



NUCLEAR FUEL SERVICES, INC.

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**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

21G-10-0178
GOV-01-55-04
ACF-10-0247

October 1, 2010

Mr. Roy Zimmerman, Director
Office of Enforcement
U.S. Nuclear Regulatory Commission
One White Flint North, 11555 Rockville Pike
Rockville, MD 20852-2738

References: 1) Docket No. 70-143; SNM License 124
2) Notice of Violation, Exercise of Enforcement Discretion, and Proposed
Imposition of Civil Penalty – \$140,000 (NRC Inspection Report No.
70-143/2010-010), dated September 2, 2010
3) Letter, dated September 20, 2010, Mr. David B. Amerine (NFS) to USNRC,
“Payment of Civil Penalty” (21G-10-0188)

Subject: Reply to a Notice of Violation: (EA-10-086)

Dear Sir:

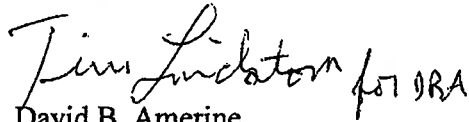
Pursuant to the requirements of 10 CFR 2.201, Nuclear Fuel Services, Inc. (NFS) hereby submits the attached response to the subject violations identified in the referenced NRC inspection report (Reference 2). A pre-decisional enforcement conference was held on July 13, 2010, at the NRC's Region II offices in Atlanta, Georgia, to discuss these violations and NFS' corrective actions.

As directed in Reference 2 to indicate the date the civil penalty payment was made and the payment method, NFS provided payment of the civil penalty on September 20, 2010, via check (Reference 3).

If you or your staff have any questions, require additional information, or wish to discuss this further, please contact me at (423) 743-1702, or Mr. Mark Elliott, Director of Quality, Safety & Safeguards, at (423) 743-1705. Please reference our unique document identification number (21G-10-0178) in any correspondence concerning this letter.

Sincerely,

NUCLEAR FUEL SERVICES, INC.


David B. Amerine
President

WRS/smd

Attachment: NFS Reply to a Notice of Violation (EA-10-086)

cc:

Mr. Luis A. Reyes, Regional Administrator
U.S. Nuclear Regulatory Commission, Region II
245 Peachtree Center Avenue NE, Suite 1200
Atlanta, GA 30303-1257

Mr. Anthony Gody, Director
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Mr. Eugene Cobey, Deputy Director
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Mr. Steven Vias, Branch Chief
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Mr. Kevin Ramsey, Senior Project Manager
Division of Fuel Cycle Safety and Safeguards
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Mr. Manuel Crespo, Senior Fuel Facility Inspector
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Atlanta, GA 30303-1257

Mr. Galen Smith, Senior Resident Inspector
U.S. Nuclear Regulatory Commission

ATTACHMENT

**NFS Reply to a Notice of Violation
(EA-10-086)**

I. Violations Assessed a Civil Penalty

The following three violations are characterized collectively as a Severity Level III Problem (Supplement VI).

Restatement of Violation

- A. 10 CFR 70.61(b) states, in part, that the risk of each credible high-consequence event must be limited. Engineered controls, administrative controls, or both, shall be applied to the extent needed to reduce the likelihood of occurrence of the event so that, upon implementation of such controls, the event is highly unlikely or its consequences are less severe than those in paragraphs (b)(1)-(4) of this section.

Contrary to the above, on October 13, 2009, the licensee failed to apply engineered controls, administrative controls, or both, to the extent needed to reduce the likelihood of occurrence of the event so that, upon implementation of such controls, the event is highly unlikely or its consequences are less severe. Specifically, the licensee failed to implement sufficient items relied on for safety to prevent or mitigate the production of nitrogen compound gas generation which could have led to a high consequence event.

Admission or denial of the alleged violation

NFS agrees with the alleged violation as stated.

The reasons for the violation if admitted, and if denied, the basis for denying the validity of the violation

The reason for the violation was the failure to recognize the possibility of increased nitrogen compound gas (NO_x) generation due to the greater surface area and aluminum content of the materials to be dissolved. Although the safety basis assumed that NO_x would be generated during processing, and an Item Relied On For Safety (IROFS) was in place (NO_x detector) to alert workers to leave the Building in the event of a NO_x release into the work area, the consequence calculations did not include a NO_x generation rate that specifically addressed the differences between the U-Aluminum fines material and the material previously processed in the Bowl Cleaning Station (i.e., cake from dissolved U-Aluminum ingots). The primary reason for not recognizing the possibility of increased NO_x generation was the lack of technical documentation to support the review and approval of the change allowing dissolution of U-Aluminum fines in the Bowl Cleaning Station.

The corrective steps that have been taken and the results achieved

Refer to the following corrective steps:

1. On October 13, 2009, the Bowl Cleaning Station event was entered into NFS' Problem Identification, Resolution, and Correction System (PIRCS) as Problem ID# 21448.
2. On October 19, 2009, based on a revised NO_x generation rate, NFS determined that insufficient Items Relied On For Safety (IROFS) were in place and that the performance criteria of 10 CFR 70.61 were not met. NFS then reported the issue to the NRC Operations Center (Reference NRC Event #45446).
3. Standard Operating Procedures (SOPs) were revised to incorporate restrictions to prohibit the processing of granular metallic fines in the U-Aluminum process (Reference SOP 409, Section 10, Revision 29, effective January 29, 2010 and SOP 409, Section 27, Revision 17, effective January 29, 2010).
4. Additional IROFS were put in place for the Bowl Cleaning Station such that the performance criteria of 10 CFR 70.61 were met (Reference PIRCS Corrective Action Number 11111 completed on January 27, 2010).
5. Extent of condition reviews were performed for other facilities/operations (Refer to PIRCS Investigation Numbers 10037, 10038, 10047 and PIRCS Corrective Action Number 11275).
6. The configuration management program was revised to provide the requirements for a technical basis with sufficient technical detail to facilitate the risk and hazard assessments of process changes (Reference NFS-CM-004, Revision 4, effective January 15, 2010).

Based on the above corrective steps, the improved documentation to support the review and approval of changes has greatly enhanced the understanding of process changes, while facilitating the risk and hazard assessments of process changes and the determination of whether existing IROFS are sufficient or additional IROFS are deemed necessary.

The corrective steps that will be taken

Refer to the corrective steps taken above. No additional corrective steps will be taken.

The date when full compliance will be achieved

Full compliance was achieved on January 29, 2010, when revised SOP 409, Sections 10 and 17 were implemented to prohibit the processing of granular metallic fines in the U-Aluminum process; additional IROFS were in place for the Bowl Cleaning Station such that the performance criteria of 10 CFR 70.61 were met; and NFS-CM-004 had been revised to provide the requirements for a technical basis with sufficient technical detail to facilitate the risk and hazard assessments of process changes.

Restatement of Violation

- B. Nuclear Fuel Services' materials license, SNM-124, Part 1, Section 2.7, states in part that "safety function activities are conducted in accordance with written procedures" and that "compliance with these procedures is mandatory."

Procedure NFS-CM-004, "NFS Change Control Process," Revision 3, Section 2.0, states in part that "changes addressing failures which are adversely impacting personnel safety or significantly impacting operations may be assigned a priority of Urgent."

Procedure NFS-CM-005, "NFS Change Controls Board (CCB) Charter," Revision 2, requires the CCB to evaluate all enterprise change requests according to various criteria including the impact the change would have on the facility systems, processes, activities, and facility configuration information.

Procedure NFS-GH-901, "Configuration Management Program," Revision 12, Sections 5.3.1 and 5.3.2, require technical reviews of changes to verify that the design basis is preserved.

Contrary to the above,

- Prior to October 13, 2009, the licensee failed to follow Procedure NFS-CM-004, when assigning Enterprise Change Requests (ECRs) 20092008 and 20091919 as urgent. Specifically, these ECRs were assigned as urgent, but did not address failures which were adversely impacting personnel safety or significantly impacting operations. Instead, the ECRs involved the implementation of a method to process fines material.
- Prior to October 13, 2009, the licensee failed to follow Procedure NFS-CM-005. Specifically, CCB's review of ECRs 20092008 and 20091919 authorized the processing of fines directly in the bowl cleaning station. CCB's review failed to identify, however, that the design requirements and design basis were affected by the direct addition of fines into the bowl cleaning station without first processing the material in the uranium-aluminum dissolvers.
- Prior to October 13, 2009, the licensee failed to follow Procedure NFS-GH-901, involving the technical reviews as documented in ECRs 20092008 and 20091919. Specifically, the licensee failed to identify that processing uranium-aluminum fines directly in the bowl cleaning station, without processing the material through the caustic dissolution and centrifuge steps, was not analyzed in the integrated safety analysis as a part of the uranium-aluminum design basis.

Admission or denial of the alleged violation

NFS agrees with the alleged violation as stated.

The reasons for the violation if admitted, and if denied, the basis for denying the validity of the violation

The reasons for the violation include lack of management oversight of the change management process and the lack of a questioning attitude by personnel involved in the handling of process change requests.

The corrective steps that have been taken and the results achieved

Refer to the following corrective steps:

1. The configuration management program was revised to provide the requirements for a technical basis with sufficient technical detail to facilitate the risk and hazard assessments of process changes (Reference NFS-CM-004, Revision 4, effective January 15, 2010).
2. The configuration management of process change procedure was revised to improve the process/program to prevent changes to a process or process system that may result in abnormal occurrences that could cause challenges to safety bases, etc. A review of internal and external operating experience is included in evaluation. (Reference NFS-TS-009, Revision 1, effective January 15, 2010).
3. Training was provided for NFS-CM-004 and NFS-TS-009 during January 13, 2010 through January 15, 2010 (Reference T&Q qualifiers SA-CMPROCCHNG and SA-CHANGE-CONTROL).
4. A performance-based qualification process was developed to ensure required personnel have a demonstrated capability to prepare technical basis documents. This was implemented through a revision to NFS-CM-004 (Reference NFS-CM-004, Revision 5, effective February 1, 2010, and T&Q qualifier TECH-BASIS-PREP-AUTH).
5. Guidelines were developed to ensure that process changes made on off-shifts have adequate technical support and oversight (Reference NFS-TS-009, Revision 1, and NFS-CM-004, Revision 4, effective January 15, 2010).
6. The definition of "urgent change" was revised (Reference NFS CM-004, Revision 6, effective March 22, 2010).

Based on the above corrective steps, the improved documentation to support the review and approval of changes has greatly enhanced the understanding of process changes, while facilitating the risk and hazard assessments of process changes and the determination of whether existing IROFS are sufficient or additional IROFS are deemed necessary. In addition, the training on these documents has improved the management oversight of the change management process and the questioning attitude by personnel involved in the handling of process change requests.

The corrective steps that will be taken

Refer to the corrective steps taken above. No additional corrective steps will be taken.

The date when full compliance will be achieved

Full compliance was achieved on March 22, 2010, when NFS procedures NFS-CM-004 and NFS-TS-009 were implemented and associated training was performed.

Restatement of Violation

- C. 10 CFR 70.72 requires licensees to maintain records of written evaluations that provide the bases for the determination that a change to its facility does not require prior NRC approval.

Contrary to the above, prior to October 13, 2009, the licensee failed to maintain records of written evaluations that provided the bases for the determination that a change to its facility did not require prior NRC approval. Specifically, the inspectors determined that an inadequate 10 CFR 70.72 review was conducted based on reviews of the Safety and Regulatory Review Routing Forms used for the change requests that led to the October 13, 2009 event.

Admission or denial of the alleged violation

NFS agrees with the alleged violation as stated.

The reasons for the violation if admitted, and if denied, the basis for denying the validity of the violation

The possibility of increased nitrogen compound gas (NO_x) generation due to the greater surface area and aluminum content of the materials to be dissolved was not recognized. Although the safety basis assumed that NO_x would be generated during processing, and an Item Relied On For Safety (IROFS) was in place (NO_x detector) to alert workers to leave the Building in the event of a NO_x release into the work area, the consequence calculations did not include a NO_x generation rate that specifically addressed the differences between the U-Aluminum fines material and the material previously processed in the Bowl Cleaning Station (i.e., cake from dissolved U-Aluminum ingots). The primary reason for not recognizing the possibility of increased NO_x generation was the lack of technical documentation to support the review and approval of the change allowing dissolution of U-Aluminum fines in the Bowl Cleaning Station. Without adequate technical documentation available for review, the subsequent 10 CFR 70.72 evaluation was deficient.

The corrective steps that have been taken and the results achieved

Refer to the following corrective steps:

1. The configuration management program was revised to provide the requirements for a technical basis with sufficient technical detail to facilitate the risk and hazard assessments of process changes (Reference NFS-CM-004, Revision 4, effective January 15, 2010).
2. The configuration management of process change procedure was revised to improve the process/program to prevent changes to a process or process system that may result in abnormal occurrences that could cause challenges to safety bases, etc A review of internal and operating experience is also included in the evaluation (Reference NFS-TS-009, Revision 1, effective January 15, 2010).
3. Training was provided for NFS-CM-004 and NFS-TS-009 during January 13, 2010 through January 15, 2010 (Reference T&Q qualifiers SA-CMPROCCHNG and SA-CHANGE-CONTROL).
4. A performance-based qualification process was developed to ensure required personnel have a demonstrated capability to prepare technical basis documents. This was implemented through a revision to NFS-CM-004 (Reference NFS-CM-004, Revision 5, effective February 1, 2010, and T&Q qualifier TECH-BASIS-PREP-AUTH).

Based on the above corrective steps, the improved documentation to support the review and approval of changes has greatly enhanced the understanding of process changes, while facilitating the risk and hazard assessments of process changes and the determination of whether existing IROFS are sufficient or additional IROFS are deemed necessary. In addition, the improved technical documentation enhances the review of a change against the 10 CFR 70.72 criteria.

The corrective steps that will be taken

Refer to the corrective steps taken above. No additional corrective steps will be taken.

The date when full compliance will be achieved

Full compliance was achieved on February 1, 2010, when NFS procedures NFS-CM-004 and NFS-TS-009 were implemented; associated training was performed; and the qualification process for preparation of technical basis documents was implemented.

II. Violations Not Assessed a Civil Penalty

Restatement of Violation

- A. 10 CFR 70.62(b) requires, in part, that licensees maintain process safety information pertaining to the performance and technology of the process to enable the performance and maintenance of the integrated safety analysis.

Contrary to the above, prior to December 11, 2009, NFS failed to maintain process safety information that would have provided reasonable assurance that a chemical addition item relied on for safety (BUA-43) could perform its intended design function as described in the integrated safety analysis.

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

Admission or denial of the alleged violation

NFS agrees with the alleged violation as stated.

The reasons for the violation if admitted, and if denied, the basis for denying the validity of the violation

In this particular case, the process safety information is the IROFS technical basis or set point analysis. Process history has demonstrated that the chemical reagent addition (BUA-43) is effective in controlling NO_x generation for the given process. However, it is difficult to quantify in absolute terms the amount of chemical reagent to be added based on variations associated with other parameters. For this reason, NFS did not rely on the control to satisfy the 10 CFR 70.61 performance requirements, but did elect to maintain the control as an IROFS.

The reason for the violation was the lack of guidance and specificity for preparing/developing set point analyses, including the critical parameter.

The corrective steps that have been taken and the results achieved

Refer to the following corrective steps:

1. NFS document ENG-EPS-A-003 ("Setpoint Verification and Design Parameter Documentation") was revised to enhance the basis of evaluation, specifically to provide guidelines for justifying the basis for critical parameters (Reference ENG-EPS-A-003, Revision 1, effective January 27, 2010).
2. Additional IROFS were put in place for the Bowl Cleaning Station such that the performance criteria of 10 CFR 70.61 were met (Reference PIRCS Corrective Action Number 11111 completed on January 27, 2010).

3. An independent review was performed of set point analyses at NFS by a team from B&W-Lynchburg (Reference 21T-10-0047, "Review of Setpoint Analyses", dated January 14, 2010). Based on this review, no set point analyses were found to be inadequate or challenge the safety basis of the system for which it was calculated.

Based on the above corrective steps, the basis of evaluation for set point analyses was enhanced, specifically to provide guidelines for justifying the basis for critical parameters.

The corrective steps that will be taken

Refer to the corrective steps taken above. No additional corrective steps will be taken.

The date when full compliance will be achieved

Full compliance was achieved on January 27, 2010, when NFS document ENG-EPS-A-003 was implemented and additional IROFS were in place for the Bowl Cleaning Station.

Restatement of Violation

- B. 10 CFR 70.61(e) requires, in part, that the licensee designate engineered or administrative controls as items relied on for safety if they are required to meet the performance requirements of 10 CFR 70.61(b).

Contrary to the above, prior to December 11, 2009, NFS failed to identify engineered or administrative controls as items relied on for safety for several accident scenarios involving excessive nitrogen compound gas generation in the fuel manufacturing, uranium-metal/oxide, uranium-aluminum, and commercial development lines in order to meet the performance requirements of 10 CFR 70.61(b).

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

Admission or denial of the alleged violation

Based on the NRC's current interpretation of the initial set of conditions that can be considered as the starting point for a process hazard analysis, NFS agrees with the alleged violation as stated.

The reasons for the violation if admitted, and if denied, the basis for denying the validity of the violation

The fundamental basis for the difference of interpretation lies in the assumptions that are considered as the initial set of conditions. The initial set of conditions reflects normal operations that exist prior to determining credible abnormal events or upset conditions. Because the initial set of conditions is the starting point for a process hazard analysis and/or consequence evaluation, these conditions are considered in the process of determining consequences. NFS considered the process chemistry, including mass of uranium and quantity of hydrogen peroxide, part of the initial set of conditions, and therefore, did not credit these controls as IROFS. The regulations and guidance documents applicable to performing ISAs are somewhat ambiguous regarding this topic.

The corrective steps that have been taken and the results achieved

Refer to the following corrective steps:

1. NFS document NFS-HS-A-61 ("Integrated Safety Analysis Accident Consequence Evaluations") was revised to clarify the definition of "unmitigated" analysis (Reference NFS-HS-A-61, Revision 10, effective January 29, 2010).
2. IROFS added to the uranium-aluminum area are discussed earlier in this response under item I.A and II.A.

3. IROFS were added to the uranium-metal/oxide area to better support NO_x calculation assumptions (Reference IROFS List 21T-10-0004, effective February 2, 2010).
4. IROFS were added to three Fuel manufacturing areas to better support NO_x calculation assumptions (Reference IROFS List 21T-09-1184, effective January 12, 2010; and IROFS Lists 21X-09-0056 and 21X-09-0057, effective January 17, 2010).
5. IROFS were added to one commercial development line area to better support NO_x calculation assumptions (Reference IROFS List 21T-10-0573, effective June 22, 2010).

Based on the above corrective steps, additional IROFS were identified and implemented.

The corrective steps that will be taken

Refer to the corrective steps taken above. No additional corrective steps will be taken.

The date when full compliance will be achieved

Full compliance was achieved on June 22, 2010 when additional IROFS were in place for the fuel manufacturing, uranium-metal/oxide, uranium-aluminum, and commercial development lines in order to meet the performance requirements of 10 CFR 70.61(b).