Reviewed:

Plant Modifications
CR-2020-0231, CR-2020-0608, CR-2020-0807, CR-2020-0907, CR-2020-1692-01

Maintenance/Surveillance
CR-2020-0907, CR-2020-0941, CR-20-1145, CR-2020-1312, CR-2020-1338, CR-2020-1430, CR-2020-1436

Environmental Protection
CR-2020-1667, CR-2020-1692-01

Nuclear Criticality Safety
CR-2019-3869, CR-2019-3977, CR-2020-0425, CR-2020-0496, CR-2020-0497, CR-2020-0608
NCS Infraction 2019-024 (CR 2019-3977), November 14, 2019
NCS Infraction 2019-026 (CR 2019-4135), December 11, 2019
NCS Infraction 2020-004 (CR 2020-0496), March 4, 2020
NCS Infraction 2020-005 (CR 2020-0497), March 4, 2020
NCS Infraction 2020-008 (CR 2020-0894), April 16, 2020
NCS Infraction 2020-010 (CR 2020-1145), May 26, 2020
NCS Infraction 2020-011 (CR 2020-1207), June 4, 2020

Operational Safety
CR-2020-0051; January 10, 2020
CR-2020-0497; March 3, 2020
CR-2020-0955; April 23, 2020
CR-2020-1145; May 26, 2020
CR-2020-1248; June 12, 2020

Other Documents:

Plant Modifications
ECN 8849, ECN 8912, ECN 8928
E04-NCSA-720, Uranyl Nitrate Storage Building, Version 8.0
E04-NCSA-810, Dry Conversion Vaporization System, Version 13.0
E04-NCSA-960, HVAC Exhaust Systems, Version 35.0
E14-01-027, SURF Building, Version 3.0
E15-01-1, Part 1 – Chapter 1-8 – Richland Facility ISA Program, Version 25.0
E15—01-2.9A, Part 2 – Chapter 9A-UO_2 Building, Version 17.0
SWI-40274G, UNB Transfer to Tanks 206 and 207, Version 1.0

Maintenance/Surveillance
AID-10474, “Reference 1107 BLEU Calciner GSE Series 60, Model 660 Programmable Digital Weight Indicator, Version 3.4
12-month print-out (spreadsheet) of all maintenance/surveillance activities involving IROFS and Equipment Essential to Safety (non-IROFS) from August 2019 – July 2020
C390I006 (template for a work order)
E04-NCSA-390, UO_2 Pellet Grinding & Inspection, Version 19.0

E04-NCSA-395, BLEU Pellet Grinding, Version 13.0
Organizational Chart (Plant Engineering, Technical Support & Maintenance)

Radiological Waste Management
E04-NCSA-780, Waste Handling, Version 22.0

Radiation Protection
iMatic Maintenance Item List for SAP

Nuclear Criticality Safety
CSA-611070, ADU Process P&ID, Sheet 1, Rev. 18
CSA-611100, ADU Process K32 Process Off Gas P&ID, Sheet 1, Rev. 24
CSA-611120, UNH Processing P&ID, Rev. 24
CSA-611950, Nitric Acid Storage & Distribution System P&ID, Sheet 4, Rev. 13
Handwritten notes on NCS drain flow experiments
HRR-CMO-000006, Chemical Operations – Cylinder Wash Station, Version 1
HRR-CMO-000021, UCAR – Criticality Control Key Custodian CCKC, Version 1
HRR-CMO-000029, UCAR – UF_6 Cylinder wash Station, Version 1
HRR-CMO-100029, UCAR – Cylinder Wash Station, Version 1
Nuclear Criticality Safety Training for New Fissile Workers
SWI-40292, Entering Cylinders into NIMS Wireless Terminal, Version 1.5
Vendor Manual for 76-500 series, Stainless Steel Ball Valve with Spring Return Handle

5. ACRONYMS AND INITIALISMS

ADAMS	NRC's document system
ADU	Ammonium Diuranate
CAAS	Criticality Accident Alarm Aystem
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
ECN	Engineering Change Notice (plant modification)
HEPA	High Efficiency Particulate Air (filter)
HST	Health & Safety Technician
IP	Inspection Procedure
IROFS	Item(s) Relied on for Safety
ISA	Integrated Safety Analysis
M/S	Maintenance/Surveillance
NaF	Sodium Fluoride
NCSA	Nuclear Criticality Safety Analysis
NCSE	Nuclear Criticality Safety Evaluation
NRC	Nuclear Regulatory Commission
PPE	Personal Protective Equipment
Rev.	Revision
SAR	Safety Analysis Report
SNM	Special Nuclear Material
SRE	Safety-Related Equipment
SURF	Solid Uranium Recovery Facility
SWUR	Solid Waste Uranium Recovery
UF_6	Uranium Hexafluoride
UO_2	Uranium Oxide
WWTF	Wastewater Treatment Facility