

## 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 February 7, 2014

Staff members S. Lewis and D. Winters were at Oak Ridge National Laboratory (ORNL) to discuss activities at Building 3019 and the Transuranic Waste Processing Center.

**Uranium Processing Facility (UPF):** This week the UPF Federal Project Director issued two letters pertaining to UPF design efforts. The first letter indicates that NNSA plans to change the UPF Program Requirements Document to make Direct Electrolytic Reduction (DER) and Electrowinning (ER) the baseline metal purification technologies for UPF. As such, the letter directs B&W to suspend design efforts on the Enriched Uranium Purification and Metal Production (EUPMP) and Saltless Direct Oxide Reduction (SDOR) process areas. This decision was based on the maturity, efficacy, and lower space demands of the DER and ER technologies, coupled with the current design maturity of the EUPMP and SDOR processes.

The second letter indicates that preparations for the fiscal year 2015 budget submittal have revealed that (1) the cost and quantity of commodities has increased, (2) design complexity is greater than initially estimated, and (3) budget decrements and top-line funding constraints will impact project cost and execution schedule. These factors will increase the UPF total project cost range to a value that exceeds the upper end of the project's Critical Decision-1 estimate. Given that the ORNL Director is currently evaluating project alternatives that could reduce cost to within the original range (see 1/24/13 report), the letter acknowledges that some in-process design activities will likely result in "low equity" work products (i.e., those that are unlikely to endure if an alternative is selected). Accordingly, the letter directs B&W to evaluate individual processes and capabilities for low equity design elements. The letter requests that the recommendations for the suspension of design of these low equity elements be made with immediacy.

**Aging Infrastructure:** This week, a 24-inch potable water line managed by the City of Oak Ridge ruptured on Y-12 property. The location of the breach was downstream of the line that supplies potable water and water for the fire suppression systems at Y-12, thus the site's fire suppression capability was unaffected. However, the breach occurred upstream of the water supply to ORNL. Within 30 minutes, B&W utilities personnel successfully isolated the leak and attempted to restore water to ORNL via a bypass, but the actuator for the valve to open the bypass line failed. B&W successfully completed emergency work to replace the valve actuator and open the bypass line in approximately 12 hours. ORNL had sufficient water reserve to preclude the need to initiate any curtailment activities during this time. The cause of the water line breach is not yet known.

**ORNL:** Late last month, URS/CH2M Oak Ridge (UCOR) submitted a justification for continued operations (JCO) to OREM to address the unreviewed safety question associated with the use of a damage ratio (DR) of 25 percent in the Liquid Low-Level Waste (LLLW) Documented Safety Analysis (DSA). In November 2013, UCOR identified several interim compensatory measures that remain in place today (see 11/22/13 report). The JCO identifies new controls to support continuing operation until new structural calculations for LLLW tank and vaults are completed and the DSA is revised. The new controls are based on consequences derived using a DR of 100 percent and include restrictions on the amount of waste transferred to some tanks or limits on the activity of the waste being transferred to others. The JCO will remain in effect through November 2014.