



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

November 12, 2009

NMED No. 090573
NRC Event No. 45179

Mr. David Kudsin
President
Nuclear Fuel Services, Inc.
P. O. Box 337, MS 123
Erwin, TN 37650

SUBJECT: NRC INSPECTION REPORT NO. 70-143/2009-003 AND NOTICE OF VIOLATION

Dear Mr. Kudsin:

This letter refers to the inspections conducted from July 1, 2009 to September 30, 2009, at the Nuclear Fuel Services (NFS) facility in Erwin, TN. The purpose of these inspections was to determine whether activities authorized under the license were conducted safely and in accordance with NRC requirements. At the conclusion of the inspections, the findings were discussed on October 5, 2009, with those members of your staff identified in the enclosed report.

The inspections consisted of an examination of activities conducted under the license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of the license. Areas examined during the inspections are identified in the enclosed report. Within these areas, the inspections consisted of a selective examination of procedures and representative records, observations of activities in progress, and interviews with personnel.

Based on the results of these inspections, the NRC has determined that a Severity Level IV violation of NRC requirements occurred. This violation was evaluated in accordance with the NRC Enforcement Policy included on the NRC's Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>.

The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding the violation are described in the subject inspection report. The violation 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. The guidance from NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," is available on the NRC's Web Site and may be helpful. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response 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/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

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

Sincerely,

/RA/

D. Charles. Payne, 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 No. 70-143/2009-003

cc w/encls:
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Vice President, Operations
Nuclear Fuel Services, Inc.
Electronic Mail Distribution

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Director
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Nuclear Fuel Services, Inc.
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Lawrence E. Nanney
Director
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cc w/encls: (cont'd on page 3)

D. Kudsin

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PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE NON-SENSITIVE
ADAMS: Yes ACCESSION NUMBER: _____ SUNSI REVIEW COMPLETE

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI
SIGNATURE	CP for 11/12/09	MLT 11/12/09	AG 11/12/09	CP for 11/12/09	PS 11/12/09	CP for 11/12/09	OL 11/12/09	CP for 11/12/09
NAME	SBurris/G.Smith	M Thomas	A.Gooden	R Prince	P.Startz	J Foster	O. López	M.Crespo
DATE	11/ /2009	11/ /2009	11/ /2009	11/ /2009	11/ /2009	11/ /2009	11/ /2009	11/ /2009
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO		YES XNO	YES NO

NOTICE OF VIOLATION

Nuclear Fuel Services, Inc.
Erwin, Tennessee

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

During an NRC inspection conducted from August 25-29, 2009, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

- A. 10 CFR 70.62 requires, in part, that each licensee shall establish a safety program that demonstrates compliance with the performance requirements. One of the elements of the safety program is management measures.

10 CFR 70.62(d) requires, in part, that each licensee shall establish management measures to ensure compliance with the performance requirements. These measures shall ensure that an item relied on for safety (IROFS) will be available and reliable to perform its intended function when needed, to comply with the performance requirements.

Contrary to the above, from November 19, 2007 to September 4, 2008, the licensee had not implemented a safety program that would ensure IROFS FIRE-15 and IROFS FIRE-28 would perform their intended function when needed to comply with the performance requirements. Specifically, the licensee did not identify that IROFS FIRE-15 was going to be impaired during the 105 Laboratory roof replacement activities and failed to implement IROFS FIRE-28 as soon as IROFS FIRE-15 was impaired to ensure that an adequate safety margin was maintained. This represented a failure of the safety program to adequately ensure the reliability of IROFS FIRE-15 and 28 to limit the likelihood, and consequently the risk, of a high consequence accident scenario.

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 Inspectors 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.

Enclosure 1

NOV

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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. 20555-000

Because your response will be made publicly available, to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made publicly available without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld, and provide in detail the basis for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

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

Dated this 12th day of November, 2009.

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-143

License No.: SNM-124

Report No.: 70-143/2009-003

Licensee: Nuclear Fuel Services, Inc.

Facility: Erwin Facility

Location: Erwin, TN 37650

Dates: July 1, 2009 – September 30, 2009

Inspectors: S. Burris, Senior Resident Inspector
G. Smith, Resident Inspector
P. Startz, Fuel Facility Inspector
M. Crespo, Senior Fuel Facility Inspector
M. Thomas, Senior Fuel Facility Inspector
J. Foster, Fuel Facility Inspector
O. Lopez, Fuel Facility Inspector
A. Gooden, Senior Fuel Facility Inspector
R. Prince, Fuel Facility Inspector

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

Enclosure 2

EXECUTIVE SUMMARY

Nuclear Fuel Services, Inc.
NRC Inspection Report 70-143/2009-003

This inspection included activities conducted by the resident and regional inspectors during normal and off-normal shifts in the areas of safety operations, radiological controls, facility support, and safeguards.

Safety Operations

- Plant operations activities were performed safely and in accordance with approved procedures. (Paragraph 2.a)
- Criticality station limit cards were followed by licensee personnel. (Paragraph 2.b)
- A violation was identified for the failure to implement a safety program that would ensure item relied on for safety (IROFS) FIRE-15 and 28 would perform its intended function when needed to comply with the performance requirements. An unresolved item was opened to review licensee's analysis that demonstrates compliance with 10 CFR 70.61 during 105 Laboratory roof replacement activities. A second unresolved item was opened to review licensee's analysis that demonstrates compliance with 10 CFR 70.61 without crediting 105 Laboratory sprinkler system as an IROFS. (Paragraph 2.c)
- Operator training, retraining, class content and requirements were adequately implemented. (Paragraph 2.d)

Radiological Controls

- Radiation work permits were adequately developed and implemented in order to ensure personnel exposure kept as low as reasonably achievable. (Paragraph 3.a)
- Radioactive waste management practices were implemented in accordance with approved plant procedures. (Paragraph 3.b)
- Radioactive material transportation activities were performed in accordance with applicable Department of Transportation regulations. (Paragraph 3.c)
- Environmental protection practices were performed in accordance with the license application. (Paragraph 3.d)

Facility Support

- Maintenance and surveillance activities were conducted safely and in accordance with the facility license. (Paragraph 4.a)
- The licensee adequately implemented the requirements of the new configuration control license amendment. (Paragraph 4.b)

- The licensee sufficiently documented and corrected conditions adverse to quality as well as documented and tracked the causes of any failures of items relied on for safety. (Paragraph 4.c)
- The inspectors evaluated an emergency preparedness exercise conducted on September 1, 2009. This drill demonstrated the capability of the licensee to adequately respond to a plant emergency. (Paragraph 4.d)
- The licensee adequately implemented facility changes and modifications to the Integrated Safety Analysis (ISA) Summary. (Paragraph 4.e)

Safeguards

- Physical Protection elements were carried out in accordance with the security plan (Paragraph 5.a)

Attachment

Partial List of Persons Contacted

Inspection Procedures Used

List of Items Opened, Closed, and Discussed

REPORT DETAILS

1. Summary of Plant Status

Fuel Manufacturing Facility (FMF), training activities, and scrap recovery processes were operated throughout the reporting period. Blended low enriched uranium (BLEU) oxide conversion activities operated at reduced capacity during the inspection period. BLEU Preparation Facility (BPF) activities which include the commercial development line (Building 301), Uranium-oxide system, Uranium-aluminum system, Uranium-metal shear, Building 440, and Building 304 all operated at normal capacity throughout the inspection period. Decommissioning, including processing, packaging, and shipping contaminated soil and debris from burial grounds continue under normal operations.

2. Safety Operations

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

(1) Inspection Scope and Observations

Operating Area Observations

The inspectors performed daily tours of the plant operating areas and determined that equipment and systems were operated safely and in compliance with the license. Daily operational meetings were observed throughout the period where production status and issues were discussed. The inspectors reviewed selected licensee identified events and corrective actions for previously identified events and found no significant deficiencies in the items reviewed. The inspectors focused on plant operations, safety-related equipment (valves, sensors, instrumentation, in-line monitors, scales, etc) and items relied on for safety (IROFS).

These daily tours included walk downs of the BPF, FMF, storage areas, vaults, and the waste water treatment facility. The inspectors verified that there was adequate staffing and that operators were attentive to their duties, including the status of various alarms and annunciators. The inspectors also verified that activities, normal and abnormal, were performed in compliance with procedures and station limits, and that safety controls were in place and were being controlled with supervision. The inspectors verified the adequacy of communications between supervisors and operators within the operating areas. The inspectors walked down sections of the standard operating procedures and verified that IROFS were identified and operable in each of the areas. The inspectors reviewed log books, lockout tagout records, and Letters of Authorization (i.e. temporary modifications) to obtain information concerning operating trends and activities. The inspectors verified the licensee was actively pursuing corrective action for conditions requiring temporary modifications as well as any prescribed compensatory measures.

The inspectors reviewed functional tests for selected IROFS in BPF and noted several attention-to-detail errors with respect to procedure use. Specifically, the licensee was checking off steps as completed when the steps did not apply and not checking off steps as completed when they did apply. Another type of attention-to-detail error was not recognizing an out-to-tolerance value on a column wall thickness test and marking the

test as passed. The test criteria for this particular test was any one reading inconsistent with any of the others. Further analysis by nuclear criticality safety engineers indicated the column was still fully functional. The inspectors noted that the area supervisors that perform the functional tests had no formal review program by the next level management or the ISA team. A formal review program would identify these errors. NFS generated Problem Identification Resolution and Correction System (PIRCS) item #21914 to address this issue.

The inspectors reviewed licensee procedure NFS-TS-001, "Preparation and Issuance of Work Instructions and Letters of Authorization (LOA)," Revision 4. The inspectors also reviewed the active LOAs in the files in BPF. The inspectors noted that several LOAs were no longer in effect and another LOA had not been followed as written. Specifically, the LOA required that a lockout/tagout (LOTO) be applied to a breaker. The inspectors observed that the breaker had been placed in the off position and the operating handle had been broken off of the breaker. The breaker issue was entered into the corrective action system as PIRCS item #19806. When questioned at the time, the licensee was not able to provide the basis for not following the LOA as written. The inspectors later learned that an audit had been performed that stated that a one tag LOTO was not an appropriate application of the LOTO procedure. However, the LOA had not been revised to reflect the audit. The following week the inspectors observed that the breaker had been secured in the off position without the use of a LOTO. While each of these LOA issues were not safety significant by themselves, taken together, the LOA issues indicated that the procedure did not address superseded LOAs, situations when a LOA needs updating, outdated LOAs, and how to communicate when a LOA is no longer in effect. NFS entered this issue into the corrective action system as PIRCS item #19843

Plant Tours

The inspectors performed periodic tours of the out-lying facility areas during the inspection period and determined that equipment and systems were operated safely and in compliance with the license. The focus of these tours centered around the evaluation of potential missile hazards and missile protection features, combustible material storage and fire loading, hazardous chemical storage, adequate storage of compressed gas containers, potential degradation of plant security features, and potential fire hazards. During these tours the inspectors also verified that required notices to workers were appropriately and conspicuously posted in accordance with 10CFR19.11.

Plan-of-the-Day-Meeting.

The inspectors attended various plan-of-the-day meetings throughout the inspection period in order to determine the overall status of the plant. The inspectors evaluated the adequacy of the licensee's response to significant plant issues as well as the approach to solving various plant problems.

Safety-Significant System Walkdown

During the inspection period, the inspectors performed a walkdown of the following safety-significant systems involved with the processing of licensed nuclear material. As part of this system evaluation, the inspectors reviewed the ISA for the system in order to identify assumptions and controls. The inspectors verified that these assumptions and controls were properly implemented in the field. During the walkdown, the inspectors verified that the as-built configuration matched the approved plant drawings. The inspectors also interviewed operators in order to ensure that plant personnel were familiar with the assumptions and controls associated with these systems as well as the IROFS and IROFS instrumentation for maintaining plant safety. Specifically, the inspectors verified correct valve and switch position alignments as required by procedure, the absence of conditions that may degrade plant performance as well as the operability of IROFS, safety-related devices, and support systems essential to safety system performance.

- Commercial Development (CD) Line Sublimation Stations 1, 2 and 3
- CD Line Ammonium Diuranate System (Drop Out area and calciner)

(2) Conclusions

The licensee operated the facility in accordance with the license requirements and the ISA.

b. 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 criticality-related IROFS to verify their operability. Operators were knowledgeable of the IROFS' requirements. These 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.

c. Fire Protection (IP 88055)

(1) Inspection Scope and Observations

The inspectors walked down the FMF, BPF, Building 440 and 310 Warehouse to verify that the licensee was managing and controlling combustible materials in accordance with approved procedures. The inspectors also reviewed the implementation of IROFS FIRE-2. No safety issues were identified.

The inspectors walked down sprinkler systems in the fuel process areas, Building 440, as well as the carbon dioxide fire suppression systems in the FMF. The inspectors also reviewed surveillance records for the fire suppression systems. The inspectors confirmed that nozzles were not obstructed and that the water and carbon dioxide supplies to the systems were readily available with the correct valve positioning and adequate pressure. The inspectors verified that there was no observable physical degradation of the systems. The inspectors also verified that portable fire extinguishers were readily available and rated for the correct fire scenario.

The inspectors walked down fire barrier systems and verified that they were in good condition, without cracks, gouges, or holes/gaps. The inspectors verified that penetrations in fire-rated walls were properly sealed. The inspectors also walked down fire detection devices and verified that they were not blocked. The inspectors reviewed inspection, testing, and maintenance records for fire barriers and fire detection systems. No safety issues were identified.

The inspectors reviewed compensatory measures that were implemented for degraded or inoperable fire protection systems. The inspectors reviewed the 105 Laboratory roof replacement activities which were performed under work request (WR) 117849. The inspectors noted that WR 117849 was approved to start work on November 19, 2007. The WR was amended on January 9, 2008; April 1, 2008; and August, 27, 2008. The work involved removing and replacing all gypsum, lightweight concrete, metal decking, and ceiling tiles. The April 1, 2008 addendum included the removal of the ceiling tiles and the installation of "TuffWrap" (ceiling tarp) to protect the laboratory from dust and debris from the construction activities. The inspectors noted that without ceiling tiles, hot gases from a fire would circumvent the sprinklers located at or slightly below the level of the ceiling. This condition would render the sprinkler system ineffective until the fire is large enough to reach the sprinklers, greatly lengthening the time it takes for them to actuate. Because fires can increase in size rapidly, this delay could enable the fire to grow much larger and become more difficult to extinguish.

The inspectors reviewed the ISA for the 105 Laboratory. The inspectors noticed that the sprinkler system installed in the 105 Laboratory was credited as IROFS FIRE-15, and a fire watch for planned impairments to either fire protection equipment, procedures, or training was credited as IROFS FIRE-28. The inspectors noted that the licensee did not identify in WR 117849 (as well as subsequent addendums) that IROFS FIRE-15 was going to be impacted during the 105 Laboratory roof replacement activities.

Based on interviews and documentation review, the impairment on IROFS FIRE-15 started on April 1, 2008. However, the compensatory measures required by IROFS FIRE-28 were not immediately put in place to ensure that an adequate safety margin was maintained. On September 4, 2008, the licensee installed temporary radio frequency (RF) smoke detectors in the 105 Laboratory that would alarm at the Security watch post in the 305 hallway as a compensatory measure. The licensee stated that a four hour security fire patrol was also established when the laboratory was unoccupied. However, the inspectors could not verify that an impairment permit and fire patrols were in place starting on September 4, 2008. Furthermore, the licensee did not have records showing that any type of compensatory measures were in place once the ceiling tiles were removed on April 1, 2008 as required by IROFS FIRE-28. In addition, the licensee

did not perform a detailed evaluation to ensure that the compensatory measures (RF smoke detectors), put in place on September 4, 2008, provided the same degree of protection as the credited IROFS in the ISA, namely IROFS FIRE-15 and 28.

10 CFR 70.62 required, in part, that each licensee establish a safety program that the safety program is management measures which ensure that IROFS will be available and reliable to perform their intended function when needed to comply with the performance requirements. The NRC determined that NFS had not implemented a safety program that would ensure IROFS FIRE-15 and 28 would perform their intended function when needed to comply with the performance requirements. Specifically, the licensee did not identify that IROFS FIRE-15 was going to be impaired during the 105 Laboratory roof replacement activities and failed to implement IROFS FIRE-28 as soon as IROFS FIRE-15 was impaired to ensure that an adequate safety margin was maintained. The failure to implement a safety program in accordance with 10 CFR 70.62 is a violation (VIO) of NRC requirements, VIO 70-143/2009-003-01.

The inspectors noted that the fire safety consequence analysis of the ISA stated, in part, that even a small fire had the potential to exceed the high consequence threshold for both occupational and environmental chemical consequences, and the intermediate consequence threshold for a radiological consequence. The inspectors determined that from November 19, 2007 to September 4, 2008, the licensee did not have sufficient IROFS in place to reduce the likelihood of occurrence of a high consequence event as required by 10 CFR 70.61(b) performance requirements. At the time of the inspection the licensee did not have sufficient information to demonstrate that they were meeting 10 CFR 70.61 performance requirements. An unresolved item (URI) 70-143/2009-003-02 was opened pending the review of the licensee's analysis.

In addition, the inspectors noted an inconsistency in the 105 Laboratory ISA related to the potential consequences that could result from a fire in the 105 Laboratory. The Fire Safety Consequence Analysis section stated, in part, that even a small fire could result in a high consequence event. However, later in that section, the ISA stated that consequences from a fire were low. These assessments were based on the Fire Hazard Analysis (FHA) for the 105 Laboratory, prepared on September 3, 2004. The FHA considered the entire laboratory as a single fire area. However, the FHA assumed that the potential of a fire to spread to adjacent laboratory work areas was highly unlikely due to the intervening masonry block walls and sprinkler protection, which is credited as IROFS FIRE-15. As a result, the sizes of the modeled fires were significantly smaller compared to a fire involving the entire laboratory, which could result in a high consequence event.

The inspectors noted that the expectation that the fire was not going to spread beyond the area of origin was based on the implementation of several recommendations to improve and correct deficiencies identified with the installed sprinkler system. The FHA made the recommendation to extend sprinkler coverage to the unprotected areas of the 105 Laboratory. In addition, the FHA made recommendations in the areas of obstructions to water discharge pattern, excessive sprinkler spacing and area of coverage, need for installation of additional sprinklers, replacement of painted sprinkler heads, and the need for testing a sample of the existing wax-coated sprinklers to verify operability. The inspectors walked down IROFS FIRE-15 and noted that the licensee had not implemented any of the FHA recommendations. Therefore, IROFS FIRE-15 did

not meet the requirements specified in the FHA to support the conclusion of meeting the performance requirements. Since the licensee did not implement the FHA recommendations, the inspectors determined that the licensee could not credit the sprinkler system as an IROFS to ensure that a fire would result in a low consequence event. The inspectors noted that the licensee had been operating the 105 Laboratory in this condition for over five years. At the time of the inspection, the licensee did not have sufficient information to demonstrate that it was meeting the performance requirements in 10 CFR 70.61 with IROFS FIRE-15 not meeting the FHA requirements. An unresolved item (URI 70-143/2009-03-03) was opened pending the review of the licensee's analysis.

(2) Conclusions

A violation was identified for the failure to implement a safety program that would ensure IROFS FIRE-15 and 28 would perform its intended function when needed to comply with the performance requirements. An unresolved item was opened to review licensee's analysis that demonstrates compliance with 10 CFR 70.61 during 105 Laboratory roof replacement activities. A second unresolved item was opened to review licensee's analysis that demonstrates compliance with 10 CFR 70.61 without crediting the building 105 laboratory sprinkler system as an IROFS.

d. Operator Training (88010)

(1) Inspection Scope and Observations

The inspectors reviewed the licensee's implementation of 10 CFR 19.12, "Instructions to Workers" training for employees. The inspectors found the licensee was adequately ensuring that employees were informed of the requirements. In addition, the licensee was properly tracking employee's completion of training activities in the T & Q (Training and Qualification) system, an electronic tracking program. The inspectors selected several operators from the process area and verified that they met the training qualifications as outlined in the T & Q system. In addition, the inspectors noted that the T & Q system had properly accounted for the operators' required three year re-qualification, the majority of which will be required to be re-qualified in 2010. No significant issues were noted.

The inspectors interviewed various operators regarding their knowledge of administrative IROFS in Area 400, Area 600 and the CD Line. The inspectors noted that the operators were knowledgeable of the implementation and purpose of the IROFS. The inspectors also observed training activities for operators in Areas 300, 400 and 500. The inspectors noted adequate instruction regarding the applicable procedural requirements. The inspectors reviewed changes in the exams for operators of the CD Line. No issues were noted.

(2) Conclusions

The licensee implemented operator training activities according to license requirements.

3. Radiological Controls

a. Radiation Protection (IP 88135)

(1) Inspection Scope and Observations

During various tours of the operating areas, the inspectors verified workers complied with health physics procedures. The inspectors noted that plant workers properly wore dosimetry, used protective clothing in accordance with applicable Radiological Work Permits (RWPs), and properly frisked upon exiting the controlled area. The inspectors verified radiation areas were properly posted and that radiation maps included up-to-date radiation levels. The inspectors also verified the operation of radiation protection instruments as well as its calibration frequencies.

The inspectors performed a detailed review of Safety Work Permit (SWP) #13365. This SWP included radiological requirements detailed under the RWP section. The work involved a modification to sublimation station #1 located in the CD line. The inspectors verified that craft personnel complied with the prescribed controls and precautions. The inspectors noted that the RWP contained adequate requirements concerning the radiation levels, respiratory equipment, dosimetry, contamination levels, special tools and equipment, airborne radioactivity, and containment devices. The area was effectively controlled by health physics personnel. The SWP was prominently posted for employees' review and observation. Workers entering the SWP area signed onto the SWP, verifying their knowledge of the entry requirements.

(2) Conclusions

Radiation protection practices were performed in accordance with plant procedures.

b. Radioactive Waste Management (IP 88035)

(1) Inspection Scope and Observations

The inspectors observed radioactive waste storage and handling areas. The inspectors noted that entrances to storage locations were properly posted and containers labeled in accordance with approved procedures and regulatory requirements. Physical condition of storage containers was adequately maintained. The inspectors interviewed personnel regarding Transportation and Waste Management (T&WM) activities. The inspectors found that personnel were knowledgeable of the requirements associated with the storage and control of radioactive waste material and the inspection requirements for storage locations.

The inspectors noted that the licensee had established a new assay system in the vicinity of the radioactive waste storage area. Additionally, the licensee instituted a more formalized procedure associated with the interim collection and storage of radioactive material since the previous inspection. The inspectors observed personnel perform the operation and daily performance checks for the radioactive material assay system. Training and qualification records for personnel operating the assay system were found

to be current. The inspectors interviewed personnel regarding equipment operation and maintenance and determined that personnel were knowledgeable of equipment operating procedures and acceptance criteria. The inspectors reviewed associated operating procedures and equipment operability records and found that equipment was adequately maintained.

Storage containers were labeled and tracked in accordance with written procedures and container identification numbers were assigned and entered into the data tracking system. Radioactive waste package certification records were current and cognizant personnel were knowledgeable of program requirements for tracking radioactive waste material.

The inspectors reviewed procedures and found that procedures adequately described the responsibilities and roles of T&WM personnel and organizations with radioactive waste management program responsibilities.

Selected radioactive waste shipment manifests were reviewed for completeness and accuracy. Manifests correctly reflected the classification, quantity, and labeling requirements for the respective shipment. Discussions with personnel responsible for certifying that waste shipments are prepared in accordance with Department of Transportation (DOT) regulatory requirements and disposal site waste acceptance criteria indicated that personnel were knowledgeable of their responsibilities and regulatory requirements.

The inspectors reviewed two waste stream characterization packages (Waste Characterization for Waste Profile: NFS-WWTFTC010, Rev 0, 6-19-2009 – Legacy Waste Filter Press Cake, and Waste Characterization for Waste Profile: NFSI000000009, Building 234 Decommissioning) for completeness and accuracy. These waste stream characterization packages were associated with legacy waste material and decommissioning work for Building 234, respectively. Appropriate conservative assumptions were applied in the determination of waste stream characterizations. No issues of safety significance were identified.

(2) Conclusions

Radioactive waste management practices were implemented in accordance with approved plant procedures

c. Transportation (IP 86740)

(1) Inspection Scope and Observations

The inspectors interviewed personnel responsible for the preparation, and shipment of radioactive material. The inspectors found that personnel were knowledgeable of procedural requirements and applicable DOT regulations. Activities associated with the preparation, packaging, and labeling of radioactive material for transportation were performed in accordance with approved procedures. No issues or concerns were identified.

The inspectors observed activities associated with the preparation and transportation of uranyl nitrate and radioactive waste shipments. The inspectors observed personnel while they loaded pallets of radioactive waste containers on transportation vehicles and secured the shipping containers for transport. Radiation and contamination levels were verified to be in accordance with DOT shipping limits. The inspectors interviewed personnel responsible for these activities and noted that individuals were knowledgeable of their responsibilities and procedural requirements associated with transportation activities. The inspectors observed transportation vehicles and shipping containers for proper labeling and placement of placards on the vehicles. No issues of safety significance were identified.

The inspectors interviewed personnel regarding a prior event that occurred in 2008, concerning a shipment of radioactive material to another facility. Upon receipt at the other facility, that licensee subsequently detected the presence of contamination on the bed of the transportation vehicle. The contamination was limited to two small localized areas on the transport trailer. No DOT limits were exceeded. As a result of that event NFS implemented corrective actions, including a requirement to perform a detailed inspection of shipments prior to departure. The inspector observed licensee personnel responsible for performing the final inspection of radioactive material shipments. Based on observations and discussions with responsible individuals, the inspectors noted individuals were knowledgeable of their responsibilities. Inspection activities were performed in a deliberate manner and included requirements to observe for the presence of contamination.

(2) Conclusions

Radioactive material transportation practices were implemented in accordance with approved plant procedures

d. Effluent Control and Environmental Protection (88045)

(1) Inspection Scope and Observations

The inspectors determined, through a review of procedures and discussions with licensee staff, that there have been few changes in the program and procedures or in the assignments of responsibilities to organizational units and individuals to implement the program. However, while observing the preparation and sampling of groundwater, the inspectors noted that the technician was not following the groundwater monitoring procedure, NFS-HS-B-41, "Groundwater Monitoring," Revision 19, as written. Examples of procedural non-adherence included how much acid was used to preserve a sample bottle, the failure to use new tubing each sample, and whether or not a turbidity measurement should or will be taken prior to placing the water analyzer in line in the sampling system. The inspectors concluded that the multiple examples of procedural non-adherence indicated an administrative concern; however the validity of the groundwater sample results was not compromised. In discussions with licensee management and a review of the license application, the inspectors noted that while safety procedures are reviewed every two years, the same frequency as operations

procedures, the safety procedures review does not assure that they reflect current work practices as required in license application Section 2.7.1, Adopting and Issuing Procedures. Several PIRCS items were entered into the corrective action system to address the groundwater monitoring procedural non-adherence issues.

In addition, the inspectors reviewed procedure NFS-HS-A-13, "Preparation, Certification, and Storage of Uranium Counting Calibration Standards," Revision 4, which had last been revised in May 1997 and noted that the procedure contained a Letter of Authorization (LOA) from March 2000. The LOA stated that it "will remain in effect until the next procedure revision." This was another example of a safety procedure not being reviewed to assure that it reflected the current work practice.

The inspectors reviewed the sample analytical methods and noted that there were no changes since the last inspection. The inspectors also reviewed and discussed laboratory operations with the laboratory technician responsible for conducting gross alpha/beta counting of environmental samples. The inspectors noted that the instruments used for performing the gross alpha/beta counts were within their current calibration period and that the laboratory technician had implemented a lab-generated procedure and a spreadsheet with built-in criteria to accept or reject measurement results. The acceptance criteria were used to flag samples that needed re-counting.

The inspectors reviewed the semi-annual effluent reports between spring 2006 and fall 2008 and determined that the airborne effluents were within the NRC requirements. The inspectors independently verified that the fall 2006 and spring 2007 semi-annual effluent report results for the main airborne stack were consistent with the monthly raw data. The inspectors accompanied a technician during the collection and detection of air filter samples from several effluent stacks and determined that the activities were consistent with approved procedures.

The inspectors verified that the liquid discharge from the Waste Water Treatment Facility was treated and sampled prior to offsite discharge to the Nolichucky River. The inspectors reviewed the semi-annual effluent reports between spring 2006 and fall 2008, and determined that the liquid effluents were below required limits. The inspectors accompanied licensee technicians during the collection of surface water and river sediment samples both upstream and downstream from the effluent outfall and verified that the locations sampled were in accordance with the license. The inspectors reviewed past sampling results and determined that the surface water and river sediment samples from the Nolichucky were below license action levels. The inspector compared sample results taken from upstream and downstream of the effluent discharge point and determined that the averaged results were not significantly different.

The inspectors accompanied licensee technicians during the collection of the quarterly environmental samples for soil, sediment, vegetation, and surface water. The collection techniques used by the licensee were in accordance with approved procedures. The sampling locations, sampling frequencies, and number of samples taken were in accordance with the license. The sampling results for soil, sediment, vegetation, and surface water were reviewed for the 2008 - 2009 timeframe and were determined to be under the license action levels.

The inspectors reviewed Martin's Creek data from a sample point downstream of where the main storm water drain and the rerouted Banner Spring Branch empty into the creek. The licensee samples surface water from this location on a weekly basis as part of the environmental sampling program and to monitor for any material which entered Martin's Creek due to storm water runoff. The inspectors verified that the sample results were below the license action levels. However, the action levels cited in the license did not account for any dilution effect of Martin's Creek. The license action levels were submitted to the NRC program office for review during license renewals. In order to evaluate the affected surface water, the inspectors compared sample results from Martin's Creek locations both upstream and downstream from the NFS property. The inspectors determined that the average surface water results were not significantly different. The inspectors also reviewed annual sample data taken from the main storm water drainage system prior to entry into Martin's Creek. The inspectors determined that the results were less than the 10 CFR 20, Appendix B action limit for effluents.

The inspectors verified that water from onsite ponds created during the excavation of the North Site were sampled and processed through the Groundwater Treatment Facility. The liquid discharge from the Groundwater Treatment Facility was released to the sanitary sewer. The inspectors verified that the sanitary sewer was sampled regularly and that radioactive isotope concentrations were below the 10 CFR 20, Appendix B regulatory limits.

The inspectors verified compliance with license reportability requirements. The licensee did not have any liquid discharges above its National Pollutant Discharge Elimination System (NPDES) permits for the past year.

The inspectors reviewed current groundwater sample results in relation to groundwater well locations and sampling frequencies, and determined that the license requirements were met. The licensee conducted the appropriate isotopic analysis for samples which exceeded the site's action level. The inspectors reviewed the progress of the groundwater remediation project for in-situ precipitation of uranium on the west side of the facility. The inspectors observed an overall decreasing trend in the uranium concentrations in the groundwater in the areas affected by this remediation project. The inspectors reviewed the groundwater data results for Technitium-99 and verified that Technitium-99 was present at concentrations which did not warrant remediation.

(2) Conclusions

Environmental protection practices were performed in accordance with the license application. No significant issues were identified.

4. Facility Support

a. Maintenance and Surveillance of Safety Controls (IP 88025)

(1) Inspection Scope and Observations

The inspectors reviewed major work order #131439 involving the rework of liquid drains associated with gloveboxes in a production area. The rework was associated with a nuclear criticality safety initiative to increase the potential fluid flow out of the drains. The four drains were defined as safety related equipment (SRE) N333XDRAINH1A09, -A10, -B09, and -B10. The inspectors confirmed that the required work order review and approval prerequisites were completed prior to beginning the actual modifications. After the work was completed, the modifications were inspected and the work acceptance form was properly executed. The modifications were properly reflected in drawings 333-F0406-D and 333-F0407-D. The inspectors determined that the work order prerequisite reviews and approvals, post-work protocols and documentation, and the physical work completed on the glovebox, were completed in compliance with licensee standard operating procedures SOP-392, "Work Request Procedure," Revision 20 and NFS-GH-43, "Safety-Related Equipment Control Program," Revision 5.

The inspectors accompanied personnel performing a periodic functional test of an electrical safety system associated with a production device. The electrical safety system was identified as an IROFS. The inspectors determined that licensee personnel properly followed all safety protocols, testing procedures, and documentation requirements during the testing process. The personnel demonstrated thorough knowledge of process equipment and associated safety systems. The test results indicated that the electrical safety system was functioning properly. The inspectors reviewed the completed work package documentation and determined that personnel properly completed and dispositioned the documentation in accordance with licensee procedures.

The inspectors reviewed work activities associated with WR 135764 concerning the repair of the nuclear criticality alarm system. The problem was originally reported on the licensee's corrective action system as PIRCS #19018. The problem was identified as failure of criticality detectors #37 and #38 to electronically communicate with the radiation network system. Documentation indicated that approval signatures were obtained prior to beginning work; qualified electrical technicians performed corrective action; prescribed post-maintenance testing and calibration activities were successfully completed; and all related documentation and computer maintenance files were properly closed out.

The inspectors reviewed a sample of records for preventative maintenance activities that had been completed over the last year. The activities involved process equipment identified as SRE or IROFS. A total of seventeen records were reviewed and all activities and related records were determined to be accurately completed and in compliance with licensee procedures.

The inspectors followed up on URI 2006-010-01, "Failure of the building 306 diesel generator." The licensee engineering staff determined that the diesel generator failure was directly related to the replacement of the uninterruptible power supply (UPS) that derives its power from the utility grid or the existing diesel generator when grid power is lost. The replacement UPS was purchased from a vendor that offered and supplied a UPS that contained a lower cost 6-pulse rectifier versus the higher cost 12-pulse rectifier that was in the old UPS. At the time, the licensee engineering staff was unaware that the 6-pulse rectifier produced higher harmonic impedance that increased the required amount of current input, either from the grid or the diesel generator. The UPS vendor also did not recognize that the higher current input requirements exceeded the existing generator's output capacity. After completing installation of the replacement UPS in early 2005, testing revealed that the UPS system would often fail when switching to the diesel generator. The vendor also failed to remove a factory jumper wire that also aggravated the UPS switch-over function. The licensee and the vendor agreed to install an active harmonic filter that reduced the harmonic impedance and solved the diesel generator switch-over problem. The UPS operated reliably until a July 8, 2009 event. The latest failure event was related to the need for a minor adjustment on a processor circuit board. The problem was corrected by a simple adjustment. Currently, the replacement UPS and diesel generator are passing all scheduled tests.

In response to the UPS problems, the licensee implemented multiple corrective actions including: (1) established an electrical engineering group staffed with electrical engineers and specialists, (2) purchased new testing equipment capable of detecting and measuring electrical harmonics, (3) enhanced procedures and scheduled preventive maintenance and functional testing, and (4) enhanced monitoring of the system and increased sensitivity to control processor adjustments. The inspectors concluded that the issues related to the new UPS equipment have been identified, successful resolutions have been implemented, and preventative actions to prevent recurrences were relevant and significant. The inspectors noted that the diesel generator and the bank of batteries are aging, and may challenge licensee efforts to maintain the desired reliability. URI 2006-010-01 is closed.

The inspectors followed up on the licensee's corrective actions concerning item IFI 2007-004-02, "Incorrectly designed check valve for application". During a licensee investigation of a leak adjacent to the check valve, the licensee discovered that the body of the check valve was stamped 10 psi. The 10 psi stamp indicated that the vendor had set the functional pressure threshold to 10 psi. The as-found valve was factory adjusted to function at 10 psi versus the design specification of 25 psi. The check valve was not identified as safety related equipment. The licensee determined that the as-found valve may have been there since original installation. Licensee corrective actions were identified in PIRCS item #10522. Corrective actions included: (1) installation of the correct valve per WR #115193, (2) performing extent-of-condition inspections to detect and correct other similar equipment errors, none were identified, and (3) evaluating potential negative consequences resulting from the as-found valve identified in memorandum DEB-07-007, "Evaluation of Incorrectly Installed Check Valve." A worst case scenario included the unplanned bypass of liquid through the valve from one column into another column. The liquid bypass could have theoretically continued until the receiving column overflowed. Consequences from an overflow event would have been similar to personnel pumping too much liquid into the column, a failure scenario

already analyzed. The inspectors determined that the licensee implemented appropriate actions to correct the as-found valve. The inspectors are not yet aware of any licensee efforts to enhance identification of similar problems that are difficult to detect on non-safety related items. IFI 2007-004-02 remains open.

The inspectors followed up on the licensee's corrective actions concerning unresolved item URI 2007-006-01, "SRE Tests." The URI concerned SRE being tested without adequate procedures. The licensee entered the deficiency into the PIRCS system on 10/16/2007 as PIRCS #11392. Corrective actions were developed and identified in the PIRCS system. Corrective actions included two aspects: (1) immediate correction of the faulty testing procedure identified in the finding, and (2) reinforcement of an existing requirement to complete a recurring 2-year review cycle of all SRE tests. The licensee created a management document LOA-MISC-07-054 allowing active management of the 2-year verification process. The review cycle process was completed in September 2009. PIRCS item #11392 was revised on 10/5/09 to indicate that the review and revision processes were completed. URI 2007-006-01 is closed.

(2) Conclusions

Maintenance and surveillance activities were conducted safely and in accordance with the facility license.

b. Configuration Control (IP 88071)

(1) Inspection Scope and Observations

The inspectors reviewed the licensee's compliance with the new configuration control amendment in the FMF. The FMF was required to be incorporated into the new configuration control system by June 2009, as stated in the license amendment submitted in response to the February 21, 2007 Confirmatory Order. The focus of the inspection was implementation and management of the electronic configuration software which represents the key modification of the licensee's configuration control program.

The inspectors conducted interviews of several members of the team of employees that had been assigned to manage, gather and input the data into the electronic system. The interviews demonstrated that the team members were knowledgeable of the requirements of the system and qualified to adequately perform the task. The inspectors audited the data associated with the fuel process. The inspectors found the process and instrumentation diagrams (P&IDs) and components for these systems were properly entered into the software database. The system components were properly "cross-linked" to all safety related equipment (SRE). The system adequately communicated the pertinent safety functions of various components to the equipment list. The inspectors also noted that the change control process had also been sufficiently incorporated into the electronic configuration software.

(2) Conclusions

The licensee adequately implemented the requirements of the new configuration control license amendment.

c. Management Organization and Controls (IP 88005)

(1) Inspection Scope and Observations

The inspectors verified that the licensee was adequately reviewing and tracking IROFS failures as required by 10 CFR 70.62(a). The inspectors noted that the licensee was performing adequate evaluations of IROFS that had failing to meet the performance requirements of 10 CFR 70.61. Each of these failures represented an event report to the NRC. In addition to this list, the licensee was tracking other equipment and procedural issues to determine if a trend was developing. These trends were analyzed and reviewed by management. No issues were noted.

The inspectors reviewed a sample of procedures in the CD Line, Area 300 and Area 400. The inspectors noted the procedures were properly approved and had been reviewed within the appropriate frequency. No issues were noted.

The inspectors reviewed audits for the configuration management program conducted during the last 12 months. The inspectors noted that one of the audits was conducted internally in late 2008. The findings from the audit were properly entered into the licensee's corrective action system. The inspectors also noted that the licensee had an external audit performed of the configuration management program in May 2009 using an independent third party. The inspectors noted that the third party's audit findings were also properly incorporated into the corrective action system.

The inspectors reviewed the Safety and Safeguards Review Council's meeting minutes for June through August 2009. The inspectors noted adequate attendance by council members and the appropriate discussion of topics, such as the impact of the use of chlorine onsite. No issues were noted.

The inspectors performed daily reviews of the licensee's PIRCS entries to ensure that conditions adverse to requirements and quality were being identified and tracked to closure. The inspectors verified that issues were being properly identified, reviewed and tracked to completion.

(2) Conclusions

The licensee sufficiently documented and corrected conditions adverse to quality. The licensee properly conducted audits, safety council meetings, and tracking of IROFS failures according to license requirements.

d. Emergency Preparedness (88051)

(1) Inspection Scope and Observations

Section 7.3.1 of the Emergency Plan requires a biennial emergency exercise. The exercise was conducted on September 1, 2009. The licensee submitted, in advance of the exercise date, the final details of the exercise scenario, scope, and objectives for NRC review. The exercise scenario and objectives were reviewed to verify that the scenario details would provide conditions for an adequate test of the onsite response

capability. The licensee's performance regarding the implementation of the Emergency Plan in response to a simulated emergency and the critique to self-identify areas of improvement were evaluated. The inspectors observed the licensee's response to the simulated emergency at the incident scene, the On-Scene Command Post, and the Emergency Control Center.

The inspectors compared the exercise scenario to training exercises conducted by the licensee to ensure that the participants were not trained on similar conditions as those postulated for the NRC evaluated exercise. No problems were noted. The exercise scenario simulated a tornado making contact onsite with a storage facility containing radioactive materials, solvents, and combustibles. A chain of events was simulated that resulted in a major fire with serious injuries to personnel working in the area and a release of radioactive material. Within the areas that were evaluated, with one exception, the licensee's performance in mitigating the postulated accident and protecting the workers, public, and environment was considered successful. The one exception involved a critical exercise objective to properly classify the event by the Emergency Control Director (ECD). The ECD's initial emergency classification of Alert, based on an onsite tornado with impact to the facility, was both timely and correct. However, the ECD failed to later upgrade the classification to a Site Area Emergency (SAE) as described below.

The simulated fire eventually engulfed the containers of radioactive materials, solvents and combustibles, and conditions rapidly deteriorated such that a major fire resulted including an airborne release via an opening in the roof of the storage facility. Based on worst case meteorology and the material inventory for the affected facility, an offsite dose projection was performed to determine if the event should be upgraded to an SAE based on the projected Effective Dose Equivalent at or beyond the site boundary. The dose assessor performing the dose projection failed to use the correct source term value based on the inventory of radioactive material that was involved in the fire and the results (0.01 rem) were 100 times less than the expected dose for a SAE declaration (greater than 1 rem). Consequently, the incorrect source term resulted in the ECD's failure to classify the event as a SAE and to provide the offsite authorities with recommended protective actions. This was self-identified by the licensee and was attributed to human error. The inspectors discussed the exception as an example of an exercise weakness requiring corrective actions. In response to the exercise weakness, the licensee contact for emergency preparedness discussed plans to develop and implement a worst case look-up table for various building fires that will include a source term value for each onsite building based on building contents. The licensee assigned corrective action #10117 (PIRCS #20795) to track the resolution of the weakness with an anticipated date for completion in November 2009.

The scenario was realistic, well planned, and the use of pre-staged drill cues at the incident scene enhanced the training experience for responders. Offsite exercise participants included the Erwin Fire Department, Pro-Med Ambulance Service, Unicoi County Memorial Hospital, Johnson City Medical Center (which included air transport of a simulated injured victim by Wings Helicopter Service), Unicoi County Emergency Management, and the Tennessee Emergency Management Agency. The licensee

conducted a critique following the exercise which provided players, controllers, evaluators, and observers an opportunity to provide comments. The licensee's critique was an adequate assessment of the response and items requiring improvement or corrective actions were identified.

(2) Conclusions

The licensee's response to the postulated accident was considered a successful demonstration of the licensee readiness to implement the Emergency Plan and implementing procedures. The inspectors discussed an area requiring corrective actions concerning the incorrect classification of the source term which resulted in the ECD's failure to classify the event as a SAE and provide the offsite authorities with recommended protective actions.

e. Permanent Plant Modifications (IP 88070)

(1) Inspection Scope and Observations

The inspectors performed a review of the ISA changes and permanent plant modifications that were made over the last year in the fuel process. The inspectors reviewed the internally authorized changes to determine if the modifications were performed and authorized according to the configuration management program. The inspectors also verified that the modifications were reviewed to ensure that any potential modifications to an accident sequence or IROFS were properly accounted for and addressed.

The inspectors reviewed a 10 CFR 70.72 evaluation related to the use of chlorine. The inspectors determined that the licensee did not need prior NRC approval before commencing activities involving chlorine.

(2) Conclusions

The licensee adequately implemented facility changes and modifications to the ISA Summary.

5. Safeguards

Physical Protection (IP 88135)

(1) Inspection Scope and Observations

During daily plant tours, the inspectors verified that persons within the protected area properly displayed photo identification and those individuals not possessing unescorted access clearances were properly escorted. During entry and exit from the protected area, the inspectors verified that personnel were searched using appropriate search equipment. Additionally, during tours of the operating areas, the inspectors verified that the Material Access Area (MAA) portals were effectively controlled.

(2) Conclusions

Security elements were implemented in accordance with the security plan.

6. Follow-up on Events (88135)

(1) Inspection Scope and Observations

The inspectors reviewed Event Notification (EN) 45179 (Nuclear Material Event Database # 090573), which involved a degradation of the public address (PA) system. On June 30, 2009, an individual located in a subcontractor trailer in the protected area noted that PA announcements related to fire alarm testing could not be clearly heard. Degradation of the PA system was suspected and the issue was entered into the corrective action system as PIRCS #19511. Subsequent investigation revealed that the cause of the degradation was due to damaged speaker wire caused by the installation of a new fire suppression system in the 310 Warehouse. Specifically, a technician had recently drilled a hole to install a support bracket and inadvertently drilled into the affected speaker wire as it was not encased in conduit. This event was reported to the NRC Headquarters Operations Officer (HOO) on July 1, 2009. The event was reported pursuant to 10 CFR 70.50 (b)(2) as equipment that failed to function as designed when the equipment is required to prevent exposure to radiation exceeding regulatory limits. Because the PA system is part of the criticality alarm system (CAS), the CAS system for the 310 Warehouse and the contractor trailer was inoperable due to the degraded PA system. The PA system was repaired and fully tested and returned to service on July 3. The inspectors reviewed the 30-day written response to the event dated July 30, 2009. Long term corrective actions include the addition of new design requirements to ensure PA speaker wiring is installed within conduit or approved mounting brackets. EN 45179 is closed.

(2) Conclusions

EN 45179 was properly reported to the NRC HOO in accordance with applicable regulations.

7. Follow-up on Previously Identified Issues

(Closed) VIO 2006-014-01: Failure to follow Lockout/Tagout procedure. The inspectors reviewed the corrective actions taken to address this particular violation, e.g., Lockout/Tagout procedure training. The inspectors had no additional concerns. This violation is closed.

(Closed) URI 70-143/2006-002-02: Failure to control electrical schematic diagrams under configuration control. The inspectors discussed with the licensee how they controlled electrical schematic diagrams. The inspectors noted that electrical diagrams were included in the configuration management program database and they linked to the respective equipment number, including safety related equipment. The inspectors also

noted that changes to electrical diagrams were handled through the change control process which required a detailed review of the change. The inspectors determined that the licensee was controlling electrical diagrams in accordance with license requirements. This item is closed.

(Closed) VIO 70-143/2007-006-03: Inadequate review/approval for a procedure change. The inspectors reviewed the licensee's corrective actions involving a process engineer that had written a Work Instruction that did not follow the requirements for writing a standard operating procedure or letter of authorization. The inspectors reviewed the revised procedure that governed the issuance of Work Instructions and reviewed several Work Instructions that were in use in the facility. No issues were noted with these documents. This item is closed.

(Closed) VIO 70-143/2007-009-03: Failure to Implement the Tollgate Process for the BPF U-Metal Project. The inspectors reviewed the licensee's corrective actions involving the failure to properly apply and document the Tollgate process for the BPF U-metal project. The inspectors reviewed the application of the Tollgate process on the modification of the 800 Area. The inspectors noted that the project engineers had properly applied and documented each of the Tollgate process milestone reviews. The inspectors' interviews with several project engineers demonstrated adequate knowledge and application of the Tollgate process. This item is closed.

(Closed) Inspector Follow-up Item (IFI) 70-143/2007-004-03: Verify Corrective Actions to Emergency Information Message (EIM). The EIM form (Attachment E to Procedure NFS-HS-03) was modified to include a requirement that the assistant ECD update the EIM and attach a copy of the offsite protective action recommendations (Attachment F to Procedure NFS-HS-03) for transmittal to offsite authorities. The licensee continues to evaluate the procedure used for offsite dose projections (NFS-HS-E-09) based on site physical and operational changes. The inspectors concluded that the corrective actions were adequate. This item is closed.

(Closed) IFI 70-143/2007-004-04: Verify corrective actions to resolve the onsite and offsite contamination. The inspectors observed the licensee performing contamination surveys of personnel and equipment during the simulated response. A contamination-control zone was established and maintained throughout the exercise. Examples were noted where response personnel removed gloves in areas potentially contaminated to perform life-saving actions, such as taking vital signs, but were later checked for contamination prior to leaving the area. The inspectors concluded that based on the response, the training provided to both onsite and offsite personnel regarding contamination control was adequate. This item is closed.

(Discussed) URI 70-143/2008-004-05: Verification of IROFS Pipe Material. The inspectors reviewed the licensee's progress in verifying that pipe material, credited as an IROFS, had been properly verified. The inspectors reviewed the licensee's updated procedure for the verification of IROFS piping (NFS-GH-939, "Piping Integrity Plan," Revision 3). The inspectors noted that the procedure was adequate to meet the intent of the IROFS requirements. The licensee had not completed the verifications of all of the

IROFS piping of the facility at the time of this inspection. Therefore, this item will remain open until the verification is complete. Thus far, no pipe designated as an IROFS was determined to be composed of the incorrect material.

(Discussed) URI 2007-008-05: Review of NFS's verification and validation of software used for decommissioning. The verification and validation of software used for decommissioning was discussed; however, the license was not ready to close the item. The licensee will be ready to review the issue after the first Final Status Survey report is completed and submitted to the NRC.

(Discussed) IFI 2005-003-04: Elevated isotopic analysis on a stack sample above the licensee's action limit. This item was closed in inspection report 2005-007. The inspectors re-evaluated the methodology used to calculate the dose to the maximally exposed individual (MEI), the resultant dose to the MEI, and the corrective actions taken to prevent recurrence. The inspectors determined that the licensee used approved methodology and an off-site laboratory accredited by the National Environmental Laboratory Accreditation Program to aid in determining the dose to the MEI. The dose value was below the 10 CFR 20.1301 limits of 100 mrem in a year and 2 mrem in any one hour. The inspectors determined that the mechanical corrective actions taken to prevent recurrence had been installed and were functional. The inspectors had no new concerns. This item remains closed.

(Discussed) VIO 2008-004-01: Failure to adhere to plant procedures. The inspectors reviewed the corrective actions taken to address this violation. While the initial corrective actions were complete, the inspectors observed that tanks WD-01 and -02 had similar discharge piping configuration as WF-03 and -04. This item will remain open for further NRC review of the licensee's extent of condition analysis.

8. Exit Meeting

The inspection scope and results were presented to members of the licensee's staff at various meetings throughout the inspection period and were summarized on October 5, 2009, with the licensee's management. No dissenting comments were received from the licensee. Proprietary information was discussed but not included in the report.

ATTACHMENT

1. PERSONS CONTACTED

Partial List of Licensee's Persons Contacted

G. Athon, Jr., Director, Applied Technology and Principal Scientist
N. Brown, Nuclear Safety Engineer
D. Coulter, Health Physicist
R. Dailey, Engineering Director
M. Dotson, Maintenance Manager
R. Droke, Licensing and Compliance Director
D. Kudsin, President, NFS
T. Lindstrom, Vice President, Operations
B. Long, Project Engineering Section Manager
M. Moore, Director, Safety and Regulatory
J. Nagy, Chief Nuclear Safety Officer
J. Quillen, Process Engineering Director
R. Shackelford, Nuclear Criticality Safety Manager
T. Sheehan, Director, High Enriched Uranium (HEU) Operations
M. Shope, Quality Assurance Manager
A. Vaughn, Director, Fuel Production
J. Wheeler, Licensing and ISA Manager
D. Wise, Director, Fuel and Operations

2. INSPECTION PROCEDURES USED

IP 88135 Resident Inspectors Program for Category 1 Fuel Cycle Facilities
IP 86740 Transportation
IP 88051 Evaluation of Exercises and Drills
IP 88055 Fire Protection (Annual)
IP 88005 Management, Organization, and Controls
IP 88010 Operator Training/Retraining
IP 88020 Operational Safety
IP 88025 Maintenance and Surveillance of Safety Controls
IP 88035 Radioactive Waste Management
IP 88071 Configuration Management Programmatic Review
IP 88070 Permanent Plant Modifications
IP 88045 Effluent Control and Environmental Protection

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Item Number</u>	<u>Status</u>	<u>Type/Description</u>
70-143/2009-003-01	Open	VIO – Failure to implement a safety program required by 10CFR70.62. (Paragraph 2.c)
70-143/2009-003-02	Open	URI – Analysis of Fire in Building 105 (Paragraph 2.c)

70-143/2009-003-03	Open	URI – Implementation of recommendations of Fire Hazard Analysis. (Paragraph 2.c)
70-143/2006-010-01	Closed	URI – Failure of the building 306 diesel generator. (Paragraph 4.a)
70-143/2007-004-02	Discussed	IFI – Incorrectly designed check valve for application. (Paragraph 4.a)
70-143/2007-006-01	Closed	URI – SRE Tests. (Paragraph 4.a)
70-143/2006-014-01	Closed	VIO – Failure to Follow Lockout/Tagout procedure. (Paragraph 7)
70-143/2006-002-02	Closed	URI – Failure to control electrical schematic diagrams under configuration control. (Paragraph 7)
70-143/2007-006-03	Closed	VIO – Inadequate review/approval for a procedure change. (Paragraph 7)
70-143/2007-009-03	Closed	VIO – Failure to Implement the Tollgate Process for the BPF U-Metal Project. (Paragraph 7)
70-143/2007-004-03	Closed	IFI – Verify Corrective Actions to EIM. (Paragraph 7)
70-143/2007-004-04	Closed	IFI – Verify corrective actions to resolve the onsite and offsite contamination. (Paragraph 7)
70-143/2008-004-05	Discussed	URI – Verification of IROFS Pipe Material. (Paragraph 7)
70-143/2007-008-05	Discussed	URI – Review of NFS's verification and validation of software used for decommissioning. (Paragraph 7)
70-143/2005-003-04	Discussed	IFI – Elevated isotopic analysis on a stack sample above the licensee's action limit. (Paragraph 7)
70-143/2008-004-01	Discussed	VIO – Failure to adhere to plant procedures. (Paragraph 7)