

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 20, 2018

TO: Steven A. Stokes, Technical Director
FROM: B. Caleca and P. Migliorini, Acting Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending April 20, 2018

Highly Enriched Uranium Materials Facility (HEUMF): Last week, CNS transmitted to NPO a justification for continued operation (JCO) and evaluation of the safety of the situation (ESS) for the potential inadequacy of the safety analysis (PISA) declared for the 16 drums containing material forms not currently analyzed in the HEUMF documented safety analysis (DSA) (see 3/2/18 and 3/16/18 reports). The JCO/ESS proposes compensatory measures including: suspension of hot-work activities in areas where the drums are located; limiting the number of lifting vehicles in the area; and requiring these materials to be maintained in approved containers with inner confinement vessels. The JCO/ESS estimates that when accounting for these materials in a design basis fire event, the radiological dose consequences to a public receptor at the emergency response boundary and co-located worker do not appreciably increase. NPO personnel are currently working on completing a safety evaluation report for the JCO/ESS.

Following the initial discovery of unanalyzed material, CNS personnel initiated an extent of condition (EOC) review to check for additional unanalyzed material types. Eight additional drums were identified as having a new unanalyzed material with potentially pyrophoric properties on April 4, 2018, leading to a new PISA on April 11, 2018. On April 11, 2018, the EOC also discovered material that has the potential to impact the safety functions of the Rackable Can Storage Boxes, as well as additional containers with radiological material not analyzed in the current HEUMF DSA, leading to the declaration of two additional PISAs on April 18, 2018. As a result of the latest PISAs, all hot work where fissile material is stored in the facility is prohibited without management approval; lifting vehicles are limited in all areas of the facility; and the new materials identified will be tagged with specific descriptions and instructions not to move or repackage the material.

Building 9212/Nuclear Criticality Safety (NCS): Earlier this month, CNS personnel completed a causal analysis for the discovery of several historical violations of an NCS limit applicable to the Holden Gas Furnace (see 2/16/18 report). The causal analysis determined that ineffective communication to operators of new acceptance criteria for the surveillance related to the NCS limit on U-235 mass and human performance errors led to inadequate surveillance execution. On April 18, 2018, CNS senior management reconvened the critique for this event, identifying several new corrective actions related to training improvements. The acting resident inspectors believe that this approach improved the identification of corrective actions.

As a result of EOC walkdowns related to the unexpected accumulation events (see 3/30/18 report), CNS personnel declared an NCS deficiency on April 17, 2018, related to inadequate execution of an NCS requirement contained in the criticality safety evaluation (CSE) for process equipment in Building 9212. The CSE requires production personnel to periodically change out roughing filters, then inspect and clean out the plenum floors of the process equipment to prevent holdup. CNS NCS personnel determined that the CSE requirement was not adequately met due to confusion over which areas of the process equipment constituted the plenum floors. CNS personnel established an NCS administratively controlled boundary at the process equipment location until they can satisfactorily execute the CSE requirement.