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December 3, 2010
10-140

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

References: 1. License No. SNM-42, Docket 70-27

2. Letter dated November 4, 2010, Steven J. Vias (NRC) to R.P Cochrane (B&W), NRC Inspection Report No.70-27/2010-003 and Notice of Violation

Subject: Reply to a Notice of Violation in Inspection Report No. 70-27/2010-003

Dear Sir or Madam:

Pursuant to the provisions of 10 CFR 2.201, Babcock & Wilcox Nuclear Operations Group, Inc. ("B&W NOG"), Lynchburg facility, is providing this written statement of explanation to the U.S. Nuclear Regulatory Commission ("NRC") in reply to the Notice of Violation that was received by letter dated November 4, 2010 (Reference 2). B&W NOG's reply is provided in the enclosure.

If there are any questions in this regard, please contact Barry Cole at 434.522.5665.

Sincerely,

Roger Cochrane
Vice President and General Manager
Babcock & Wilcox Nuclear Operations Group Inc., Lynchburg

Enclosure

cc: NRC, M. Baker, Senior Project Manager
NRC, Resident Inspector
NRC, Region II, Regional Administrator

IE07
RGN II

ENCLOSURE

REPLY TO NOTICE OF VIOLATION

Violation: 70-27/2010-003-02

Per the Notice of Violation dated November 4, 2010:

During NRC inspection activities conducted between July 1 and September 30, 2010, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Safety Condition S-1 of NRC license SNM-42 authorizes the use of nuclear materials in accordance with Chapters 1 through 11 of the License Application submitted on October 24, 2006, and supplements thereto.

License Application, Section 5.1.1. "Protection Against Criticality," requires, in part, that the licensee conduct nuclear criticality safety evaluations to assure that under normal and credible abnormal conditions, all nuclear processes will remain subcritical and maintain an approved margin of subcriticality for safety.

License Application, Section 5.1.1, "Protection Against Criticality," requires, in part, that the licensee establish and maintain nuclear criticality safety Items Relied On For Safety, based on current nuclear criticality safety evaluations.

Contrary to the above from June 6, 2005 to June 11, 2010, the licensee failed to conduct a nuclear criticality safety evaluation and establish and maintain nuclear criticality safety Items Relied on for Safety to protect against the accumulation of fissile solution for an unfavorable geometry pass-through glovebox in the high-level trough dissolver system.

Reason For The Violation

Babcock & Wilcox Nuclear Operations Group, Inc. ("B&W NOG"), Lynchburg facility, dissolves high-enriched uranium in two trough dissolvers in the Uranium Recovery ("UR") area. The trough dissolvers are part of a larger enclosure arrangement. The enclosure arrangement consists of two column dissolver gloveboxes, two trough dissolver gloveboxes, two pass-through gloveboxes and an ante-chamber. This enclosure arrangement is connected and arranged as shown in Figure 1 below. The column dissolver and trough dissolver gloveboxes have multiple drains, but the pass-through gloveboxes did not have drains.

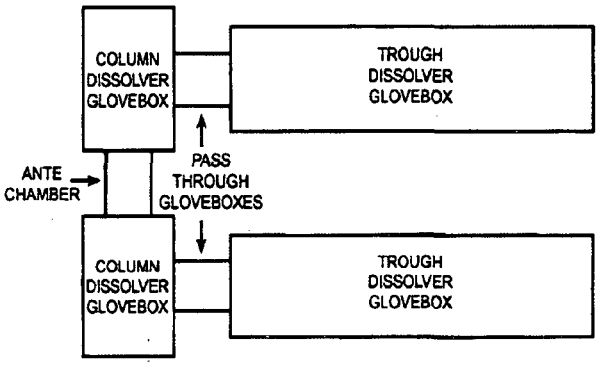

Figure 1 - High-Level Dissolver Enclosure, Top View

Following normal glovebox flushing operations on June 11, 2010, UR area operators observed approximately one-liter of solution at the bottom of one of the pass-through gloveboxes. UR notified Nuclear Criticality Safety ("NCS"). The concentration of the solution was determined to be 26 grams U-235/liter. UR operators cleaned both pass-through gloveboxes to remove any residual material that was in the pass-through gloveboxes. Measurements indicated that a total of 111.65 grams of solid U-235 was removed. B&W NOG determined that presence of fissile solution in the pass-through glovebox represented an unanalyzed condition that failed to meet the performance requirements of 10 CFR 70.61 for nuclear criticality safety. There was no immediate risk or threat to the safety of workers or the public as a result of this event.

After clean-out of the residual material in the pass-through gloveboxes, B&W NOG shut down the system and initiated a Corrective Action (CA 201001322) to investigate the event. The investigation determined that fumes from dissolution of uranium in the trough dissolver entered the pass-through glovebox over time and adhered to the inner walls. Also, aqueous solution entered the pass-through glovebox from the trough dissolver through the hatchway during trough dissolver cleaning operations between dissolution batches when the water hose was directed at the hatchway. This resulted in fissile solution in the bottom of the pass-through glove box where it was difficult to see due to the enclosure configuration and lighting. The investigation did not identify fume penetration into the ventilation system.

B&W NOG's investigation found the error in this causal factor was a latent error committed in the knowledge based performance mode. The root cause category is Human Performance – Knowledge Based (Inadequate Mental Picture). In other words, the original analysis for the process did not anticipate or analyze for the presence of solution or material being left in the pass-through glovebox, and therefore had failed to establish items relied on for safety to prevent a nuclear criticality accident in the pass-through glovebox.

B&W NOG agrees with the NRC's recognition of B&W NOG's effectiveness of procedural requirements and operator training as noted in the NRC inspection report (Reference #2):

> "The inspectors determined that operators halted the operation when the solution was discovered thus demonstrating the effectiveness of procedural requirements and operator training. The inspectors also noted that the only other potential source of additional solution were the trough dissolvers themselves and that criticality controls, including drains, on that system prevented the rapid addition of more fissile solution into the pass-through glovebox."

Corrective Steps Which Have Been Taken and the Results Achieved:

1. All work in the trough dissolver gloveboxes was immediately stopped, and the water lines used for spraying water in the troughs were locked out from further use. The solution and solids were collected and sampled from the pass-through gloveboxes.

   Completion Date: 6/11/2010.

2. The ventilation ductwork above each trough pass-through glovebox was measured by Nuclear Materials Control. It was determined there were no significant accumulations of U-235 present in the exhaust system. The highest measurement showed less than 0.5 grams of U-235 contamination.

   Completion Date: 6/14/2010.

3. A test was performed per Radiation Work Permit (#10-0044) which determined that the water entered the pass-through glovebox due to an improper seal on the entrance door gasket.

   Completion Date: 6/21/2010.

4. An extent-of-condition / extent-of-cause review of other gloveboxes with a potential to accumulate solutions was completed. No concerns regarding the accumulation of solutions were identified. Instructions indicating pass-throughs are not for storage of licensed materials were posted in several locations.

   Completion Date: 7/22/2010.

Corrective Steps That Will Be Taken To Avoid Future Violations:

1. Perform an NCS evaluation of the trough dissolver pass-through glovebox to consider potential for collection of liquids and multiple containers.

   Completion Date: 9/15/2010.

2. Implement requirements from the NCS evaluation of the trough dissolver pass-through glovebox using NOG-L's Change Management System (e.g. Safety Evaluation Requests, etc.). Requirements include adding independent drains to the pass-through gloveboxes and implementing administrative limits for U-235 mass, container piece count, container volume and spacing.

   Completion Date: 10/15/2010.

3. Repair gaskets on trough pass-through glovebox doors to minimize leaks. Install lighting to improve visibility in the trough pass-through glovebox.

   Completion Date: 10/15/2010.

4. Revise operating procedure (OP-0061232) to perform a thorough cleaning of the trough pass-through glovebox during each inventory use.

   Completion Date: 10/15/2010.

5. Revise Quality Work Instruction (QWI 4.1.5) to include guidance for evaluation of gloveboxes with the potential to accumulate fissile solutions and the use of independent drains to limit the solution height in the boxes.

   Completion Date: 2/1/2011.

Date When Full Compliance Will Be Achieved:

Full compliance will be achieved by February 1, 2011.