DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 17, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending December 17, 2021

Nuclear Criticality Safety: NPO completed an assessment focused on the nuclear criticality safety program. The team reviewed CNS' progress on completing improvement initiatives and corrective actions, while also reviewing the effectiveness of those actions. In addition, the assessment covered: the large geometry exclusion area program, an improvement program for container criticality safety evaluations, and CNS' performance with managing the nuclear criticality safety integrated schedule. The team identified four performance problems, four observations, and two noteworthy practices. Overall, the team determined that the assessment objective was partially met. The assessment criteria regarding progress on the improvement program for container criticality safety evaluations was not met due to CNS only approving one of the five criticality safety evaluations that were scheduled for fiscal year 2021. The container improvement program is a corrective action for a NPO finding from 2015. Because this existing corrective action is not on track, NPO requested that CNS submit a revised corrective action plan for the 2015 finding. NPO also requested that CNS respond to the assessment team's observation that a comprehensive effectiveness review is warranted for many of the actions contained in a CNS report that documented key actions to address issues and improve the nuclear criticality safety program (see 3/5/21 report).

Radiological Protection: Last week, a chemical operator was contaminated by a small splash of uranyl nitrate solution in Building 9212. Operators drained two tanks by pumping the contents into another tank to prepare for an upcoming maintenance activity. Near the end of the solution transfer, one of the operators was asked to check if solution was still flowing through a portion of the system. Unable to see the sight glass clearly, the operator opened a lid at a pour-up station and felt a small drop of liquid land on his neck. Radiological control personnel responded and detected 2,112 disintegrations per minute per 100 cm^2 alpha contamination on the operator. The operator was transported to the Y-12 occupational health services center for decontamination and treatment of the acid burn. CNS developed corrective actions that include ensuring that the pump is turned off prior to lifting the pour-up station lid and cleaning or replacing the plexiglass sight glass on the pour-up station involved in the event and other pour-up stations in the facility.

This is the 26th personnel contamination event in 2021. As previously noted, the rate of personnel contamination events is within the historical range (see 11/19/21 report). Only one of the personnel contamination events this year had a contamination level that required filing an occurrence report under DOE Order 232.2A (see 1/22/21 report).

Building 9818: One of two sump pumps in the basement of Building 9818 (part of the Building 9212 Complex) stopped working in early November. This failure resulted in several inches of groundwater accumulating in the basement, portions of which are a radiological contamination area. The resident inspectors and a NPO facility representative walked down the facility last week. CNS primarily uses Building 9818 for handling nitric acid, aluminum nitrate, and chemical wastes containing low concentrations of enriched uranium.