

## 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 19, 2013

**Criticality Safety/Casting Operations:** Last week, a loaded stack assembly (primarily comprising a crucible, mold, and uranium charge) from a recently completed casting run in Building 9212 fell several feet from the body of an induction furnace to the base of the furnace where stack assembly loading and unloading occur. Normally, operators watch carefully while the stack assembly is being lowered to ensure that it does not catch on the furnace interior and tip over. However, in this instance, the lever that controls the movement of the stack assembly was inadvertently bumped into the down position during the casting run. This caused the stack assembly to be lowered without any operator oversight, catch on the furnace interior, and fall.

Operators responded to the situation in accordance with the applicable abnormal operating procedure. After gathering and removing the spilled parts per direction from the responsible criticality safety engineer, operators noticed that someone had unintentionally moved the control lever for a different furnace to the up position. The stack assembly in this furnace had also completed its casting run and, in accordance with criticality safety requirements, operators had installed a cover on the crucible to prevent water intrusion. This cover, which is not designed to be present while the stack assembly is in the raised position, damaged the brick lining of the furnace. Production management is considering several corrective actions to prevent unintentional changes to the position of the lever that controls stack assembly movement.

Following these events, criticality safety engineers questioned whether the applicable criticality safety evaluation addresses a scenario in which a loaded stack assembly falls and damages a fluid line, resulting in the entire mass of fissile material collecting in an uncontrolled configuration at the base of the furnace while concurrently being inundated with hydraulic fluid. All induction furnace casting operations are paused pending resolution of this question.

**Uranium Processing Facility (UPF):** The site reps met with the UPF Engineering Manager to discuss the actions being taken to improve the safety culture of the project. In June 2012, DOE's Office of Health, Safety and Security (HSS) completed a report documenting an independent safety culture assessment of the UPF Project (see 8/10/12 report). In January 2013, B&W submitted a safety culture improvement plan to NPO that describes the completed and planned actions to address the weaknesses identified during the HSS assessment. The project has implemented a differing professional opinion procedure, developed a communications plan, and crafted a policy statement that has been communicated to the workforce. UPF management created a Technical Issues Management System (TIMS) that allows workers to document issues that have not been addressed through normal design processes and elevate these issues to higher levels of management. The project plans to conduct a survey in the fall to evaluate its progress.

**Nuclear Material Packaging:** B&W has submitted a third revision to its Implementation Plan (IP) for DOE Manual 441.1-1, *Nuclear Materials Packaging Manual*, to NPO for approval (see 2/24/12, 5/21/10, and 12/5/08 reports). The revision addresses deferred UPF scope that excludes Building 9204-2E and 9215 capabilities. The revised plan addresses the need for the packaging from these facilities to be consistent with UPF container requirements once it is operational. In addition, the revised IP also reflects a new packaging strategy that includes the use of inner and outer cans.