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

[redacted]

April 2, 2004

Nuclear Fuel Services, Inc.
ATTN: Mr. Kerry Schutt
President
P. O. Box 337, MS 123
Erwin, TN 37650

SUBJECT: NRC INSPECTION REPORT NO. 70-143/2004-02

Dear Mr. Schutt:

This refers to the inspection conducted from January 25 through March 6, 2004, at your Erwin facility. The purpose of the inspection was to determine whether activities authorized by the license were conducted safely and in accordance with NRC requirements.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examination of procedures and representative records, interviews with personnel, and observation of activities in progress.

Based on the results of the inspection, no violations or deviations were identified.

By letter dated February 20, 2004, we received your reply to our Notice of Violation which was issued on January 26, 2004. The reply 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 Enclosure 1 will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room). [redacted]

[redacted]

[redacted]

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

Sincerely,

/RA/

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

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

Enclosures: 1. NRC Inspection Report (Part 1)
2. NRC Inspection Report (Part 2) [redacted]

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

cc w/encl 1 only:
Debra Shults, Manager
Technical Services
Division of Radiological Health
Electronic Mail Distribution

Distribution w/encls: (See Page 3)

[redacted]

[redacted]

NFS 3

Distribution w/encls:
D. Ayres, RII
W. Gloersen, RII
D. Rich, RII
A. Boland, RII
C. Gibson, NMSS
B. Westreich, NSIR
M. Adams, NMSS
J. Lubinski, NMSS
K. Ramsey, NMSS
P. Silva, NMSS

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI		
SIGNATURE	/RA/	/RA/	/RA by DAAyres/		
NAME	DRich	WGloersen	Classifier		
DATE	3/30/2004	4/1/200	4/2/2004		
COPY?	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: C:\ORPCheckout\FileNET\ML040990708.wpd

[redacted]

[redacted]

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	70-143
License No.:	SNM-124
Report No.:	70-143/2004-02
Licensee:	Nuclear Fuel Services, Inc.
Facility:	Erwin Facility
Location:	Erwin, TN 37650
Dates:	January 25 through March 6, 2004
Inspectors:	D. Rich, Senior Resident Inspector
Approved by:	D. Ayres, Chief Fuel Facility Inspection Branch 1 Division of Fuel Facility Inspection

Enclosure 1

[redacted]

[redacted]

EXECUTIVE SUMMARY

Nuclear Fuel Services, Inc.

NRC Inspection Report 70-143/2004-02 (Part 1)

This inspection included activities conducted by the senior resident inspector during normal and off normal shifts in the areas of facility operations, fire protection, and radiological protection.

Plant Operations

- The plant was operated safely and in accordance with the license (Paragraph 2.a).

Fire Protection

- Fire protection and detection equipment was adequately maintained. Fire hazards were minimized by appropriate housekeeping (Paragraph 3.a).

Radiation Protection

- Radiological control practices met regulatory requirements (Paragraph 4.a).
- Two events in licensee laboratories demonstrated weaknesses in radiological controls and communication of safety information to laboratory workers and management (Paragraph 4.b).
- An unresolved item was identified to track an issue of contaminated intermodal shipping containers which had been returned to the licensee's vendor (Paragraph 4.c).

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

[redacted]

[redacted]

REPORT DETAILS

1. Summary of Plant Status

The fuel manufacturing and scrap recovery processes operated throughout the reporting period. Operations at the uranyl nitrate [redacted] building and construction of the other blended low-enriched uranium (BLEU) facilities continued. Efforts continued in decommissioning older facilities on site. The processing, analysis, packaging, and shipments of contaminated soils and debris from the burial grounds continued and construction continued in several areas.

2. Plant Operations (Temporary Instruction (TI) 2600/006)

a. Routine Observations

(1) Inspection Scope

The inspector reviewed plant operations in progress during normal and off-normal operating shifts to evaluate plant safety and compliance with the license.

(2) Observations and Findings

The inspector made routine tours of the plant operating areas, including a walk-down of the [redacted], and determined that equipment and systems were operated safely and in compliance with the license. Some daily operational meetings were observed where production status and issues were discussed. The inspector verified the Emergency Control Center (ECC) and associated equipment were maintained in a state of readiness. The inspector reviewed selected licensee identified events and corrective actions for previously identified events and found no significant deficiencies in the items reviewed.

The inspector also observed construction and testing activities in the BLEU areas. The inspector noted parts of the oxide conversion building (OCB) were moderator controlled areas and were protected from rainwater incursion[redacted]. The inspector reviewed construction drawings of the roof design, reviewed photographs taken by the licensee during construction, and inspected the [redacted] roof [redacted]. The inspector noted the [redacted] roof had just been installed [redacted]. No significant deficiencies were identified.

(3) Conclusions

The plant was operated safely and in accordance with the license.

[redacted]

[redacted]

3. Fire Protection (TI 2600/06)

a. Routine Observations

(1) Inspection Scope

The inspector reviewed fire detection and protection systems in accordance with the license and additional licensee commitments.

(2) Observations and Findings

The inspector determined that fire protection and detection equipment was adequately maintained. Portable fire extinguishers were charged to the normal operating zones and no visible damage was noted. Fire hazards were minimized by appropriate housekeeping.

(3) Conclusions

Fire protection and detection equipment was adequately maintained. Fire hazards were minimized by appropriate housekeeping.

4. Radiation Protection (TI 2600/006)

a. Routine Observations

(1) Inspection Scope

The inspector reviewed radiation work permits, radiological surveys, radiological precautions, and general work practices in the process area and in decommissioning and construction areas to verify that work was conducted safely and in compliance with the license.

(2) Observations and Findings

During tours of the facility, the inspector noted that radiological signs, postings, and procedures were properly posted or readily available. The inspector determined that equipment and devices used to confine and contain radioactive contamination and airborne radioactivity were in proper working condition and that proper personal protective clothing and dosimetry were issued and properly worn. Radiological controls in process and decommissioning areas were adequate. During process area tours, the inspector noted that housekeeping was adequate and emergency egress routes were sufficiently clear of debris. The inspector observed response to off-normal events and

[redacted]

noted the use of conservative radiological controls practices to confine contamination and to prevent unnecessary personnel exposure.

(3) Conclusions

Radiological control practices met regulatory requirements.

b. Review of Laboratory Events

(1) Inspection Scope

The inspector reviewed two licensee identified events concerning laboratory operations.

(2) Observations

The first event concerned a spill of depleted uranium in the [redacted] laboratory. Although the spill was promptly cleaned up and personnel in the area were checked for contamination, there was a notable delay in the safety office being informed. Therefore, the personnel involved and the area of the spill were not promptly surveyed by a qualified radiological control technician (RT). Surveys were finally performed the next day by a qualified RT and indicated contamination had been properly controlled and was not spread.

The second event occurred in the [redacted] laboratory and concerned use of a sealed glass ampule containing [redacted] of Plutonium (Pu) 239, [redacted]. In order to utilize the ampule contents, the chemist snapped the top off the ampule with thumb pressure, with hands protected by latex gloves. The ampule top snapped off but left a sharp edge which gave the chemist a small cut on the thumb. Surveys detected low levels of contamination, which was reduced to background after washing. The inspector reviewed the results of three urine bio-assays which were analyzed by an independent laboratory. The laboratory results indicated that a minor uptake of radioactive material had occurred, and the resulting dose estimate was a small fraction of the limit allowed by 10 CFR Part 20. At the time of this inspection, the licensee continued to monitor the person involved by analyzing additional bio-assay samples and refining the estimated dose.

The inspector reviewed laboratory precautions contained in standard operating procedure (SOP) 387 and found there were no specific precautions for opening sealed glass ampules. SOP 387 stated special instructions may be issued for utilizing Pu in the laboratory, but in this case, special precautions or safety instructions were not issued. The inspector interviewed the chemist involved and found the chemist was a qualified radiological worker with an understanding of the material being handled. The chemist stated no special precautions or safety instructions had been provided for this work.

The chemist also stated it had been roughly a year since [redacted] had last utilized a sealed glass ampule. The inspector noted that some type of special precautions for this operation would have been appropriate.

Each of the above events could have been a more serious event and could have resulted in spread of contamination or greater exposure of personnel. The events together indicated laboratory management and laboratory workers should focus additional attention on radiological controls and safety.

(3) Conclusions

Two events in licensee laboratories demonstrated weaknesses in radiological controls and communication of safety information to laboratory workers and management.

c. Review of Shipping Container Issues

(1) Inspection Scope

The inspector reviewed a licensee identified problem of contaminated containers being returned to the vendor.

(2) Observations

The licensee has been engaged in a large scale effort to excavate a radiological burial ground at the Erwin facility and ship contaminated soil and debris in intermodal shipping containers to the Envirocare disposal site in Utah. For economic reasons, the licensee recently planned to slow down the pace of excavation and shipping of this material, and therefore began to return some of the leased intermodals to the vendor, MHF Logistical Solutions, in Pennsylvania. On January 15, 2004, the licensee was notified by MHF, that radiological contamination had been detected in several of the returned intermodals.

The licensee sent a health physicist (HP) to MHF to investigate the issue. The HP found maximum fixed contamination levels to be 804,000 disintegrations per minute (dpm) beta, and 408 dpm alpha. The HP also found smearable contamination levels to be 1268 dpm per 100 square centimeter (cm^2) beta and 20 dpm/100cm^2 alpha. The licensee planned to evaluate methods to have better surveys performed on returned intermodals and also planned to return the contaminated intermodals to service. Results of the licensee's investigation were documented under Problem Identification, Resolution and Corrective Action System (PIRCS) investigation number 1064.

The licensee investigated the circumstances surrounding the shipment of the intermodals and determined that out of a fleet of 471 containers, 194 had recently been

[redacted]

sent to MHF. Of the 194, NFS determined that 104 were shipped directly from NFS, and the remaining 90 were shipped from Envirocare to MHF. The investigation concluded that the contaminated intermodals had been surveyed by Envirocare, and that Envirocare had shipped the intermodals to MHF at the direction of NFS. This position was contradicted by a letter sent to Envirocare from NFS dated January 16, 2004, which requested that Envirocare investigate the issue. This letter stated that the intermodals were decontaminated and free released by Envirocare "prior to return to NFS". The letter stated that "based on the free release criteria shipping documentation provided by Envirocare", NFS subsequently shipped the containers to MHF. The inspector made the licensee aware of the contradiction between the investigation conclusion and the January 16 letter. This issue will be tracked as unresolved item (URI) 70-143/2004-02-01, Contaminated Intermodals Returned to Vendor, pending further NRC review of the issue.

(3) Conclusions

A URI was identified to track an issue of contaminated intermodal shipping containers which had been returned to the licensee's vendor.

5. Exit Interview

The inspection scope and results were presented to members of the licensee management at various meetings throughout the inspection period and were summarized on March 9, 2004. Although proprietary documents and processes were occasionally reviewed during this inspection, the proprietary nature of these documents or processes has been deleted from part one of this report. No dissenting comments were received from the licensee.

[redacted]

[redacted]

ATTACHMENT

1. PERSONS CONTACTED

Partial List of Licensee's Persons Contacted

Dave Brown, Business Process Improvement
K. Crutcher, Analytical Services Manager
B. Drane, Engineering Director
J. Eidens, [redacted] Resident
B. Fore, Fuel Materials Manager
J. Greene, Environmental Safety Manager
N. Kenner, Training Manager
A. Maxim, Safety Director
M. Moore, Vice President, Safety and Regulatory
J. Nagy, Senior License & Regulatory Compliance Officer
J. Pugh, Transportation & Waste Manager
K. Schutt, President & General Manager
R. Shackleford, Nuclear Criticality Safety Manager
M. Shope, Quality Assurance Manager
G. Tipton, Plant Facilities Director
A. Vaughan, Director Fuel Production
D. Wise, Project Director

2. INSPECTION PROCEDURES USED

TI 2600/006 Safety Operations, Safeguards, Radiological Controls & Facility Support

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Status	Type	Description
70-143/2004-02-01	Open	URI	Contaminated Intermodals Returned to Vendor,

4. LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management Systems
BLEU	Blended Low Enriched Uranium
CFR	Code of Federal Regulations
cm	centimeter
dpm	disintegrations per minute
ECC	Emergency Control Center

[redacted]

HP	Health Physicist
IR	Inspection Report
NFS	Nuclear Fuels Services
NRC	Nuclear Regulatory Commission
OCB	Oxide Conversion Building
PARS	Publicly Available Records
PIRCS	Problem Identification, Resolution and Corrective Action System
Pu	Plutonium
RT	Radiological Controls Technician
SOP	Standard Operating Procedure
TI	Temporary Instruction
URI	Unresolved Item