UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

December 21, 2006

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. 70-143/2006-014 AND NOTICE OF VIOLATION

Dear Mr. Ferguson:

This refers to the inspection conducted from October 15, 2006, through November 25, 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: Operations, Management Organization and Controls, Fire Protection, Radiation Protection, Resumption of Normal Operations After a Strike, and Physical Protection. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Based on the results of this inspection, the NRC has determined that a violation of NRC requirements occurred. The violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is available on the NRC's Web site at www.nrc.gov. The violation is cited in the enclosed Notice of Violation (Notice) and is being cited in the Notice because it was identified by the NRC.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. For your consideration, NRC Information Notice 96-28, "SUGGESTED GUIDANCE RELATING TO DEVELOPMENT AND IMPLEMENTATION OF CORRECTIVE ACTION," is available on the NRC's Web site. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

[redacted]

If you contest the violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region II, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001, and the NRC Resident Inspector at your facility.

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).

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

Enclosures: 1. Notice of Violation
2. NRC Inspection Report

cc w/encls:
B. Marie Moore
Vice President
Safety and Regulatory Management
Nuclear Fuel Services, Inc.
P. O. Box 337, MS 123
Erwin, TN 37650

L. Edward Nanney, Director
Division of Radiological Health
Tennessee Dept. of Environment & Conservation
L&C Annex, Third Floor
401 Church Street
Nashville, TN 37243-1532

Distribution w/encls: (See page 3)

[redacted]

[redacted]

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☐ PUBLICLY AVAILABLE X NON–PUBLICLY AVAILABLE X SENSITIVE ☐ NONSENSITIVE

ADAMS: X Yes ACCESSION NUMBER:_____

| OFFICE | RII:DFFI | RII:DFFI | RII:DFFI | RII:DFFI | | | |
|---|---|---|---|---|---|---|---|
| SIGNATURE | SB 12/21/06 | GS 12/21/06 | MC 12/21/06 | DMC 12/21/06 | | | |
| NAME | SBurris | GSmith | MCrespo | DCollins | | | |
| DATE | 12/ /2006 | 12/ /2006 | 12/ /2006 | 12/ /2006 | 12/ /2006 | 12/ /2006 | 12/ /2006 |
| E-MAIL COPY? | YES NO | YES NO | YES NO | YES NO | YES NO | YES NO | YES NO |

OFFICIAL RECORD COPY DOCUMENT NAME: G:\REPORTS\Final Reports\NFS\REDACTIONS\2006-014 Rev 1 (REDACTED).wpd

[redacted]

NOTICE OF VIOLATION

Nuclear Fuel Services, Inc.
Erwin, Tennessee

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

During an NRC inspection conducted from October 15, 2006, through November 25, 2006, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

> Safety Condition S-1 of Special Nuclear Materials License No. SNM-124, authorizes the use of licensed materials in accordance with the statements, representations, and conditions in the License Application and Supplements.
>
> Section 2.7 of the License Application, "Procedures," requires SNM operations and safety function activities to be conducted in accordance with written procedures.
>
> Procedure NFS-GH-36, "Lockout/Tagout," Revision 5, Section 6.6.1 and 6.6.2, requires removal of system and personnel locks only when the equipment is ready for operation.
>
> Contrary to the above, on October 25, 2006, a lockout was removed on the 1E01 Uranium-Aluminum centrifuge prior to work being completed on the component. Specifically, the inspectors noted the removal of locks and tags without the scheduled work being completed and the shaft guard on the centrifuge being reinstalled.

This is a Severity Level IV violation (Supplement VI).

Pursuant to the provisions of 10 CFR 2.201, Nuclear Fuel Services, Inc. is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 with a copy to the Regional Administrator, Region II, and a copy to the NRC Senior Resident Inspector at the facility that is the subject of this Notice, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

[redacted]

If you contest this enforcement action, you should also provide a copy of your response to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001.

Your response will be considered sensitive information and will not be made available for public inspection in the NRC Public Document Room or in the NRC's document system (ADAMS).

In accordance with 10 CFR 19.11, you may be requested to post this Notice within two working days.

Dated this 21st day of December, 2006.

[redacted]

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

| | |
|---|---|
| Docket No.: | 70-143 |
| License No.: | SNM-124 |
| Report No.: | 70-143/2006-014 |
| Licensee: | Nuclear Fuel Services, Inc. |
| Facility: | Erwin Facility |
| Location: | Erwin, TN 37650 |
| Dates: | October 15, 2006 - November 25, 2006 |
| Inspectors: | S. Burris, Senior Resident Inspector<br>G. Smith, Resident Inspector<br>M. Crespo, Fuel Facilities Inspector |
| Approved by: | D. Ayres, Chief<br>Fuel Facility Inspection Branch 1<br>Division of Fuel Facility Inspection |

## EXECUTIVE SUMMARY

Nuclear Fuel Services, Inc.
NRC Inspection Report 70-143/2006-014

This inspection included observations conducted by the resident inspectors during normal and off-normal shifts in the area of Plant Operations, Management Organization and Controls, Radiation Protection, and Physical Protection.

Plant Operations

- A violation was identified due to the failure to correctly implement the lockout/tagout process during operation in the BLEU Preparation Facility (BPF). All other observed operations activities were performed safely and in accordance with approved procedures (Paragraph 2 a).

- Blended Low-Enriched Uranium (BLEU) Preparation Facility began operation on October 23, 2006 with continuous NRC oversight coverage (Paragraph 2 a).

- The licensee continues to perform loss of power testing on various electrical safety related equipment (SRE) in the Naval Fuel Production Area, BLEU Complex, BLEU Preparation Facility (BPF). This issue was identified by a special NRC inspection team. These tests are being performed to verify that each component will fail to its specified safety condition on a loss of power and remain in a safe condition on re-energization. (Paragraph 2 b).

- The inspectors noted a weakness in the Operation Readiness Review process where a newly installed component in the process area was placed in operation prior to verifying leak tightness (Paragraph 2 b). This weakness was addressed in the licensee's corrective action program under Problem Identification, Resolution, and Correction System (PIRCS) #8644.

Management Organization and Controls

- No significant management personnel changes were made during this assessment period. Positive improvements were indicated by senior management's involvement with the daily oversight of the operational activities. Review of site procedures adequately ensured that safety procedures were properly controlled and approved (Paragraph 3 a).

- The licensee's audits for the Nuclear Criticality Safety Group was adequately implemented and tracked. The licensee's usage of the PIRCS program to properly identify all issues of concern was noted to be a weakness (Paragraph 3 b).

[redacted]

Radiation Protection

- The licensee's radiological practices were adequate. A weakness was noted with the licensee's configuration control of the local criticality alarm panel (Paragraph 4 a). Licensee generated PIRCS #8593 to address this NRC concern.

Fire Protection

- The licensee's fire protection compensatory measures were adequate for the newly installed area LA (Paragraph 5 a).

Physical Protection

- The licensee's communications and coordination with local law enforcement agencies was adequate (Paragraph 6 a).

Attachment:
Partial List of Persons Contacted
Inspection Procedures Used
List of Items Opened, Closed, and Discussed

[redacted]

## 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) resumed operations on October 23, 2006, following an extended shutdown as a result of the March 6, 2006, spill event. Decommissioning, including processing, packaging, and shipping contaminated soil and debris from burial grounds has been stopped due to staffing issues because of the union strike. On November 6, 2006, NFS began the return of union employees to the site. The restaffing will be on a gradual basis with approximately 57 individuals having returned. Return to full complement of staffing will take several months. Contract negotiations will continue in parallel with the restaffing efforts. Implementation of the Resumption of Normal Operations After a Strike inspection procedure (IP) 92712 was captured in inspection report 2006-021.

### 2. Plant Operations (IP 88020, 88135)

a. Plant Tours, Plant Activities, and Operating Procedures

(1) Inspection Scope and Observations

The inspectors performed numerous tours of the fuel process area, including [redacted]. The inspectors verified adequate staffing and evaluated attentiveness of operators in carrying out their assigned duties. Communications were monitored between supervision and line operators. Adequate oversight was provided by supervision. The inspectors verified procedural compliance within the operating areas.

From October 23, 2006, to October 27, 2006, the inspectors performed a round-the-clock inspection of the BPF restart process. The inspectors evaluated the licensee's performance in the operation of the Uranium (Uranium)-Oxide, Uranium-Aluminum (U-AL), and the solvent extraction systems. The inspectors observed numerous activities, including U-AL bowl cleaning, dissolver operations, material transfers, and material purification. On October 25, the inspectors noted a violation of the lockout/tagout process. Specifically, following a bowl change-out on the 1E01 centrifuge in the U-AL system, the inspectors noted that the system locks, personnel locks, and the tags had been removed from the breaker on the 1E01 centrifuge. The inspectors also noted the shaft guard had not been reinstalled or extended to cover the shaft. The inspectors brought this condition to the attention of licensee management.

Followup investigation by the licensee revealed that operations personnel removed all locks following the shift change-over and then immediately rehung them. Following work completion, the locks were finally removed without reinstalling the shaft guard. Although the centrifuge was never running with the guard in the retracted position, the potential existed to start the centrifuge without the appropriate personnel protection from rotating equipment. Failure of plant staff to follow plant procedure, NFS-GH-36, "Lockout/Tagout," Rev. 5 was a violation of NRC requirements, and will be tracked as VIO 70-143/2006-014-01.

The inspectors noted no issues with housekeeping in any of the areas reviewed.

(2) Conclusions

The inspectors identified VIO 70-143/2006-014-01 for the failure of plant staff to properly implement the lockout/tagout program during U-Al operations in the BPF.

b. Safety Function, Maintenance for Safety Controls, Configuration Control, and Change Control

(1) Inspection Scope and Observations

The inspectors reviewed activities associated with testing the loss of power feature for various safety related equipment (SRE) components. Although these tests were performed safely, the inspectors noted that a general LOA was used in conjunction with the normal SRE testing document. In some cases, the loss of testing could not be performed without more specific instructions. Although in these cases the testing was secured, these difficulties could have been identified up front in the planning stage rather than during execution of the actual test. No safety issues were identified.

The inspectors evaluated the activities associated with the Operational Readiness Review process for the newly installed LA process area. The inspectors performed numerous walkdowns and interviewed various operators, trainers, and engineers in order to gauge the adequacy of the design process. The licensee noted a problem during initial operation and generated PIRCS #8644. This problem report addressed a leak that developed at a flanged connection located within a glove box. This leak can be attributed to inadequate verification of construction activities or startup testing. The licensee is currently developing corrective actions to address this deficiency. The inspectors communicated to the licensee the importance of verifying that equipment is operable prior to placing in service.

(2) Conclusions

All of the testing and operational activities observed were performed safely and in accordance with approved procedures.

## 3. Management Organization and Controls (IP 88005)

a. Organizational Structure and Procedure Controls

(1) Inspection Scope and Observations

There were no significant management personnel changes made during this assessment period, however, the licensee has recently added a senior person with the responsibility for all High Enriched Fuel (HEU) activities across the site. Also, management is taking a more proactive role in the day-to-day operations and review of issues which could impact plant safety. The inspectors determined that experience and education requirements, as specified in the license, were satisfied.

Through interviews with management 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

Personnel changes did not appear to impact the responsibilities and functions specified in the license. The licensee's system to review and issue procedures adequately ensured that safety procedures were properly controlled and approved.

b. Internal Reviews and Audits, Safety Committees, and Quality Assurance Programs

(1) Inspection Scope and Observations

The inspectors reviewed quality assurance audits for the Nuclear Criticality Safety Group. These reviews and audits were conducted as required by the license and the licensee's internal program controls. Several significant audit findings were noted, for which recommendations were proposed. The inspectors verified that the issues were identified in the corrective action program and were being tracked to final closure. The inspectors reviewed a sample of the resolutions and found them to adequately address the concerns detailed in the audit. No findings of significance were identified with the licensee's audit program.

The inspectors also reviewed the effectiveness of the corrective action program. The inspectors reviewed the effectiveness of problem identification by plant personnel to ensure that all of the required items of concern were being documented in their problem identification, resolution and corrective action system (PIRCS). There were several instances where issues were not being properly identified in the PIRCS program, which

the licensee has been made aware of by the NRC. The inspectors will continue to monitor this issue to ensure that no further examples of documenting issues are identified. No other findings of significance were identified.

(2) Conclusions

The licensee's audits for the Nuclear Criticality Safety Group was adequately implemented and tracked. The inspectors will monitor closely the effectiveness of the PIRCS program to properly identify all issues of concern.

**4. Radiation Protection (IP 88135 and 88030)**

a. Inspection Scope and Observations

The inspectors evaluated the licencee's activities associated with road paving operations near the wastewater treatment plant. Prior to engaging in the work, as required by procedure, the licensee stopped all special nuclear material movement in the affected area. The licensee then disabled the criticality alarm function of the nearby detector pair, 200 East (E) and 200 West (W) to prevent possible spurious alarms from the paving operation. One detector's (200W) input to the logic drawer associated with the plant criticality alarm was disconnected. The other detector, 200E was de-energized. These actions prevented the 200E and 200W criticality detector pair from actuating the plant alarm. The local alarm panel however would still alarm for 200W, thus still providing operations a limited status indication. However, the inspectors noted that the local alarm panel actually showed the 200W detector to be de-energized which conflicted with the previous actions taken. The initial corrective action was to simply swap the annunciator target windows to show the 200E detector to be in alarm (i.e. de-energized). Additionally, the licensee had to be prompted to generate a PIRCS (#8593) to evaluate this nonconforming condition.

The radiation protection program, in general, was being implemented in accordance with regulations and license commitments. Self-assessments by the licensee and implementation of the as low as reasonably achievable (ALARA) program were adequate. The licensee's implementation of corrective actions to resolve violations of noncompliance in the area of Radiation Work Permits (RWPs) was adequate.

Radiological safety postings and RWPs were properly used to communicate potential hazards and protective equipment requirements to workers.

The radiation and contamination survey programs were appropriately implemented to protect workers, and to identify potential work areas posing an internal or external radiation hazard to workers. A review of the licensee's PIRCS indicated that most of the radiation and contamination problems and events were entered into PIRCS plant wide.

b. Conclusions

The licensee's radiological practices were adequate. A weakness was noted with the licensee's configuration control of the local criticality alarm panel.

## 5. Fire Protection (IP 88135 and IP 88055)

a. Inspection Scope and Observations

The inspectors reviewed the compensatory measures associated with the recently upgraded area LA. LOA-1988L-004 was developed to provide compensatory fire protection measures for this area since all required fire protection features had not been completed prior to startup of this area. The inspectors performed a walkdown of the area, reviewed the ISA, and interviewed various operators to evaluate the effectiveness of these compensatory measures. No findings of significance were noted.

b. Conclusions

The licensee's fire protection compensatory measures were adequate for the newly installed area LA.

## 6. Physical Protection (IP 88135)

a. Inspection Scope and Observations

The inspectors assessed the communications and coordination between the Site Security Group and the local law enforcement agencies (LLEAs). This assessment was based on the observation of a security exercise which incorporated various procedures and communications equipment. The exercise demonstrated an effective relationship between the LLEAs and the on-site NFS security staff. No findings of significance were noted.

b. Conclusions

The licensee's communications and coordination with LLEAs was adequate.

## 7. Follow-up on Previously Identified Issues

(Closed) URI 70-143/2005-010-08: The inspectors reviewed the issue that involved the failure to properly secure material prior to leaving it unattended. The event that occurred on November 6, 2005 was determined to be of minor significance and therefore will not be subject to enforcement. However, the event of November 9, 2005 was determined to be an apparent violation (AV 2006-008-01) in a separate inspection report. Therefore, this item is considered closed.

## 8. 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 November 27, 2006. No dissenting comments were received from the licensee.

## ATTACHMENT

### 1. PERSONS CONTACTED

Partial List of Licensee's Persons Contacted

B. Faidley, Building Manager, Fuel Production
D. Ferguson, CEO
K. Guinn, Advisor
T. Lindstrom, Executive Vice President, HEU Operations
M. Moore, Vice President, Safety & Regulatory
J. Nagy, Senior Licensing & Regulatory Compliance Officer
R. Rice, Supervisor, Radiation Protection
D. Rogers, Building Manager, BPF
K. Schutt, Executive Vice President
R. Shackelford, Nuclear Criticality Safety Manager
M. Tester, Senior Manager, Radiation Control
M. Wilson, Supervisor, BPF
A. Vaughan, Fuel Production Director

### 2. INSPECTION PROCEDURES USED

| | |
|---|---|
| IP 88135 | Resident Inspector Program for Category 1 Fuel Cycle Facilities |
| IP 88005 | Management Organization and Controls |
| IP 88020 | Operational Safety |
| IP 88030 | Radiation Protection |
| IP 88055 | Fire Protection (Annual) |

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

| | | | |
|---|---|---|---|
| 70-143/2006-014-01 | Open | VIO | Failure to Follow Lockout/Tagout Procedure |
| 70-143/2005-010-08 | Closed | URI | Physical Security and Handling of Material |