

## 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 April 5, 2013

**Building 9204-2:** This week, an operator was injured after being exposed to lithium hydride powder in Building 9204-2. The operator was performing post-maintenance testing on a system used to recycle lithium hydride powder and noticed an abnormal condition involving nitrogen leakage and some lithium hydride powder effluent from one of the valves on the system. The individual consulted with a system engineer on how to address this condition. Rather than recognizing the condition as abnormal and stopping work, both individuals agreed on a set of actions needed to complete the activity, including a verification that the valve was in the closed position. When the operator attempted to verify the position of the valve, lithium hydride powder discharged from the valve into the operator's face. The operator was wearing safety glasses with side shields, which was the eye protection specified in the applicable job hazard analysis. The operator used a safety shower and emergency response personnel transported the worker to a local hospital. The operator received chemical burns to his face and eyelids, but doctors expect a full recovery. B&W critiqued the event and is developing corrective actions.

**Transuranic Waste Processing Center (TWPC):** Oak Ridge Office of Environmental Management (OREM) conducted an extensive review of the corrective action for the event in which the breathing air supply was secured to workers (see 3/15/13 report). The review team found that Wastren Advantage, Inc. (WAI) has addressed many of the weaknesses from the event but additional actions are required prior the resumption of operations that utilize breathing air. OREM identified five pre-resumption actions and three actions that can be completed after operations restart. One of the pre-resumption actions is to provide a plan to address the flawed design of the breathing air system. WAI is considering ways to redesign the system that prevent inadvertent isolation of the emergency air supply, but it may take months to make modifications.

**Criticality Safety:** Recent events have exposed legacy weaknesses in Y-12's implementation of criticality safety controls and the processes used to periodically verify implementation of these controls (see 10/26/12, 1/11/13, 2/8/13, and 2/15/13 reports). As a result, B&W has issued a comprehensive plan to 1) verify the proper implementation of existing criticality safety controls and 2) evaluate current criticality safety processes and procedures for improvement. The implementation verifications will begin with operations in Building 9204-2E and casting operations in Building 9212. The areas to be evaluated for improvement include the procedures for implementing criticality safety evaluations; the roles and responsibilities of criticality safety officers; and the scope, requirements, and responsibilities for annual operations reviews by criticality safety engineers. Most actions are due by the end of this fiscal year.

**Building 9212:** B&W determined that an unreviewed safety question (USQ) does not exist for the recent potential inadequacy of the safety analysis (PISA) associated with the Holden Gas Furnace (see 3/15/13 report). The USQ determination was based on an analysis that concluded that the newly postulated scenario (a flame propagating through cracked bricks to other interior areas of the furnace) could not result in an explosion of sufficient magnitude to breach the furnace exterior. Subsequently, criticality safety personnel questioned whether this new scenario could result in a criticality accident and challenged the validity of the conclusion in safety basis that any gas explosion in the furnace could not result in a criticality. As a result of these questions, B&W declared another PISA.