

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 27, 2024

TO: Timothy J. Dwyer, Technical Director
FROM: Brandon Weathers and David Andersen, Acting Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending September 27, 2024

Highly Enriched Uranium Materials Facility (HEUMF): The HEUMF technical safety requirements (TSRs) specify that the density, water content, and boron content of the BoroBond neutron poison within Rackable Can Storage Boxes (RCSBs) be protected as key nuclear criticality design features for safety. During a review of corrective actions associated with the lack of a safety basis control for neutron poisons for Special Nuclear Material Vehicles (see 2/2/2024 report), the DNFSB Oak Ridge cognizant engineer reviewed a document that provides composition data for the original set of RCSBs procured for initial material load out of HEUMF. Within this report, the staff member identified three RCSBs where the BoroBond density exceeded the maximum allowable density as specified in the HEUMF TSRs. The cognizant engineer shared this observation with YFO and CNS and inquired if these containers were in use. CNS determined the three RCSBs are in storage at HEUMF and loaded with nuclear material.

CNS determined a potential inadequacy of the safety analysis (PISA) exists since the BoroBond density for the three RCSBs exceeds the upper limit as specified in the TSRs, and since no actions could be taken to return the discrepant as-found condition to a configuration compliant with the HEUMF safety basis. The three affected RCSBs have been placed on administrative hold and cannot be moved until the issue has been resolved. CNS held an event investigation this week and has filed a DOE occurrence report for noncompliance of a credited hazard control specified in a nuclear facility's DOE approved Documented Safety Analysis.

On Tuesday, an acting resident inspector observed a YFO and CNS nuclear criticality safety walkdown of HEUMF. Other than the non-compliant RCSBs, the group discussed CNS' progress on dispositioning non-compliantly loaded drums that were identified in 2023. CNS recently approved the necessary criticality safety evaluation changes to allow this material to be transferred and processed in Building 9212. After processing the material, CNS has identified an external customer who will take possession of it.

Building 9212: An acting resident inspector observed an operational drill that simulated a briquette fire. This scenario corresponds to previous energetic events that occurred while processing briquettes (see 2/24/23 and 8/11/23 reports). During the drill, the operators responded appropriately per their emergency operating procedure. This entailed making an immediate notification to the site 911 extension and voluntarily attempting to extinguish the fire. For the drill, the operator's attempt to extinguish the fire was not successful and he evacuated the area. The operators routinely stage a can of the fire extinguishing agent (carbon microspheres) near the processing equipment before beginning their work activities and did so prior to the drill. However, the storage rack for these cans is not conveniently located near the briquette handling area. CNS plans to evaluate whether the storage rack can be moved closer to the equipment or if an existing pre-requisite in the operating procedure can be improved to ensure consistent understanding of the extinguishing agent being "readily available."