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

[redacted]

June 27, 2005

EA -04-199

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

SUBJECT: NRC INSPECTION REPORT NO. 70-143/2005-03

Dear Mr. Schutt:

This refers to the inspection conducted from April 17, 2005, through May 28, 2005, 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 included the following: Plant Operations, Fire Protection, Radiation Protection, Emergency Preparedness, Waste Management, 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 two violations of NRC requirements occurred. The violations are being treated as non-cited violations (NCVs), consistent with Section VI.A.8 of the Enforcement Policy, and are described in the enclosed

[redacted]

inspection report. If you contest the NCVs or their significance, 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.

By letters dated June 10, June 14, and June 15, 2005, we received your replies to our Notice of Violation which was issued on May 16, 2005. The replies met the requirements of 10 CFR 2.201 and your corrective actions will be reviewed during a future inspection.

[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

Enclosure: NRC Inspection Report

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

NFS [redacted]

Distribution w/encl:
D. Ayres, RII
W. Gloersen, RII
D. Rich, RII
B. Bonser, RII
C. Gibson, NMSS
B. Westreich, NSIR
J. Olivier, NMSS
M. Markley, NMSS
K. Ramsey, NMSS
P. Silva, NMSS

X☐ SISP REVIEW COMPLETE: Initials: DAA ☐ SISP REVIEW PENDING*: Initials: _____ *Non-Public until the review is complete

[redacted]

ADAMS: ☐ Yes ACCESSION NUMBER:_____

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NAME	DRich	WGloersen	JJimenez	NRivera	RGibson	
DATE	06/23/2005	06/23/2005	06/23/2005	06/23/2005	06/23/2055	
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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	70-143
License No.:	SNM-124
Report No.:	70-143/2005-03
Licensee:	Nuclear Fuel Services, Inc.
Facility:	Erwin Facility
Location:	Erwin, TN 37650
Dates:	April 17, 2005 - May 28, 2005
Inspectors:	D. Rich, Senior Resident Inspector R. Gibson, Health Physics Inspector W. Gloersen, Senior Fuel Facilities Inspector J. Jimenez, Fuel Facilities Inspector N. Rivera, Fuel Facilities Inspector
Approved by:	D. Ayres, Chief Fuel Facility Inspection Branch 1 Division of Fuel Facility Inspection

Enclosure

[redacted]

EXECUTIVE SUMMARY

Nuclear Fuel Services, Inc.
NRC Inspection Report 70-143/2005-03

This inspection included activities conducted by the senior resident inspector and regional inspectors during normal and off normal shifts in the areas of facility operations, fire protection, radiological protection, emergency preparedness, waste management, and physical protection.

Plant Operations

- The plant was operated safely and in accordance with the license. The supervisors understood their responsibilities and ensured operators were implementing the safety requirements (Paragraph 2.a).

- The plant's configuration that was reviewed was in agreement with the licensee's documentation. Operating procedures were adequate and the correct revisions were being used by the operators. Operators were trained in the procedures as they became official (Paragraph 2.b).

- The safety analysis for the areas reviewed identified contingencies, and controls and safety limits were specified . Nuclear criticality safety components were adequately maintained. Although the criticality alarm system was tested and maintained in accordance with the procedures, system trouble conditions continued to be an area of concern (Paragraph 2.c).

- A non-cited violation was identified for failure to store special nuclear material in accordance with procedure. A second non-cited violation was identified for failure to operate the [redacted] system in accordance with procedure. The latter event highlighted several poor operating practices. (Paragraph 2.d).

Fire Protection

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

Radiation Protection

- Radiological control practices met regulatory requirements (Paragraph 4).

Emergency Preparedness

- The licensee conducted a fully successful limited scope exercise in accordance with the Emergency Plan. The scenario details provided a realistic set of conditions for evaluating the onsite response capability and the state of readiness for responding to incidents. The exercise critique was a candid assessment of the response (Paragraph 5).

[redacted]

[redacted]

Waste Management and Low-level Radioactive Waste Storage

- Notwithstanding an elevated stack sample still under investigation, the gaseous effluent monitoring program was effective in controlling and measuring effluents, and compliant with the requirements of the license. The effluent air sampling equipment, including sample delivery lines, had been properly maintained. Calculated offsite doses were well below regulatory limits. A negative observation was identified, in that, the licensee removed an [redacted] probe from a ventilation stack for cleaning and unclogging without any guidance (Paragraph 6.a).

- The liquid effluent program effectively maintained effluent concentrations below the limits specified in the license (Paragraph 6.b).

- The radioactive waste storage and processing areas were adequately controlled, the housekeeping was adequate, and the package integrity and labeling were maintained in accordance with the license and 10 CFR Part 20 requirements. (Paragraph 6.c).

Waste Generation Requirements

- The licensee had adequate controls for waste classification and characterization. Quality assurance audits and waste manifests were in compliance with the 10 CFR Parts 20 and 61 requirements (Paragraph 7).

Physical Protection

- [redacted]

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

[redacted]

REPORT DETAILS

1. Summary of Plant Status

The fuel manufacturing and scrap recovery processes operated throughout the reporting period. Blended low-enriched uranium (BLEU) operations 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, Inspection Procedure (IP) 88020)

a. Routine Observations, Management and Administration Practices (O3.01), Plant Activities (O3.03)

(1) Scope and Observations

The inspector reviewed plant operations in progress during normal and off-normal operating shifts to evaluate plant safety and compliance with the license. The inspector made routine tours of the plant operating areas 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 reviewed selected licensee-identified events and corrective actions for previously identified events and found no significant deficiencies in the items reviewed.

The inspector reviewed the licensee's proposed operations schedule and log books to verify that operational hazards were identified and monitored. The inspector conducted interviews throughout the three facilities to verify employees had sufficient information to safely perform daily activities and to prevent and/or mitigate credible accident scenarios.

The inspector toured the BLEU Preparation Facility (BPF), Oxide Conversion Building (OCB), and Fuel Process facilities to review the operational condition of these areas. The operations at the OCB were normal without any outstanding safety issues. The interviews conducted with the operators showed they had a good understanding of the process and the safety significance of the items relied on for safety. A routine activity observed by the inspector was the system walkdown by an operator. The operator used a check list of key components in order to verify proper operation. The inspector noted that the operator understood the significance of the items in the check list and was knowledgeable of required actions for abnormal conditions. The inspector interviewed operators stationed at the Uranyl Nitrate Building (UNB). The operators demonstrated they understood the safety and operational responsibilities of their work in this area. They were able to identify and explain the safety significant components pertaining to their jobs. One of these key components was the use of a checklist to verify that every significant piece of equipment in the building is functional. The operators explained how

the check list was used and the benefits gained from it. The list was validated by engineering to ensure nothing was overlooked. The records reviewed showed the checklists were performed and validated accordingly.

The inspector observed the [redacted] Fuel process operators in their routine activities and interviewed selected operators. The operators interviewed were able to describe their process area in accordance with the applicable procedure and were knowledgeable of the safety components of the process and what actions needed to be taken in case an abnormal condition occurred. The inspector was able to assess that communications between operators and management proceeded well and with clarity. The inspector verified that selected operators were qualified for their jobs. Records accessed through the computer network showed the operators available and the areas where they were qualified to work. The inspector observed first line supervisors verify this information before the start of the shift. No issues were identified.

During the walkdown of the process a small fire occurred in an area which had undergone extensive repairs and was in a startup mode with no special nuclear material (SNM) in process. The inspector was able to observe that the appropriate alarms were activated and that personnel responded in accordance with training and procedures. Equipment damage due to the fire was minor. The licensee identified an equipment deficiency as the cause of the fire and repaired the deficiency.

(2) Conclusion

The plant was operated safely and in accordance with the license. The supervisors understood their responsibilities and ensured operators were implementing the safety requirements.

b. Configuration Control (O3.04), Operating Procedures (O3.06)

(1) Scope and Observations

The inspector reviewed the licensee's operating procedures to verify they included the safety aspects of the process. The procedures were the latest revision and operators were well trained in their use. The inspector also verified that the present plant configuration was accurately reflected by the licensee's documentation and that modifications had not adversely affected nuclear criticality safety (NCS). The procedures for the areas selected by the inspector for review were in order. The procedures were up to date. A walkdown of selected procedures with the operators showed the procedures were in accordance with the process. The safety and operational steps were adequately written into the procedures and the operators were capable of explaining the procedures to the inspector. The inspector questioned the operators and first line supervisors regarding implementation of new or revised procedures. The operators and supervisors explained new revisions were highlighted in the training and qualification computer system. Each operator and supervisor documented their acknowledgment in the computer system when review of the new revision was completed. The inspector observed this process. No issues were identified.

The system configuration in areas reviewed by the inspector were in agreement with the documentation kept by the licensee. This included procedures, system drawings, safety analyses and training related to the systems. No negative impact was observed to NCS from facility changes reviewed.

(2) Conclusion

The plant's configuration was in agreement with the licensee's documentation. Operating procedures were adequate and the correct revisions were being used by the operators. Operators were trained in the procedures as they became official.

c. NCS Functions (O3.02), Maintenance of NCS (O3.07), Criticality Alarm System (O3.10)

(1) Scope and Observations

The inspector verified that the passive, active and administrative safety controls for selected areas were adequately implemented. The inspector verified that NCS systems were adequately maintained and that the criticality alarm system was tested and maintained according to the licensee's procedure. The inspector reviewed the Integrated Safety Analyses (ISAs) to verify that, in the selected areas of inspection, credible contingencies and safety controls were identified. The safety components specified by the analysis were in place and were adequately maintained by the licensee. Operators were knowledgeable of the items relied on for safety. Plant procedures reflected the conclusions of the safety analysis and the passive and active controls in place throughout the processes were implemented in accordance with the analysis.

The inspector interviewed maintenance personnel in charge of the criticality monitors, criticality alarms and in-line monitors. Personnel interviewed explained how the maintenance process worked for these particular items of nuclear safety equipment, which included calibrations and functional testing. The inspector reviewed the documents kept by the licensee and verified that the maintenance was performed according to procedure and in the period established by the maintenance department. The inspector reviewed the number and type of difficulties the licensee continued to experience with the criticality alarm system. These problems included repeated trouble alarms and sporadic high radiation alarms by criticality alarm detectors. Although the licensee's periodic testing using installed check sources and external test sources routinely demonstrated the system's reliability, the number of trouble alarms and false high radiation alarms continued to be an area of concern. This issue was noted in past reports and tracked as Inspection Follow-up Item (IFI) 70-143/2004-201-02. The licensee continued working with the equipment vendor to resolve the problem.

(2) Conclusions

The safety analysis for the areas reviewed identified contingencies, and controls and safety limits were specified . Nuclear criticality safety components were adequately maintained . Although the criticality alarm system was tested and maintained in accordance with the procedures, system trouble conditions continued to be an area of concern.

d. Follow-up on Licensee Identified Issues

(1) Scope and Observations

The inspector reviewed the investigations and corrective actions for three events identified by the licensee.

(a) On May 9, 2005, the licensee identified a container stored in an unauthorized location [redacted] designed with several different types of shelves, and as noted on the NCS posting, different containers were allowed to be stored on each type of shelf. In this case, the similarity between shelves led to confusion on the part of operators and supervision, and an incorrect decision resulted in a container being stored on an unauthorized location. Failure to store a container of SNM in accordance with the NCS posting was a violation of License Application section 2.7. This non repetitive, licensee-identified and corrected violation is being treated as a non-cited violation (NCV), consistent with Section VI.A.8 of the NRC Enforcement Policy (NCV 70-143/2005-03-01), Failure to Store SNM in Accordance With Procedure. NCS evaluation of the event demonstrated that the required margin to criticality was maintained. As corrective action, the licensee entered the event into the corrective action system, conducted training with operators and supervisors, and planned to label the storage shelves clearly in order to eliminate confusion in this operating area.

(b) Event Number 41651: On April 7, 2005, the licensee attempted to rework [redacted] waste solution [redacted]. The operation required manipulation of several manual valves, and the lineup was performed in error such that the waste solution was pumped to the off-service [redacted] column. The operation eventually filled the column, which overflowed into the [redacted], filled the process off-gas piping, and overflowed into the [redacted] dilution ventilation system on the roof. The operation was finally shutdown when solution was discovered that had drained from the ventilation system onto the operating spaces floor. The event was reported to the NRC on April 29, and the NCS aspects of the event were discussed in NRC report 70-143/2005-203, which included a notice of violation. This report dispositions the operational aspects of this event. Failure to operate [redacted] in accordance with procedures was a violation of License Application Section 2.7. This non-repetitive, licensee-identified and corrected violation is being treated as an NCV, consistent with Section VI.A.8 of the NRC Enforcement Policy (NCV 70-143/2005-03-02), Failure to Operate [redacted] in accordance with procedure.

The event highlighted poor operational practices [redacted]. In addition to the failure of the operator to follow procedure, the procedure required supervisory verification of the

valve lineup. This verification was not performed in an independent, thorough manner which contributed to the event. Also, the [redacted] were instrumented with a level indication and alarm system. This system alarmed several times during the event, correctly indicating the column was full and automatically shutting down the transfer pump. Due to interaction with the nitrogen purge system and other design issues, the alarms were able to be reset which allowed the operators to continue the operation. The operators assumed the alarms were meaningless since the [redacted] was not in service, and therefore did not adequately investigate the alarms. Also, there was apparently no validation of expected system response to the operation in progress. Although a significant volume of liquid was moved, there was inadequate validation that the operation was proceeding as expected.

As immediate corrective action to the deficiencies identified on April 7, the operator and supervisor involved were re-trained on system operation, procedural compliance and independent verification. Subsequently, when the full extent of the issue was realized on April 28, the [redacted] system was shutdown for review and revision of the safety basis, and also design and completion of physical modifications to the system. Additionally, all operations staff were re-trained on system changes, alarm assessment and response, and procedural compliance.

(c) Event Number 41197: On November 15, 2004, the licensee discovered that the Wet Off Gas (WOG) line [redacted] was not properly sized. The inspector verified that the licensee had corrected the sizing problem in order to prevent any backflow from occurring. The inspector reviewed the analysis performed by engineering. The calculations made by the licensee determined the maximum pressure of the supply line to the WOG. This pressure was then used to calculate the maximum flow capable of entering the overflow vessel. As a result a section of the supply line was replaced with smaller diameter tubing in order to restrict flow into this column. No issues were identified.

(2) Conclusions

An NCV was identified for failure to store SNM in accordance with procedure. A second NCV was identified for failure to operate the [redacted] system in accordance with procedure. The latter event highlighted several poor operating practices.

e. Follow-up on Previously identified Issues and Events (O3.12)

(Closed) NOV 70-143/2004-10-01: An uncontrolled unfavorable geometry container was found [redacted]. The inspector verified the licensee had emphasized in their training the correct procedure for handling containers in the area. Operators interviewed explained the enhanced administrative controls put in place. The operators were also capable of describing the situation that lead to the violation. The inspector determined that adequate corrective actions were taken by the licensee. This item is closed.

(Closed) NOV 70-143/2005-01-03: Failure of the [redacted] Safety Related Equipment Process Logic Controller (SRE PLC) to be capable of performing its function. The SRE PLC was an engineered control [redacted]

[redacted]. The issue concerned the degradation of the control [redacted]. The licensee addressed this process deficiency by replacing certain functions of the SRE PLC with administrative controls. As a result, the SRE PLC still performed [redacted], but required operator entry of some information. The inspector observed operator training on this process. The trainer went over all the steps of the procedure and best practices to obtain [redacted] measurements and how to use that information in conjunction with the system PLC. The inspector was able to verify that the present enhanced administrative controls put in place adequately addressed the deficiency presented by the [redacted] PLC. This item is closed.

(Closed) URI 70-143/2004-01-01: Control of Process Waste System Valve Positions. This issue concerned control and verification of the position of valve [redacted] in the process waste discard system. A severity level three violation was issued by letter dated May 23, 2005. No response from the licensee was required. For tracking purposes, this is violation 70-143/2005-03-03, (EA -04-199), Failure to Control Waste Process Valve Position. URI 70-143/2004-01-01 is closed.

3. Fire Protection (TI 2600/06)

a. Scope and Observations

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

b. Conclusions

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

4. Radiation Protection (TI 2600/006, IP 83822)

a. Scope and Observations

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

b. Conclusions

Radiological control practices met regulatory requirements.

5. Emergency Preparedness (IP 88050)

a. Drills and Exercises

(1) Scope and Observations

Section 7.3.1 of the Emergency Plan required that an emergency exercise be conducted biennially. The exercise observed on [redacted], was a limited scope exercise that was conducted to address the performance deficiencies identified during the biennial exercise conducted on [redacted] The inspector reviewed the exercise scenario and objectives for adequacy in testing the onsite response capability. The inspector also evaluated the licensee's performance in responding to the simulated emergency and the critique to self identify areas of improvement.

The exercise scenario simulated an event [redacted]. The scenario was realistic and well planned. The use of realistic props at the incident scene enhanced the experience for the responders.

Offsite exercise participants included the Erwin Fire Department, Emergystat Ambulance Service, Unicoi County Memorial Hospital, and the Tennessee Emergency Management Agency. The licensee's response to manage the postulated accident was considered fully successful. The emergency classifications were correctly determined in a timely manner and notifications to offsite authorities were completed within the required time limits. Initial protective action recommendations based on accident conditions were correct and frequent discussions were observed between licensee participants regarding security considerations associated with the event. In addition, the inspector observed timely assignment and dispatching of the on-scene coordinator and response teams to the scene and proper coordination between the on-site responders, Erwin Fire Department, and the Emergystat Ambulance Service. In summary, the licensee met the performance objectives for this limited scope exercise.

The inspector observed certain aspects of the licensee's performance pertaining to information dissemination and drill control and discussed with the licensee the following areas for enhancement: (1) emergency classifications should be announced more formally in the Emergency Control Center (ECC), especially when offsite agencies are present; (2) the emergency classification status board should be updated periodically with current emergency classification information; and (3) an exercise control problem was noted in that the exercise controller for the [redacted] did not indicate to search and rescue personnel that the diked area within the [redacted] was full of [redacted] which would have precluded personnel from walking in the diked area searching for additional victims. In addition, no chemical airborne hazard assessment was performed by

exercise participants nor was chemical airborne data provided to the players [redacted].

The licensee conducted a critique following the exercise which afforded players, controllers, evaluators, and observers an opportunity to provide comments. The critique was a candid assessment of the response and several items were identified by the licensee for program improvement or corrective actions. The inspector reviewed the critique comments and the licensee initiated followup actions for improved drill performance.

(2) Conclusions

The licensee conducted a fully successful limited scope exercise in accordance with the Emergency Plan. The scenario details provided a realistic set of conditions for evaluating the onsite response capability and the state of readiness for responding to incidents. The exercise critique was a candid assessment of the response.

b. Follow-up on Previously Identified Issues

(Closed) IFI 70-143/2004-09-02: Verify the adequacy of the corrective actions to resolve the areas of poor exercise performance. In response to the performance deficiencies in the biennial exercise conducted on [redacted], the licensee conducted a limited scope exercise on [redacted] which incorporated as exercise objectives the performance deficiencies noted in the biennial exercise. In addition, the inspector reviewed the following corrective actions the licensee had taken to improve exercise performance: (1) conducted on-scene coordinator (OSC) training and added a new pool of OSCs; (2) added an OSC response board to the ECC; (3) revised NFS-HS-E-03 to enhance role and responsibilities of emergency response organization (ERO, OSC, and ERO support; (4) revised NFS-HS-E-11 for scene control and contamination control with illustration; and (5) added a BLEU complex mobile rad cart. The inspector determined that the corrective actions were more than adequate. This item is closed.

6. Waste Management and Low-level Radioactive Waste Storage (IPs 88035, 84900)

a. Airborne Effluent Program Controls, Instrumentation, Ventilation, and Airborne Effluent Monitoring Results (IP 88035)

(1) Scope and Observations

The inspector examined selected stack effluent sampling stations at NFS facilities and the BLEU complex to ensure that equipment was properly maintained and representative samples were being collected. The inspector reviewed the airborne effluent monitoring results to verify that releases were within license application limits.

The inspector observed a radiation technician collect daily air particulate filter samples from several stacks at NFS, including: stacks [redacted] for waste water treatment; stacks [redacted] for [redacted] laundry rooms; stack [redacted] for Building [redacted]; stacks [redacted] for the main facilities; and stacks [redacted] at

the BLEU complex. The stack samples were collected properly by the radiation technician in accordance with the collection procedures. No significant changes to the procedure or the program were noted since the last inspection. The stainless steel enclosures used to protect the sampling equipment from environmental conditions and polyethylene and stainless steel sample delivery lines were in good condition with no signs of damage or corrosion.

The stack sampling results and quantities of airborne radioactive materials released for the period June 1, 2004 to May 18, 2005, and the semiannual effluent release reports to the NRC for the second six months of 2004 were reviewed. The total dose from the gaseous effluent was 1.14×10^{-2} millirem (mrem) for the calendar year 2004. The calculated offsite doses for gaseous effluents were well below 10 CFR Part 20 constraint level of 10 mrem per year.

From an interview with licensees' representatives and a review of records, the inspector determined that a negative observation was identified. According to a radiation technician, the air flow from the rotameter [redacted] dropped from a normal 40 liters per minute (lpm) to 15 lpm during a period of approximately five months. A work order was issued to redirect the air effluent sampling equipment closer to the stack. However, the moving of the equipment did not change the airflow back to normal. It was then decided by the technician, based on history and skill of the craft, to remove the [redacted] probe from the stack for inspection of clogging. The probe was cleaned and unclogged by the technician prior to it being reinstalled into the stack. After the probe was cleaned, the airflow returned to the nominal 40 lpm. The inspector noted that the stack sample collection procedure, NFS-HS-B-18, did not provide adequate instruction for removal and cleaning of the probe. In Section 4.4.1, "Inspection of Sampling System" of the procedure, it states, in part, that if operating status of the sampling system is unsatisfactory, take appropriate steps to return the system to satisfactory operational status, if possible. The procedure did not provide instruction and/or evaluation for a Radiation Work Permit (RWP) to perform the job. The licensee acknowledge this negative observation and was reviewing potential enhancements to the procedure.

On April 28th, the licensee identified a buildup of liquid waste in the [redacted] dilution ventilation system [redacted]. This issue was discussed in Section 2.d of this report. As a result of the incident, the licensee shutdown the ventilation system and removed the filters for several days to facilitate cleaning and engineering assessments. The licensee did not maintain a record of system operation during this period and did not utilize a lock-out/tagout process to ensure the system was not inadvertently operated. During routine stack sample collection on May 2, 2005, the licensee determined that the sample from the [redacted] dilution stack ([redacted], BPF Process Exhaust[redacted]) indicated an initial elevated reading of 53,961.90 disintegrations per minute (dpm) for alphas, and 192,528.74 dpm for betas. The samples were held for 7-days and recounted by the licensee to allow radon and its associated daughters to decay. After the 7-day decay count, the alpha reading indicated 3,381.48 dpm and the beta reading indicated 1,267.10 dpm. The licensee's action limit for alpha is 130 dpm and 5,000 dpm for betas. As of May 19, 2005, the alpha reading on the stack air filter was still above the licensee's action limit of 130 dpm. The licensee plans to submit the filter offsite for isotopic analysis. Pending further evaluation of this issue, analysis

[redacted]

results and assessment of possible release, this issue will be tracked for further NRC review as IFI 70-143/2005-03-04, Elevated Isotopic Analysis on a Stack Sample Above the Licensee's Action Limit.

(2) Conclusion

Notwithstanding an elevated stack sample still under investigation, the gaseous effluent monitoring program was effective in controlling and measuring effluents, and compliant with the requirements of the license. The effluent air sampling equipment, including sample delivery lines, had been properly maintained. Calculated offsite doses were well below regulatory limits. A negative observation was identified, in that, the licensee removed an iso-kinetic probe from a ventilation stack for cleaning and unclogging without procedural guidance.

b. Liquid Effluent Monitoring Results (IP 88035)

(1) Scope and Observation

The inspector reviewed the liquid effluent monitoring data for the NFS facilities and the [redacted] facilities in order to verify that releases were compliant with the limits specified in the license application requirements. The liquid effluent activity for CY 2004 was: 63.6 microcuries (uCi) for U-235/236 and 17.9 uCi for technetium-99 at the Waste Water Treatment Facility (WWTF); 209 uCi for U-235/236 at the sewer sampling point; 97.9 uCi for U-235/236 at the Banner Spring down stream point; and 0.173 uCi for U-235/236 at the BLEU sewer sampling point. The reported liquid releases in the sewer effluent to the City of Erwin for CY 2004 was below the applicable limits in 10 CFR Part 20, Appendix B. The inspector concluded that the licensee's liquid effluents monitoring program was effective in controlling and measuring effluents and met the requirements of the license.

(2) Conclusion

The liquid effluent program effectively maintained effluent concentration below the limits specified in the license.

c. Low-Level Radioactive Waste Storage (IP 84900)
Radioactive Solid Waste (IP 88035)

(1) Scope and Observations

The inspector toured radioactive waste storage and processing areas at NFS facilities and the BLEU complex to ensure that control, housekeeping, and package integrity and labels were maintained in accordance with the license and 10 CFR Part 20 requirements. The inspector observed that the licensee had stored various quantities of waste in lift liner sacks and drums at various outdoor areas around the plant site [redacted]. The inspector noted that the outdoor storage arrangements for the low-level radioactive waste (LLRW) were intended for short term storage only since they were not adequate for the long term storage of the waste material, primarily due to the storage conditions and exposure to environmental effects.

[redacted]

The material condition of the [redacted] waste storage areas was good. The area supervisor explained the inventory and labeling process of the waste for the area. The waste was segregated by waste class or hazard. No significant degradation of containers was noted.

The inspector reviewed the mixed low-level radioactive and hazardous waste and 90-day hazardous waste satellite areas and verified that adequate controls were performed. The waste that posed an increased flammable/oxidizing hazard was housed in separate shelters with individual fire suppression systems [redacted]. The inspector also interviewed the licensee staff regarding the inspections performed for the mixed low-level radioactive and hazardous waste and reviewed the inspection checklists for the daily and weekly inspections. No problems were identified.

The inspector also noted that the licensee was storing quantities of both Class C and transuranic waste [redacted]. Upon inspection of the facilities and the containers of the Class C and transuranic waste, the inspector noted that the waste was secure, properly labeled, and stored in appropriate containers that were in good material condition. The inspector observed that some waste lift liner sacks and one drum were labeled as packages unsuitable for shipment. The licensee communicated to the inspector that, due to the uranium mass per total mass ratio these packages could not be considered as a Low Specific Activity (LSA) I shipment and needed to be repackaged [redacted]. The inspector reviewed the process of the generation of this waste and no problems were noted.

In the BLEU complex, the inspector observed the conditions of the LLRW. The inspector noted that there was an increase in the storage for solid waste drums. The licensee communicated to the inspector that procedures allowing shipment had to be approved by the Nevada Test Site, and that this approval was expected within six weeks. The LLRW produced in the Effluent Process Building (EPB) had previously been approved to be packaged in lift liner sacks and was being shipped to the Nevada Test Site, decreasing the volume stored in the waste area. No significant degradation of the drums was noted.

The inspector also reviewed the waste generation process in the NFS facility and in the BLEU complex. The inspector reviewed the waste generation logs of the compaction drum area in OCB and no problems were noted. The inspector also verified that the equipment was in good condition and that calibration of the equipment was current in both facilities where the waste was classified, compacted and assayed. Also, the inspector toured the WWTF and the EPB. No problems were noted.

(2) Conclusions

The radioactive waste storage and processing areas were adequately controlled, the housekeeping was adequate, and the package integrity and labeling were maintained in accordance with the license and 10 CFR Part 20 requirements.

7. Waste Generation Requirements (IP 84850)

a. Scope and Observations

The inspector verified that waste classification and characterization, and documentation in waste manifests, met the requirements of 10 CFR Parts 20 and 61. The review included management controls, quality assurance, and waste shipment tracking.

The inspector reviewed several waste manifests for waste shipments made in 2004 and 2005 year-to-date at the NFS facilities and the [redacted] complex to verify compliance with regulations. No discrepancies were identified.

The inspector reviewed audits as required by 10 CFR Part 20, and 10 CFR 61.55 and 61.56. The licensee completed audits for Class A waste in July 2004. The audits received appropriate management review, and the issues identified in the audits were promptly assigned and evaluated for further follow-up. No problems were identified.

b. Conclusions

The licensee had adequate controls for waste classification and characterization. Quality assurance audits and waste manifests were in compliance with the 10 CFR Parts 20 and 61 requirements.

8. Physical Protection (TI 2600/006)

a. Scope and Observation

[redacted]

b. Conclusions

[redacted]

9. 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 June 6, 2005. No dissenting comments were received from the licensee.

ATTACHMENT

1. PERSONS CONTACTED

Partial List of Licensee's Persons Contacted

E. Barrett, Environmental Safety
D. Buck, Vice President, Human Resources
R. Droke, NFS Licensing & Compliance Director
B. Faidley, Fuel Facility Manager
G. Hazelwood, Engineering Director
R. Holley, Senior Project Manager
D. Hopson, BLEU Safety Manager
P. Johnson, Vice President, Applied Technology
N. Kenner, Training Manager
S. Morie, Environmental Scientist
J. Nagy, Senior License & Regulatory Compliance Officer
D. Paine, Vice President, BPF
J. Pugh, Transportation and Waste Manager
K. Schutt, President and General Manager
M. Shope, Quality Engineering Supervisor
A. Vaughn, Director, Fuel Production
A. Ward, General Counsel

2. INSPECTION PROCEDURES USED

TI 2600/006	Safety Operations, Safeguards, Radiological Controls & Facility Support
IP 88020	Plant Operations
IP 88035	Radioactive Waste Management
IP 88050	Emergency Preparedness
IP 84850	Radioactive Waste Management - Inspection of Waste Generator Requirements of 10 CFR Part 20 and 10 CFR Part 61
IP 84900	Low Level Radioactive Waste Storage

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Status	Type	Description
70-143/2004-201-02	Reviewed	IFI	Tracks resolution of criticality alarm system equipment and installation problems
70-143/2005-03-01	Closed	NCV	Failure to Store SNM in Accordance With Procedure.

[redacted]

70-143/2005-03-02	Closed	NCV	Failure to Operate the [redacted] system in accordance with procedure.
70-143/2004-10-01	Closed	NOV	Uncontrolled unfavorable geometry container was found in the BPF
70-143/2005-01-03	Closed	NOV	Failure of the Uranium [redacted] SRE PLC to be capable of performing its function
70-143/2004-01-01	Closed	URI	Control of Process Waste System Valve Positions.
70-143/2005-03-03	Open	NOV	Control of Process Waste System Valve Position
70-143/2004-09-02	Closed	IFI	Verify the adequacy of the corrective actions to resolve the areas of poor exercise performance.
70-143/2005-03-04	Open	IFI	Elevated Isotopic Analysis on a Stack Sample Above the Licensee's Action Limit.

4. LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management Systems
BLEU	Blended Low Enriched Uranium
BPF	BLEU Preparation Facility
CFR	Code of Federal Regulations
dpm	disintegrations per minute
EPB	Effluent Process Building
ECC	Emergency Control Center
ERO	Emergency Response Organization
H_2	hydrogen
IFI	Inspection Follow-up Item
IP	Inspection Procedures
IR	Inspection Report
ISA	Integrated Safety Analyses
LLRW	Low-Level Radioactive Waste
LPM	liter per minute
LSA	Low Specific Activity
mrem	millirem
NCS	Nuclear Criticality Safety
NCV	Non-Cited Violation
NFS	Nuclear Fuels Services
NRC	Nuclear Regulatory Commission
OCB	Oxide Conversion Building

[redacted]

[redacted]

OSC	On-Scene Coordinator
PARS	Publicly Available Records
PLC	Process Logic Controller
RWP	Radiation Work Permit
RT	Radiological Controls Technician
SNM	Special Nuclear Material
SRE	Safety Related Equipment
TI	Temporary Instruction
[redacted]	[redacted]
U-235	Uranium-235
uCi	microcurie
UNB	Uranyl Nitrate Building
URI	Unresolved Item
VIO	Violation
WOG	Wet Off-Gas
WWTF	Waste Water Treatment Facility

[redacted]