

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 22, 2017

TO: Steven Stokes, Technical Director
FROM: Jennifer Meszaros and Rory Rauch, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending May 19, 2017

Nuclear Criticality Safety (NCS): Following recent large spill events involving uranium-bearing solutions in Building 9212 (see 10/14/16 and 1/27/17 reports), the resident inspectors and NPO staff members noted operators using a cumbersome approach to spill cleanup that involved scooping the solution into dust pans and pouring it into NCS-approved containers. Currently, CNS fissile material handling procedures prohibit the use of more efficient cleanup methods (e.g., mopping). Contractor NCS engineers are working to address a longstanding NPO issue with the adequacy of the NCS analysis supporting the use and storage of mops in fissile chemical processing areas.

The resident inspectors recently discussed the timeline for closure of this issue with NPO and CNS management. A new NCS analysis for mopping operations and other fissile solution collection measures is approved, but not implemented. While contractor NCS and operations staff believe implementation should occur soon, the resident inspectors provided feedback to NPO and CNS management that certain aspects of NPO's issue warrant consideration for more immediate risk reduction measures. For example, NPO NCS staff concluded that the currently approved practice of placing mop heads on the floor to dry lacks sufficient analysis to demonstrate subcritical conditions in the event that the mop heads absorb fissile solution during a spill. This week, NPO issued a letter to CNS requesting a written update and briefing in 30 days on the status of actions to address NPO's issue. The letter also states that consideration be given to instituting some of the protective controls in the new analysis immediately to provide additional defense-in-depth until the analysis is fully implemented.

Criticality Accident Alarm System (CAAS): This week, CNS reported an increase in the CAAS detector failure rate (see 4/28/17 report) as a positive Unreviewed Safety Question. CNS also approved and implemented a standing order that increases the calibration frequency of installed detectors from thirteen months to seven months.

Highly Enriched Uranium Materials Facility (HEUMF): As a result of recent issues related to Secondary Confinement System (SCS) dampers not fully closing (see 4/10/17 and 4/28/17 reports), HEUMF remains in a Limiting Condition of Operation (LCO). This LCO requires that facility personnel verify Fire Protection Systems (FPS) are operable. Last week, facility personnel performed weekly preventive maintenance on part of the FPS. During this activity, they discovered that a block heater was not functioning and observed a small puff of smoke from the block heater thermostat. The operations manager conservatively determined that failure of the block heater rendered the FPS inoperable and, given the facility was already in the SCS LCO, entered a general TSR LCO requiring facility personnel to initiate actions that would place the facility in warm standby within 12 hours. Maintenance personnel successfully replaced the heater in approximately six hours and avoided transition to warm standby mode.

The resident inspectors reviewed the maintenance work package for the block heater replacement activity. Overall, the work package provided an adequate work scope definition and captured the correct set of hazard controls. However, the resident inspectors also identified weaknesses, such as the incorporation of non-applicable hazard controls and a step that could not be performed because it specified the wrong test equipment. In the latter case, crafts marked the step "N/A" after consulting with engineering despite the work package containing no allowance to skip the step. The resident inspectors provided these observations to CNS maintenance management.