

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

TO: Steven Stokes, Technical Director  
FROM: William Linzau and Rory Rauch, Site Representatives  
SUBJECT: Oak Ridge Activity Report for Week Ending May 30, 2014

**Continued Safe Operability Oversight Team (CSOOT):** Last week, the CSOOT gave an update to NPO and B&W senior management on CSOOT activities, as well as facility and process equipment challenges in Buildings 9212, 9215, and 9204-2E. Building 9212 continues to encounter the most significant facility-level challenges. Examples include water intrusion events and ventilation system reliability issues. The most significant Building 9212 production challenges have been reported extensively in recent site rep reports and involve inoperability of the gamma radiation monitor supporting Primary Extraction operations, hydrogen fluoride leaks at the Oxide Conversion Facility, and cracking in the Holden Gas Furnace luminous wall. Regarding Building 9204-2E, Production management highlighted an ongoing, multi-year effort to inspect and repair concrete structures that have been subject to kathene-induced degradation. These measures appear to have been effective to date. As a basis for comparison, Building 9204-2 recently encountered a significant kathene-induced concrete spallation event without the benefit of such proactive measures. Key takeaways from the briefing include:

- The site is making good progress in addressing previous CSOOT recommendations; however, B&W's response to the FY13 CSOOT recommendation to reevaluate the latest Building 9215/9204-2E Facility Risk Review assumptions is on hold pending an NNSA decision on Uranium Processing Facility (UPF) Red Team recommendations.
- The CSOOT plans to increase its oversight of safety equipment aging management.
- Due to changes in UPF's scope and schedule, the CSOOT recommended that B&W management develop a Building 9204-2E/9215 electrical cable aging sampling plan.
- The CSOOT noted that the investment needs for the existing EU infrastructure have increased since certain capabilities are no longer planned for transition to UPF. As a result, the CSOOT has a growing concern that continued safe operations can be maintained without modernization of Y-12's enriched uranium (EU) infrastructure.

**UPF:** Last year, in response to concerns expressed by Nuclear Criticality Safety (NCS) engineers, the UPF Project Team changed the NCS control strategy for casting operations to one that primarily relied on a geometry control via entombment (see 1/25/13 report). Since then, the UPF Project Team has encountered certain challenges in implementing this strategy. Most notably, technology development supporting qualification of the entombment material has not progressed as expected (see 3/7/14 report).

Recently, the B&W Vice President for UPF Integration issued a letter to the UPF Project Director endorsing a new strategy that is intended to mitigate the project risk associated with these challenges while maintaining an acceptable overall safety posture. The most significant change endorsed in the letter is a shift in operational approach that creates two classes of casting: furnaces authorized to cast charges below the ANSI/ANS single parameter limit of 20.1 kg <sup>235</sup>U (i.e., "normal" casting) and furnaces authorized to cast charges above the limit (i.e., "special" casting). The latter class would still be performed with an NCS-controlled geometry via entombment. Attendant with this change in strategy is the need to design positive measures to ensure segregation of the normal and special casting lines (e.g., special casting stack assemblies that are physically incompatible with normal casting furnaces). Another key component of the new strategy is isolation of the fire suppression system in order to control water/liquid sources in the special casting area. Such an approach would require the identification of alternate fire protection measures. Finally, the letter endorses a change to reduce the number of multi-part pours, thereby allowing most charges to be cast in the normal casting line.