

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 19, 2016

TO: Steven Stokes, Technical Director
FROM: Jennifer Meszaros and Rory Rauch, Site Representatives
SUBJECT: Oak Ridge Activity Report for Week Ending December 16, 2016

Building 9212: This week, enriched uranium (EU) operations (EUO) personnel resumed EU briquette casting operations after updating the briquette casting procedure to incorporate the expected response to an unplanned oxidation event. After resuming operations, operators observed another oxidation event while transferring a casting stack assembly loaded with briquettes in the casting glovebox line. Similar to last week's event, the reaction occurred in a ventilated enclosure that is intended to safely process high-temperature, respirable uranium oxides; therefore, the operators left the briquettes in the enclosure, paused work, and notified their supervisor.

Immediately following the event, EUO management convened an operational safety board (OSB) to evaluate the facts surrounding both oxidation events and potential actions to reduce the risks associated with briquette storage, handling, and processing. EUO management proposed two actions to minimize the radiological hazard in the unlikely event that briquettes in storage spontaneously oxidize. First, EUO personnel plan to preferentially cast briquettes stored farthest from a ventilation source. Second, EUO personnel plan to cease storage of briquettes near high-traffic areas until a causal evaluation of these recent events is completed. To that end, EUO management noted that both batches of briquettes involved in these events were cleaned and pressed at around the same time frame. CNS engineers plan to evaluate the briquette preparation methods used during that time for changes that may have made these briquettes more susceptible to oxidation. The OSB determined that these actions were sufficient to allow briquette casting operations to resume.

EUO personnel also observed a separate unanticipated oxidation reaction this week in another area of Building 9212. Operators were re-containerizing EU material when an operator observed evidence of a reaction (minor sparking), paused work, and notified the area supervisor who in turn contacted the fire department. Fire department personnel performed thermal imaging on the container and found no evidence of an ongoing reaction; however, responders did observe some discoloration on one of the container labels. CNS event investigation activities are ongoing.

Highly Enriched Uranium Materials Facility (HEUMF): During the last several years, short duration loss of normal power events have impaired the HEUMF secondary confinement system (SCS) and resulted in unplanned limiting condition of operation (LCO) entries (see 6/26/15 report). Typically, SCS impairment is the result of a design configuration that transfers power for certain facility exhaust fans to the emergency diesel generator upon loss of power. If power is restored before the diesel generator starts, these exhaust fans remain shut down thereby impairing the system. Two weeks ago, HEUMF experienced another short duration loss of power event that resulted in an unplanned LCO entry for the SCS. CNS is close to implementing a design change that will result in full activation of the SCS for even short duration loss of power events. The responsible system engineer anticipates completing the modifications associated with this change next month.

Special Nuclear Materials Operations (SNMO): SNMO personnel recently began preparing legacy containers for transport to HEUMF (see 11/25/16 report). This week, CNS process engineers revised the applicable procedure to incorporate worker input following an initial work execution period. The site representatives observed operations this week and found no issues with the revised procedure or work execution.