Westinghouse

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May 20, 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 # 45884, 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, Region II
Attn. Mr. Richard Gibson
Atlanta Federal Center
245 Peachtree Center Ave., NE, Suite 1200
Atlanta, Georgia 30303-1257

U. S. Nuclear Regulatory Commission
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One White Flint North
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South Carolina - Department of Health and Environmental Control
Attn: Susan Jenkins, Assistant Director
Division of Waste Management
Bureau of Land and Waste Management
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NRC Notification Summary of April 30, 2010
Event Report # 45884 at 1234 EST

Facility

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

Time and Date of Event

April 29, 2010, 1:04 pm EST

It was reported to EH&S Management that on April 29, 2010 the hot oil system emergency shutdown system failed during the annual preventive maintenance functional check. This system is an Item Relied On for Safety (IROFS) and is identified in the Integrated Safety Analysis (ISA) Summary for the conversion area of the Columbia Fuel Fabrication Facility. This IROFS designation is ADUHOS-407 and this IROFS is a control applied to a fire related sequence. Information pertaining to the accident sequence can be found in the January 2010, ISA Summary 03 page 78. There were no actual fire incidents; there were no hazardous materials released nor were any special nuclear materials (SNM) released or involved in the event.

The notification was based on 10CFR70 Appendix A (b) (2) "Loss or degradation of items relied on for safety that results in failure to meet the performance requirements of 10CFR70.61." The performance requirements for this accident sequence require the Overall Likelihood Index (OLI) be a -4, which corresponds to Highly Unlikely. With this control failure the sequence OLI is a -3 which corresponds to Unlikely.

Immediate Corrective Actions:

The preventive maintenance functional test requires the conversion lines and associated hot oil dryer be shut down. The conversion lines which utilize the hot oil system protected by this IROFS were in normal shutdown at the time the functional test was performed. The Columbia Fuel Fabrication Facility was in a shutdown for performance of the annual SNM inventory and associated maintenance outage.

The event was entered into the plant Corrective Action Process, CAPs IR # 10-120-C004 - Hot Oil System #3 Breaker failure while performing PM81016 Emergency Shutdown. Appropriate troubleshooting and repair activities were conducted to restore the IROFS to an operable status. The IROFS was restored to operability and compliance restored on May 2, 2010 prior to restarting normal operation of the conversion lines.

Conclusions:

The IROFS failure was self identified by Westinghouse and Westinghouse personnel executed appropriate actions in accordance with the governing procedures. There were no actual fire incidents; there were no hazardous materials released nor were any special nuclear materials (SNM) released or involved in the event. At no time was the health or safety of our Westinghouse staff or any member of the public or damage to the environment in jeopardy.

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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;

Investigation of the failed IROFS determined it was the result of a failed motor operator, Cutler Hammer Model # 657D819G23, attached to the breaker. The breaker itself is a Square D monoblock 480V breaker which remained functional. The trip lever motor runs on a 120VAC, 20 rpm synchronous motor. Exact failure of the rotary actuator is indeterminate but the actuator exhibited a combination of extreme wear/ pitting on cam actuator lobe in addition to the cam being bent such that it came into contact with the actuator mounting plate. Both of these degraded conditions reduced the capacity of the cam actuator to fully overcome the resistance of the breaker trip mechanism. It is not known if the pitting caused the cam to bend out of shape or the cam was bent out of shape causing the pitting and wear. This equipment has been place for approximately 25 years. A review of past plant events does not yield any indication that this control has been used to prevent or mitigate an actual process upset. The annual test frequency is therefore much higher than the demand frequency. The probability of failure on demand of any control is dependent upon this relationship. In this case there was a 95% probability that an annual preventive maintenance would catch such a failure by testing rather than experience a failure on demand. In this case, the annual preventive maintenance identified the failure via testing.

(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;

<u>Completed Corrective Actions</u>:

- The system was repaired by replacing the failed rotary lever with another one that was available in the plant and tested several times for operability.
- The repaired device was functionally tested satisfactorily in accordance with the PM and restored to operable status on May 2, 2010. This type of breaker system was installed on one of the two Hot Oil Systems (#3) and the other system (#4) is a different design device which had been successfully tested and did not require repair. <u>These actions restored compliance</u> for the identified issue contained within the event report.
- EH&S, maintenance, engineering and production staff evaluated the scenarios for which this control was designated an IROFS to determine if additional controls could be designated as IROFS. This was performed to ensure that the performance requirements would remain satisfied should a similar failure occur. The team identified and established additional controls as IROFS, revised ISA-03 for the Conversion area and completed implementation activities May 6, 2010.
- An additional passive engineered control, ADUHOS-907, for the structural integrity of the two Hot Oils Systems was put in place with the necessary PM established and performed to confirm the

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operability of the newly designated IROFS. Existing IROFS ADUHOS-906, Fire Rated Barrier of the Hot Oil Room and ADUFIRE-901/902, fire prevention and fire fighting contributions for meeting the performance requirements for this scenario were recognized.

- Additional active engineered control interlocks which were Safety Significant Controls (SSCs) were designated as IROFS for the scenarios. These controls are the hot oil system #3 high oil temperature shutoff and backup high oil temperature shutoff, ADUHOS-901 and 908 respectfully. For hot oil system #4, high oil temperature shutoff and backup high oil temperature shutoff, ADUHOS-902 and 909, were designated as IROFS.

Extent of Condition Related Actions:

- Engineering to evaluate upgrading hot oil system #3 to replace this device with a new style breaker equipped with an electrical contactor to provide a more robust fail-safe design, where loss of contactor voltage would result directly in opening the breaker to shut down the hot oil system.
- EH&S, engineering and production staff to evaluate active engineered IROFS utilizing electrical devices currently identified for potential upgrades should a similar condition exist where a non fail safe design exists and compliance with the performance requirements could be challenged should a similar failure occur.
- Depending on what if any other systems are identified, either additional IROFS will be designated, or an engineering modification to provide a more robust fail-safe design will be installed.
- The above actions will be tracked to completion by management in accordance with the corrective action process.

(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. As the IROFS involved is an active component, it is subject to appropriate management measures identified in the ISA. The failed component was self identified by Westinghouse while conducting the periodic maintenance required by the ISA for this active control.

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