



babcock & wilcox nuclear operations group

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July 22, 2010
10-079

ATTN: Document Control Desk
Director, Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Reference: License SNM-42, Docket 70-27

Subject: 30-Day Written Report for Event Notification # 46001

Dear Madam:

Babcock & Wilcox Nuclear Operations Group, Inc. ("B&W NOG") is providing a 30-Day written report for its Lynchburg facility for Event Notification # 46001 per 10 CFR 70.50(c)(2). The event notification was reported under 10 CFR 70 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 §70.61.

The enclosure presents the detailed information on this event and corrective actions. If there are any questions in this regard, please contact me at 434.522.5665 or by email at blcole@babcock.com.

Sincerely,

Barry L. Cole
Manager, Licensing and Safety Analysis
(Licensing Officer)
Babcock & Wilcox Nuclear Operations Group, Inc. - Lynchburg

Enclosure

cc: NRC, Region II
NRC, Resident Inspector
NRC, Merritt Baker

IE72

30-Day Written Report for Event Notification # 46001 – June 11, 2010**Event Description**

On June 11, 2010 at 14:56 EDT, Babcock & Wilcox Nuclear Operations Group, Inc. - Lynchburg ("NOG-L") notified the Nuclear Regulatory Commission ("NRC") of an event in our Uranium Recovery facility. Maintenance was being performed on the Trough Dissolver Enclosure of the High Level Dissolver. Maintenance activities included the spraying of water on the interior surfaces of the enclosure to reduce contamination. A small quantity of water leaked into an adjoining Pass-through Glovebox and mixed with contamination on the box's interior surfaces. As a result, approximately 1 liter of solution with a concentration of approximately 26 grams ^{235}U per liter accumulated on the floor of the Pass-through Glovebox. The amount of ^{235}U within the accumulated solution was much less than the minimum amount required for criticality. Both of the Trough Pass-through Gloveboxes were cleaned and measurements indicated that a total of 111.65 grams of ^{235}U solids were removed.

There was no immediate risk or threat to the safety of workers or the public as a result of this event. The event was reported in accordance with 10 CFR 70, 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 § 70.61.

Initial Evaluation

Actions taken by NOG-L following the event were as follows:

1. Work was immediately stopped in the Trough Dissolver Enclosures, and the water lines used for spraying water in the troughs were locked out.
2. Solution and solids were collected and sampled from the Pass-through Gloveboxes.
3. An investigation team was formed.
4. The ventilation ductwork above each Trough Pass-through Glovebox was measured by Nuclear Materials Control which determined there were no significant accumulations of ^{235}U present in the exhaust system. The highest measurement showed less than $\frac{1}{2}$ gram of ^{235}U contamination.
5. An extent of condition / extent of cause review was completed.

6. A test was performed per Radiation Work Permit and determined that the water entered the Pass-through Glovebox due to an improper seal on the entrance door gasket.

Investigation Team Findings

The Investigation Team utilized TapRoot® and Human Performance investigation techniques for this event. Three causal factors were identified as follows:

Causal Factor 1 - Potential presence of liquid in the Trough Pass-through Glovebox was not considered in SER 04-012 as part of the Integrated Safety Analysis ("ISA") –No NCS requirements. The Trough Dissolver System introduced a new method for dissolving entire components of uranium bearing scrap. The process description for the system was based on technical knowledge gained from prior years experience with the existing Tray Dissolver System. All possible equipment maintenance issues could not be foreseen for the newly designed dissolution equipment. The NCS engineer who performed the evaluation of the Trough Dissolver System acknowledged he did not consider the condition of water collecting in the Pass-through Glovebox.

Causal Factor 2 - Equipment problem / part or hardware inadequate - (a) failure of Trough Pass-through Glovebox door gasket and (b) cannot visually inspect box due to poor lighting. The process operator discovered solution in the Pass-through Glovebox when her glove became wet while transferring trash and tools from the Trough Dissolver to the Column Dissolver Glovebox. She could not see the bottom of the box due to poor lighting and the abandoned pipes. The gasket on Trough #1/2 Pass-through Glovebox appeared okay, but leaked when tested. No operators observed the leaking gasket during the water spray cleaning. Operators did not expect to find water / solution in the bottom of the Trough Pass-through Glovebox. There does not appear to be any human error in this causal factor.

Causal Factor 3 - No requirements in the Trough Dissolving Operating Procedure or the Inventory Procedure requiring inspections or periodic cleaning of the Trough Pass-through Gloveboxes. Recovery process operators and engineers did not believe requirements for antechambers and exit hoods pertained to the Trough Dissolver and Pass-through Glovebox. There are no requirements in the High Level Trough Dissolving Procedure or the Inventory Procedure for periodic cleaning or cautions concerning water possibly draining into the Pass-through Glovebox.

Corrective Actions to Prevent Recurrence

As a result of the investigation, corrective actions to prevent recurrence for the three causal factors were identified:

Causal Factors and Corrective Actions

Casual Factor 1: Potential presence of liquid in the Trough Pass-through Glovebox was not considered in SER 04-012 as part of the ISA – No NCS requirements.

Corrective Action 1-1: Perform NCS evaluation of the Trough-Dissolver Pass-through Glovebox to consider potential for collection of liquids and multiple containers.

- (a) NCS evaluation will consider if Preventive Maintenance task for periodic gasket test / replacement is necessary.
- (b) NCS evaluation will consider if wipe-down during trough reform (4000 gram) cleanout is necessary.
- (c) NCS evaluation will determine if drain(s) in Trough Pass-through Glovebox is necessary.

To be completed by: 09/15/2010

Corrective Action 1-2: Required actions from NCS evaluations will be implemented through NOG-L's Change Management System (e.g. Safety Evaluation Requests, etc.).

To be completed by: 10/15/2010

Casual Factor 2: Equipment problem / part or hardware inadequate - (a) failure of Trough Pass-through Glovebox door gasket, (b) cannot visually inspect box due to poor lighting.

Corrective Action 2-1: Repair gaskets on Trough Pass-through Glovebox doors to minimize leaks. Install lighting to improve visibility in the Trough Pass-through Glovebox.

To be completed by: 10/15/2010

Causal Factor 3: No requirements in the Trough Dissolving Operating Procedure or the Inventory Procedure requiring

inspections or periodic cleaning of the Trough Pass-through Gloveboxes.

Corrective Action 3-1: Revise operating procedure (OP-0061232) to perform a thorough cleaning of the Trough Pass-through Glovebox during each inventory use.

To be completed by: 10/15/2010