



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
61 FORSYTH STREET, SW, SUITE 23T85  
ATLANTA, GEORGIA 30303-8931

December 16, 2005

Event No. 42047

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

SUBJECT: NRC INSPECTION REPORT NO. 70-143/2005-10 AND NOTICE OF VIOLATION

Dear Mr. Schutt:

This refers to the inspection conducted from October 2, 2005, through November 12, 2005, at your Erwin, Tennessee, facility. The purpose of the inspection was to determine whether activities authorized by the license were conducted safely and in accordance with NRC requirements. The results of the inspection are documented in the attached NRC Form 591; Parts 1, 2, and 3.

Areas examined during the inspection included the following: Plant Operations, Fire Protection, Radiation Protection, Chemical Safety, 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 four violations of NRC requirements occurred. These violations were evaluated in accordance with the NRC Enforcement Policy which is available on the NRC's Web site at [www.nrc.gov](http://www.nrc.gov). Two violations are cited in the enclosed Notice of Violation (Notice). The violations are being cited in the Notice because they were 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. For your consideration, NRC Information Notice 96-28, "SUGGESTED GUIDANCE RELATING TO DEVELOPMENT AND IMPLEMENTATION OF CORRECTIVE ACTION," is available on the NRC's Web site. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

[REDACTED]

Two violations are being treated as non-cited violations (NCV), consistent with Section VI.A.8 of the Enforcement Policy. The NCVs are described in the subject inspection report. If you contest the violation or significance of these NCV's, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region II, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001, and the NRC Resident Inspector at your facility.

In addition, one apparent violation was identified. The apparent violation concerns two examples of failure to provide adequate assurance that items relied on for safety will be reliable and available to meet nuclear criticality safety performance criteria. Since the NRC has not made a final determination in this matter, no Notice of Violation is being issued for this inspection finding at this time. In addition, please be advised that the characterization of the apparent violation described in the enclosed inspection report may change as a result of further NRC review.

You will be advised by separate correspondence of the results of our deliberation on this matter. No response regarding this apparent violation is required at this time.

By two separate letters dated November 30, 2005, we received your replies to our Notice of Violation which was issued on October 31, 2005. The replies met the requirements of 10 CFR 2.201 and your corrective actions will be reviewed during a future inspection.

[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: (See page 3)

[REDACTED]

- Enclosures:
1. Notice of Violation
  2. NRC Inspection Report
  3. Form 591 Inspection Report, Parts 1, 2, and 3

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



Distribution w/encls:

D. Ayres, RII  
 B. Bonser, RII  
 W. Gloersen, RII  
 S. Caudill, RII  
 D. Rich, RII  
 G. Wertz, RII  
 K. Ramsey, NMSS  
 M. Lamastra, NMSS  
 B. Westreich, NSIR  
 nmed@inl.gov

\*see previous concurrence

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:EICS	RII:DFFI
SIGNATURE						
NAME	DRich*	SBurris*	MCrespo*	OLopez*	Cevans*	WGloersen*
DATE	5/ /2008	5/ /2008	5/ /2008	5/ /2008	5/ /2008	5/ /2008
COPY?	YES NO					

OFFICIAL RECORD COPY

DOCUMENT NAME: E:\Filenet\ML053530311.wpd

[REDACTED]

NOTICE OF VIOLATION

Nuclear Fuel Services, Inc.  
Erwin, Tennessee

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

During an NRC inspection conducted between October 2 - November 12, 2005, violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

- A. Safety Condition S-1 of Special Nuclear Material License No. SNM-124 authorizes the use of licensed material in accordance with the statements, representations, and conditions in the license Application and Supplements.

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

NFS BPF Standard Operating Procedure (SOP) 409, [REDACTED], Rev. 8, Section 10, Step 6.6, Caustic Discard [REDACTED] Phase, Items Relied on For Safety (IROFS) Note 1 states, "Liquid waste effluent shall not be released from the [REDACTED] to unfavorable geometry tanks until the U-235 concentration in the effluent has been confirmed by way of dual samples and analyses to be less than [REDACTED]" and Step 6.7.1 states "Once [REDACTED] stops, close the block & bleed valve [REDACTED] and then notify Supervision to lock."

Contrary to the above, on October 28, 2005 the licensee failed to close and lock the block and bleed valves, and subsequently released approximately [REDACTED] of liquid waste effluent from [REDACTED] to unfavorable geometry tanks without confirmation of the U-235 concentration.

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

- B. Safety Condition S-1 of Special Nuclear Material License No. SNM-124 authorizes the use of licensed material in accordance with the statements, representations, and conditions in the license Application and Supplements.

Section 3.1.2 of the License Application requires non routine activities in radiologically restricted areas to be administered by the Radiation Work Permit (RWP) system. RWPs are required to specify the nature and location of the work.

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

[REDACTED]

Procedure NFS-GH-03, Radiation Work Permits (RWP), Rev. 11, Section 5.2, RWP Implementation and Termination, Step 5.2.5, states, "...The RWP cannot be terminated until the monitoring results are within the required limits. Upon compliance with the required limits, the RT Supervisor will notify the area supervisor that the RWP can be terminated. At this time, the RWP and traffic restriction method (banner tape, chain, etc.) can be removed and the area can be restored to normal status, per guidelines established in NFS-GH-42." Section 5.3, Common Requirements, Step 5.3.5 States "All personnel who enter a RWP area must read, sign and comply with all requirements of the RWP."

Procedure NFS-GH-42, Establishing and Posting Radiologically Controlled Areas, Rev. 4, Step 5.9.4.3 states: "These areas shall be posted as restricted areas and may require additional posting in accordance with this procedure. They shall also be barricaded to control access." Step 5.10.2.1 states: "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."

Contrary to the above, the licensee failed to properly implement procedures and controls for work activities associated with RWPs as follows:

1. On October 18, 2005, RWP #05-07-041 did not specify the nature and location of the work being conducted, in that equipment disassembly and component replacement activities were being performed in the area when the RWP only specified cleaning activities.
2. October 25, 2005, personnel did not comply with RWP requirements, in that they were working inside an RWP area but not equipped with the personal protective equipment required by RWP #05-41-082.
3. On October 28, 2005, the upper walk deck in the [REDACTED] process area, which was part of the work area controlled by RWP #11116, was not posted with RWP banner tape, as required by Procedure NFS-GH-42.
4. On November 2, 2005, an RWP area was found to be terminated prior to the monitoring results being verified to be within required limits, in that process piping and flanges were found to be contaminated above the action limits of 5000 disintegrations per minute per 100 square centimeters.

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 Resident Inspector 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 previous 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.

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.

Your response will be considered sensitive information and will not be made available for public inspection in the NRC Public Document Room or in the NRC's document system (ADAMS).

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

Dated this 16<sup>th</sup> day of December, 2005.



U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-143

License No.: SNM-124

Report No.: 70-143/2005-010

Licensee: Nuclear Fuel Services, Inc.

Facility: Erwin Facility

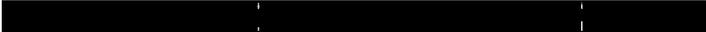
Location: Erwin, TN 37650

Dates: October 2, 2005 - November 12, 2005

Inspectors: D. Rich, Senior Resident Inspector  
S. Burris, Resident Inspector  
M. Crespo, Fuel Facilities Inspector  
O. Lopez, Fuel Facilities Inspector

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 70-143/2005-10

This inspection included activities conducted by the resident inspectors during normal and off normal shifts in the area of facility operations. , Blended Low Enriched Uranium (BLEU) Preparation Facility (BPF), Oxide Conversion Building (OCB), and decommissioning processes were in operation.

### Plant Operations

- An apparent violation was noted for failure to meet performance criteria relating to nuclear criticality safety (AV 70-143/2005-10-02).
- 

[REDACTED]

## REPORT DETAILS

1. Process Enclosure Design Basis

a. Observations and findings

The inspector reviewed URI 70-143/2005-08-03 and further reviewed glovebox design basis for completeness.

URI 70-143/2005-08-03 concerned a poorly controlled modification of a process enclosure drain, such that the drain may not have functioned due to lack of control of the elevation of the drain. The inspector noted that beyond piping diameter, the design basis for the drain did not specify critical dimensions of the [REDACTED] drain.

The inspector further reviewed the design basis for the enclosure drain system, and questioned whether enclosure vacuum was accounted for. The licensee evaluated the issue and found that vacuum was not accounted for in the design basis. The licensee found that enclosure drains in the BPF would function adequately under normal vacuum conditions, but they would have to be modified to allow for any increase in system vacuum above the normal range of values. The licensee shut-down operations in the BPF and modified the drains to meet the worst possible conditions for process vacuum, which was determined [REDACTED]. The licensee evaluated [REDACTED] and determined existing glovebox drain configuration was adequate for normal and credible abnormal vacuum. The difference in the maximum possible vacuum between the two areas was the method of analysis.

Although no actual consequences occurred, since the IROFS mentioned were the only IROFS in an accident sequence leading to a criticality, and since those IROFS were subject to a common cause failure, the potential consequences of this issue are severe.

NFS Procedure HS-A-79, Section 6, baseline design criteria, required that designs must be developed and implemented in accordance with management measures, to provide adequate assurance that IROFS will be reliable and available to perform their function when needed. Two examples of failure to provide adequate assurance that IROFS will be reliable and available to perform their function when needed was an apparent violation of NRC requirements (AV 70-143/2005-10-02). URI 70-143/2005-08-03 is closed.

The inspector noted that NCSE 54T-05-0030, Section 4.1.4.2.1 identified the drains as two independent passive engineered controls, each with an effectiveness of protection index of [REDACTED]. The inspector also noted that NCSE 54T-05-0030 assigned a likelihood index of [REDACTED] for the initiating event [REDACTED]

[REDACTED]

[REDACTED], which indicates it would be an expected event. Although no actual consequences occurred, since the IROFS mentioned were the only IROFS in an accident sequence leading to a criticality, and since those IROFS were subject to a common cause failure, the potential consequences of this issue are severe.

b. Conclusions

Two examples were identified of inadequate design basis for process enclosure drains, and the issue was tracked as an apparent violation.

**SAFETY INSPECTION REPORT  
AND COMPLIANCE INSPECTION**

<b>1. LICENSEE/LOCATION INSPECTED:</b>  <b>Nuclear Fuel Services, Inc.</b> <b>P. O. Box 337, MS 123</b> <b>Erwin, TN 37650</b>  INSPECTION REPORT(S): 2005-10	<b>2. NRC/REGIONAL OFFICE</b>  <b>U.S. Nuclear Regulatory Commission</b> <b>Region II, Division of Fuel Facilities Inspection</b> <b>61 Forsyth Street, Suite 23T85</b> <b>Atlanta, GA 30303</b>
---	---

<b>3. DOCKET NUMBER(S):</b> 70-143	<b>4. LICENSEE NUMBER(S):</b> SNM-124	<b>5. DATE(S) OF INSPECTION:</b> 10/02/05 - 11/12/05
---------------------------------------	--	---

**LICENSEE:**

The inspection was an examination of the activities conducted under your license as they relate to Plant Operations, Fire Protection, Radiation Protection, Chemical Safety, 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. The inspection findings are as follows:

- 1. Based on the inspection findings, no violations were identified.
- 2. Previous violation(s) closed. See list of items opened, closed and discussed in item 6 of NRC Form 591FF Part 2.
- 3. The violation(s), specifically described to you by the inspector as non-cited violations, are not being cited because they were self-identified, non-repetitive, and corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, NUREG-1600, to exercise discretion, were satisfied.

Two Non-Cited Violation(s) was/were discussed involving the following requirement(s) and Corrective Action(s):

A. Section 2.7 of the license application requires the licensee to follow operational procedures. Standard Operating Procedure (SOP) 409 required the presence of operators in order to operate equipment within safety guidelines and to respond to abnormal conditions and process upsets. Contrary to the above, on October 31, 2005, the licensee found that the [redacted] processes had been operated for approximately one hour with no personnel present [redacted]. This non repetitive, licensee-identified and corrected violation is being treated as a non-cited violation (NCV), consistent with Section VI.A.8 of the NRC Enforcement Policy (NCV 70-143/2005-010-03), Unattended Process Operation. Corrective actions included implementing a more formal shift turnover process, requiring supervisors to turnover prior to the arrival of hourly workers, and assigning supervisors specific process area responsibilities

B. The station limit posting for the [redacted], promulgated in NFS procedure HS-CL-13-03, limited [redacted] in the [redacted] drums. On November 6, 2005, the licensee violated this requirement by storing [redacted] drums [redacted]. This non repetitive, licensee-identified and corrected violation is being treated as a non-cited violation (NCV), consistent with Section VI.A.8 of the NRC Enforcement Policy (NCV 70-143/2005-010-04), Failure to Follow Criticality Station Limits. Corrective actions included removal of the extra drums and development of training which included the basis for the safety limits and postings, and the adherence to site safety procedures.

4. During this inspection certain of your activities, as described below and/or attached, were in violation of NRC requirements and are being cited. The attached NOTICE OF VIOLATION may be subject to posting in accordance with 10 CFR 19.11.

(Violations and Corrective Actions)

See Attached Notice of Violation

Licensee's Statement of Corrective Actions for Item 4, above.

I hereby state that, within 30 days, the actions described by me to the inspector will be taken to correct the violations identified. This statement of corrective actions is made in accordance with the requirements of 10 CFR 2.201 (corrective steps already taken, corrective steps which will be taken, date when full compliance will be achieved). I understand that no further written response to NRC will be required, unless specifically requested.

Title	Printed Name	Signature	Date
LICENSEE'S REPRESENTATIVE	Not Applicable		
NRC INSPECTOR(S)	See Part 3		

**SAFETY INSPECTION REPORT  
AND COMPLIANCE INSPECTION**

1. LICENSEE

**Nuclear Fuel Services, Inc.  
P. O. Box 337, MS 123  
Erwin, TN 37650**

INSPECTION REPORT(S): 2005-10

2. NRC/REGIONAL OFFICE

**U.S. Nuclear Regulatory Commission  
Region II, Division of Fuel Facilities Inspection  
61 Forsyth Street, Suite 23T85  
Atlanta, GA 30303**

3. DOCKET NUMBER(S):

70-143

4. LICENSE NUMBER(S):

SNM-124

5. DATE(S) OF INSPECTION:

10/02/05 - 11/12/05

**Supplemental Inspection Information**

(Continued)

5. Reported events reviewed.

NRC Event 42047, Criticality Alarm System Failure. An Eberline RMS-3 radiation monitor display unit reset internal scaling factors and alarm values to factory values. This failure was not detected until a monthly test was conducted. The licensee claimed the unit would still function due to redundant circuitry, which provides a rate based criticality alarm. No test or certification information was available for inspectors to review to verify this claim. The licensee had redundant coverage of the area due to other criticality alarm system detector pairs. Due to the uncertainty of how this failure occurred, the licensee committed to perform a weekly verification of alarm system function until the issue is resolved. The item will be tracked as IFI 70-143/2005-010-07, pending licensee identification of the cause of failure and corrective actions.

6. List of Items Opened, Closed, and Discussed:

<u>Item Number</u>	<u>Status</u>	<u>Type</u>	<u>Description</u>
70-143/2004-12-02	Closed	VIO	Failure to complete training on procedural changes
70-143/2005-03-03	Closed	VIO	Control of Process Waste Valve Position
70-143/2005-08-03	Closed	URI	Adequacy of Design Basis of [REDACTED] System IROFS
70-143/2005-10-01	Opened	IFI	Replacement of IROFS
70-143/2005-10-02	Opened	AV	Failure to Meet Criticality Safety Performance Criteria
70-143/2005-10-03	Opened/Closed	NCV	Unattended Process Operation
70-143/2005-10-04	Opened/Closed	NCV	Criticality Station Limit Violation
70-143/2005-10-05	Opened	VIO	Failure to verify SNM concentration in waste.
70-143/2005-10-06	Opened	VIO	Failure to Comply with RWP procedures.
70-143/2005-10-07	Opened	IFI	RMS-3 Criticality Alarm Unit Failure
70-143/2005-10-08	Opened	URI	[REDACTED]

**SAFETY INSPECTION REPORT  
AND COMPLIANCE INSPECTION**

1. LICENSEE

**Nuclear Fuel Services, Inc.  
P. O. Box 337, MS 123  
Erwin, TN 37650**

REPORT NUMBER(S): 2005-10

2. NRC/REGIONAL OFFICE

**U.S. Nuclear Regulatory Commission  
Region II, Division of Fuel Facilities Inspection  
61 Forsyth Street, Suite 23T85  
Atlanta, GA 30303**

3. DOCKET NUMBER(S):

70-143

4. LICENSE NUMBER(S):

SNM-124

5. DATE(S) OF INSPECTION:

10/02/05 - 11/12/05

6. INSPECTOR(S):

D. Rich, S. Burris, M. Crespo, O. Lopez

7. INSPECTION PROCEDURES USED:

TI 2600/006; TI 2600/012; IP 88056 - IP 88066

**Supplemental Inspection Information**

**Executive Summary**

This inspection included activities conducted by the resident inspectors and regional inspectors during normal and off normal shifts in the areas of facility operations, chemical safety, fire protection, radiation protection, and physical protection. [REDACTED], Blended Low Enriched Uranium (BLEU) Preparation Facility (BPF), Oxide Conversion Building (OCB), and decommissioning processes were in operation.

Plant Operations

- A weakness was identified in that updated drawings were not available in the BPF.
- An inspection followup item (IFI) was tracked in the narrative section of this report regarding equivalency of replacements for Items Relied on for Safety (IROFS) (IFI 70-143/2005-10-01).
- Two non-cited violations (NCVs) were noted: one for failure to maintain operators stationed with operating processes (NCV 70-143/2005-10-03); and one for failure to comply with criticality safety postings which restricted the number of drums stored [REDACTED] (NCV 70-143/2005-10-04).
- A violation was noted for failure to verify U-235 concentration levels in [REDACTED] liquid waste effluent prior to transfer from favorable to unfavorable geometry storage (VIO 70-143/2005-10-05). The significance of this item was highlighted by the fact that lessons learned from several previous similar violations were not incorporated in the procedure for this new process. Specifically, there was no signature verification that the discard valve was shut and locked as required, and no verification that the valve lineup was correct prior to initiating recirculation of the system.
- An RMS-3 Criticality Alarm unit failed with no detection by system trouble monitoring features. This failure defeated one detector pair of the licensee's system, but redundant coverage by other detector pairs maintained system coverage of operating areas. This issue will be tracked as an inspection followup item (IFI 70-143/2005-10-07).

(Continued)

### Executive Summary

#### Plant Operations (continued)

- Temporary Instruction 2600/12 regarding Information Notice 90-70: Pump Explosions Involving Ammonium Nitrate was reviewed and adequately addressed by the licensee in the appropriate safety analyses.

#### Fire Protection

- Engineered fire prevention and mitigation systems were adequately maintained.
- Excessive amounts of debris had accumulated, which was noted as a fire hazard. The licensee made significant progress at removing the debris.

#### Chemical Safety

- Minor operational events concerning leaking equipment were observed.
- The "Manpower" computer system, used for assigning operators to jobs, had no limit as to how long operators were in training status. There was no distinction between an unqualified operator in the position and an operator that needed to review a procedure change to be re-qualified.

#### Radiation Protection

- A violation was identified with four examples of failure to comply with radiation work permit instructions (VIO 70-143/2005-10-06).

#### Physical Protection

- [REDACTED]
- [REDACTED]

(Continued)

## Narrative Summary

1. Equivalent Replacement of IROFSa. Observations and findings

The inspector reviewed the licensee's practices for replacement of IROFS to evaluate whether the replacements were equivalent.

The inspector reviewed the status of down blending IROFS [REDACTED] was an engineered control, which was designed to [REDACTED] added to any blend. The device was a [REDACTED], but the licensee was never able to achieve accurate measurements with the device. The first blend, on December 16, 2004, and each blend since, has been completed with a Letter of Authorization (LOA), which required certain administrative control measures designed to compensate for the non-functional engineered control. The administrative measures included a volumetric check on the [REDACTED] prior to blending, a volumetric check on the [REDACTED] during blending, and lock-out of valves and pumps to ensure no HEU solution was added to the [REDACTED] during a blend. Violation 70-143/2005-01-01 was cited to document non-compliance with the LOA, when some of the checks were not recorded and one was not performed. Although the engineered control never functioned properly, and thus was never an effective control, the inspector questioned whether the temporary compensatory measures were an equivalent replacement to the engineered control, and also questioned whether the licensee's process complied with 10 CFR 70.72. 10 CFR 70.72 requires changes to the facility to be evaluated for the following: Impact of the change on safety and health or control of licensed material; and impacts or modifications to the integrated safety analysis, integrated safety analysis summary, or other safety program information, developed in accordance with 70.62. The changes were issued in accordance with licensee procedure, which allows compensatory measures approved by the safety committee to be substituted for IROFS. However, the inspector questioned whether the licensee's process met the intent of the above requirements for change analysis, in that the impact of the changes to the Integrated Safety Analysis (ISA) and the ISA summary were not evaluated, and the compensatory measures were not risk indexed.

The inspector reviewed the status of IROFS [REDACTED]. These IROFS were engineered controls designed [REDACTED]. The control device was a float switch and had not proved reliable. [REDACTED] had failed several weeks prior to this inspection, and [REDACTED] failed during the inspection period. The licensee designed compensatory measures, and in the case of the BPF, formalized these measures as IROFS [REDACTED]. These IROFS were risk indexed with the same reliability as the engineered control and consist of the following checks: [REDACTED]. If the check fails, [REDACTED] operation cannot continue with [REDACTED]. IROFS [REDACTED] were conditional use only; the safety basis describes the IROFS to be used only if IROFS [REDACTED] are bypassed. Bypassing was accomplished [REDACTED], and allows system operation. Bypassing was permitted by NFS procedure in case the float switch was not functioning, and required a supervisor's permission. It was difficult to determine the position [REDACTED]. The position was not obvious, no record was kept of the bypass, and there was no formal means of deducing whether the IROFS was bypassed or not.

(Continued)

## Narrative Summary (Continued)

A related topic was IROFS [REDACTED] which had the same function as [REDACTED], but in the [REDACTED] process. This engineered control was also a float switch and had also failed. The inspector found that in this case, the licensee had incorporated compensatory measures in the operating procedure. The compensatory measures were not designated as IROFS, and were not documented in the design basis. The compensatory measures allowed continued operation with similar administrative controls as described above.

The inspector questioned whether an administrative IROFS was an equivalent replacement to an engineered control. Also, in this case, the inspector noted that the engineered control functioned [REDACTED]. The administrative control provided a time cushion [REDACTED].

Therefore, the point of control of the administrative measure was closer to allowing an upset. Additionally, the automatic process controls to maintain [REDACTED] interface levels in the [REDACTED] system functioned poorly, and the system was normally run in manual control, which placed an additional burden on the operator. In spite of the differences in control, the administrative control and the engineered control are assigned the same effectiveness index for risk reduction.

The inspector also questioned whether a conditional use IROFS, described in procedures and the design basis, but only used upon failure of another IROFS, met the 10 CFR 70.62 management measures requirements of maintaining IROFS available and reliable. Additionally, the licensee had no formal means of indication to the operator which IROFS was in effect. When a procedure prescribes use of a safety control only upon failure of another safety control, and no formal means is established to indicate or document the status of which safety control is being used, it raises a question of whether an IROFS is available and reliable. Likewise, there is no description in 10 CFR 70.62 of IROFS which are typically not used. This item will be tracked as IFI 70-143/2005-10-01, pending further NRC evaluation.

b. Conclusions

The inspector reviewed use of temporary compensatory measures and conditional use IROFS and reviewed equivalency of replacement and other safety program aspects. The issue will be tracked as an inspection followup item (IFI 70-143/2005-10-01) for further NRC review.

2. 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 November 10, 2005. The licensee objected to the violation of the criticality safety posting at the [REDACTED], on the basis that there was little or no risk significance. No other dissenting comments were received from the licensee.