



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

April 20, 2018

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

**SUBJECT: FRAMATOME INC. – NUCLEAR REGULATORY COMMISSION INTEGRATED  
INSPECTION REPORT 70-1257/2018-002**

Dear Dr. Land:

This letter refers to inspections conducted from January 1 – March 31, 2018, at the Framatome Inc., facility in Richland, Washington. The purpose of these inspections was to perform routine reviews of the Nuclear Criticality Safety and Operational Safety programs. The enclosed report presents the results of these inspections. At the conclusion of the inspections, the results were discussed with members of your staff at an exit meeting held on February 15, 2018.

These inspections examined activities conducted under your license as they relate to public health and safety, the common defense and security, and to confirm compliance with the Commission's rules and regulations and with the conditions of your license. Within the area of safety operations, the inspections consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. Based on the results of these inspections, the NRC has determined that no violations of more than minor significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice and Procedure," a copy of this letter and its 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>.

If you have any questions, please contact Noel Pitoniak of my staff at 404-997-4634.

Sincerely,

*/RA/*

Eric C. Michel, Chief  
Projects Branch 2  
Division of Fuel Facility Inspection

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

Enclosure:  
NRC Inspection Report 70-1257/2018-002  
w/Supplemental Information

cc:  
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SUBJECT: FRAMATOME INC. – NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 70-1257/2018-002

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 ADAMS:  Yes      ACCESSION NUMBER: ML18110A023       SUNSI REVIEW COMPLETE       FORM 665 ATTACHED

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI				
SIGNATURE	RA (feeder)	RA (feeder)	RA (feeder)				
NAME	NPitoniak	DAnderson	LCooke				
DATE	04/ 19 /2018	04/ 19 /2018	04/ 19 /2018				
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

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U. S. NUCLEAR REGULATORY COMMISSION  
REGION II

Docket No.: 70-1257

License No.: SNM-1227

Report No.: 70-1257/2018-002

Licensee: Framatome Inc.

Facility: Richland Facility

Location: Richland, Washington 99354

Dates: January 1 – March 31, 2018

Inspectors: D. Anderson, Fuel Facility Project Inspector (Paragraph A.2)  
L. Cooke, Fuel Facility Inspector – Trainee (Paragraph A.1)  
N. Pitoniak, Senior Fuel Facility Project Inspector (Paragraph A.1)

Approved by: E. Michel, Chief  
Projects Branch 2  
Division of Fuel Facility Inspection

Enclosure

## **EXECUTIVE SUMMARY**

FRAMATOME INC.  
NRC Integrated Inspection Report 70-1257/2018-002  
January 1, 2018 through March 31, 2018

Inspections were conducted by regional inspectors during normal shifts in the area of safety operations. The inspectors performed a selective examination of licensee activities that were accomplished by direct observation of safety-significant activities and equipment, tours of the facility, interviews and discussions with licensee personnel, and a review of facility records.

### **Safety Operations**

- No violations of more than minor significance were identified related to the Operational Safety Program. (Paragraph A.1)
- No violations of more than minor significance were identified related to the Nuclear Criticality Safety Program. (Paragraph A.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<sub>6</sub>) into uranium dioxide (UO<sub>2</sub>) 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 interviewed licensee engineers, operators, and managers, and reviewed records associated with systems 080 (ADU uranium recovery) and 100 (ADU process off gas) to verify compliance with the E10-08-011, License Application Section 11. The inspectors reviewed a select sample of the items relied on for safety (IROFS) associated with these systems identified in the Integrated Safety Analysis (ISA).

The inspectors performed field walk-downs of the ADU uranium recovery and ADU process off gas systems with approved system piping diagrams to verify the field configurations were maintained in accordance with the configuration control requirements of the License Application Section 11.1.2. The inspectors observed the physical presence of passive and active engineered safety controls. The inspectors conducted interviews, document reviews, and field observations to verify that the licensee conducted preventative maintenance and surveillance as required by the ISA Summary for System 080 (IROFS 6205, 6206, 6207, 6209, 6210, and 6211) and System 100 (IROFS 2232, 6110, 6116, 6303, 6304, 6507, 6909, and 6967). The inspectors reviewed criticality drain maintenance records C080DR01 through C080DR06 and C100DR01 through C100 DR13, process off gas ventilation duct maintenance records, and three work orders for thermocouple transmitter calibrations for tanks T-154, T-155, and T-156 (IROFS 6213).

The inspectors observed an ISA periodic system review meeting per procedure E15-01-1, ADU Uranium Recovery System, version 22.0 to verify that potential accident scenarios were addressed.

The inspectors reviewed training records regarding initial and continuing training programs to verify compliance with the training requirements of the License Application Section 11.3.2. The inspectors interviewed site training specialists and reviewed qualification records for four operators and one instrument and control maintenance technician to verify that individuals were currently qualified on the systems and equipment they were assigned to operate and maintain. Additionally, the inspectors reviewed the training qualification records of three operators to verify that these individuals were qualified to administer training qualification activities per procedure HRR-CMO-100030, ADU skills qualification.

The inspectors reviewed procedures and records (see attached list of documents) to verify that required actions as identified in the ISA Summary had been accurately transcribed into written procedures as required by the License Application Section 11.4. The inspectors evaluated the procedures' contents with respect to operating limits and operator responses for upset conditions to verify that limits needed to assure safety were adequately described in the procedures.

The inspectors reviewed the licensee's corrective action program (CAP) entries for the past 12 months affecting safety controls to verify that deviations from procedures and unforeseen process changes affecting nuclear criticality, chemical, radiological, or fire safety were documented and investigated per the License Application Section 11.6. The inspectors observed a condition report screening meeting to verify that issues were addressed and screened to the proper severity level and actions were assigned. The inspectors reviewed a sample of corrective actions to determine the status of completed and planned corrective actions associated with safety controls.

b. Conclusion

No violations of more than minor significance were identified.

2. Nuclear Criticality Safety (Inspection Procedure 88015)

a. Inspection Scope

*Criticality Analysis*

The inspectors reviewed selected nuclear criticality safety analyses (NCSAs) to determine whether properly reviewed and approved NCSAs were in place prior to conduct of new or changed operations and were of sufficient detail and clarity to permit independent review. The inspectors reviewed the selected NCSAs and associated assumptions and calculations to verify that they were consistent with the commitments in the License Application, including consideration of the Double Contingency Principle, assurance of subcriticality under normal and credible abnormal conditions with the use of subcritical margin, technical practices and methodologies, and treatment of NCS parameters. The NCSAs were selected based on factors such as whether or not they were new and/or revised, complexity, and operating history. The NCSAs reviewed are listed in Section 4 of the Attachment.

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. This included the review of accident sequences/upsets 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, and were documented in sufficient detail to permit an independent assessment of credibility. Additionally, the inspectors reviewed selected accident sequences designated as not credible to determine whether the bases for incredibility rely on any items which should be identified as formal NCS controls or items relied on for safety (IROFS). This review was conducted in the areas of Uranium Recovery and the Process Off-gas System for the following NCSAs E04-NCSA-080 and E04-NCSA-100.

### *Criticality Implementation*

The inspectors performed walk-downs for systems 80 and 100 (Uranium Recovery and the Process Off-gas System) 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 process and system descriptions, specifications, and drawings to verify that engineered controls established in the NCSAs were included. The inspectors reviewed operating procedures and postings to verify that selected administrative controls established in the NCSAs were included. The inspectors interviewed operators and engineers to verify that administrative actions established in the NCSAs were understood and implemented properly.

The inspectors reviewed the ISA summary and supporting ISA documentation to determine whether the controls identified in the ISA were supported by technical basis in the NCSAs.

### *Criticality Operational Oversight*

The inspectors reviewed NCS-related training records and material to determine whether operator training included instruction in criticality hazards and control methods, whether the licensee's established NCS-related operator training was consistent with commitments in the License Application, including American Nuclear Society standards where applicable, and whether NCS staff was involved in the development of operator training. Additionally, the inspectors interviewed operations and maintenance staff to determine whether they were cognizant of NCS hazards and control methods as they relate to their specific job function. The NCS-related training records reviewed included Nuclear Criticality Training for Operators.

The inspectors reviewed records of monthly NCS audits as required by the License Application Section 11.5.1 and accompanied licensee NCS engineers on a walk-downs of various areas of the facility and observed the engineers interacting with maintenance and operations staff to determine whether NCS staff routinely inspected fissile material operations to ascertain that criticality requirements were being satisfied. Additionally, the inspectors interviewed three NCS engineers and reviewed audit records that had been documented since the last NCS inspection.

### *Criticality Programmatic Oversight*

The inspectors reviewed the selected NCSAs listed above to verify that they were performed in accordance with NCS program procedures and received appropriate independent review and approval.

The inspectors reviewed NCS staff qualification records and conducted interviews to verify that NCS engineers have the necessary education and experience and were qualified in accordance with license requirements. Additionally, the inspectors reviewed records to verify that NCS staff members only performed those functions for which they were qualified.



### *Criticality Corrective Action*

The inspectors reviewed selected NCS-related condition reports to determine whether anomalous conditions were promptly identified and entered into the CAP, whether they received the appropriate level of investigation consistent with license commitments and procedures, whether proposed corrective actions were sufficiently broad, whether they were prioritized on a schedule commensurate with their significance, and whether they were completed as scheduled and were adequate to prevent recurrence. Additionally, the inspectors reviewed NCS-related CAP entries to assess NRC reportability. The CAP entries reviewed included 2017-7623, 2017-7060, 2017-6917, 2017-6610, 2017-5058, 2017-5151, 2017-5852.

b. Conclusion

No violations of more than minor significance were identified.

**B. Exit Meeting**

The inspection scope and results were presented to members of the licensee's staff at various meetings throughout the inspection period and were summarized on February 15, 2018, to R. Land and staff. No dissenting comments were received from the licensee. Proprietary information was discussed but not included in the report.

## SUPPLEMENTAL INFORMATION

### 1. KEY POINTS OF CONTACT

<u>Name</u>	<u>Title</u>
W. Doane	Manager, Nuclear Criticality Safety
J. Henn	Maintenance Supervisor
C. Kahambwe	Criticality Safety Engineer
J. Kreitzburg	Criticality Safety Engineer
R. Land	Site Manager
B. Nelson	Criticality Safety Engineer
C. Oshaughnessy	Training Specialist
T. Tate	Manager, Environmental, Health, Safety, & Licensing

### 2. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

### 3. INSPECTION PROCEDURES USED

88015 Nuclear Criticality Safety  
88020 Operational Safety

### 4. DOCUMENTS REVIEWED

#### Records:

Criticality Drain Maintenance Records for the following drains:

C080DR01, C080DR02, C080DR03, C080DR04, C080DR05, C080DR06, C100DR01, C100DR02, C100DR03, C100DR04, C100DR05, C100DR06, C100DR07, C100DR08, C100DR09, C100DR10, C100DR11, C100DR12, C100DR13

E04-07-201707, NCS Audits/Inspection Report – July 2017, Version 1.0

E04-07-201708, NCS Audits/Inspection Report – August 2017, Version 1.0

E04-07-201709, NCS Audits/Inspection Report – September 2017, Version 1.0

E04-07-201710, NCS Audits/Inspection Report – October 2017, Version 1.0

E04-07-201711, NCS Audits/Inspection Report – November 2017, Version 1.0

E04-07-201712, NCS Audits/Inspection Report – December 2017, Version 1.0

E04-07-201801, NCS Audits/Inspection Report – January 2018, Version 1.0

E04-NCSA-070, ADU Line – ADU Process; P600 Centrifuges, position verification, Version 18.0

E04-NCSA-070, Line 2 ADU System Table 4 Accident Conditions Summary, Version 1.0

E04-NCSA-080, Line 2 Uranium Recovery, Version 19.0

E04-NCSA-100, Line 2 Process Off-Gas System, Version 12.0

E04-NCSA-065, UF6 Cylinder Washing Operation, Version 11.0

E04-NCSA-150, Miscellaneous Uranium Recovery System (MURS), Version 21.0

E04-NCSA-777, Planar Array Storage of SNM in Sea-Land Containers and Warehouses, Version 16.0

E04-NCSA-960, HVAC Exhaust Systems, Version 31.0  
 E04-NCSS-800, General DCF Requirements, Version 14.0  
 E04-NCSA-810, Dry Conversion Vaporization System, Version 12.0  
 Work Order 13329325, Transmitter T/C 1Y Calibration T-154, dated March 12, 2017  
 Work Order 13329404, Transmitter T/C 1Y Calibration T-155, dated March 12, 2017  
 Work Order 13329326, Transmitter T/C 1Y Calibration T-156, dated March 12, 2017  
 Work Order 13345056, ADU IX HI Temp Shutoff 12 mo, dated August 22, 2017  
 Work Order 13329548, L2 Overflow Vents PM

Procedures:

E10-08-005, Version 2.1, SNM-1227- Chapter 5, Nuclear Criticality Safety  
 E04-05-01, Version 16.0, Nuclear Criticality Safety Standards  
 E04-06-002, Version 5.1, Routine Nuclear Criticality Safety Audits

Condition Reports Written as a Result of the Inspection:

CR-2018-002, Documented Comments Identified by NRC during IP 88020 inspection,  
 dated February 15, 2018

Condition Reports Reviewed:

2017-7623, 2017-7060, 2017-6917, 2017-6610, 2017-5058, 2017-5151, 2017-5852

Other Documents:

Drawing CSA-611080, ADU Process Uranium Recovery P&ID, Revision (Rev.) 012,  
 sheet 001 of 010  
 Drawing CSA-611080, ADU Process Uranium Recovery P&ID, Rev. 015, sheet 002 of  
 010  
 Drawing CSA-611080, ADU Process Uranium Recovery P&ID, Rev. 015, sheet 003 of  
 010  
 Drawing CSA-611080, ADU Process Uranium Recovery P&ID, Rev. 011, sheet 004 of  
 010  
 Drawing CSA-611080, ADU Process Uranium Recovery P&ID, Rev. 009, sheet 005 of  
 010  
 Drawing CSA-611080, ADU Process Uranium Recovery P&ID, Rev 008, sheet 006 of  
 010  
 Drawing CSA-611080, ADU Process Uranium Recovery P&ID, Rev 008, sheet 007 of  
 010  
 Drawing CSA-611080, ADU Process Uranium Recovery P&ID, Rev. 009, sheet 008 of  
 010  
 Drawing CSA-611080, ADU Process Uranium Recovery P&ID, Rev. 017, sheet 009 of  
 010  
 ECN 7791, Modify Valves on ADU Processing Tanks Vent Lines, dated May 20, 2004  
 C100P002 L2 POG Duct PM  
 Nuclear Criticality Training for Operators as of February 12, 2018:  
 Framatome: Practical Application of NCS Controls  
 Framatome: Nuclear Criticality Safety Annual Refresher Training  
 Framatome: NCS Guide Rules and Generic Program Requirements  
 Framatome: Factors that Affect Nuclear Criticality Neutron Escape  
 Framatome: Factors that Affect Nuclear Criticality Neutron Absorption  
 Framatome: NCS Controls.  
 Framatome: Factors that Affect Nuclear Criticality Neutron Production  
 Framatome: Evacuation / Accidents

AID-10392, Reference 1063 EdgeTech Dew Point Monitor Model COM.AIR, Version 2.5  
IRM C135I005, CSA, Calibration of EdgeTech Hygrometer Monitor Model COM.AIR.,  
Compressed Air Dew Point Monitor  
HRR-CRT-000070-003  
HRR-CRT-000070-System 70 ADU Process  
HRR-CRT-000070-System 70 ADU NCS Process Exam  
Evaluation of Reportability for NCS Infraction 17-013  
Evaluation of Reportability for NCS Infraction 17-037  
Evaluation of Reportability for NCS Infraction 17-036