



NUCLEAR FUEL SERVICES, INC.

a subsidiary of The Babcock & Wilcox Company

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**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

21G-09-0055
GOV-01-55-04
ACF-09-0106

April 2, 2009

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

Subject: 30-Day Written Notification of Event (NRC Event No. 44890)

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

Gentlemen:

On March 4, 2009, at approximately 1519 hours EST, Nuclear Fuel Services, Inc. (NFS) made a telephone notification to the NRC Operations Center of an event for which 10CFR70.74, Appendix A, (a)(5) requires a 1-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. Randy Shackelford, Nuclear Criticality Safety Manager, at (423) 743-2504. Please reference our unique document identification number (21G-09-0055) in any correspondence concerning this letter.

Sincerely,

NUCLEAR FUEL SERVICES, INC.

B. Marie Moore
Director
Safety and Regulatory

WRS/smd

Attachment

cc: Regional Administrator
U. S. Nuclear Regulatory Commission
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Atlanta Federal Center
61 Forsyth Street, SW
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Mr. Manuel G. Crespo
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B.M. Moore to U.S. NRC
April 2, 2009

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Attachment

30-Day Notification of Reportable Event

(3 pages to follow)

30-Day Notification of Reportable Event

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

The event occurred on March 4, 2009 at approximately 1440 hours (EST). The report of the event was made on March 4, 2009 at approximately 1519 hours (EST). The event occurred in the 300 Complex 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 associated with the event. Specific information concerning the materials typically located in the related areas is as follows:

Isotopes:	Primarily ^{235}U and ^{238}U
Quantities:	Various
Chemical Form:	Uranium-bearing solution (e.g., Uranyl Nitrate)
Physical Form:	Liquid

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 or potential health and safety consequences to the public or the environment. There were also no personnel exposures to radiation, radioactive materials, or hazardous chemicals produced from licensed materials. The potential safety consequences for workers were low due to the margins of safety associated with the safety analyses.

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**

Many gloveboxes in the processing areas are equipped with overflow drains to prevent solution from exceeding a safe depth in the event of a potential equipment malfunction. These overflow drains are sized to accommodate the credible flow rates into the associated gloveboxes. During preparations to bring a new process operation on line, one of NFS' engineers questioned the drainage rate calculations (performed by contract engineers) associated with glovebox drains for this new process line. To resolve these questions, field tests were performed to validate the calculations; field tests were performed on February 26, 2009 and February 27, 2009 with water using a glovebox in the new process area. It should be noted that uranium-bearing materials had not been introduced into this new process area, as the new process area had not yet been released for use. Initial results of these tests indicated that the glovebox drains may not perform as intended. As a precaution on February 27, 2009, a conservative decision-making process was used to suspend operations in all of the plant's potentially-affected gloveboxes. Uranium-bearing materials were then removed from the affected gloveboxes and all of the affected gloveboxes were tagged out-of-service pending further evaluations by Engineering and Safety personnel. The evaluations proceeded through March 4, 2009, which revealed some potential drain deficiencies. It was recognized that the drain weir height and floor flatness have an impact on the potential depth of solution (if present) in the glovebox prior to overflow and there is an interaction with the drain flow rate calculations.

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 probable cause of the event was the inability to recognize the impact of drain weir height and floor flatness on the potential depth of solution (if present) in the glovebox prior to overflow and the interaction with the drain flow rate calculations. It was determined that there were no previous opportunities to recognize these impacts and that a questioning attitude along with field tests identified the problem.

No equipment failed or malfunctioned.

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**

The issue was entered into NFS' Problem Identification, Resolution, and Correction System (PIRCS) as Problem ID# 17543. NFS generated a plant-wide list of all potentially affected gloveboxes; and, on February 27, 2009 a conservative decision-making process was used to suspend operations in those gloveboxes. Uranium-bearing materials were then removed from the affected gloveboxes and all of the affected gloveboxes were tagged out-of-service pending further evaluations by Engineering and Safety personnel. The evaluations proceeded through March 4, 2009. Glovebox floor measurements were performed of the glovebox floors and modifications were made to reduce the drain weir heights. Modifications were also made to some glovebox floors by bolting the glovebox floors to the associated support tables. In addition, flow rates into the gloveboxes were reevaluated and glovebox drain discharge flow rates were reestablished. Gloveboxes were not released for use until a formal review by Process Engineering, Nuclear Criticality Safety, and Integrated Safety Analysis.

To capture the lessons learned from this event, NFS document NFS-NCS-DESIGN ("Nuclear Criticality Safety Design Considerations") will be revised to include the consideration of drain weir height and floor flatness for impact on the potential depth of solution (if present) in the glovebox prior to overflow and the interaction with the glovebox drain flow rate.

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 associated with an area having an approved Integrated Safety Analysis (ISA). The accident sequence associated with the need for glovebox drains was identified and evaluated in the ISA.

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

No individuals were exposed to radiation or radioactive materials as a result of this event.