



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

[REDACTED]

September 19, 2005

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. 70-143/2005-007 AND NOTICE OF VIOLATION

Dear Mr. Schutt:

This refers to the inspection conducted from July 10 through August 20, 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. At the conclusion of the inspection, the findings were discussed with your staff as identified in the enclosed report.

Areas examined during the inspection included the following: Plant Operations, Operator Training, Fire Protection, Radiation Protection, 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 three (3) violations of NRC requirements occurred.

[REDACTED]

[REDACTED]

[REDACTED]

The violations are cited in the enclosed Notice of Violation and the circumstances surrounding them are described in detail in the subject inspection report. If you contest these violations 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 Senior Resident Inspector at your facility.

You are required to respond to this letter and should follow the instructions specified in the Notice when preparing your response. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

[REDACTED]

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

Sincerely,

/RA/

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

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

Enclosures: Notice of Violation
NRC Inspection Report

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

[REDACTED]



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DATE	09/19/2005	May 17, 2008	09/19/2005	09/19/2005	09/19/2005	May 17, 2008	May 17, 2008
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[REDACTED]

NOTICE OF VIOLATION

Nuclear Fuel Services, Inc.
Erwin, Tennessee

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

During an NRC inspection conducted from July 10 through August 20, 2005, three (3) violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedures for NRC Enforcement Actions - May 1, 2000," NUREG-1600, the violations are listed below:

- A. Safety Condition S-1 of Special Nuclear Materials License No. SNM-124 authorized the use of licensed materials in accordance with the statements, representations, and conditions in the License Application and Supplements.

Section 2.7 of the License Application, "Procedures," stated that, "SNM operations and safety function activities are conducted in accordance with written procedures as defined in Section 1.7.4 and 1.7.5."

Standard Operating Procedure 401, Section A, required that in the event of loss of process ventilation, personnel must utilize full face respirators until the processes were in safe shutdown.

Contrary to the above, on August 9, 2005, the [REDACTED] lost process ventilation but plant staff inside the Complex did not don full face respirators.

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

- B. Safety Condition S-1 of Special Nuclear Materials License No. SNM-124 authorized the use of licensed materials in accordance with the statements, representations, and conditions in the License Application and Supplements.

Section 2.7 of the License Application, "Procedures," stated that, "SNM operations and safety function activities are conducted in accordance with written procedures as defined in Section 1.7.4 and 1.7.5."

Contrary to the above, plant staff failed to conduct safety function activities in accordance with written procedures related to the radiation work permit (RWP) program, as described in the following three instances:

1. Procedure NFS-HS-A-12, "Radiation Monitoring Training Procedure," Section 3, stated in part that, "As part of the initial training, the trainee will be required to read and sign off on all applicable Health and Safety procedures."

Enclosure 1

[REDACTED]

Prior to August 18, 2005, the licensee failed to require Radiation Technicians (RTs) to read and sign-off on two applicable Health and Safety procedures: NFS-GH-42, "Establishing and Posting Radiologically Controlled Areas," and NFS-GH-03, "Radiation Work Permits."

2. Chapter 3, Section 3.1.2 of the License Application stated in part that, "upon completion of work under the RWP, the radiation safety and protection function are responsible for assuring that the RWP is terminated to allow the work area to be returned to normal conditions."

Procedures NFS-GH-03, "Radiation Work Permits," Section 5.2.5, stated in part that, "the permit will be terminated upon completion of all required monitoring and surveys, provided that the results are within limits. The RWP cannot be terminated until the monitoring results are within the required limits."

On August 3, 2005, the licensee terminated RWP #05-41-064 prior to completion of required monitoring and surveys, in that work areas with open piping and visible contamination were not monitored or surveyed.

3. Chapter 3, Section 3.1.2 of the License Application stated in part that, "Non-routine activity which is not normally covered by documented procedures, are administered by the RWP system. RWPs are issued for all work on or involving entry into a system where a potential for release of contamination exists or exposure of employees to airborne radioactivity."

Procedure NFS-GH-42, "Establishing and Posting Radiologically Controlled Areas," Section 5.10.2.1, stated in part that, "RWP Area banner tape is used to mark the boundaries of the RWP areas as required within the applicable RWP. Compliance with the specific dimensional/geographical area delineated on the RWP is required."

On July 20, 2005, RWP Area banner tape was not used to mark the boundaries for work as specified on RWP 05-02-009.

The above three examples constitute a Severity Level IV violation (Supplement VI).

- C. Safety Condition S-1 of Special Nuclear Materials License No. SNM-124 authorized the use of licensed materials in accordance with the statements, representations, and conditions in the License Application and Supplements.

Chapter 3, Section 3.2.5.1 of the License Application stated in part that, "The routine frequency for the collection and analysis of urine samples to measure intakes of uranium by individuals who could be exposed to highly soluble compounds of uranium enriched in the isotope uranium-235 at a weight percentage less than 5% by weight shall be at least twice a month, with a maximum interval between sampling not to exceed 20 days."

[REDACTED]

Procedure NFS-GH-08, "Collecting Urine Specimens," Section 5.5.1, stated in part that, "If a urine sample is not received within seven days, the employee will be issued a 'Do Not Admit Without Urine Sample' red tag. The red tags will be delivered to the Entry/Exit Control Point to be placed on the employee's badge slot. The [REDACTED] shall not admit the employee to the plant [REDACTED] until a urine specimen is presented.

Contrary to the above, from August 8 to August 17, 2005, an employee did not submit a urine sample per procedural timeliness requirements, and concerning that employee's access to the [REDACTED] Complex, plant staff failed to issue the required red tag and prohibit the employee's access.

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, DC 20555 with a copy to the Regional Administrator, Region II, 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: (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 not be modified, suspended, or revoked, or why such other action as may be proper should be taken. Where good cause is shown, consideration will be given to extending the response time.

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

[REDACTED]

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

Dated this 19th day of September, 2005

[REDACTED]

[REDACTED]

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-143

License No.: SNM-124

Report No.: 70-143/2005-007

Licensee: Nuclear Fuel Services, Inc.

Facility: Erwin Facility

Location: Erwin, TN 37650

Dates: July 10 through August 20, 2005

Inspectors: D. Rich, Senior Resident Inspector
S. Burris, Resident Inspector
R. Gibson, Health Physicist

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

Enclosure 2



EXECUTIVE SUMMARY

Nuclear Fuel Services, Inc.
NRC Inspection Report 70-143/2005-007

This inspection included activities conducted by the senior resident inspector, resident inspector, and a regional inspector during normal and off-normal shifts in the areas of Plant Operations, Operator Training, Fire Protection, Radiation Protection, and Physical Protection.

Plant Operations

- The plant was operated safely and generally in accordance with the license. The effectiveness of the corrective action system was diluted by the licensee's hesitation to make entries on identified issues (Paragraph 2.a).
- The Blended Low Enriched Uranium preparation facility processes were shutdown for installation of process improvements. Inspections of modifications in progress and changes to the safety basis were ongoing at the end of the inspection report period (Paragraph 2.b).

Operator Training

- The training program for initial and refresher training in nuclear criticality safety, radiation protection and general emergency preparedness was effective. Training material and examinations were current, and adequate to measure knowledge levels. Lessons learned from past events were added to refresher training (Paragraph 3.a).
- A violation was identified due to the failure to require radiation technicians to review and sign-off on applicable procedures. This issue was consolidated with two similar issues described in Paragraph 5.d to comprise a single violation (Paragraph 3.b).
- New employees received adequate on-the-job training. Employee qualifications were maintained daily by each supervisor and reviewed quarterly with each new employee until the employees were fully certified (Paragraph 3.c).

Fire Protection

- Fire protection and detection equipment was adequately maintained. Fire hazards were minimized by appropriate housekeeping (Paragraph 4.a).
- Two fires occurred at NFS, one of which was reportable. A longstanding deficiency in equipment condition contributed to one event. The licensee adequately addressed several issues related to fire alarm response and equipment design (Paragraph 4.b).



Radiation Protection

- Self-assessments of the Radiation Protection program were implemented in accordance with requirements (Paragraph 5.a).
- The external exposure monitoring program was implemented in a manner to maintain doses as-low-as-reasonably-achievable (ALARA). Exposures were less than the occupational limits in 10 CFR 20.1201 (Paragraph 5.b).
- The inspectors identified a violation for a case where a licensee employee continued to enter the [REDACTED] Complex from August 8 to August 17, although per procedural requirements the employee should have been denied access for failure to submit a required urine sample (Paragraph 5.c).
- A violation was identified for two examples of failure to properly control and release radiation work permit areas. (These two examples and the Operator Training violation described in Paragraph 3.b were consolidated into one violation.) In one example, a contributing cause was the use of a general radiation work permit for an infrequently performed task. In addition, the inspectors identified another violation for the failure of plant staff in a uranium processing area to evacuate or don full-face respirators when process ventilation was lost (Paragraph 5.d).
- The radiation and contamination survey programs were appropriately implemented to protect workers, and to identify potential work areas posing an internal or external radiation hazard to workers (Paragraph 5.e).
- The licensee's ALARA program was properly implemented (Paragraph 5.f).

Physical Protection

- [REDACTED]

Attachments:

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

[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) oxide conversion operations continued, but BLEU preparation facility (BPF) operations were shutdown for some of the inspection period for modifications. 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

(1) Scope and Observations

The inspectors reviewed plant operations in progress during normal and off-normal operating shifts to evaluate plant safety and compliance with the license. The inspectors 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 inspectors verified the Emergency Control Center (ECC) and associated equipment were maintained in a state of readiness. 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 noted the licensee had engaged in a procedural improvement program, which included benchmarking to review alternatives to the current procedure format. The first of the new procedures was in use on the production floor during this inspection period. The procedure was a run sheet for the [REDACTED]

[REDACTED]. The inspectors reviewed the format and use of the run sheet and noted no issues.

The inspectors reviewed selected entries from the Problem Identification, Resolution and Corrective Action System (PIRCS), including corrective actions for previously identified events. The inspectors noted several issues which had been identified by NRC inspectors and discussed with licensee management which were not entered into PIRCS until inspectors made repeated inquiries. An example was violation 70-143/2005-07-03, described in paragraph 5.d of this report. NRC inspectors identified the issue to licensee management and, although the issue was investigated and corrective actions were evaluated, the issue was not documented in PIRCS until NRC inspectors requested additional updates on resolution and proposed corrective actions. On each separate issue, inspectors had to either make repeated requests for information or point out to senior management that no entry was yet made in PIRCS.

[REDACTED]

The inspectors performed a walkdown of the safety-related [REDACTED] system involved with the processing of licensed nuclear material. The inspectors used the walkdowns to independently verify conformance to the license and the corresponding safety analysis. Prior to these walkdowns the inspectors reviewed the safety analysis, assumptions and controls for [REDACTED] system. During each walkdown, the inspectors verified that the system drawings reflected the proper implementation in the field, and that engineered and administrative controls were in place as required by the original design. The inspectors discussed these assumptions and controls with the operators to ensure that they were aware of the proper operation and control of [REDACTED] system. The inspectors verified that procedures associated with the [REDACTED] system reflected the approved drawings and the as-built configuration. Calibrations were current and functioning, and that safety-significant process parameter values were consistent with normal expected as found values. During these walkdowns the inspectors witnessed the licensee's contractor during bi-annual Safety Related Equipment (SRE) testing of [REDACTED] system performed under Work Order 67407 and 67408, issued on 7/06/2005 for [REDACTED]. The testing was performed to validate the operability of [REDACTED] system to properly alarm and initiate during a fire. Each temperature sensor was tested and verified to actuate to the proper temperature stimulus. All data collected were reviewed and verified that the results met the criteria established in the fire suppression system test sheets.

(2) Conclusions

The plant was operated safely and generally in accordance with the license. The effectiveness of the corrective action system was diluted by the licensee's hesitation to make entries on identified issues.

b. BPF Operations

(1) Scope and Observations

The inspectors reviewed recent events and observed modifications in progress in the BPF facility in order to ensure compliance with license conditions.

On July 25, the [REDACTED] process was in operation when hot [REDACTED] solution overflowed from the [REDACTED], into the enclosure overflow line and onto the floor. The hot solution caused the clear [REDACTED] lines to sag and deform. The licensee shutdown the [REDACTED] process until evaluation of the event could be completed. The licensee found that the event was caused by poor level control in the [REDACTED]. Design of the enclosure overflows did not foresee the possibility that solution at an elevated temperature would overflow [REDACTED].

The licensee evaluated an improved level indication and control system, evaluated different material for the overflow lines, and began installation of several other design modifications. The system was still shutdown at the end of this inspection period.

The licensee also shutdown other BPF processes in order to implement process improvements. The inspectors observed modifications made to the [REDACTED] process,

which included changes [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]. The inspectors reviewed proposed changes to the piping and instrumentation design, observed work in progress in the facility, and inspected proposed changes to items relied on for safety. The inspectors noted that the addition of the nitrogen purge line required the addition of several IROFS, in order to prevent pressurization of the enclosure in case of an upset. The inspectors noted no issues with proposed changes to IROFS. The process was still shutdown at the conclusion of the inspection period.

(2) Conclusions

The BPF processes were shutdown for installation of process improvements. Inspections of modifications in progress and changes to the safety basis were ongoing at the end of the report period.

c. Follow-up on Previously Identified Issues:

Closed IFI 70-143/2005-01-02: Control of Temporary Fixtures. This issue, related to nuclear criticality safety (NCS) controls, concerned the licensee's use of temporary equipment without specification of controls over diameter, length, or connector information. During inspection 70-143/2005-01-02, the inspector noted that a temporary procedure did not specify the diameter, length, or connector information of the temporary fixture and questioned whether the hose had been adequately evaluated and approved from a criticality safety standpoint. In response to the inspector's question, a licensee NCS engineer had evaluated the temporary fixture as being safe, tagged it as being approved, and the licensee agreed to evaluate information which should be included in a temporary procedure when authorizing use of temporary fixtures. During this inspection, the inspectors noted that prior to using temporary equipment in areas where special nuclear material was processed, the licensee evaluated the use of the temporary equipment against the existing NCS Evaluations to ensure that no new accident sequences were created by the use of such equipment. The inspectors also verified that the use of temporary equipment having the potential to create new accident sequences was not permitted until a NCS analysis was completed to demonstrate the safety basis, and new controls identified in the analysis were implemented through procedures. This item is closed.

3. Operator Training (IP 88010) (F2)

a. Initial and Refresher Nuclear Criticality Safety (NCS), Radiation Protection (RP), and General Emergency Preparedness Training (F2.01), (F2.02), (F2.03) & (F2.04)

(1) Scope and Observations

The inspectors reviewed initial and refresher NCS, RP, and general emergency preparedness training areas. The inspectors reviewed relevant training materials, examinations, and examination scores. The inspectors discussed lessons-learned information with plant staff to determine whether it was incorporated into the licensee's training programs. The inspectors verified that initial and refresher general employee training (GET) met the requirements listed in 10 CFR 19.12, "Instructions to Workers." Annual refresher training for both NCS and RP was adequately implemented.

(2) Conclusions

No findings of significance were identified.

b. Operating Procedure and Facility Change Control Training (F2.05)

(1) Scope and Observations

The inspectors reviewed training for operating procedures and the facility change control process. The inspectors reviewed several procedural changes associated with operations and radiological controls in fuel production, BPF, and other process areas, and discussed changes with process operators, health physicists (HPs), and radiation technicians (RTs). The operators' answers demonstrated that their training was current with the existing plant operations and that they were aware of applicable recent changes. The inspectors discussed the training program with several operators, training coordinators and supervisors. The operators indicated that the training methods used were adequate.

The inspectors identified, from reviews of training records and interviews with cognizant licensee representatives, that RTs were not required to review and sign-off on two procedures that were applicable to health and safety: NFS-GH-42 "Establishing and Posting Radiologically Controlled Areas," and NFS-GH-03 "Radiation Work Permits."

Chapter 3, Section 3.1.3 of the License, required that activities performed for the safety program shall be in accordance with approved written procedures. These procedures, which provide instructions on tasks for contamination control and collecting and analyzing samples, will be made available to personnel working in the safety function. Training and other means to assure that the procedures are understood and followed will be conducted.

Procedure NFS-HS-A-12, "Radiation Monitoring Training Procedure," stated in part that as part of the initial training, the trainee will be required to read and sign-off on all applicable health and safety procedures. Failure to require employees to read and sign

off on applicable health and safety procedures was a violation of NRC requirements, and will be tracked as one of three examples of VIO 70-143/2005-007-01. (The other two examples comprising this violation are described in Paragraph 5.d of this report).

(2) Conclusions

One of three examples of VIO 70-143/2005-007-01 was identified for failure to require RTs to review and sign off on applicable RP procedures. No other findings of significance were identified.

c. On-The-Job Training (F2.06)

(1) Scope and Observations

The inspectors reviewed the training program to assess the effectiveness of the on-the-job training to new operators trainees. The inspectors interviewed supervisors, team leaders and training coordinators to verify that new operators were adequately trained on-the-job. Each new trainee went through practical on-the-job training and was assigned with an experienced operator who taught the trainee the use of the equipment, and reviewed the associated procedures. The training coordinator along with the supervisor or team leader certified the new trainee with a qualification check off sheet, which was initialed and signed off by the training coordinator and the supervisor. The inspectors determined from review of on-the-job training records and interviews with licensee representatives that new operators were adequately trained.

(2) Conclusions

No findings of significance were identified.

4. Fire Protection (TI 2600/06)

a. Routine Observations

(1) Scope and Observations

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

(2) Conclusions

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

b. Event Followup

(1) Scope and Observations

The inspectors responded to two fires and reviewed licensee response to the events.

On July 8, a fire occurred in the [REDACTED], when the [REDACTED] developed an electrical fault. The fire alarm sounded and fire brigade response was prompt. The fire self extinguished when electrical power was interrupted by automatic breaker action. Equipment damage was limited to the heater body, and no spread of uranium or other contamination occurred. The fire was not reportable. The inspectors responded to the scene of the fire and noted no significant deficiencies in the licensee's immediate actions.

The licensee identified several issues requiring resolution. First, the heater design included an over-temperature sensor, but this was not properly connected to the controller to provide protection. The licensee planned to utilize this safety feature when installing a new heater. Secondly, the local breaker supplying the heater controller apparently opened on fault, but failed to interrupt electrical power due to the contacts subsequently re-closing or being welded shut. The [REDACTED] supply breaker subsequently opened and removed power [REDACTED]. The licensee evaluated the cause of the breaker failure but determined no specific cause for the failure.

A third problem was the fire alarm status panel incorrectly indicated that the source of the fire alarm was a "protectawire" signal from the [REDACTED] process. Protectawire is a trade name for a heat sensing wire installed in the process. The licensee found that the [REDACTED] system was identified as the source of the fire because the [REDACTED] enclosure loss of air sweep alarm was wired into the protectawire system. The loss of air sweep occurred when ventilation was lost due to the loss of electrical power. The loss of air sweep alarm subsequently triggered the fire alarm. The licensee modified this design and separated the loss of air sweep alarm signal from the fire alarm system.

On July 9, a fire occurred in the [REDACTED]. The licensee reported the event to the NRC and also notified the senior resident inspector, who responded to the fire location. The inspector noted that the fire had quickly self extinguished and although some equipment damage occurred, including significant deformation of the PVC ventilation piping from the process, no containment breach or spread of contamination occurred. The fire alarm was not sounded, due to confusion between the scene of the fire and the alarm station operator who received a verbal report from the scene. Therefore the fire brigade did not respond to the scene. The licensee acknowledged the deficiency and conducted training to improve recognition of and appropriate response to emergency conditions.

The inspectors evaluated design issues and the safety basis as documented in the licensee's integrated safety analysis. Inspectors determined that the [REDACTED] system had an adequate fire safety evaluation which bounded the event. However, the inspectors also noted one aspect of system operation, which was a longstanding deficiency in the function of the apparatus, but which seemed to function as an unintended addition to approved safety devices. The event demonstrated that this aspect of system operations also increased the probability of a fire in the enclosure. Licensee management acknowledged the deficiency but noted an independent contractor was already engaged in an evaluation of process improvements. The licensee made modifications to the safety basis for this area, and planned to install a new ventilation connection made of corrosion resistant metal. The system remained shutdown at the end of the report period.

(2) Conclusions

Two fires occurred at NFS, one of which was reportable. A longstanding deficiency in equipment condition contributed to one event. The licensee adequately addressed several issues related to fire alarm response and equipment design.

5. Radiation Protection (TI 2600/006, IP 83822, R1)

a. RP Program Implementation (R1.01)

(1) Scope and Observations

The inspectors conducted interviews and reviewed licensee documentation to determine the adequacy of audits and self-assessments of the RP program. The licensee conducted quarterly management audits and HP Department monthly audits of the RP program. The inspectors reviewed several of these audits and determined that no significant safety issues were identified. The reviewed audits and self-assessments were effective to help ensure that the RP program was adequately implemented.

(2) Conclusions

No findings of significance were identified.

b. External Exposure Control (R1.04)

(1) Scope and Observations

The inspectors interviewed plant staff, reviewed several RP procedures, and reviewed personnel exposure data to determine if exposures were below 10 CFR 20.1201 limits, and if controls were in place to maintain occupational doses as low as reasonably achievable (ALARA).

The licensee's exposure monitoring program complied with the applicable requirements. Table 1 below displays the maximum assigned exposure data for calendar year (CY) 2004 and for CY 2005 as of June 30. The exposures, as of June 30, 2005, had slightly

increased due to some workers handling high levels of feed material for the downblending areas, and also poor maintenance practices resulting in elevated exposures from high airborne activity. The inspectors reviewed the licensee's ALARA goals and determined that the elevated exposure levels did not exceed the licensee's ALARA goals. The inspectors noted that the licensee continued to implement the International Commission on Radiological Protection Publication (ICRP) 68 dosimetry model.

The licensee continued to measure shallow dose extremity (SDE) for the [REDACTED] except in the materials receipt/check-weighing activities. The licensee concluded from results of finger dose rings worn from July 2003 to June 2004 that the majority of individuals in that area received less than 30 mrem. Table 1 also provides the maximum ring dose "SDE" for an individual as of June 30, 2005, located in [REDACTED] processing area. The dose was well below the 10% regulatory limit of 50 rem and below the results from 2004. The licensee did not measure SDE doses in the normal fuel operations and other areas of the plant because of historically low exposures to extremities in those areas. The licensee continued to take actions through its ALARA Committee to maintain external exposures below action limits.

Table 1. Annual Exposures

Year	Deep Dose Equivalent (DDE)	Shallow Dose Extremity (SDE)	Total Effective Dose Equivalent (TEDE)	Collective TEDE (person-rem)	Committed Effective Dose Equivalent (CEDE)
2004	0.288 rem	0.140 rem	0.429 rem	42.104 person-rem	0.301 rem
2005 as of June 30	0.677 rem	0.126 rem	0.695 rem	27.142 person-rem	0.170 rem

(2) Conclusions

No findings of significance were identified.

c. Internal Exposure Control (R1.05)

(1) Scope and Observations

The inspectors reviewed licensee procedures for assessing internal exposure to determine if controls were in place to monitor occupational doses, and to verify that the administrative limits were established to control occupational dose ALARA. Exposure data was examined to determine if exposures resulting from various plant operations exceeded limits in 10 CFR Part 20.

The licensee continued to use the annual limit on intake and derived air concentration (DAC) values based on dose coefficients published in ICRP Publication 68. Table 1 shows that the committed effective dose equivalent (CEDE) as of June 30, 2005, continued to decrease compared to CY 2004. The inspector determined that the decrease in exposure was due largely to the implementation of ICRP 68, and also to the completion of many large decommissioning tasks.

The inspectors interviewed the HP responsible for monitoring employees who approached or exceeded the licensee's action limits for internal exposures. The inspectors also interviewed the cognizant licensee representative responsible for internal monitoring and in-vivo counting, and reviewed the relevant procedures.

The inspector reviewed bioassay results to determine proper urine sample submission and adequate dose assignment. From that review, the inspector determined that on August 8, a licensee employee was placed on the restricted list for entry into the [REDACTED] Complex because he did not submit a monthly urine sample within the required seven days. However, the individual was allowed to enter the [REDACTED] Complex until August 17.

Chapter 3, Section 3.2.5.1 of the License, stated in part that, "The routine frequency for the collection and analysis of urine samples to measure intakes of uranium by individuals who could be exposed to highly soluble compounds of uranium enriched in the isotope uranium-235 at a weight percentage less than 5% by weight shall be at least twice a month, with a maximum interval between sampling not to exceed 20 days."

Procedure NFS-GH-08, "Collecting Urine Specimens," stated in part that, "If a urine sample is not received within seven days, the employee will be issued a 'Do Not Admit Without Urine Sample' red tag. The red tags will be delivered to the Entry/Exit Control Point to be placed on the employee's badge slot. The [REDACTED] shall not admit the employee to the plant [REDACTED] until a urine specimen is presented."

Contrary to the above, the licensee failed to ensure an employee's urine sample was collected within the required time frame, and failed to accordingly deny that employee

access to the [REDACTED]. This was a violation of NRC requirements, VIO 70-143/2005-007-02.

(2) Conclusions

The inspectors identified VIO 70-143/2005-007-02 for a case where a licensee employee continued to enter the [REDACTED] Complex from August 8 to August 17, although per procedural requirements the employee should have been denied access for not submitting a required urine sample.

d. Postings, Labeling and Control (R1.07)

(1) Scope and Observations

The inspectors reviewed the licensee's program for radiological postings, as required by 10 CFR 19.11, to determine if postings were adequate to permit individuals engaged in licensed activities to observe them. Several work locations were examined to determine if radioactive containers were properly labeled and to assess the adequacy of the licensee's compliance to 10 CFR 20.1902, "Posting Requirements." RWPs were also reviewed to determine the adequacy of the requirements posted for worker protection and the degree to which those requirements were implemented.

During tours of various areas, the inspectors noted, with the exceptions noted below, that radiological signs, postings and procedures were properly posted and readily available. Observed work areas involving radioactive material or potentially contaminated materials were properly posted and containers labeled. The inspectors determined through review of records and observations that radiologically controlled areas were properly posted and identified. The inspectors noted that workers complied with the RWPs.

On July 20, inspectors noted work in progress to dismantle the top [REDACTED], at the [REDACTED] processing area. Inspectors noted the technicians took safety precautions in accordance with RWP 05-02-009, but that the work area was only posted on the ground floor level, not where work was in progress on the second floor. Plant staff believed that a "vertical envelope" was created by the posting on the ground floor, but since employees did not have to cross that posting to access the second floor work site, the ground floor posting was not an adequate posting for the second floor.

NFS-GH-42 required RWP Area banner tape to be used to mark the boundaries of the RWP area as required within the applicable RWP. RWP 05-02-009 required a roped off (posted) area with a minimum radius of five feet from the work area. This failure to post an area around an RWP work area was a violation of NRC requirements and will be tracked as the second of three examples comprising VIO 70-143/2005-007-01.

On August 3, the inspectors toured [REDACTED], and observed open piping flanges and visible residue on pipes and on the floor [REDACTED]. The inspectors determined that work activities in the area were addressed by RWP #05-41-064, and

[REDACTED]

that an RT had recently released the area and terminated the RWP. Plant staff responded to the inspectors inquiries by posting the area and performing monitoring and surveys. The licensee found transferable alpha contamination levels in the area above the established action limits of 5,000 dpm/100 cm². The surface contamination levels found on the floor, piping, and inside the flanges ranged from 12,488 dpm/100 cm² to 99,112 dpm/100cm².

Procedure NFS-GH-03, "Radiation Work Permits," stated in part that, "The permit will be terminated upon completion of all required monitoring and surveys, provided that the results are within limits. The RWP cannot be terminated until the monitoring results are within the required limits." The failure to properly terminate a posted RWP area was a violation of NRC requirements and will be tracked as the third of three examples of VIO 70-143/2005-007-01.

The inspectors determined that a contributing cause to the violation described above was the use of a general RWP for an infrequently performed task. In making this determination, the inspectors reviewed RWP 05-41-064 and interviewed the RT who terminated the area. The inspectors noted that RWP 05-41-064 was a general RWP used for common maintenance such as valve replacements or leak repairs. This general RWP did not contain specific descriptions of authorized work, only general radiological precautions. The work performed in this situation was an infrequently performed task, in that it consisted of removal of enclosure overflow piping and cutting it up for disposal. Furthermore, there were no precautions in the general RWP for leaving a contaminated system open to generally accessible areas. Accordingly, since the work authorized was not described on the RWP, the RT did a survey where he had observed work taking place earlier, and did not survey the location of the open piping and visible residues because he was unaware work had taken place in this area. Consequently, the general RWP did not provide the necessary information to ensure safe working conditions for this particular maintenance task.

On August 9, the B [REDACTED] [REDACTED] lost process ventilation when a short commercial power outage occurred. The ventilation outage lasted less than an hour and no elevated levels of airborne activity were detected. The inspectors evaluated licensee response to the event, and found that two groups of personnel inside the [REDACTED] did not immediately evacuate or don full face respirators. [REDACTED] stationed at the access control point were unaware that a loss of process ventilation had occurred, and therefore did not don respirators.

Also, plant staff performing operations at the loading dock check-weigh station were not supplied respirators, and were unable to leave the area due to [REDACTED]. They took actions to comply with those requirements, and then exited the area.

SOP 401, Section A, required that if process ventilation was lost, plant staff in the affected areas must don full face respirators until the processes were in safe shutdown mode. Failure of plant staff to don full face respirators or evacuate was a violation of NRC requirements, and will be tracked as VIO 70-143/2005-007-03.

(2) Conclusions

The inspectors identified two additional examples comprising VIO 70-143/2005-007-01, for failures to properly control and release RWP areas. In addition, the inspectors identified VIO 70-143/2005-007-03 for the failure of plant staff in a uranium processing area to evacuate, or don full-face respirators, when process ventilation was lost.

e. Surveys (R1.08)

(1) Scope and Observations

The radiation survey program was reviewed to determine if surveys were effective in the identification of radiation and contamination. During tours of the plant, the inspectors observed RTs conducting job coverage of posted RWPs. Also, fixed air samples were collected and analyzed in the laboratory. The inspectors observed the fixed samples being counted to determine initial gross alpha counts. According to procedures, the samples were recounted later in the shift after daughter product decay. No problems were noted.

The inspectors reviewed the licensee's PIRCS, interviewed staff members and reviewed radiation and contamination survey results, and determined that the licensee had identified and taken immediate and effective actions for occurrences of radiological contamination. From the review of PIRCS and interviews with cognizant licensee representatives, the inspectors found no significant external or internal doses to the exposed individuals.

(2) Conclusions

No findings of significance were identified.

f. Implementation of ALARA Program (R1.10)

(1) Scope and Observations

The licensee's ALARA program was reviewed to determine if the program and ALARA goals were developed and implemented in accordance with the license. In addition, the program for reinforcing the ALARA concept among employees was assessed. Managers, operators, and HPs were interviewed regarding ALARA, and demonstrated an adequate knowledge and/or understanding of the ALARA concepts.

The inspectors reviewed the licensee's first quarter ALARA report for 2005. The licensee also generated semiannual ALARA reports for management review. The reports included detailed ALARA goals and exposure summaries to identify adverse trends. The annual threshold dose limit for 2005 was set at 0.5 rem for internal exposures, and was set at 1.0 rem for external exposures for all areas except the




(2) Conclusions

No findings of significance were identified.

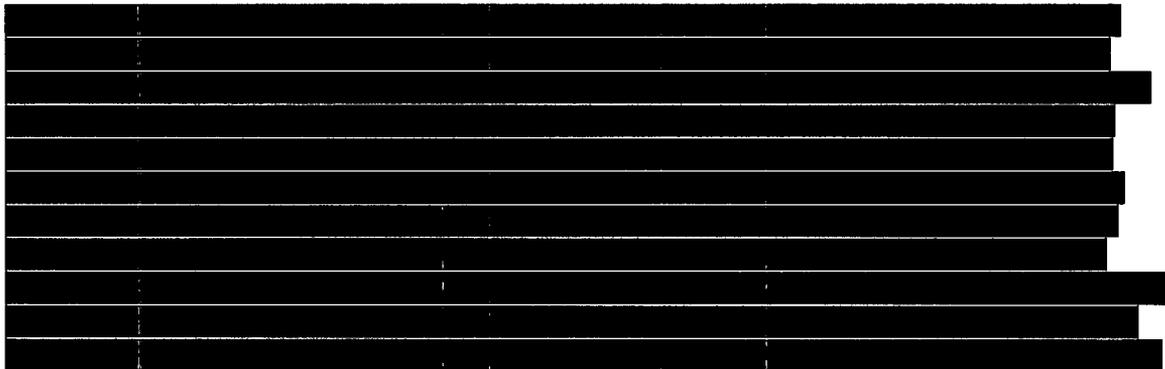
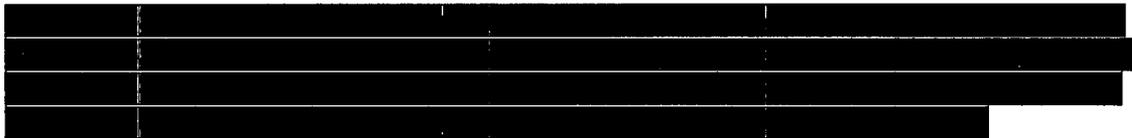
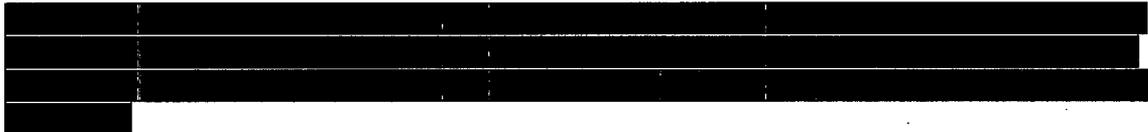
g. Follow-up on Previously Identified Issues:

Closed IFI 70-143/2005-04-03: High airborne conditions and elevated exposure. This issue related to an incident of high airborne activity conditions and elevated exposures caused by poor maintenance practices. The inspectors reviewed ALARA goals records to determine if the incident had any significant impact on those goals. Based on the doses assigned during the incident, there were no significant increases in any individual exposure or the licensee's ALARA goals, and NRC limits were not exceeded. This item was closed.

Closed IFI 70-143/2005-03-04: An elevated stack sample at Stack 704. This issue related to an elevated stack sample above the licensee's action limits from the [REDACTED]. The inspectors reviewed the results of the isotopic analysis of the elevated stack sample. The inspectors determined there were no stack releases and/or significant dose to the public. The inspectors noted that as a result of this issue, the licensee revised Procedure NFS-HS-B-18, Attachment E, in order to provide a more efficient technique for analyzing stack samples. This item was closed.

6. Physical Protection (TI 2600/006)

(a) Scope and Observation



[REDACTED]

[REDACTED]

(b) Conclusions

[REDACTED]

7. 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 August 18, 2005. Although proprietary documents and processes were occasionally reviewed during this inspection, the proprietary nature of these documents or processes has been captured through the use of proprietary information markings throughout this report. The licensee acknowledged the findings presented, but objected to the first example of VIO 70-143/2005-007-01 which concerned the failure to require the RTs to review and sign-off on two relevant procedures.

[REDACTED]

ATTACHMENT

1. PERSONS CONTACTED

Partial List of Licensee's Persons Contacted

S. Barron, Manager, Emergency Preparedness
D. Buck, Vice President, Human Resources
R. Droke, NFS Licensing & Compliance Director
P. Johnson, Vice President, Applied Technology
N. Kenner, Training Manager
M. Moore, Vice President, Safety and Regulatory
J. Nagy, Senior License & Regulatory Compliance Officer
J. Parker, Industrial Safety Manager
R. Rice, Radiation Monitor Manager
S. Sanders, Health Physicist
R. Shackelford, Nuclear Criticality Safety Manager
M. Shope, Quality Engineering Supervisor
D. Stewart, Director, Operational Excellence
J. Stout, Security Director
M. Tester, Sr. Manager, Radiation Control
G. Tipton, Director, HEU & BLEU Projects
A. Vaughan, Director, Fuel Production
A. Ward, General Counsel
J. Wheeler, ISA Manager

2. INSPECTION PROCEDURES USED

TI 2600/006 Safety Operations, [REDACTED], Radiological Controls & Facility Support
IP 83822 Radiation Protection

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Item Number</u>	<u>Status</u>	<u>Type</u>	<u>Description</u>
70-143/2005-01-02	Closed	IFI	Control of Temporary Fixtures. (Paragraph 2.c)
70-143/2005-07-01	Open	VIO	Failure to review and follow RWP procedures: three examples. (Paragraphs 3.b and 5.d)

[REDACTED]			
70-143/2005-07-02	Open	VIO	Failure to collect a required urine sample.(Paragraph 5.c)
70-143/2005-07-03	Open	VIO	Failure to utilize respirators when required. (Paragraph 5.d)
70-143/2005-04-03	Closed	IFI	High airborne condition and elevated exposure. (Paragraph 5.g)
70-143/2005-03-04	Closed	IFI	Isotopic analysis from an elevated stack sample at stack [REDACTED] (Paragraph 5.g)
70-143/2005-07-04	Open	URI	[REDACTED] [REDACTED] (Paragraph 6)

