

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 30, 2017

TO: Steven Stokes, Technical Director
FROM: Jennifer Meszaros and Rory Rauch, Site Representatives
SUBJECT: Oak Ridge Activity Report for Week Ending January 27, 2017

Material-at-Risk (MAR) Reduction: CNS Y-12 enriched uranium (EU) mission transformation personnel recently updated the MAR metrics for Buildings 9212, 9204-2E, and 9215 (Area 5). MAR quantities in Building 9212 increased slightly, falling several thousand EU metal-equivalent kg behind goals set forth in a 2014 plan to accelerate Area 5 MAR reduction activities (MAR quantities remain well ahead of the goals established prior to 2014). The increase can be attributed to issues processing two material forms: uranyl nitrate crystals and EU briquettes. EU operations (EUO) personnel previously exceeded planned rates for processing most of the crystal inventory (see 6/10/16 report). However, the remaining crystals are designated for an offsite customer and their shipment has been delayed by safety basis issues. CNS engineers are working to resolve the issue. Regarding EU briquettes, despite significant improvements to briquette processing rates in 2016 (see 7/15/16 report), EUO personnel have been unable to keep pace with accelerated MAR reduction goals. CNS EU mission transformation personnel plan to work with NNSA to revisit the feasibility of these goals while continuing to pursue initiatives to increase the capacity of briquette processing equipment.

Training: Several months ago, the CNS Y-12 production support organization initiated monthly continuing training sessions for shift managers and shift technical advisors. One of the most challenging shift manager responsibilities involves directing the actions required to achieve a safe and secure condition following abnormal events. As such, this month's continuing training session reviewed the lessons learned from two recent abnormal events, a power outage affecting mission-critical equipment in Buildings 9204-2 and 9204-2E (a response that was lauded by the responsible NPO facility representative) and a glovebox component that fell during a maintenance activity in Building 9204-2E (see 12/9/16 report). The site representatives observed this session and found it to be effective at reinforcing the proper response to an abnormal event.

Infrastructure Sustainment: The CNS system health manager for Y-12 fabrication operations recently reconstituted preventive maintenance activities on Building 9215 machining equipment that have not been performed in several decades. The evolution is extensive (lasting several weeks per machine) and could serve as a prototype for the type of proactive, outage-based approach to asset management sought by the Building 9215/9204-2E Extended Life Program (see 10/14/16 report). The site representatives observed portions of the second evolution of these activities and identified no issues with the execution of the maintenance work package. On a positive note, the responsible maintenance engineer made significant improvements to the sequencing of work steps based on worker feedback from the first evolution.

Nuclear Criticality Safety (NCS): Last week, two abnormal events involving fissile material occurred in Building 9212. The first event occurred in a glovebox used to sieve and sample uranium oxides. Operators opened a container of material and observed what appeared to be metal turnings, a material form that has not been evaluated nor approved by NCS personnel for the glovebox. The operators paused work and contacted NCS personnel, who confirmed the presence of EU metal and provided guidance to return the container to storage. The second event occurred on the primary extraction (PX) system. During facility rounds, operators observed a spill of approximately 150 L of uranyl nitrate and immediately contacted the plant shift superintendent who initiated spill response activities. The responsible NPO facility representative commended the safe and timely execution of the spill response effort. EUO personnel believe the spill was caused by a failed fastener on a PX system feed tank's sight glass.