

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 15, 2023

TO: Katherine R. Herrera, Acting Technical Director
FROM: Clinton Jones, Resident Inspector
SUBJECT: Oak Ridge Activity Report for Week Ending December 15, 2023

Staff Activities: B. Sharpless and S. Thangavelu traveled to Y-12 this week to conduct familiarization walkdowns of several nuclear facilities associated with the electrorefining (ER) project in preparation for monitoring of the ER readiness assessment. CNS presented on the status of the project and provided personnel familiar with ER to guide and assist in the facility walkdowns. The resident inspector attended the CNS presentation and escorted staff during the week. W. Dumayas and A. Powers walked down the Uranium Processing Facility as part of staff turnover. F. Harshman traveled to the Nevada National Security Site to attend criticality safety training.

Building 9204-2E: A criticality safety officer raised concerns about the amount of depleted uranium (DU) being stored in cans on open racks in the building due to the recent potential nuclear criticality issues (PNIs) that have been written (see 11/17/23 report). A facility safety engineer reviewed the hazard evaluation study for the building and confirmed that the mass of DU chips present exceeds the allowable mass documented. CNS entered the potential inadequacy of the safety analysis (PISA) process and determined that a PISA does exist. CNS determined that no operational restrictions or other actions were required due to the nature of the condition. The excess mass brings into question the safety basis evaluation of fire events that may potentially involve DU chips. The resident inspector also questioned whether the facility was performing any type of surveillances on the condition of the DU chip cans being stored. The resident inspector discussed the potential vulnerability of the chips with the NPO fire protection engineer (FPE), and both agreed some further analysis needed to be performed to validate the storage method. The resident inspector also discussed the issue with the CNS FPE, specifically the storage method and the potential for the chips to become a new, unanalyzed initiator for a fire event. The CNS FPE position is that the DU chip storage in the tape-sealed and inerted can was not a concern. The CNS FPE was more concerned about the co-location of combustible materials on and around the storage racks that currently house the DU chip cans. Building 9204-2E has a history of excessive amounts of combustible materials in the production areas due to the amount of throughput and construction activities in the building. During a walkdown of the building this week, the resident inspector and DOE facility representative for the building identified several instances of combustible materials being stored on racks that had large signs identifying them as DU chip can storage only. Also, the resident inspector witnessed personnel placing items on the storage racks that were packaged in paper-based drums causing items previously stored on the racks to shift in the process.

Building 9215: CNS approved PLN 9215-MPP-0001, *Metal Purification Process Plan for Safe Procedure Practice in Conjunction with Pre-operational Testing*. The plan was written to allow enriched uranium machining operations personnel to begin hands-on procedure practice on the electrorefining system while construction and design engineering complete acceptance testing. The plan places restrictions on which procedures may be practiced and adds additional pre-requisite actions to address conduct of operations and safety concerns.