



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

October 17, 2016

Mr. Joel W. Duling  
President  
Nuclear Fuel Services, Inc.  
P. O. Box 337, MS 123  
Erwin, TN 37650

**SUBJECT: NUCLEAR FUEL SERVICES, INC. – U. S. NUCLEAR REGULATORY  
COMMISSION INTEGRATED INSPECTION REPORT NUMBER 70-143/2016-004**

Dear Mr. Duling:

This letter refers to the inspections conducted from July 1 to September 30, 2016, at the Nuclear Fuel Services, Inc. (NFS) facility in Erwin, TN. The purpose of these inspections was to determine whether activities authorized under the license were conducted safely and in accordance with U.S. Nuclear Regulatory Commission (NRC) requirements. The enclosed report presents the results of the inspections. The findings were discussed with members of your staff at the exit meetings held on July 21 and October 6, 2016.

During the inspections, NRC staff examined activities conducted under your license, as they related to public health and safety and to confirm compliance with the Commission's rules and regulations and with the conditions of your license. Areas examined during the inspections are identified in the enclosed report. Within these areas, the inspections consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. The inspections covered the following areas; safety operations, radiological controls, facility support, and other areas.

Based on the results of these inspections, no cited violations or deviations were identified.

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 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>.

J. Duling

2

Should you have any questions concerning these inspections, please contact Leonard Pitts of my staff at 404-997-4708.

Sincerely,

***/RA/***

Marvin D. Sykes, Chief  
Projects Branch 1  
Division of Fuel Facility Inspection

Docket No. 70-143  
License No. SNM-124

Enclosure:  
Inspection Report 70-143/2016-004  
w/Attachment: Supplementary Information

cc: (See page 3)

J. Duling

2

Should you have any questions concerning these inspections, please contact Leonard Pitts of my staff at 404-997-4708.

Sincerely,

**/RA/**

Marvin D. Sykes, Chief  
Projects Branch 1  
Division of Fuel Facility Inspection

Docket No. 70-143  
License No. SNM-124

Enclosure:  
NRC Inspection Report 70-143/2016-004  
w/Attachment: Supplementary Information

cc: (See page 3)

**DISTRIBUTION:**

PUBLIC  
N. Baker, NMSS  
M. Sykes, RII  
R. Johnson, NMSS  
K. Ramsey, NMSS  
C. Stancil, RII  
L. Pitts, RII  
C. Rivera, RII  
NFS Website

PUBLICLY AVAILABLE       NON-PUBLICLY AVAILABLE       SENSITIVE       NON-SENSITIVE

ADAMS:  Yes      ACCESSION NUMBER:ML16292A047       SUNSI REVIEW COMPLETE  FORM 665 ATTACHED

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI			
SIGNATURE	/RA/	/RA/	/RA/	/RA/			
NAME	CStancil	TSippel	CRivera-Crespo	NPeterka			
DATE	10/13/2016	10/12/2016	10/12/2016	10/13/2016			
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY      DOCUMENT NAME: G:\DFFI\REPORTS\DRAFT INSPECTION REPORT FOLDER\NFS\2016 FEEDERS\NFS IR 2016-004.DOCX

cc:

Monty Fritts  
Operations Director  
Nuclear Fuel Services, Inc.  
Electronic Mail Distribution

Richard A. Freudenberger  
Safety & Safeguards Director  
Nuclear Fuel Services, Inc.  
Electronic Mail Distribution

Debra G. Shults  
Director, TN Dept. of Environment & Conservation  
Electronic Mail Distribution

Doris D. Hensley  
Mayor, Town of Erwin  
211 N. Main Avenue  
P.O. Box 59  
Erwin, TN 37650

Greg Lynch  
Mayor, Unicoi County  
P.O. Box 169  
Erwin, TN 37650

Johnny Lynch  
Mayor, Town of Unicoi  
P.O. Box 169  
Unicoi, TN 37692

David W. Deming  
Manager, Program Field Office – NFS  
Naval Nuclear Laboratory  
1205 Banner Hill Rd  
Erwin, TN 37650

U. S. NUCLEAR REGULATORY COMMISSION  
REGION II

Docket No.: 70-143

License No.: SNM-124

Report No.: 70-143/2016-004

Licensee: Nuclear Fuel Services, Inc.

Facility: Nuclear Fuel Services, Inc.

Location: Erwin, TN 37650

Dates: July 1 through September 30, 2016

Inspectors: C. Stancil, Senior Resident Inspector  
T. Sippel, Fuel Facility Inspector  
N. Peterka, Fuel Facility Inspector

Approved by: M. Sykes, Chief  
Projects Branch 1  
Division of Fuel Facility Inspection

Enclosure

## **EXECUTIVE SUMMARY**

Nuclear Fuel Services, Inc.  
NRC Integrated Inspection Report 70-143/2016-004  
July 1 – September 30, 2016

Inspections were conducted by the resident and regional inspectors during normal and off-normal hours in safety operations, radiological controls, and facility support. The inspectors performed a selective examination of licensee activities that was 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. No safety significant findings were identified during this inspection.

### **Safety Operations**

- Plant operations were performed safely and in accordance with license requirements. Items relied on for safety were properly implemented and maintained in order to perform their intended safety function. (Paragraphs A.1 and A.2)
- The Nuclear Criticality Safety (NCS) program was properly implemented and maintained in order to assure that normal and credible abnormal conditions remained subcritical as required by license and regulatory requirements. Criticality analysis demonstrated double contingency and adequate control of NCS parameters. (Paragraphs A.3 and A.4)
- The Fire Protection program and systems were adequately maintained in accordance with the license application and regulatory requirements. (Paragraph A.5)

### **Radiological Controls**

- The licensee adequately implemented the Radiation Protection program consistent with the license application and regulatory requirements. (Paragraph B.1)

### **Facility Support**

- The post maintenance testing and surveillance programs were implemented in accordance with the license application and regulatory requirements for work control and safety-related equipment testing. (Paragraphs C.1 and C.2)
- Adverse conditions were adequately identified, evaluated, and entered into the corrective action program. (Paragraph C.3)
- The plant modifications and configuration management programs were implemented in accordance with the license and regulatory requirements. (Paragraph C.4)

### **Attachment:**

Supplementary Information

## REPORT DETAILS

### **Summary of Plant Status**

The facility began the inspection period with the following process areas operating: Blended Low Enriched Uranium (BLEU) Preparation Facility (BPF) which includes the Uranium (U)-Metal, U-Oxide, Solvent Extraction and the down-blending lines. On approximately July 7, 2016, the Naval Fuel Manufacturing Facility (FMF) began preparations for start-up from the Building 302 roof replacement project. Preparations included valve lineups, process cleanouts, tests and inspections. The FMF began restart of processes August 1, 2016.

#### **A. Safety Operations**

1. Plant Operations Routine (Inspection Procedures (IPs) 88135 and 88135.02)
  - a. Inspection Scope and Observations

The inspectors performed routine tours of plant operating areas housing special nuclear material (SNM) and determined that equipment and systems were operated safely and in compliance with the license. Daily operational and shift turnover meetings were observed throughout the period to gain insights into process safety and operational issues. The inspectors reviewed selected licensee-identified issues and corrective actions for previously identified issues. These reviews focused on plant operations, safety-related equipment (SRE) (valves, sensors, instrumentation, in-line monitors, and scales), and items relied on for safety (IROFS) to determine whether the licensee appropriately captured off-normal events and implemented effective corrective actions to prevent recurrence.

The routine tours included walk-downs of the FMF, BPF, commercial development line, miscellaneous storage areas, Building 234, and Building 440. During routine tours, the inspectors verified that operators were knowledgeable of their duties and attentive to any alarms or annunciators at their respective stations. The inspectors observed activities during normal and upset conditions for compliance with procedures and material station limits. The inspectors noted that safety controls, including IROFS, were in place, properly labeled, and functional to ensure proper control of SNM. The inspectors verified the adequacy of communications between supervisors and operators within the operating areas. The inspectors reviewed operator log books, standard operating procedures (SOPs), maintenance records, and Letters of Authorization (i.e., temporary procedures) to obtain information concerning operating trends and activities. The inspectors verified that the licensee actively pursued corrective actions for conditions requiring temporary modifications and compensatory measures.

The inspectors performed periodic tours of the outlying facility areas and determined that equipment and systems were operated safely and in compliance with the license. The inspectors focused on potential wind-borne missile hazards, potential fire hazards with combustible material storage and fire loading, hazardous chemical storage, the physical condition of bulk chemical storage tanks and piping, storage of compressed gas containers, and potential degradation of plant security features. In addition, the inspectors periodically toured or inspected the licensee's emergency response facilities for familiarization and to ensure the facilities were maintained in a readily available status.

The inspectors attended various plan-of-the-day meetings, including the Safety and Safeguards Review Council (SSRC), and met daily with the Plant Shift Superintendent throughout the inspection period in order to determine the overall status of the plant. The inspectors evaluated the adequacy of the licensee's response to significant plant issues as well as their approach to solving various plant problems during these meetings.

b. Conclusion

No findings of significance were identified.

2. Safety System Inspection (IP 88135.04)

a. Inspection Scope and Observations

The inspectors performed walk-downs of safety-significant systems involved with the processing of SNM. As part of the walk-downs, the inspectors verified as-built configurations matched approved plant drawings. The inspectors interviewed operators to confirm that plant personnel were familiar with the assumptions and controls associated with the IROFS systems and instrumentation for maintaining plant safety. The inspectors also verified that IROFS assumptions and controls were properly implemented in the field. The inspectors reviewed the related Integrated Safety Analysis (ISA) to verify system abilities to perform functions were not affected by outstanding design issues, temporary modifications, operator workarounds, adverse conditions, or other system-related issues. The inspectors also verified that there were no conditions that degraded plant performance and the operability of IROFS, safety-related devices, or other support systems essential to safety system performance. Building 311 vault and storage areas were specifically inspected.

To determine the correct system alignment, the inspectors reviewed procedures, drawings, related ISAs, and regulatory requirements such as 10 CFR 70.61, "Performance Requirements." During the walk-downs, the inspectors verified all or some of the following as appropriate:

- Controls in place for potential criticality, chemical, radiological, and fire safety hazards
- Process vessel configurations maintained in accordance with Nuclear Criticality Safety Evaluations (NCSEs)
- Correct valve position and potential functional impacts such as leakage
- Electrical power availability
- Major system components correctly aligned, labeled, lubricated, cooled, and ventilated
- Hangers and supports correctly installed and functional
- Lockout/Tag-Out program appropriately implemented
- Cabinets, cable trays, and conduits correctly installed and functional
- Visible cabling in good material condition
- No interference of ancillary equipment or debris with system performance



b. Conclusion

No findings of significance were identified.

3. Nuclear Criticality Safety (IP 88135.02)

a. Inspection Scope and Observations

During daily production area tours, the inspectors verified that various criticality controls were in place, that personnel followed criticality station limit cards, and that containers were adequately controlled to minimize potential criticality hazards. The inspectors reviewed a number of criticality-related IROFS for operability. The inspectors noted that operators were knowledgeable of the requirements associated with IROFS. The inspectors performed the tours inside various process areas when restrictions on SNM movements were in effect.

As part of routine day-to-day activities on-site, the inspectors reviewed corrective action program (CAP) entries associated with criticality safety aspects. The inspectors evaluated the licensee's response to such entries and, if needed, had discussions with Nuclear Criticality Safety (NCS) engineers to determine safety significance and compliance with procedures.

b. Conclusion

No findings of significance were identified.

4. Nuclear Criticality Safety (IP 88015)

a. Inspection Scope and Observations

1) Criticality Analysis

The inspectors reviewed selected NCSEs to determine whether properly reviewed and approved NCSEs were in place and were of sufficient detail and clarity to permit independent review. The inspectors reviewed the selected NCSEs to determine whether calculations were performed within their validated area of applicability and consistent with the validation report. The inspectors reviewed the selected NCSEs and associated assumptions and calculations to verify that they were consistent with the commitments in the License Application, including the 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 NCSEs were selected based on factors such as risk-significance, whether or not they were new or revised, the use of unusual control methods, and operating history. The NCSEs reviewed included 54T-10-039, 54T-14-014, 54T-15-009, and those listed in Section 4 of the Attachment.

The inspectors reviewed the licensee's generation of accident sequences to verify whether the NCSEs 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 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. This review was conducted for the 54T-14-014, and 54T-15-009 NCSEs.

The inspectors verified that no changes to the validation report have been made since the last NCS inspection.

## 2) Criticality Implementation

The inspectors performed walk-downs in the commercial development line (CDL) and BLEU production facility areas to determine whether existing plant configuration and operations were covered by, and consistent with, the process description and safety basis in the NCSE. The inspectors reviewed process and system descriptions, and setpoint analyses to verify that engineered controls established in the NCSEs were included. The inspectors' review of engineered controls focused on the use of inline monitors (such as IROFS CDWW-11). The inspectors reviewed operating procedures and postings, to verify that selected administrative controls established in the NCSEs were included. The inspectors' review of administrative controls focused on the use of non-destructive assay and lab samples, and included IROFS CDPV-10, and -27. The inspectors interviewed four operators, two fissile material handlers, and three engineers to verify that administrative actions established in the NCSEs 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 NCSEs.

## 3) Criticality Operational Oversight

The inspectors reviewed NCS-related training records 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 ANSI/ANS standards where applicable, and whether NCS staff was involved in the development of operator training. Additionally, the inspectors interviewed operations 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 training qualification cards and certificates of attendance for specific required courses.

The inspectors accompanied a licensee NCS engineer on a walk-down of the shipping and receiving vault to determine whether NCS staff routinely inspected fissile material operations to ascertain that criticality requirements were being complied with. Additionally, the inspectors interviewed two NCS engineers and reviewed audit records, the audit procedure (NFS-NCS-AUDITWG), and the audit schedule to verify that the NCS function audited all areas biennially as required by Section 5.3.4 of the License Application. The inspectors reviewed the records of all 2016 NCS audits that had been documented as of the inspection, NCS-2016-01 through NCS-2016-14.

The inspectors reviewed the applied management measures for selected NCS controls to determine whether the management measures were sufficient to ensure the availability and reliability of NCS controls. The NCS controls reviewed were selected

from the NCSEs listed above and included IROFS CDWW-11, CDPV-10, and -27; for which the inspectors focused on the management measures of functional testing and procedures.

#### 4) Criticality Programmatic Oversight

The inspectors reviewed the selected NCSEs listed above to verify that they were performed in accordance with NCS program procedures and received appropriate independent review and approval. The inspectors conducted interviews and reviewed problem, identification, resolution, and correction system (PIRCS) entries to verify that audit findings were being identified, put in PIRCS, and tracked to resolution of the issue in accordance with Section 3.7 of NFS-NCS-AUDITWG. The PIRCS entries reviewed included P51775, P52377, P51940, P51755, and P51886.

The inspectors reviewed NCS staff qualification records and conducted interviews to verify that NCS engineers and senior NCS engineers had the necessary education and experience and were qualified in accordance with license requirements. The inspectors also interviewed an NCS engineer in training and reviewed his training and qualification records to verify that he was being qualified in accordance with license requirements. Additionally, the inspectors reviewed records to verify that NCS staff members only performed functions for which they were qualified.

#### 5) Criticality Incident Response and Corrective Action

The inspectors reviewed documentation to determine whether dual alarm coverage was provided for the BLEU facility where required and whether conservative assumptions consistent with license commitments were made concerning the source strength and spectrum, source location, and the amount and location of intervening shielding. The documents reviewed included 54T-04-088. The inspectors reviewed a recent Criticality Accident Alarm System (CAAS)-related event, in which one of the three detector pairs in the BLEU facility was accidentally cut off from the CAAS, to determine whether the licensee remained in compliance with the requirements of 10 CFR 70.24 after the CAAS detector pair was lost.

The inspectors reviewed selected NCS-related PIRCS entries to verify whether anomalous conditions were identified and entered into PIRCS, 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 addressed the problem identified in the PIRCS. The PIRCS entries reviewed included P50910, P52022, P52658, P53121, and P53181.

##### b. Conclusion

No findings of significance were identified.

#### 5. Fire Protection Quarterly (IP 88135.05)

##### a. Inspection Scope and Observations

During routine plant tours, the inspectors verified that transient combustibles were being adequately controlled and minimized in selected process areas. Various fire barriers and doors were examined and found to be properly maintained and functional in

accordance with site procedures. The inspectors reviewed active fire impairments in selected process areas and determined they were implemented per site procedure. Building 310 Resource Conservation and Recovery Act (RCRA) Warehouse and associated storage areas were specifically inspected.

The inspectors conducted a walk-down of Building 310 Warehouse and determined that the Pre-Fire plan drawing matched the as-found condition for various fire protection components like extinguishers, sprinkler systems, and postings. The material condition of fire protection components was adequate. The inspectors noted the fire water supply to the surrounding area fire hydrants was properly aligned for operational status.

b. Conclusion

No findings of significance were identified.

**B. Radiological Controls**

1. Radiation Protection Quarterly (IP 88135.02)

a. Inspection Scope and Observations

During tours of the production areas, the inspectors observed radiation protection controls and practices implemented during various plant activities including the proper use of personnel monitoring equipment, required protective clothing, and frisking methods for detecting radioactive contamination on individuals exiting contamination controlled areas. The inspectors noted that plant workers properly wore dosimetry and used protective clothing in accordance with applicable Special Work Permits (SWPs). The inspectors also noted that radiation area postings complied with plant procedures and included radiation maps with up-to-date radiation levels. The inspectors monitored the operation of radiation protection instruments and verified calibration due dates.

The inspectors performed numerous partial reviews of SWPs during the inspection period in different operational areas, but conducted a more thorough review for the following SWPs and posted radiologically controlled areas:

- SWP-16-34-015, Inspection and Clean-Out of B302 POG Main Piping
- SWP 16-449, Inspect and Repair Furnace Building 303
- SWP-16-19-008, Connecting of Airgap

b. Conclusion

No findings of significance were identified.

**C. Facility Support**

1. Post Maintenance Testing (IP 88135.19)

a. Inspection Scope and Observations

The inspectors witnessed and reviewed the post-maintenance tests (PMTs) listed below to verify that procedures and test activities confirmed safety systems and components

(SSCs) operability and functional capability following the described maintenance. The inspectors reviewed the licensee's completed test procedures to ensure any of the SSC safety function(s) that may have been affected were adequately tested, that the acceptance criteria were consistent with information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed and/or reviewed the test data to verify that test results adequately demonstrated restoration of the affected safety function(s). The inspectors verified that PMT activities were conducted in accordance with applicable work order instructions or licensee procedural requirements. Furthermore, the inspectors verified that problems associated with PMTs were identified and entered into the licensee's PIRCS.

- WR 244783 Buildings 303 and 302 2 hour Fire-Wall Process Pipe Sleeve; Change Package (CCP)-20120263; Engineering Change Request (ECR)-20160631; PMT per SRE Test N303PRSLEEVE004
- WR 245452 Replace 0D05 Retort & FRNCOV-0D05 Elements; WR 245468 Construct Tent for FRNCOV-0D05; PMT per SOP 401-26
- WR 247840 Repair Blocked Photoelectric Eye Path; WR 247840A Build Tent Over 303-FRNCOV-0601 to Support Repairs; SWP 16-449; PMT = Purge, external meas., cycle 4 vessels in auto, restore per SOP 401-6-303 Step 5.2, SREs N303FRNCTIC0685, Zone 4 Controller; N303FLAMDETECTR, Flame Arrestor; N303FURDOOR600A Door Interlocks

b. Conclusion

No violations of significance were identified.

2. Surveillance Testing (IP 88135.22)

a. Inspection Scope and Observations

The inspectors witnessed portions of and/or reviewed completed test data for the following surveillance tests of risk-significant and/or safety-related systems to verify that the tests met the requirements of the ISA, commitments, and licensee procedures. The inspectors confirmed the testing effectively demonstrated that the SSCs were operationally capable of performing their intended safety functions and fulfilled the intent of the associated SRE test requirement.

The inspectors discussed surveillance testing requirements with operators performing the associated tasks and determined that their procedural knowledge was adequate. The inspectors verified that any test equipment or standards used to conduct the test were within calibration. The inspectors determined that effective communications between personnel performing these tests were used to complete each activity.

- SRE Tests (4) N302XDRAINHAA02, -HBA02, -HAF01, -HBF01 for U-Recovery ENCLs 0A02 & 0F01 Drain Loop Seals
- SRE Tests (2) N302VENDRAIN001, South 24" POG and N302VENDRAIN003, North 18" POG Inspections; Work Request (WR) 245082; SWP1634-015; Scaffold builds N & S WRs 248590 & 245091
- N302XXAREAGHTRS, Area G Red Oil Controls with electronic technician support per WR 248643

b. Conclusion

No findings of significance were identified.

3. Corrective Action Program (CAP) Review (IP 88135)

a. Inspection Scope and Observations

The inspectors reviewed the PIRCS to ensure that items adverse to safety were being identified and tracked to closure in accordance with program procedures. The inspectors routinely attended daily PIRCS screening committee meetings and periodic Corrective Action Review Board meetings to evaluate site management's response and assignment of corrective actions or investigations to various issues. The inspectors also performed daily screenings of items entered into the CAP to aid in the identification of repetitive equipment failures or specific human performance issues for follow-up.

The inspectors reviewed CAP entries that occurred during the inspection period to assess and evaluate the safety significance of issues. For items identified to be more safety significant, the inspectors conducted an additional evaluation to verify the licensee was adequately addressing and correcting the issues to prevent recurrence.

b. Conclusion

No findings of significance were identified.

4. Permanent Plant Modifications (IP 88135.17)

a. Inspection Scope and Observations

The inspectors reviewed records, work packages, and supporting documentation associated with a design modification and a developmental material transition, against system design bases documentation to verify that the changes had not affected system operability or availability. The inspectors reviewed licensee procedures NFS-CM-001, Configuration Management, and NFS-WM-001, Control and Execution of Work, and selected ongoing and completed work activities to verify that the change was consistent with the design control documents and requirements. The inspectors verified that operational details associated with the changes had been incorporated into appropriate operating procedures. The inspectors performed field observations with licensee personnel to verify that the as built configuration was in accordance with design documents. The inspectors observed testing activities associated with the change and assessed the impact on interfacing operating systems. The inspectors observed the systems in operation and verified control panel displays including process and alarm status. Local and remote instrumentation were verified to be operable and clearly visible to personnel. Licensee personnel demonstrated the operational features of the systems and were knowledgeable of alarm settings and system functions. The inspectors verified that training had been provided to operators concerning the purpose and function of the systems and alarm response actions. Specifically, the inspectors reviewed the following:

- Building 302 Roof Replacement Letter of Authorization (LOA)-2289X-005, Facility Restart Requirements; Restart walk-downs of: equipment protection removal, general cleaning, SRE Tests, smoke and heat detection, process isolations removal,

- valve lineups, process cleaning/inventory, operation checkouts, and quality, engineering, and operations inspections
- LOA-HS-16-3 Comp Measure for Emergency Lighting in the SNM Processing Areas
  - LOA-2289x-16, Recovery Material Transfer from B303-200 to B302-108; SWP-16-19-008, Connecting of Airgap
  - Enclosure 6901 Modification; WR 245103; CCP-20120886; IQ T1T-16-0031; Performance Validation per LOA-2289X-015 Validation Testing for 302 6901
  - LOA-2281W-003 Manual Control of U-Oxide Band Heaters Following Post-Heat

b. Conclusion

No findings of significance were identified.

**E. Exit Meetings**

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 July 21 and October 6, 2016, to J. Duling and his staff. No dissenting comments were received from the licensee. Proprietary and classified information was discussed but not included in the report.

## SUPPLEMENTARY INFORMATION

### **1. KEY POINTS OF CONTACT**

<u>Name</u>	<u>Title</u>
S. Barron	Emergency Preparedness Program Manager
C. Brown	MC&A Department Section Manager
N. Brown	NCS Department Unit Manager
T. Cloyd	Fire Protection Engineer
R. Dailey	Engineering Director
R. Dotson	Quality Section Manager
J. Duling	President
T. Evans	Security Director
R. Freudenberger	Safety & Safeguards Director
J. Hagemann	Operations Section Manager
R. Mauer	Acting Licensing & ISA Manager
M. Fritts	Operations Director
M. Moore	Environmental Protection & Industrial Safety Section Manager
A. Morie	Acting Licensing Manager
J. Nagy	Assurance Director
R. Rice	Radiation Protection Unit Manager
D. Rogers	Waste Management & Decommissioning Section Manager
S. Sanders	Training Unit Manager
R. Shackelford	Nuclear Safety & Licensing Section Manager

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

None

### **3. INSPECTION PROCEDURES USED**

88015	Nuclear Criticality Safety
88135	Resident Inspection Program For Category I Fuel Cycle Facilities
88135.02	Plant Status
88135.04	ISA Implementation
88135.05	Fire Protection
88135.17	Permanent Plant Modifications
88135.22	Surveillance Testing

### **4. DOCUMENTS REVIEWED**

#### Drawings:

311-A0028-D, 311 Universal Storage Rack Layout, Revision (Rev.) C  
310-A0003-C, Building 310 Pre-Fire Plan, Revs. G and F

#### Procedures:

N333MONITR4COND, Rev. 10  
NFS-A-7, Procedure Listing for Control Lab Samples, Rev. 22  
NFS-HS-A-50, Guidelines for Government Agency Notification, Rev. 24  
NFS-HS-A-63, Verification & Validation of Nuclear Criticality Safety Analysis Codes, Rev. 7  
NFS-HS-A-71, Pre-Fire Plan Administration, Rev. 7A  
NFS-HS-B-11, Inspection of Emergency Lights, Rev. 10  
NFS-HS-B-70, Fire Detection, Rev. 9A



NFS-HS-CL-10, NCS Fuel Manufacturing Facility (u), Rev. 28  
 NFS-HS-CL-13-04, Nuclear Criticality Safety Shipping and Receiving Vault, Rev. 23  
 NFS-HS-CL-28, Nuclear Criticality Safety for the CDL Facility, Rev. 3  
 NFS-NCS-AUDITWG, Nuclear Criticality Safety Audit Writer's Guide, Rev. 5  
 NFS-NCS-QUALP, Nuclear Criticality Safety Engineer Qualification Program, Rev. 0  
 NFS-SA-3-08, Determination of Uranium in Process Solutions by Gamma Counting, Rev. 13  
 NFS-SA-3-14, Determination of Uranium Solution Using High Resolution Germanium  
 Detector Spectroscopy, Rev. 9  
 WM-HTG-001, Work Control Planning Guide, Rev. 3

Records:

54T-04-088, Demonstration of Criticality Accident Alarm System (CAAS) Detector Coverage  
 for the Oxide Conversion Building (OCB) and the Effluent Process Building (EPB),  
 Rev. 0  
 54T-10-039, Nuclear Criticality Safety Evaluation for the CDL Process Ventilation System,  
 Rev. 4  
 54T-14-014, Nuclear Criticality Safety Evaluation for the Can Cleaning System, Rev. 4  
 54T-15-009, Nuclear Criticality Safety Evaluation for CDL Liquid Waste Discard System,  
 Rev. 1  
 COR-NDA-13-003, Results of Uranium Hold-Up Measurements at Nuclear Fuel Services,  
 Rev. 1  
 Email from Charles Street, dated August 30, 2016, 802 Stacking  
 IROFS 000-FIREPREVENT, Items Relied on for Safety (IROFS) and Safety-Related  
 Equipment (SRE) – Fire Prevention and Mitigation, Rev. 13  
 NCS-07-01, Nuclear Criticality Safety Evaluation for the Receipt Calciner Furnace, dated  
 December 2015, Rev. 6  
 NCS Audits NCS-2016-01 through NCS-2016-14  
 NFS-ACC-062, 300 Scrubber Summary Sheet, Rev. 20, completed July 20, 2016  
 NFS-WM-001-6, Work Control Process for SubContractors/Vendors, Rev. 0  
 NCSE for the High Security Storage Area in Building 311, Rev. 8  
 SA-00307, Setpoint Analysis for BLW-044, Rev. 3, dated June 23, 2015  
 Building 302 Roof Project Schedule, dated April 11, 2016  
 Corrective Action Review Board (CARB) Agendas for July 19 and August 31, 2016  
 Fire Hazard Analysis 310 Building (Warehouse), Rev. 4  
 Lists of Buildings 310 and 311 Vault ECRs/ESRs and PIRCS for last 12 months  
 Nonconformance Report NCR-2289X-040, ES-3100 Containers Failed Leak Test  
 Plant Hazards Analysis Table for Building 311 Storage Facility  
 Safety Message, Flashlights to Support Personnel Evacuation in the Case of a Power  
 Failure, dated August 4, 2016  
 SRE Test N310XXDSPRINKLR, completion date March 24, 2016  
 Work Requests 1022741, 1022747, 1022763, and 1022740, Fire Damper Tests

PIRCS Reviewed:

42430, 42543, 50910, 51755, 51775, 51886, 51940, 52022, 52337, 52455, 52456, 52658,  
 52891, 52982, 53121, 53181, 53296, 53298, 53365, 53404, 53423, 53427, 53433, 53467,  
 53509, 53522, 53553, 53554, 53580, 53589, 53666, 53686, 53694, 53703, 53716, 53755,  
 54769, 54770, 54873, 55023, 55151, 55156