



NUCLEAR FUEL SERVICES, INC.
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21G-14-0023
GOV-01-55-04
ACF-14-0030

January 31, 2014

Director, Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Reference: 1) Docket No. 70-143; SNM License 124
2) NRC Inspection Report No. 70-143/2013-003 and Notice of Violation, dated July 30, 2013
3) NFS Reply to Notice of Violation (VIO-70-143/2013-003-01), dated August 29, 2013 (21G-13-0199)
4) NRC Response to Disputed Notice of Violation 70-143/2013-003-01, dated November 14, 2013
5) Request for Date Extension for NFS Reply to Notice of Violation (VIO 70-143/2013-003-01), dated December 12, 2013 (21G-13-0271)
6) Approval of NFS Request for Extension to Provide Response to NRC Response to Disputed Notice of Violation 70-143/2013-003-01, dated December 18, 2013

Subject: Response to NRC Response to Disputed Notice of Violation (VIO 70-143/2013-003-01)

Pursuant to the requirements of 10 CFR 2.201, Nuclear Fuel Services, Inc. (NFS) hereby submits the attached response to the violation identified in the referenced NRC inspection report and to the NRC response to NFS' initial reply to the violation. NFS requested and received NRC approval for an extension until January 31, 2014, to reply to the NRC documents.

NFS agrees that the annual 1.5 hour testing of installed emergency lights as defined in NFPA 101, "Life Safety Code," Section 7.9.3, was not performed in accordance with the code requirements, nor was adequate justification/evaluation of this condition performed in accordance with code-required processes.

There is an additional issue that was discussed in References 3 and 4 wherein the NRC's stated position as to the role of the Authority Having Jurisdiction (AHJ) differs from that of NFS' staff. A Formal Interpretation has been requested from NFPA on the definition and assignment of AHJ responsibility. Following receipt of the NFPA Formal Interpretation, NFS requests that a meeting including representatives from NRC Region II and NRC Headquarters be arranged so that the AHJ roles and responsibilities can be clearly defined in order to avoid future interpretation differences and the resulting regulatory consequences.

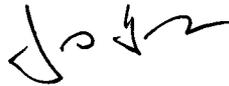
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If you or your staff have any questions, require additional information, or wish to discuss this matter further, please contact me, or Mr. Andrew Sabisch, Licensing and ISA Manager, at (423) 743-9141, extension 5722. Please reference our unique document identification number (21G-14-0023) in any correspondence concerning this letter.

Sincerely,

NUCLEAR FUEL SERVICES, INC.

A handwritten signature in black ink, appearing to read 'J. Henry', with a stylized flourish at the end.

Joseph G. Henry, President

ATS/pdj

Attachment: **Response to NRC Response to Disputed Notice of Violation (VIO 70-143/2013-003-01)**

Copy:

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Mr. Charles Stancil
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**Response to NRC Response to Disputed Notice of Violation
(VIO 70-143/2013-003-01)**

Restatement of Violation

During an NRC inspection conducted June 24-28, 2013, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Safety Condition S-1 of Special Nuclear Material License SNM-124 requires that material be used in accordance with the statements, representations, and conditions in the application.

Section 7.4.1, Facility Design Criteria, of the License Application dated August 1, 2011, states that Nuclear Fuel Services, Inc. (NFS) buildings are designed and built to the requirements of NFPA 801, as well as, any applicable state and local building, electrical, and fire codes in effect at the time of their construction.

Section 5.11 of NFPA 801, "Standard for Fire Protection for Facilities Handling Radioactive Materials," 2008 Edition, states that "Emergency Lighting shall be provided for means of egress in accordance with NFPA 101, 'Life Safety Code'."

Section 7.9.3.1.1, Periodic Testing of Emergency Lighting Equipment, of the NFPA 101, 2009 version, states the "Functional testing shall be conducted annually for a minimum of 1.5 hours if the emergency lighting system is battery powered."

Contrary to the above, prior to June 28, NFS failed to functional test the battery powered emergency lighting system annually for a minimum of 1.5 hours. Additionally, the licensee failed to identify an equivalency for the test in which it is demonstrated that the light will work as intended.

This is a Severity Level IV violation.

The reason for the violation

NFS agrees that the annual 1.5 hour testing of installed emergency lights as defined in NFPA 101, "Life Safety Code," Section 7.9.3, had not been performed. This issue was self-identified in 2013 as part of the review performed under PIRCS corrective action C11556. NFS issued a memo entitled "Authority Having Jurisdiction Decision for Annual Functional Testing of Emergency Lights," on June 12, 2013, to justify not performing the test as defined in the emergency lighting section of NFPA 101. This memo was revised and reissued on August 28, 2013, to further explain the basis for NFS' position of not performing the 1.5 hour annual test of the emergency lights. Upon further review following the NRC inspection, it was determined that these memos did not provide adequate justification to support this position using the guidance contained in the applicable NFPA codes. The memo is currently being revised to include the additional supporting information and justification contained in this response which defines how Equivalent Compliance of the testing requirement is being achieved through the application of NFPA-approved methodology.

The corrective steps that have been taken and the results achieved

Recently, discussions have been held with the emergency lighting manufacturer regarding possible testing options that would satisfy the annual 1.5-hour requirement specified in NFPA 101, Section 7.9.3.1.1.3. The accepted method of performing the test is to remove AC power from the lighting unit by opening the supply breaker and verifying that the lights remain energized via the internal battery for 1.5 hours. The only other option provided was to physically remove the wires from the back of each light for 1.5 hours. According to the manufacturer, this option would not provide a true loss-of-power test. This would also require considerable resources to test the 400+ emergency lights at NFS on an annual basis. Additional barriers and precautions would be needed to protect plant equipment during this type of testing due to the location of many of the lights and their proximity to sensitive or fragile equipment. With the current uncertainty of what other loads are on breakers that feed each emergency light, opening breakers could produce unexpected and undesired results in vital areas and potentially place workers in unsafe or hazardous conditions. Therefore, performing the annual 1.5-hour test is not currently achievable at NFS without significant modifications to the lighting systems.

Monthly testing of the installed emergency lighting has been and will continue to be performed by NFS technicians. This testing verifies that the lights illuminate and that the internal battery holds a charge sufficient to actuate the lights. While this test does not ensure the lights will remain on for the full 1.5 hours, it does provide reasonable assurance that adequate light will be available for the short period of time needed for personnel to exit areas affected by a fire using existing guidance and training provided to all personnel with access to the Protected Area. The lighting manufacturer confirmed that the monthly test would identify issues that would prevent the fixtures from providing illumination needed for workers to exit the affected area during a bounding period – assumed to be 15 minutes. Issues identified during the testing are promptly corrected either through replacement of individual components or installation of self-diagnosing fixtures. Currently, approximately 45% of lights installed within the Material Access Area (MAA) are self-diagnosing fixtures.

In NFS' letter dated August 29, 2013, NFPA 101, Section 4.6.1.3 was referenced. This section states that *"Where it is evident that a reasonable degree of safety is provided, any requirement shall be permitted to be modified, if in the judgment of the authority having jurisdiction, its application would be hazardous under normal occupancy conditions."* The NRC response to the letter referenced above stated that while it was agreed that activities should not be conducted if they would create an unsafe condition, *"Section 4.6.1.1 of NFPA 101 was not a part of the NFS licensing basis and therefore, the argument that a condition could be modified if its application would be hazardous under normal occupancy conditions if a reasonable degree of safety is provided is not applicable."* The NRC's response further stated that *"NFS is only committed to portions of NFPA directly related to the requirements for emergency egress lighting."* NFS has discussed the application of general code sections with the NFPA staff. They have verbally concurred that the administrative sections of the code (i.e., Sections 1 through 4) apply to subsequent sections which provide specific testing and/or equipment requirements. While NFPA 801 only references NFPA 101 for the emergency lighting code requirements, guidance and interpretations contained in the first four sections are needed to correctly implement the specific testing requirements contained in Section 7.9. A Formal Interpretation Request has been submitted to the NFPA Standards Council to document this position for our records.

Based on the potentially undesirable/hazardous consequences resulting from attempting to de-energize the emergency lights in order to perform the annual 1.5-hour functional test, a reasonable degree of safety for plant personnel exiting a plant building which has experienced a loss of normal power during emergency conditions, is provided through the following:

- The monthly 30-second test provides a regular assessment of the overall condition of emergency lighting installed at the NFS site and has demonstrated that the lights are highly reliable. Few repairs have been required following the monthly testing and identified equipment issues are often addressed by replacing older lights with newer models rather than performing complex troubleshooting and repair.
- Initial and Continuing General Employee Training, which is provided to all personnel with access to the Protected Area states that *"If visible signs of a fire are present, qualified personnel should attempt to extinguish the fire using an area fire extinguisher if it is safe to do so. If unsuccessful in extinguishing the fire and the area becomes unsafe, personnel should proceed to the nearest safe exit and report to the assembly area for accountability and further direction."*
- The NFS fire brigade has been shown to be able to rapidly respond to a fire alarm and provide qualified firefighters fully equipped for zero-visibility conditions upon receipt of a fire alarm or notification of a fire by plant personnel. At times where fire brigade response may be adversely impacted due to limited on-site staffing, the Erwin fire department would respond. Drills have demonstrated that they would be able to provide on-site firefighting support within an acceptable time frame. Workers that are attempting to fight a fire would be relieved by the fire brigade/Erwin Fire Department and directed to immediately exit the area.
- In order for emergency lighting to be required, a loss of power must accompany the emergency. Due to the diverse nature of power supplies feeding plant structures and areas within individual structures, a loss of power that darkens an entire building due to fire would require a large or intense fire that would take time to reach that level. Workers would have likely been directed to exit the area prior to a fire reaching that level and response responsibilities turned over to the fire brigade or Erwin Fire Department.
- The following guidance and direction ensures that workers exit the area while emergency lighting, if activated, is still available.
 - Procedure NFS-HS-E-04, Fire Reporting and Response, states that upon receipt of a fire alarm and confirmation of a fire, a public address announcement is made stating *"A fire emergency has occurred. Employees in Building(s) _____ must proceed to the nearest safe exit and report to their evacuation area."* This direction ensures workers are exiting the area while lighting is still available.
 - Training and guidance for actions to be taken in the event of a pending CO2 discharge to address detected fire conditions direct workers to immediately evacuate Buildings 301, 302, 303, 304, 306, 307, 333 MAA, and the 105 Laboratory, except those security personnel stationed with supplied air via the nearest emergency exit. This direction ensures workers are exiting the area while lighting is still available.

- Procedural guidance requires non-essential personnel to leave the work area immediately following the loss of ventilation that occurs as a result of a loss of power (and activation of the emergency lights). Essential personnel are directed to don respirators, place their equipment in a safe configuration and then exit the area.

The NRC's response states that first responders could be adversely impacted if emergency lights failed to function for the full 1.5 hours and such failure was not accounted for in NFS' analysis. The requirements for emergency lighting are contained in NFPA 101. Section 1.1.3 states that "*The code establishes criteria for the design of egress facilities so as to allow prompt escape of occupants from the building or where desirable, into safe areas within buildings.*" While having emergency lighting available for first responders when entering a building or extinguishing a large fire is recognized as being beneficial, it is not a requirement of NFPA 101 nor is it assumed to be available in the response tactics that are used by the NFS fire brigade and Erwin Fire Department personnel when responding to a fire. A Formal Interpretation Request has been submitted to the NFPA Standards Council to document this position for our records.

It is important to recognize that the sole function of emergency lighting at NFS is to aid in worker egress from work locations in the event of a loss of power event which includes a loss of power resulting from a large fire. Emergency lighting is not required nor is it credited for performing any time-critical operator actions in regard to placing the facility in a safe condition which would otherwise require the lights remain fully operable for extended periods of time. Emergency lighting is not considered to be an Item Relied on For Safety (IROFS). Workers are trained to immediately exit the area if actual fire conditions exist, and current testing of the emergency lights has demonstrated that they have a high degree of reliability to ensure workers will have adequate lighting to exit the area in the time needed to complete the evacuation.

NFS agrees that the 1.5-hour functional test of emergency lighting as defined in NFPA 101 has not been performed. However, based on the potentially hazardous consequences resulting from the need to remove power from the lights in order to perform the test, NFS' evaluation of the existing guidance and direction demonstrate that a reasonable degree of safety exists for plant personnel to ensure they are able to exit affected areas. Based on these factors, the NFS Authority Having Jurisdiction (AHJ) has determined that compliance with the provisions of the code have been met through the application of the modification of the testing requirement permitted under NFPA 101, Section 4.6.1.3. This position is further supported by the guidance contained in NFPA 101, Sections 1.4.3, Equivalent Compliance, and 1.4, Equivalency, which allows for the use of alternative systems, methods or devices approved as being equivalent by the AHJ as being in compliance with the Code.

NFS is revising the basis of the AHJ decision for not performing the annual 1.5-hour test and the key points contained in the revised evaluation have been summarized in this letter.

In addition, the term "deviation" was removed from the basis memo since NFS has not deviated from the NFPA 101 code requirements but rather defined Equivalent Compliance through the methodology approved by the NFPA.

The corrective steps that will be taken

NFS has submitted requests for Formal Interpretations to the NFPA Standards Council on the issues that have been discussed verbally with the NFPA staff and documented in this letter. Once the formal responses have been received, they will become part of the file supporting the revised NFS memo entitled "Authority Having Jurisdiction Equivalent Compliance Evaluation for Annual Functional Testing of Emergency Lights."

The site's Fire Protection engineers are evaluating an automated monitoring/testing system available from the lighting manufacturer that would perform the NFPA 101 testing; i.e., monthly and annual, without the need for technicians to physically press the test button or remove power from each light. The ability to integrate this capability into the current site emergency lighting system and possible implementation schedule is under review at this time. If this system can be incorporated into the NFS plant infrastructure, it would allow the annual testing specified in NFPA 101, Section 7.9.3.1.1.3 to be performed without jeopardizing worker safety or impacting vital plant equipment.

Pending completion of this review and possible installation of the automated monitoring/testing system, NFS will ensure the guidance and direction defined in this response and the revised memo documenting Equivalent Compliance to the code remain in-place and effective.

Date when full compliance will be achieved

NFS will be in full compliance with the applicable NFPA Codes and Standards associated with emergency lighting once the NFPA Formal Interpretations have been received and the memo documenting NFS' methodology for ensuring that a reasonable degree of safety is being provided to plant personnel has been revised to include reference to these interpretations. Based on the time estimates from NFPA required to process the requests and provide their formal position to NFS, it is expected that the memo documenting Equivalent Compliance to the code will be finalized by April 30, 2014.