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

November 16, 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. 70-143/2007-007

Dear Mr. Ferguson:

This refers to the inspection conducted from September 9, 2007, through October 20, 2007, 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 Safety Operations and Facility Support. 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, no violations or deviations were identified. By letter dated September 13, 2007, we received your reply to Notice of Violation 70-143/2007-005-01, which was issued on June 20, 2007. In addition, by two letters dated April 20, 2007, we received your replies to the violations that fulfill Confirmatory Order, Section V, Paragraph 1. The above replies met the requirements of 10 CFR 2.201, and your corrective actions will be reviewed during a future inspection.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," 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 document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/readingrm/adams.html.

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

Sincerely,

***/RA/***

Thomas R. Decker, Acting Branch Chief
Fuel Facility Inspection Branch 1
Division of Fuel Facility Inspection

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

Enclosure: (See page 2)
Enclosure: NRC Inspection Report
cc w/encl:
Timothy Lindstrom, General Manager
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P.O. Box 337, MS 123
Erwin, TN 37650

B. Marie Moore
Vice President
Safety and Regulatory Management
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Erwin, TN 37650

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Nashville, TN 37243-1532

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**X**☐ PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE **X**☐ NON-SENSITIVE

ADAMS: **X** ☐ Yes ACCESSION NUMBER:_____

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SIGNATURE | | | | | | | ***/RA/*** | | | | | | | |
| NAME | S. Burris | | G. Smith | | S. Subosits | | M. Crespo | | | | | | | |
| DATE | 11/ | /2007 | 11/ | /2007 | 11/ | /2007 | 11/16/2007 | | 11/ | /2007 | 11/ | /2007 | 11/ | /2007 |
| E-MAIL COPY? | YES | NO | YES | NO | YES | NO | YES | NO | YES | NO | YES | NO | YES | NO |

OFFICIAL RECORD COPY DOCUMENT NAME: G:\REPORTS\Draft Inspection Report Folder\NFS\NFS Inspection Report 2007-007 Draft.wpd rev 1.wpd

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

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|---|---|
| Docket No.: | 70-143 |
| License No.: | SNM-124 |
| Report No.: | 70-143/2007-007 |
| Licensee: | Nuclear Fuel Services, Inc. |
| Facility: | Erwin Facility |
| Location: | Erwin, TN 37650 |
| Dates: | September 9, 2007 - October 20, 2007 |
| Inspectors: | S. Burris, Senior Resident Inspector<br>G. Smith, Resident Inspector<br>S. Subosits, Fuel Facility Inspector |
| Approved by: | T. Decker, Acting Branch Chief<br>Fuel Facility Inspection Branch 1<br>Division of Fuel Facility Inspection |

Enclosure

**EXECUTIVE SUMMARY**

Nuclear Fuel Services, Inc.
NRC Inspection Report 70-143/2007-007

This inspection included observations conducted by the Resident Inspectors during normal and off-normal shifts in the area of Safety Operations and Facility Support Operations. Specialized inspections and reviews of documentation were conducted by regional inspectors in the areas of Safety Operations and Facility Support.

Safety Operations

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

Transient combustibles were controlled and minimized (Paragraph 2.b).

- Criticality station limit cards were followed by licensee personnel (Paragraph 2.c).

Facility Support

- Maintenance/surveillance activities were being satisfactorily performed and documented by the licensee. The inspectors did not identify any adverse conditions (Paragraph 3.a).

- The inspectors determined that the licensee adequately implemented their Problem Identification and Resolution Correction System (PIRCS) program (Paragraph 3.b).

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

## REPORT DETAILS

### 1. Summary of Plant Status

Blended low-enriched uranium (BLEU) oxide conversion activities operated normally during the inspection period. Fuel manufacturing, training activities, and scrap recovery processes were operated throughout the reporting 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 88020)

(1) Inspection Scope and Observations

The inspectors performed various tours of the fuel process areas, BPF, and waste treatment facility. 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 evaluated an incident regarding an overflow of the BPF scrubber blowdown tank. On October 16, 2007, the Low Enriched Uranium (LEU) operator noted the BPF scrubber blowdown tank to be overflowing. The LEU operator informed supervision to secure the blowdown. Subsequent investigation noted that the manual bypass valve associated with the blowdown line was found cracked open. The valve was immediately closed and the blowdown was secured. Initial corrective action involved locking this valve in the closed position. The licensee also noted that an audible alarm for the high level in the tank failed to annunciate and a work request (WR) was generated. The licensee entered the issue in the Problem Identification and Resolution Correction System (PIRCS) as PIRCS item #11400.

The inspectors performed a detailed walkdown of the Uranium-Aluminum (UAL) system located with the BPF. As part of this walkdown, the inspectors reviewed the Integrated Safety Assessment (ISA) to verify assumptions and controls were properly implemented in the field via engineered and administrative controls. The inspectors also verified that the operating personnel were aware of these assumptions and controls. The inspectors sampled various components and verified the as-built configuration matched the process drawings. Items Relied On For Safety (IROFS) were verified to be properly functioning and operators were knowledgeable of requirements associated with these IROFS.

The inspectors also verified that there were no external hazards that could degrade system performance.

The inspectors performed a detailed walkdown of the Area 600 system for the process support line (PSL). As part of this walkdown, the inspectors reviewed the (ISA) to verify assumptions and controls were properly implemented in the field via engineered and administrative controls. The inspectors also verified that the operating personnel were aware of these assumptions and controls. The inspectors sampled various components and verified the as-built configuration matched the process drawings. IROFS were verified to be properly functioning and operators were knowledgeable of requirements associated with these IROFS. The inspectors also verified that there were no external hazards that could degrade system performance. During this assessment period the licensee experienced a cooling water problem with the PSL - 600 area equipment, that required them to shut down the production in this area and transfer the activities back to the main - 600 area. The licensee continues to evaluate/repair this problem at the close of this assessment period.

The inspectors performed general daily tours and walkdowns of the Naval fuel process areas, BPF, and the waste treatment facility. The inspectors verified that:

- There was adequate staffing. Activities were performed in compliance with procedures and station limits, operators were attentive to their duties, and safety controls were in place and properly controlled with supervision.

- The inspectors verified procedural compliance within the operating areas.

- The inspectors walked down sections of the standard operating procedures and verified that IROFS were identified and present in the 200, 300, 500, 600, and 800 areas of both process lines. No issues were noted.

The inspectors evaluated the licensee's response to a spill event that occurred in Area 500 of the production support line on October 17, 2007. The event was documented in PIRCS item #11417 and occurred in a transfer line. The spill was contained and the radiological hazards were minimized by licensee. The line was repaired and rerouted to help reduce future failures.

The inspectors reviewed the Integrated Safety Analysis (ISA) and IROFS, toured the wastewater treatment facility, observed plant operations activities and discussed IROFS and criticality safety controls with operators and supervisors in the BPF. The inspectors verified by discussion and observation that operators were knowledgeable of operating procedures for the solvent extraction (SX) process. BPF SX operating procedures reviewed by the inspectors, contained adequate instructions to conduct routine operations. The inspectors verified that select engineered and administrative control IROFS identified in the ISA Summary for the BPF SX process were properly implemented in the field.

(2) Conclusions

Plant operations activities observed were performed safely and in accordance with license requirements and internal procedures.

b. Fire Protection (IP 88135)

(1) Inspection Scope and Observations

During daily plant tours, the inspectors verified that transient combustibles were being adequately controlled and minimized and that fire barriers located between fire areas were being properly maintained.

(2) Conclusions

Maintenance of fire barriers was adequate and transient combustibles were controlled.

c. Criticality Safety (IP 88135)

(1) Inspection Scope and Observations

During daily operating area tours, the inspectors verified various criticality controls to be in place. The station limit card requirements were observed by personnel. Containers were adequately controlled in order to minimize criticality hazards. The inspectors sampled a number of IROFS to verify their operability. Operators were knowledgeable of the IROFS' requirements. IROFS were adequately identified in the field as well as on plant controlled drawings.

(2) Conclusions

Licensee criticality controls were adequately followed by licensee personnel.

## 3. Facility Support

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

(1) Inspection Scope and Observations

The inspectors observed equipment maintenance as well as the documentation and controls used to support this maintenance in order to verify that; 1) work documents reflected the proper approvals and reviews of the proposed activities, 2) personnel were properly implementing these work instructions and 3) management oversight was evident during the work activities. Proper controls such as WR, Lockout/Tagout (LO/TO), and Safety Work Permits (SWPs) were in place and implemented during the work activities.

The inspectors evaluated the following activities:

- Maintenance was required due to an obstruction within the Area 600 equipment. Work was performed under WR #117379 and the radiological/safety guidance was prescribed under SWP #12024. The inspectors also walked down LO/TO P-5386. Post Maintenance testing was performed under Letter Of Authorization (LOA) 2035M-042, "600 Testing," Rev. 0.

- Inspectors followed the maintenance activities associated with the BPF in-line monitors. Several intermittent failures occurred on the BPF raffinate in-line monitor between 10/13 and 10/18. These failures are described in PIRCS #11375, #11391, #11403, #11414, #11425, and #11431.

- Troubleshooting by the licensee revealed a slowly degrading Multichannel Analyzer (MCA) circuit board. Due to no available spares, the board was replaced by the MCA board cannibalized from the caustic in-line monitor. When a spare MCA board became available, it was reinstalled into the caustic in-line monitor. However, this MCA board failed the safety related equipment (SRE) testing and the licensee subsequently developed LOA-18771-266, "Enhanced Administrative Control Compensatory Measures for IROFS BLW-4 & WWF-3 (U/Aluminum Caustic Discards In-line Monitor and valves HV-5B01A &-HV-5B01B)," Rev 0 as a compensatory measure for caustic discharges. The inspectors verified the compensatory measures encompassed the performance requirements for the associated accident sequences as required by 10 CFR 70.61.

(2) Conclusions

The inspectors determined that the licensee adequately performed maintenance and sufficiently documented any identified adverse conditions.

b. Management Organization and Controls (IP 88005, IP88071 and IP 88135)

(1) Inspection Scope and Observations

The inspectors continued to monitor the effectiveness of the PIRCS program. All issues of concern were reviewed, properly identified and documented. Issues reviewed were of sufficient detail to properly characterize the finding and were appropriately documented and conveyed to management. Findings were resolved in a timely manner. The inspectors determined that the licensee adequately implemented their PIRCS program.

(2) Conclusions

The inspectors determined that the licensee adequately implemented their PIRCS program.

## 4. Followup on Previously Identified Issues

(Closed) AV 70-143/2006-09-01 (EA 06-129): Failure to utilize required respiratory protection. This issue concerned the failure of two individuals to don respiratory protection as required by a posted (RWP) upon entry to a work area. As a corrective action, the licensee took action with the individuals involved in the issue. The licensee conducted toolbox training sessions with personnel related to compliance with RWPs and internal procedures. The licensee also implemented a number of actions to improve the conduct of radiological work practices, including upgrades to radiological work procedures and enhancements to radiation worker and radiation technician training modules. This item is considered closed.

## 5. 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 October 22, 2007. No dissenting comments were received from the licensee.

## ATTACHMENT

## 1. PERSONS CONTACTED

Partial List of Licensee's Persons Contacted:

C. E. Athon, Vice President, Applied Technology
S. Barron, Manager, Emergency Preparedness
T. Coates, Engineering Section Manager
R. Crowe, Manager, Corrective Actions Program
D. Ferguson, President & CEO
T. Finan, KAPL Resident
J. Greene, Manager, Decommissioning
G. Hazlewood, Director, Engineering
T. Lindstrom, General Manager
M. Moore, Vice President, Safety & Regulatory
S. Morie, Manager, Decommissioning-Environmental
J. Nagy, Senior Licensing & Regulatory Compliance Officer
J. Parker, Manager, Industrial Safety
S. Sanders, Manager, Training
K. Schutt, Executive Vice President
M. Shope, Manager, Quality Assurance
M. Tester, Senior Manager, Radiological Control
A. Vaughan, Director, Fuel Production
K. Weir, Deputy Security Director
D. Wise, Vice President, Fuel Manufacturing

## 2. INSPECTION PROCEDURES USED

| | |
|---|---|
| IP 88005 | Management Organization and Controls |
| IP 88020 | Operational Safety |
| IP 88025 | Maintenance and Surveillance of Safety Controls |
| IP 88071 | Configuration Managment Programmatic Review |
| IP 88135 | Resident Inspector Program for Category 1 Fuel Cycle Facilities |

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

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|---|---|---|---|
| 70-143/2006-009-01 | Closed | AV | Failure to Utilize Required Respiratory Protection |