



**Westinghouse**

Westinghouse Electric Company LLC  
Nuclear Fuel  
Columbia Fuel Site  
P.O. Drawer R  
Columbia, South Carolina 29250  
USA

Director, Office of Nuclear Material Safety and  
Safeguards  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555  
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Your ref:  
Our ref: LTR-RAC-10-16  
February 23, 2010

**SUBJECT: WESTINGHOUSE REPORTED EVENT 30 DAY FOLLOW UP REPORT**

The following information is being provided by Westinghouse Electric Company LLC (Westinghouse) in accordance with 10CFR70.50(c)(2). A summary of the initial notification report, Event Report # 45655, is attached and provides the applicable information required by 10CFR70.50(c)(1). The attachment also documents the additional information required in accordance with 10CFR70.50(c)(2).

If you have any questions regarding this report, please contact me at (803) 647-2045.

Sincerely,

Gerard F. Couture, Manager  
Licensing & Regulatory Programs  
Westinghouse Columbia Fuel Fabrication Facility  
Docket No. 70-1151, License No. SNM-1107

Attachment

cc: U. S. Nuclear Regulatory Commission  
Attn. Mr. Richard Gibson Region II  
Atlanta Federal Center  
61 Forsyth Street, SW, Suite 23T85  
Atlanta, Georgia 30303-3415

U. S. Nuclear Regulatory Commission  
Attn: Christopher Ryder, Project Manager  
Mail Stop: EBB 2C40M  
One White Flint North  
11555 Rockville Pike  
Rockville, Maryland 20852-2738

South Carolina - Department of Health and Environmental Control  
Attn: Susan Jenkins, Assistant Director  
Division of Waste Management  
Bureau of Land and Waste Management  
2600 Bull Street  
Columbia, SC 29201-1708

IE72  
NIMSS01

NRC Notification  
Page 2 of 1  
Fax# 301-816-5151

January 25, 2010  
Event Report # 45655  
Time 1820 EST

### Facility

Westinghouse Electric Company LLC (WEC), Commercial Fuel Fabrication Facility, (CFFF) Columbia SC, low enriched ( $\leq 5.0$  wt.% U-235) fuel fabricator for commercial light water reactors. License: SNM-1107.

### Time and Date of Event

- January 25, 2010, 11:30 a.m EST
- It was reported to the EH&S Management that on January 24, 2010 a spill of approximately 200 gallons of uranium bearing ammoniated (5-7%) wastewater overflowed from the "Q" tanks into the diked area below the tanks. These tanks are the final filtration prior to transfer of this liquid effluent to the outside treatment facility. Operators received a high level alarm and responded by shutting down the process in accordance with the operational procedure, with the overflow occurring for approximately six minutes. This spill was the result of a pump failure in the tank discharge line. Notification was made to the on duty Health Physics (HP) staff and the on duty Incident Commander. Health Physics staff responded within minutes and used a Drager counter to determine the ammonia concentrations present. Readings in the immediate area of the dike were as high as 256 ppm ammonia. Readings in adjacent areas of the facility were approximately 150 ppm ammonia. Non-essential personnel were evacuated and essential personnel were instructed to don PPE- respirators with ammonia cartridges.
- Operations cleanup of the area was completed and with normal plant ventilation running the ppm ammonia concentrations were returned to  $< 25$  ppm within approximately two hours. The failed pump has been repaired and returned to service. Based on the quick response of the HP staff, evacuations and appropriate use of PPE no workers were exposed to significant concentrations and no medical attention was necessary.
- Notification was made based on 10CFR70 Appendix A (b)(1) "Any event or condition that results in the facility being in a state that was not analyzed, was improperly analyzed, or is different from that analyzed in the Integrated Safety Analysis, and which results in failure to meet the performance requirements of 10CFR70.61." The potential for a loss of containment was recognized and evaluated in one of the Process Hazards Analysis (PHA) which constitutes the Integrated Safety Analysis for this system. The PHA identified several initiating events which could lead to a high level and loss of containment event. The appropriate safeguards were identified, including the procedural responses, the evacuation during such an emergency of the workers in the enclosed chemical area, and the use of appropriate PPE. The consequences of the event were identified as a potential for personnel inhalation and exposure hazard from the uranium bearing ammoniated wastewater. However, the PHA did not specifically identify that the potential existed for the consequences to exceed the Intermediate Consequence criteria for credible events. In accordance with SNM-1107 License Requirements for the Columbia Plant intermediate consequences are those that have the potential for a worker to receive greater than or equal to ERPG-2 chemical exposures. (ERPG-2 value for ammonia is 150 ppm.) Since the Q-Tank contains comingled uranium and chemicals, the Intermediate Consequences of 10CFR70.61 apply. Westinghouse applied a conservative approach for reporting this event, as ERPG values are a time based concentration threshold. The failure to identify such a spill as a

credible Intermediate Consequence event led to that event not being included in the Conversion ISA Summary ISA-03 and not designating Items Relied on For Safety (IROFS) for that accident sequence.

Immediate Corrective Actions:

- The pump which failed had been reset and returned to service. In the initial report EH&S was informed that the pump had been repaired and returned to service. It was later learned that the original pump was returned to service and the motor was replaced at a later date. Actions taken by the staff to mitigate the event were appropriate and in accordance with approved procedures. Normal ventilation system operation reduced the concentrations to acceptable levels. *Complete*
- The safeguards identified in the PHA will be evaluated in the ISA and appropriate selections of IROFS will be made based on that evaluation and included in the ISA summary. *In progress.*

The notification for Event Report # 46555 was entered into the plant Corrective Action Process, CAPS IR# 10-026-C001. The non-reportable spill was also entered into the Corrective Action Process, CAPS IR# IR # 10-032-C001 - Safety Reset - Aqueous Ammonia Spill from Conversion Q-Tank. The activation of the emergency response team was also entered into the Corrective Action Process, CAPS IR# 10-035-C008.

Conclusions:

- The inadequacy pertaining to the Conversion ISA Summary was self identified by Westinghouse and Westinghouse personnel executed appropriate actions to ensure the health and safety of facility workers for the spill which led to discovery of the issue resulting in this notification.
- The spill itself was contained within the confines of a diked area within the facility.
- At no time was the health or safety of any member of the public or damage to the environment in jeopardy.

**10CFR70.50 (c)(2) Information:**

*(2) Written report. Each licensee that makes a report required by paragraph (a) or (b) of this section, or by § 70.74 and Appendix A of this part, if applicable, shall submit a written follow-up report within 30 days of the initial report. Written reports prepared pursuant to other regulations may be submitted to fulfill this requirement if the report contains all the necessary information, and the appropriate distribution is made. These written reports must be sent to the NRC's Document Control Desk, using an appropriate method listed in § 70.5(a), with a copy to the appropriate NRC regional office listed in appendix D to part 20 of this chapter. The reports must include the following:*

*(i) Complete applicable information required by § 70.50(c)(1);*

This information has been provided above.

*(ii) 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;*

An Apparent Cause Analysis was completed. The cause was identified as: *ISA process permitted use of organization beliefs or assumptions without validation.* The defense which was flawed involved Validation of Assumptions concerning risks associated with < 10% NH<sub>3</sub>. Numeric consequence analysis is not performed to estimate actual consequences unless an accident sequence is determined to have a

potential credible consequence of interest. There was an Institutional belief that Ammonia concentrations had to be above 10% NH<sub>3</sub> to cause intermediate or high consequence event. Therefore, this was treated as a given and recognized as such in the governing procedures. The Knowledge Worker Human Performance tool of Validate Assumptions is one tool to be utilized to prevent recurrence of this or similar events for future analysis.

*(iii) Corrective actions taken or planned to prevent occurrence of similar or identical events in the future and the results of any evaluations or assessments;*

Completed Corrective Actions:

- The existing controls necessary for protection of workers from ammonia spills within the conversion area (i.e., donning of appropriate PPE and Emergency Response), have been designated as Items Relied On For Safety in the governing procedures and included in the revised Safety Significant Control Sketches. Training was conducted as part of the normal Electronic Training and Procedure System issuance of these procedures and sketches. These actions restore compliance for the identified issue contained within the event report.
- An Apparent Cause Analysis has been completed. This analysis includes an extent of condition review. Several commitments and actions have been identified to address potential extent of condition with the *targeted* due dates provided:
  - The governing procedures which address performances of Process Hazards Analysis, RA-133, RA-124 and RA-126 have been revised to address the need for and method of addressing potential chemical related accident sequence consequences. *Completed*
  - Activity initiated to complete extent of condition review for similar conditions in remaining ISAs. *July 2010*
  - Activity initiated to update Integrated Safety Analysis (ISAs) based on results of extent of condition review. *August 2010*
  - Activity initiated to designate applicable IROFs where needed and include in ISA summaries. *August 2010*
- Any revised ISA and ISA summaries will be available at the CFFF for NRC review during inspections and applicable ISA Summaries will be transmitted to NRC as part of annual update in accordance with 10CFR70.72(d)(3). *January 2011*

*(iv) For licensees subject to Subpart H of this part, whether the event was identified and evaluated in the Integrated Safety Analysis.*

The Columbia Fuel Fabrication Facility is subject to Subpart H. As described in the body of the event report the potential for this type of event was recognized and discussed in the Integrated Safety Analysis. The event report deals with a potential inadequacy in that evaluation.