



**NUCLEAR FUEL SERVICES, INC.**  
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21G-14-0136  
GOV-01-55-04  
ACF-14-0209  
September 9, 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) Letter from Richard J. Freudenberger to NRC, dated August 6, 2014 (21G-14-0121), Defining the Role of the Authority Having Jurisdiction (AHJ)
  - 3) Letter from Richard J. Freudenberger to NRC, dated September 4, 2014 (21G-14-0134), Request to Amend License SNM-124 Chapter 7, Fire Safety, Regarding the Authority Having Jurisdiction (AHJ)

**Subject: Corrected Request to Amend License SNM-124 Chapter 7, Fire Safety, Regarding the Authority Having Jurisdiction (AHJ)**

Nuclear Fuel Services, Inc. (NFS) hereby submits the corrected request for an amendment to Chapter 7, "Fire Safety," of SNM-124 per the requirements set forth in 10 CFR 70.34. The request for license amendment incorporates information from the August 6, 2014, letter (Reference 2) and teleconferences held with NRC Staff to clarify the license-defined roles and responsibilities of the AHJ. This corrected submittal is intended to replace the submittal made on September 4, 2014, (Reference 3) in its entirety. Additionally, the date on the Attachment has been revised to match the date of this transmittal letter.

Our license, SNM-124; Chapter 7, Fire Safety; Section 7.2.1, Fire Safety Organization, designates the Safety discipline director as the AHJ for NFS. The current verbiage states that the AHJ "*is consulted regarding any NFPA code conflicts*"; however, this limited description of the AHJ's roles and responsibilities leaves many aspects of the AHJ's function subject to interpretation. It also does not include the established roles and responsibilities of an AHJ as defined by the NFPA organization which has resulted in several fire protection-related issues at NFS being placed on hold pending determination of who is able to make an AHJ decision in order to resolve them.

We are proposing that the portion of SNM-124, Section 7.2.1, associated with the roles and responsibilities of the AHJ at NFS be clarified to better define what actions the Safety discipline director is authorized to perform. It is NFS' position that if an issue is

identified where an NFPA Code requirement cannot be met and an alternate method (i.e., a performance-based design and/or documented analysis, providing an equivalent level of safety) cannot be identified, a formal request to approve that path would be submitted to the NRC for review and approval prior to its implementation in areas that involve the handling or processing of licensed nuclear material.

Proposed changes to the license are provided in the Attachment. For your convenience, vertical lines in the margin of affected license pages denote changes.

If you or the reviewers have any questions, require additional information, or wish to discuss this matter further, please contact me at (423) 743-1705; Mr. Randy Shackelford, Nuclear Safety and Licensing Manager, at (423) 743-2504; or Mr. Andrew Sabisch, Licensing and ISA Manager, at (423) 735-5030. Please reference our unique document identification number (21G-14-0136) in any correspondence concerning this letter.

Sincerely,

**NUCLEAR FUEL SERVICES, INC.**



Richard J. Freudenberger, Director  
Safety and Safeguards

DML/pdj

Attachment: Corrected SNM-124, Chapter Index, and Chapter 7, Revision 2

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Attachment

**Corrected  
SNM-124**

**Chapter Index,  
Chapter 7, Revision 2**

(8 pages to follow)

**SPECIAL NUCLEAR MATERIAL LICENSE  
SNM-124**

**CHAPTER INDEX**

<b>Chapter</b>	<b>Title</b>	<b>Revision</b>	<b>Revision Date</b>
<b>1</b>	<b>General Information</b>	<b>2</b>	<b>09/28/2012</b>
<b>2</b>	<b>Organization and Administration</b>	<b>2</b>	<b>09/28/2012</b>
<b>3</b>	<b>Integrated Safety Analysis</b>	<b>0</b>	<b>06/30/2009</b>
<b>4</b>	<b>Radiation Protection</b>	<b>1</b>	<b>05/13/2011</b>
<b>5</b>	<b>Nuclear Criticality Safety</b>	<b>1</b>	<b>05/27/2011</b>
<b>6</b>	<b>Chemical Process Safety</b>	<b>0</b>	<b>06/30/2009</b>
<b>7</b>	<b>Fire Safety</b>	<b>2</b>	<b>09/09/2014</b>
<b>8</b>	<b>Emergency Management</b>	<b>0</b>	<b>06/30/2009</b>
<b>9</b>	<b>Environmental Protection</b>	<b>1</b>	<b>09/30/2011</b>
<b>10</b>	<b>Decommissioning</b>	<b>1</b>	<b>08/01/2011</b>
<b>11</b>	<b>Management Measures</b>	<b>2</b>	<b>09/28/2012</b>
<b>Addendum</b>	<b>Sensitive Information</b>	<b>1</b>	<b>09/09/2011</b>

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**FIRE SAFETY  
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**FIRE SAFETY**

**7.1 Fire Safety**

The NFS fire protection program is designed to minimize the potential for and provide reasonable protection against fire and explosive hazards associated with the processing, handling, and storage of licensed materials during normal operations, anticipated operational off-normal occurrences, and credible accidents. As part of the integrated safety analysis (ISA) process described in Chapter 3, area operations are evaluated for the potential for, and consequences of, fire and explosive hazards. Where these consequences could exceed the performance requirements in 10 CFR 70.61, IROFS are assigned. These IROFS are identified and controlled as described in the ISA Summary and in written procedures.

In addition to the fire hazards analyses prepared to support the ISA process, NFS has a general fire safety program that includes general fire safety management measures, facility design requirements, and general fire protection and emergency response measures. Guidance from NFPA 801 and the following documents, as applicable, are used to develop the fire protection program: Southern and International Building Codes, NFPA Codes and Standards, and Code of Federal Regulations, Title 29, Parts 1910 and 1926 applicable to the year of construction. Applicable NFPA Codes are also used on the NFS site for installation, maintenance, and testing of fire protection systems and equipment.

**7.2 Fire Safety Management Measures**

**7.2.1 Fire Safety Organization**

The safety discipline director is the senior manager who has the authority and staff to ensure that fire safety receives appropriate priority. He/she serves as the Authority Having Jurisdiction (AHJ) for the fire protection program. The AHJ is responsible for resolving any NFPA code conflicts by evaluating whether the provisions of NFPA Codes /Standards are being met and, if not being met, approving alternate methods that demonstrate equivalency to the specific NFPA Code/Standard found to be in conflict. If an NFPA Code/Standard cannot be met and an alternate method that provides an equivalent level of safety cannot be identified (i.e., performance-based design and/or documented analysis), a formal request to approve that exemption (deviation) from the NFPA Code/Standard shall be submitted to the NRC for review and approval prior to its implementation. All AHJ-approved equivalency justifications shall be retained for review by the NRC. Within the safety discipline, the responsibility for fire safety design bases, hazard analyses, and day-to-day fire protection program implementation is assigned to the ISA function. The responsibility for safety work permits, the emergency response

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team, pre-fire plans, and associated procedures is assigned to the Industrial Safety function. The organization structure and qualification requirements of these management functions are described in Chapter 2.

The manager of the ISA function is responsible for the day-to-day oversight of the fire protection program in all areas of the NFS site. This includes ensuring that the necessary fire safety training is provided to employees, making them aware of any applicable fire safety related IROFS, as well as the periodic testing and maintenance of fire detection and protection systems, in accordance with written procedures.

The configuration management program assures that any plant changes are properly evaluated with regard to the impact upon fire safety and documented within the plant safety bases. New facilities and processes are reviewed by the facility safety review committee.

## **7.2.2 Fire Prevention**

### **7.2.2.1 Employee Training**

General fire safety awareness training is administered to each employee as part of their general employee training. Applicable IROFS training is provided as part of job specific training.

### **7.2.2.2 Facility Audits and Inspections**

Facility audits and inspections are performed routinely for facilities containing licensed materials in a quantity and form that could cause at least an intermediate consequence as defined in 10 CFR 70.61 if totally consumed by fire. These inspections are detailed in written procedures. Items identified are entered into the plant's problem identification system and tracked to closure.

### **7.2.2.3 Fire Prevention Procedures**

NFS maintains written procedures for the administration of the general fire prevention program.

Fire safety procedures address areas such as the storage and handling of combustible, flammable, and pyrophoric materials; and the review and issuance of permits for all work performed in the plant which might provide a source of ignition, such as welding and cutting.



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**7.2.3 Inspection, Testing, and Maintenance of Fire Protection Systems**

Procedural guidance is established for the inspection, testing, and maintenance of fire protection systems routinely performed by NFS personnel. These procedures are applied to fire detection, warning, and suppression systems. Records of these activities and of outside vendor inspections are maintained by the Industrial Safety function.

**7.2.4 Emergency Response Organization**

NFS maintains an emergency response organization in accordance with 10 CFR 70.22 and is described in written procedures. These procedures outline the overall emergency response program, including but not limited to staffing, training, drills and exercises, response measures, and offsite agency coordination. The Emergency Preparedness program, as described in Chapter 8, includes memorandums of understanding between NFS and off-site agencies, and addresses periodic off-site training and drills. The NFS emergency brigade is discussed in Section 7.6.8.

**7.2.5 Pre-Fire Plans**

NFS maintains pre-fire plans for each facility, or part thereof, that, if totally consumed by fire, could release SNM in a quantity and form that could cause at least an intermediate consequence as defined in 10 CFR 70.61. These pre-fire plans provide information needed by fire fighting personnel responding to the emergency and are located for ready access by the plant emergency response team and local fire departments who may respond to an emergency at NFS.

**7.3 Fire Hazard Analyses**

Fire Hazard Analyses (FHAs) are developed to address the requirement for facility-related FHAs as outlined in NFPA 801, "*Standard for Fire Protection for Facilities Handling Radioactive Materials.*" These documents are prepared for the NFS facilities that are involved in the processing or storage of nuclear materials in sufficient quantities and in a form that, if released in a fire, could result in an intermediate or high consequence event as defined in the ISA summary.

FHAs are a component of the ISA process, as described in Chapter 3. FHAs focus on bounding fire scenarios of fire areas within buildings and consider fire loading, the consequences and analysis of an unmitigated fire, and mitigating controls. Fire and/or explosion hazards which have the potential to create high or intermediate consequences as defined in 10 CFR 70.61 are controlled via the application of appropriate IROFS. These IROFS are documented in the ISA Summary as described

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in Chapter 3. Management measures that ensure the reliability and availability of IROFS are established as described in Chapter 11.

**7.4 Facility Design**

**7.4.1 Facility Design Criteria**

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. Fire areas may subdivide specified processes or materials involving significant fire hazards to confine the spread of fire to the area of origin. In particular, the building areas are considered and fire barriers are provided as recommended by a fire hazard analysis.

For new construction and for renovations affecting 25% or more of the existing structure, NFS will comply with the NFPA codes or standards listed below when required by either (1) NFPA 801, "Standard for Fire Protection for Facilities Handling Radioactive Materials; or (2) The International Building Code, the International Fire Code, the Life Safety Code (NFPA 101), and/or the National Electric Code (NFPA 70), as adopted by the State of Tennessee and/or the Town of Erwin:

- NFPA 10 – Standard for Portable Fire Extinguishers
- NFPA 25 – Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems
- NFPA 30 – Flammable and Combustible Liquids Code
- NFPA 72 – National Fire Alarm Code

Design and construction criteria for facilities that process uranium include an evaluation to determine the proper methods to prevent, detect, extinguish, limit, and control fires and explosions. Fire-resistive and non-combustible materials are used as appropriate. Electrical installation, ventilation, lightning protection, fire water runoff, worker egress, and firefighter access are considered. The design features of physical security projects for the protection of SNM will be reviewed to prevent or minimize the inadvertent delay of either worker egress or fire fighter access during emergency situations.

If a planned new facility and/or new process meets any of the 10 CFR 70.72 criteria requiring a license amendment, baseline design criteria (BDC) and defense-in-depth requirements of 10 CFR 70.64 are addressed as they apply to fire protection.

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**7.5 Process Fire Safety**

Process fire safety is considered in the planning, design, and construction of new facilities and processes. The fire risk associated with new and existing process parameters are evaluated and documented by the ISA process. The ISA evaluates the special fire risk associated with:

- Combustible, flammable, and pyrophoric process chemicals (solids, liquids, gases), in use and in storage;
- Exothermic reactions of uranium oxides;
- High temperature and/or high pressure equipment;

Process related fire hazards are controlled with IROFS to the extent necessary to meet the performance requirements of 10 CFR 70.61.

**7.6 Fire Protection and Emergency Response**

**7.6.1 Water Supply**

Plant fire protection water is provided through a loop system with two 8-inch connections to the City of Erwin Water Distribution System. Details of the fire protection water supply are contained in written procedures.

**7.6.2 Hydrants and Hose Houses**

Numerous hydrants are provided throughout the fire protection loop. Locations are such that they allow ready access for quick use when needed to assist in fire fighting. In addition, several hose houses are provided on major process building roofs and in inaccessible areas.

**7.6.3 Fixed Fire Protection Systems**

Fixed fire protection systems, including automatic sprinkler, carbon dioxide, and Halon systems, are utilized throughout the plant. Automatic systems are located in various facilities as detailed in written procedures.

**7.6.4 Fixed Fire Detection Systems**

Several areas within the plant are equipped with fixed fire detection systems. Fire detection systems located in various facilities are detailed in written procedures.

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**7.6.5            Portable Fire Extinguishers**

Portable fire extinguishers are located throughout the NFS site, and are maintained based on written procedures. The types of portable fire extinguishers available at the site include, but are not limited to, CO<sub>2</sub>, dry chemical, and class D.

**7.6.6            Plant General Alarm**

In addition to the various fixed protection and detection systems, the plant has a plant-wide manual pull-box fire alarm capability. All plant-wide fire protection, detection, and alarm systems are integrated into the plant's central alarm panel. As a result, this system is equipped with an uninterruptible power supply (UPS).

**7.6.7            Lightning Protection**

The HEU Fuel and BLEU Production Facilities have been outfitted with lightning protection systems as specified in the Lightning Protection Code, NFPA 780.

**7.6.8            Emergency Response Team**

NFS maintains an emergency brigade which functions as an emergency response team. The emergency response team is an organized group of employees who are knowledgeable, trained, and skilled in basic fire-fighting operations, first aid techniques, and emergency response in accordance with NFPA 600. Training and education are provided for team members commensurate with those duties and functions that they are expected to perform. NFS relies on support from offsite firefighting resources when sufficient onsite emergency response team staffing is unavailable or when additional support is warranted.

The site Emergency Preparedness program, as described in Chapter 8, includes memorandums of understanding between NFS and off-site agencies, and addresses periodic off-site training and drills.