



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

January 26, 2007

Mr. D. B. Ferguson, Jr.
President & CEO
Nuclear Fuel Services, Inc.
P. O. Box 337, MS 123
Erwin, TN 37650

SUBJECT: NRC INSPECTION REPORT NO. 70-143/2006-022

Dear Mr. Ferguson:

This refers to the inspection conducted from November 26, 2006, through December 31, 2006, at the Nuclear Fuel Services facility. The purpose of the inspection was to determine whether activities authorized by the license were conducted safely and in accordance with NRC requirements. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the enclosed report.

Areas examined during the inspection included: Plant Operations, Fire Protection, Maintenance/Surveillance, Training, Management Organization and Controls, Blended Low Enriched Uranium Preparation Facility Operations Restart Review Followup and Previous Commitments. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Within the scope of the inspection, violations or deviations were not identified.

This letter and the enclosed report contain sensitive unclassified information and will not be available for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS).

D. B. Ferguson

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Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA/ D. Collins for

David A. Ayres, Chief
Fuel Facility Inspection Branch 1
Division of Fuel Facility Inspection

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

Enclosure: NRC Inspection Report

cc w/encl:
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Vice President
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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-143

License No.: SNM-124

Report No.: 70-143/2006-022

Licensee: Nuclear Fuel Services, Inc.

Facility: Erwin Facility

Location: Erwin, TN 37650

Dates: November 26, 2006 - December 31, 2006

Inspectors: S. Burris, Senior Resident Inspector
G. Smith, Resident Inspector
M. Crespo, Senior Fuel Facilities Inspector

Approved by: D. Ayres, Chief
Fuel Facility Inspection Branch 1
Division of Fuel Facility Inspection

Enclosure



EXECUTIVE SUMMARY

Nuclear Fuel Services, Inc.
NRC Inspection Report No. 70-143/2006-022

This inspection included observations conducted by the Resident Inspectors during normal and off-normal shifts in the area of Plant Operations. Specialized inspections and reviews of documentation were conducted by a regional inspector in the areas of Training, Operations, Maintenance and Surveillance, and Management Organization and Controls.

Plant Operations

- All of the operations activities observed were performed safely and in accordance with approved procedures (Paragraph 2.a).

Fire Protection

- The licensee experienced a problem with control of activities associated with the Secondary Alarm Station Halon System after responding to a small fire on site. This item is identified as an Unresolved Item (URI) 70-143/2006-022-01 (Paragraph 2.b).

Maintenance/Surveillance

- Safety reviews and verifications were performed as specified in the license (Paragraph 3.a).

Training

- The licensee provided adequate training to its employees in the required areas of radiation protection, criticality safety, emergency preparedness, procedure adherence, and general employee training. The training observed showed that the employees had a good understanding of the processes (Paragraph 3.b).

Management Organization and Controls

- Returning personnel were being appropriately trained and qualified. Audit results were documented and conveyed to management, and any findings were resolved in a timely manner. The inspectors will monitor closely the effectiveness of the PIRCS program to properly identify all issues of concern. The licensee adequately implemented the Safety and Safeguards Review Council (Paragraph 3.c).

Blended Low Enriched Uranium Preparation Facility (BPF) Operations Restart Review Followup

- The licensee was adequately implementing the license requirements for BPF operations
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[REDACTED]

(Paragraph 4.a).

[REDACTED]



Previous Commitments

- The BPF restart commitment matrix was updated with the status of the licensee's long-term commitments (Paragraph 5.a).

Attachment:

Partial List of Persons Contacted

Inspection Procedures Used

List of Items Opened, Closed, and Discussed





REPORT DETAILS

1. Summary of Plant Status

Fuel manufacturing, training activities, and scrap recovery processes were operated throughout the reporting period. Blended low-enriched uranium (BLEU) oxide conversion activities operated normally during the inspection period. BLEU Preparation Facility (BPF) operations were conducted in accordance with license requirements. Decommissioning, including processing, packaging, and shipping contaminated soil and debris from burial grounds continue under normal operations.

2. Safety Operations

a. Plant Operations (Inspection Procedure (IP) 88135 and IP 88020)

(1) Inspection Scope and Observations

The inspectors performed walkdowns of the fuel process areas, Building 333, the Oxide Conversion Building (OCB), and the BPF. The inspectors verified adequate staffing, operator attentiveness, compliance with procedures and station limits and verified that safety controls were implemented and controlled. Communications were monitored between supervision and line operators to ensure that safety activities were being performed in accordance with design and administrative controls. Adequate oversight was provided by supervision. The inspectors verified procedural compliance within the operating areas.

The inspectors reviewed operations across the facility and verified procedural compliance. The inspectors walked down sections of the standard operating procedures and verified that Items Relied On For Safety (IROFS) were identified and present in the 100, 200, 300, 500, 600, 800 and 900 areas. No issues were noted.

The inspectors toured the BLEU complex and verified that safety related equipment (SRE) tests were current and being performed.

The inspectors observed the modifications of equipment for uranium metal areas and uranium aluminum areas during the holiday shutdown period. The inspectors reviewed the documentation and controls used to support these modifications to verify that work documents reflected the proper approvals and reviews of the proposed activities, personnel were properly implementing these changes as designed, and management oversight was evident during the work activities. Verification included that proper



controls (Work Request, Lockout/Tagout, Special Work Permits) were in place and being implemented during the work activities. The inspectors evaluated the following activities:

- Work activities associated with the modification of the Uranium Oxide/Metal (U/M) system in which the licensee removed and replaced the U-Metal reactors with an up-graded design and installed up-graded heaters and controllers. The inspectors reviewed Work Request (WR) #108243, Lockout/Tagout # P2894 and Special Work Permit (SWP) (radiological) #11771.
- Repair and/or replacement of four Uranium Aluminum (U/A) pumps for Columns 1F03 and 1E03 and rebuild control valve for 1E01D. The licensee rebuilt two of the pumps, replaced the other two pumps and rebuilt the control valve. Work documentation reviewed included WR #108621 and WR #108620.
- The licensee modified the U/A Dissolver Column overflow lines to include break points along the run of the lines. The lines plug often, and therefore NFS determined that this modification would facilitate cleaning these lines. The documents reviewed were WR #108772 for the work activities and controls and SWP #11772 for the radiological controls.
- The licensee replaced a non-functioning fire damper and its associated ductwork with a newer design during the holiday shutdown. The ventilation ductwork between areas 302 and the tube room had been in a non-operational condition for over a year. The licensee implemented compensatory fire impairment requirements and actively worked on an engineering fix for this issue. During the holiday shutdown, the licensee issued work documents to modify the ventilation system which would correct the repeated failures of the installed fire damper. The original large bore ventilation duct was replaced with four smaller diameter ventilation pipes with individual fire clamps. These pipes were installed and properly completed and tested. All work was performed under WR #108281 and SWP #11776.

(2) Conclusions

Review of the in process work activities, identified documents, and closure packages were found to be acceptable with no identified issues. All of the operations activities observed were performed safely and in accordance with approved procedures.

b. Fire Protection (IP 88055)

(1) Inspection Scope and Observations

On December 15, 2006, a small electrical fire started in a heat trace line associated with the de-ionized water supply line leading to building 105 (analytical lab). The fire location was outside, near the penetration to the building. The Secondary Alarm Station (SAS) was contacted via emergency telephone and announced the fire over the plant paging system. The fire brigade was appropriately dispatched and the fire was immediately extinguished. Maintenance removed power from the heat trace circuit. Subsequent to the extinguishing of the fire, plant supervision directed the SAS operator to activate the manual fire pull station at the SAS panel since the fire protection procedure, "Fire Reporting and Response," Revision (Rev.) 29, directed that the sounding of the plant fire alarm would be made for any fires. SAS was requested to perform this action even though there were pull stations located near the scene and there was no manual actuation station at the SAS watch station. Inadequate communication between the on-scene personnel and the SAS operator resulted in the manual actuation for the Halon system within the SAS building being actuated instead of the fire alarm pull station. Supervision then responded to SAS to address the Halon system discharge. During an attempt to reset the Halon system and place the alternate tank in service, the backup tank discharged. SAS was then ventilated and normal access was restored. NFS prepared a fire impairment for the SAS due to the inoperable Halon system (both tanks fully discharged). The impairment required the addition of a manual portable fire extinguishing agent. The expectation being that the SAS operator would use the extinguisher to address a fire in lieu of the Halon system. The inspectors reviewed the impairment form and noted that some SAS operators had not received the required portable extinguisher training. Safety immediately trained all of the individuals assigned to this watch station. NFS is currently performing a root cause of event, which will be reviewed by the Residents when complete. This issue will be tracked as an unresolved item (URI) 70-143/2006-022-01.

(2) Conclusions

The inspectors noted several weaknesses/deficiencies in the operation and maintenance of the SAS Halon system. These issues require further NRC review to determine the correct NRC response.

3. Facility Support

a. Maintenance/Surveillance (IP 88025 and IP 88135)

(1) Inspection Scope and Observations

The inspectors performed assessment of the maintenance and surveillance activities to ensure that IROFS and other safety controls are in place and are adequately verified to perform their safety function when needed. These assessments included work control documents, permits, and other required controls.

Through interviews with personnel, observation of on-going activities and discussions with the licensee, the inspectors determined that procedures for operations and safety management systems were reviewed in the appropriate time frame and approved by the appropriate management. The inspectors verified that changes to procedures were properly reviewed by the appropriate level of management and were performed at the designated frequency. The inspectors verified that the appropriate safety management was included in the review and approval of procedure changes. The inspectors found no examples of outdated procedures during the inspection.

(2) Conclusions

Safety reviews and verifications were performed as specified in the license.

b. Training (IP 88010 and IP 88135)

(1) Inspection Scope and Observations

The inspectors reviewed the licensee's plan for return workers and their training and general employee training (GET) schedules. An important aspect of this training was the emphasis placed on the different ways that the employees have to notify management of any event or violation of regulatory requirements. The radiological worker training described the recent changes to the radiological safety controls throughout the facility. No findings of significance were identified.

The inspectors observed a Building 333 training session. Topics covered by the training included; general criticality safety requirements and postings, review of radioactive materials processed, emergency alarm and evacuation, abnormal operations and items relied on for safety. In addition, previous safety significant events were discussed during the training. No findings of significance were identified.

The inspectors observed on the job training (OJT) for the 200/300/500 and 600 process areas and the solvent extraction process to review the adequacy of the licensee's OJT and the operating procedures training. The inspectors were able to verify that the employees were aware of the radiological and criticality safety concerns and safety controls of the designated work area. The inspectors were also able to see the trainer

[REDACTED]

interact with trainees and verify the adequacy of the training. No findings of significance were identified.

(2) Conclusions

The licensee provided adequate training to its employees in the required areas of radiation protection, criticality safety, emergency preparedness, procedure adherence, and general employee training. The training observed indicated that the employees had a good understanding of the training acquired and how it is implemented in the work area.

c. Management Organization and Controls (IPs 88005, 88071 and 88135)

(1) Inspection Scope and Observations

The inspectors reviewed staffing changes due to the increased number of returning union employees and their reassignment to new areas. The inspectors reviewed these changes in personnel assignment, responsibilities and functions that occurred since the last inspection in order to verify that personnel training and qualification requirements were met. The inspectors determined that these changes, as specified in the license, were satisfied.

The inspectors reviewed the licensee's PIRCS entries to ensure that items adverse to requirements and quality were being identified and tracked to closure. Those items reviewed were being properly identified, reviewed and tracked to completion. The inspectors also reviewed audits and noted that they were of sufficient depth and appropriately targeted. The audit results were documented and conveyed to management, and audit findings were resolved in a timely manner.

The inspectors attended selected meetings and reviewed the most recent minutes from various Safety and Safeguards Review Council (SSRC) meetings. The inspectors found that the reviewed minutes from the calendar year 2006 meetings included a review of new or revised facilities and equipment, NRC inspection findings, safety-related audit and inspection findings, and licensing deficiency reports. The inspectors found that the required disciplines (e.g. Safety, Security, Material Control and Accounting Management, Production, etc.) were represented in the meetings conducted. The inspectors found that the items reviewed were given appropriate consideration and management attention. No findings of significance were identified.

(2) Conclusions

Returning personnel were being appropriately trained and qualified. Audit results were documented and conveyed to management, and any findings were resolved in a timely manner. The inspectors will monitor closely the effectiveness of the PIRCS program to properly identify all issues of concern. The inspectors determined that the licensee adequately implemented the SSRC.

[REDACTED]

4. **BPF Operations Restart Review Followup**

a. **Scope and Observations**

The inspectors performed a followup review of BPF operations. The inspection involved a review of the qualification records of operators currently at the job and observations of downblending and solvent extraction operations. The inspectors noted that operators were properly qualified for their positions and knowledgeable in their areas. The inspectors also noted adequate adherence to procedures. No issues were noted.

The inspectors also reviewed BPF work orders generated over the last seven weeks of BPF operations. The inspectors noted the correct approvals for modifications and replacements. No issues were noted. The inspectors also reviewed recently modified SRE test procedures, some of which were modified to account for any power failure issues of the safety equipment. No issues were noted.

b. **Conclusions**

The licensee was adequately implementing the license requirements for BPF operations.

5. **Previous Commitments**

a. **Scope and Observations**

The inspectors reviewed the BPF restart commitment matrix. This matrix was developed to ensure the safe operation of the BPF upon its return to service and to track the long term corrective actions of the licensee. The inspectors discussed the remaining long term items with facility personnel and verified that implementation of the commitments were still underway.

b. **Conclusions**

The BPF restart commitment matrix was updated with the status of the licensee's long term commitments.

6. **Exit Meeting**

The inspection scope and results were presented to members of the licensee management at various meetings throughout the inspection period and were summarized on January 3, 2007. No dissenting comments were received from the licensee.

[REDACTED]

ATTACHMENT

1. PERSONS CONTACTED

Partial List of Licensee's Persons Contacted:

R. Bond, Jr., Sr., Project Director, BPF
N. Brown, Nuclear Safety Engineer
T. Coates, Engineering Section Manager
R. Droke, Licensing/Acting Safety Director
D. Ferguson, President & CEO
K. Guinn, Consultant
G. Hazlewood, Engineering Director
T. Lindstrom, Executive Vice President, HEU Operations
M. Moore, Vice President, Safety & Regulatory
J. Nagy, Sr. Licensing & Regulatory Compliance Officer
J. Parker, Industrial Safety Manager
M. Tester, Sr. Manager, Radiation Control
A. Vaughan, Director Fuel Production
J. Wheeler, Licensing & ISA Manager
D. Wise, Vice President, Fuel Manufacturing

2. INSPECTION PROCEDURES USED

IP 88005	Management Organization and Controls
IP 88010	Operator Training/Retraining
IP 88020	Operational Safety
IP 88025	Maintenance and Surveillance of Safety Controls
IP 88055	Fire Protection (Annual)
IP 88071	Configuration Management Programmatic review
IP 88135	Resident Inspector Program for Category 1 Fuel Cycle Facilities

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

70-143/2006-022-01 Open URI Operability of the SAS Fire/Halon System

[REDACTED]