

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

TO: Steven Stokes, Acting Technical Director  
FROM: William Linzau and Rory Rauch, Site Representatives  
SUBJECT: Oak Ridge Activity Report for Week Ending May 3, 2013

**Building 9212 Operations:** This week, process engineering personnel briefed the operators for the primary extraction (PX) and primary intermediate evaporator (PIE) systems on the most likely cause of the recent operational abnormalities on the PIE system (see 3/29/13 and 4/26/13 reports) and the actions to be taken to minimize the potential for recurrence. They believe the primary cause of the issue was the extended amount of time the PX product solution resided in the PX product tanks before it was transferred to the PIE system (some of the solution had resided in the tanks for several months). This gave the nitric acid in the PX product solution sufficient time, even at ambient temperatures, to react with the dibutyl carbitol carryover and form organic degradation products in greater quantities than are typically introduced to the PIE system. To minimize the potential for recurrence of this issue, engineering personnel are recommending that PX operators manually decant any organic carryover every time solution is transferred to the PX product tanks and drain the heel in the PX product tanks every time solution is transferred to the PIE system. This will reduce the concentration of organic solution available for reaction. The site reps are working with B&W and NPO to understand whether extended operational pauses on the PX system could lead to conditions that have not been fully addressed in the Building 9212 safety analysis report.

Last week, during installation of a lockout/tagout (LOTO) by facility operators on the tower water cooling system, two relief valves lifted and one failed to reseal. The LOTO was being installed to allow construction forces to conduct system upgrades funded under the Nuclear Facility Risk Reduction project. Components and segments of the system were being isolated sequentially while maintaining the main header and pumps in service to avoid repeating events that caused relief valves to lift earlier this year (see 2/8/13 and 2/22/13 reports). However, as components were isolated the head loss in the system reduced and the pressure of the system still in service increased sufficiently to lift the relief valves. During recovery actions to back out of the partially completed LOTO, workers failed to reopen two isolation valves. This week, this error in realigning the tower water cooling system was discovered during the start-up of the High Capacity Evaporator when abnormal readings indicated that cooling water was not supplied to the heat exchangers.

**Casting Operations:** B&W determined that an unreviewed safety question does exist for the potential inadequacy in the safety analysis pertaining to the newly postulated criticality accident scenario affecting induction furnace casting operations in E-Wing of Building 9212 (see 4/19/13 report). Operation of the furnaces remains secured per a standing order and B&W is planning physical modifications to the furnaces to prevent the scenario associated with damaging fluid lines.

**Technology Development Building:** This week, B&W held a critique for events in which poor compliance with radiological requirements was observed. The radiological posting in Room 314 was changed to a high contamination area (HCA), but workers entered the area on Radiological Work Permits (RWPs) that were not updated to reflect the revised posting. In addition, other RWPs were revised to reflect the new posting and included special instructions to conduct a whole body frisk when exiting and then proceed to a personnel contamination monitor (PCM-1B) for another survey, but workers did not consistently comply with this requirement. It is not the normal practice to discuss the RWPs during the pre-job briefings for these activities; therefore, the changes to the RWPs were not specifically briefed to the workers.