

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 8, 2023

TO: Timothy J. Dwyer, Acting Technical Director
FROM: Frank Harshman and Clinton Jones, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending September 8, 2023

Nuclear Criticality Safety: CNS filed an occurrence report for a deficiency in a criticality safety analysis such that adequate controls were not in place for a credible criticality accident scenario. A nuclear criticality safety engineer (NCSE) discovered a lack of a technical basis for an assay meter that had been used for over 15 years to determine if there were enriched uranium chips mixed with depleted uranium chips. During a routine review of the criticality safety evaluation (CSE), the NCSE requested the technical basis for the assay meter. The only document provided to the NCSE was a spreadsheet. After interpretation of the data in the spreadsheet and discussions with the peer reviewer, it was determined the information was contradictory to the assumptions in the CSE; the NCSE subsequently entered the potential nuclear criticality safety issue process. CNS established compensatory measures while the issue was being analyzed by the non-destructive assay engineering group. After determining the issue with the meter may not be resolved, CNS filed the occurrence report, conducted an event investigation and subsequent critique. The critique resulted in actions to change the CSE and complete the analysis of a new test plan. The resident inspector discussed the matter with the NPO criticality safety engineer and currently has no concerns with the CNS response to this issue due to the compensatory measures implemented at the time of discovery.

Continued Safe Operating Oversight Team (CSOOT): The resident inspectors attended a CSOOT walkdown in Building 9212. The acting enriched uranium operations production manager led the walkdown. The route covered casting, the casting ventilation stack, the building roof, and several areas where solid waste is processed and staged for removal. In casting, the walkdown included discussions on continued cleanup of the area, challenges with maintaining casting furnaces, and balancing of resources between enriched uranium operations transition and maintaining the facility. At the ventilation stack, production management discussed possible upgrades to the area that would aid workers during maintenance periods and simplify scheduling of those maintenance activities. On the roof, discussion focused on the challenges with maintaining an aging roof and impacts on building operations due to ventilation exhaust fan breakdowns. Discussion in the solid waste areas focused on challenges with processing and removal of those items due to activities required to certify the waste, which has resulted in a waste backlog. In the resident inspector's opinion, the walkdown was beneficial in highlighting to the CSOOT the challenges that building personnel have to contend with while maintaining an aging facility.

Building 9212: CNS resumed reduction operations this week after pausing operations due to three unexplained pressure excursion events (see 8/19/2022, 10/7/2022, and 5/26/2023 reports). CNS changed operations to require personnel to exit the room when performing reduction operations. CNS determined if process pressure overwhelmed the installed safety systems and breached the containment vessel, having the operators outside of the room removes the potential for personnel injury. CNS will continue with reduction operations until all available feedstock at Y-12 has been exhausted and then will permanently shut down the system as previously planned (see 1/27/2023 report).