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21G-04-0133
GOV-01-55-04
ACF-04-0301

August 27, 2004

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Subject: 30-Day Written Notification of Event (NRC Event No. 40901)

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

Gentlemen:

On July 28, 2004, at 0858 hours, Nuclear Fuel Services, Inc. (NFS) made a telephone notification to the NRC Operations Center of an event for which 10 CFR 70.50(b)(4) requires a 24-hour notification. This letter provides the 30-day written notification of that event.

If you or your staff have any questions, require additional information, or wish to discuss this matter further, please contact me or Mr. Andrew M. Maxin, Safety Director, at 423-743-1777. Please reference our unique document identification number (21G-04-0133) in any correspondence concerning this letter.

Sincerely,

NUCLEAR FUEL SERVICES, INC.

B. Marie Moore
Vice President
Safety and Regulatory

WRS/rcy

Attachment

TE72

cc: Regional Administrator
U. S. Nuclear Regulatory Commission
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Mr. William Gloersen
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B.M. Moore to U.S. NRC
August 27, 2004

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Attachment

30-Day Notification of Reportable Event

(3 pages to follow)

OFFICIAL USE ONLY

30-Day Notification of Reportable Event

1. The date, time, and exact location of the event

The event was identified on Tuesday, July 27, 2004, at approximately 1000 hours and occurred in Building [REDACTED] at the Nuclear Fuel Services, Inc. (NFS) site, located in the town of Erwin, Unicoi County, Tennessee.

2. Radiological or chemical hazards involved, including isotopes, quantities, and chemical and physical form of any material released

There were no radiological or chemical hazards involved with the event. There was also no material released. Specific information associated with the material involved is as follows:

Isotopes: 97 wt.% ^{235}U
Quantities: Approximately [REDACTED] of Uranium
Chemical Form: Uranium-bearing material
Physical Form: Solid

3. Actual or potential health and safety consequences to the workers, the public, and the environment, including relevant chemical and radiation data for actual personnel exposures to radiation or radioactive materials or hazardous chemicals produced from licensed materials (e.g., level of radiation exposure, concentration of chemicals, and duration of exposure)

There were no actual health and safety consequences to workers, the public, or the environment. There were also no personnel exposures to radiation, radioactive materials, or hazardous chemicals produced from licensed materials.

4. The sequence of occurrences leading to the event, including degradation or failure of structures, systems, equipment, components, and activities of personnel relied on to prevent potential accidents or mitigate their consequences

Background

Two additional Area [REDACTED] units (M & N) had been installed in Building [REDACTED] and were being prepared for operation. To accomplish this task, a manifold was constructed to be placed over multiple gas sample ports to use inert gas for leak testing and calibration of the M & N units. Calibration was delayed, but purging of the units which involved opening the supply header valves and introducing inert gases and a flammable gas into their respective M & N unit lines proceeded. The valves on the sample ports were left open for the calibration process. This allowed the potential for cross connection between the inert gases and a

flammable gas to occur within the supply header which also serviced the existing operating units (G-J).

Event

Units G-J began operating shortly after midnight on July 26. On day shift of the 27th, units H-J were shut down (G had been shut down on the 26th) for removal of the sidearm flange as part of the routine material removal process. The portion of the sidearm which is removed first is located within a glovebox. As the flange for Unit J was removed at approximately 1000 hours, a flame approximately three feet long was observed coming out of the lower portion of the sidearm. This flame continued for approximately 3-6 minutes until it self extinguished within the glovebox. Operators checked Unit J's flammable gas valve and noted that the valve was shut. Operations supervision was notified.

At approximately 1020 hours, flange removal for Unit H was begun. Upon removal of the sidearm flange, a flame approximately 6 inches long was observed which burned for approximately 20 minutes. The flammable gas valve serving Unit H was checked and found to be closed. Operators increased the inert gas flow to the glovebox in an attempt to extinguish the flame, but the flame actually increased as a result of this action. Supervision noted that the flame resembled a flammable gas fire and the area process engineer began a more extensive review of the lines and found that all gas sample ports on N unit were manifolded together and the sample valves were open. The process engineer closed the sample valves and the fire extinguished. It was identified that the fires were the result of mixing of flammable and inert gases in the supply header due to the manifold connection on Unit N.

As a result of the flames within the gloveboxes for the two units, insulation within the gloveboxes was charred and soot was deposited on the Lexan panels of the gloveboxes. While there was some deformation of the Lexan panels, panel penetration did not occur, so there was no release of smoke or material outside of glovebox containment.

5. **The probable cause of the event, including all factors that contributed to the event and the manufacturer and model number (if applicable) of any equipment that failed or malfunctioned**

The event occurred due to the introduction of a flammable gas into lines designed to contain only purge gas. As a result, there was actually a mixture of flammable and inert gases introduced into the production units, thereby creating a flash fire. The flammable gas was introduced as a result of the cross connection generated from the temporary testing manifold. Communication between personnel involved in testing the newly installed units (M & N) and those involved with operation of the

production units was not adequate to assure that steps were taken to either remove or effectively isolate the test manifold from the production units.

6. **Corrective actions taken or planned to prevent occurrence of similar or identical events in the future and the results of any evaluations or assessments**

A full-team TapRoot investigation (PIRCS ID#1825) was conducted on this incident. The team identified that although procedure NFS-GH-901 ("Configuration Management Program") identifies system walkdown prior to operational startup of installed equipment, it does not have similar requirements during the equipment testing process. A corrective action (PIRCS ID#1375) to revise this procedure to incorporate this requirement was assigned to the Director of Fuel Technology.

7. **If the event involved an area or equipment with an approved Integrated Safety Analysis, whether the event was identified and evaluated in the Integrated Safety Analysis**

The event was not considered under the existing Integrated Safety Analysis since the connection of the manifold involved a one-time activity related to testing of additional installed equipment. However, the potential for elevated temperatures is considered in the specifications for materials of construction in gloveboxes.

8. **The extent of exposure of individuals to radiation or radioactive materials**

Since the fire remained contained within a glovebox connected to process ventilation, no individuals were exposed to radiation or radioactive materials as a result of this event.