

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 1, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending October 1, 2021

Building 9206: During a maintenance activity to remove legacy material from a ventilation duct on an exterior wall of the facility, contaminated material was released through a stack. The debris was spread on the ground and on the roofs of some nearby facilities. CNS suspects the debris was from a failed duct filter that they were not aware of. Personnel cleaned up the debris and found that it had a maximum fixed contamination level of 70,000 disintegrations per minute alpha. CNS decided to postpone assigning corrective actions at the event investigation and critique meetings until the causal analysis is completed.

Building 9204-2E: Soon after operators transferred pyrophoric uranium metal chips from a hospital can to a chip dolly, the chips caught on fire. The operator backed away and the supervisor directed the operator to put a solvent on the flame to extinguish it. The solvent is used to cover the chips when they are stored in chip dollies. The chips then began to smolder, and the operator put more solvent on the chips. The operating procedure had a note to not put solvent on chips that show signs of ignition. The solvent can decompose in contact with very high temperatures and produce hazardous decomposition products. The personnel in the area did not directly call the Y-12 Fire Department, but the shift manager was quickly notified and reported the fire to the fire department. During the event investigation, personnel noted that when the chips were generated, they had visual characteristics that were different than typical chips. The resident inspectors have previously reported on several observations concerning hazards associated with chip storage (see 6/18/21, 8/13/21, and 9/17/21 reports).

Building 9212: Chemical operators opened a fissile material container in a hood, expecting to find mixed uranium compounds. Instead, the operators found fuel elements in the container. The nuclear criticality safety loading limits did not allow fuel elements in that container, and the hood was not authorized for handling fuel elements. In response, nuclear criticality safety engineers provided guidance to load the fuel elements into an approved container. They also directed that operators post additional containers that were part of this material lot in Building 9212 as deficient. Y-12 personnel accepted the subject material from an external entity between 2000 and 2002 and ultimately moved the containers to the Highly Enriched Uranium Materials Facility as part of the Area 5 Deinventory Project (see 10/3/16 report). During the event investigation, CNS personnel realized that additional information about this material was documented in the scrap declaration forms but Building 9212 personnel were not aware of it. CNS recognized this gap and generated corrective actions to improve the review process for material receipts. The operators relied on Nuclear Material Control and Accountability designators (material form codes) to determine whether they met the requirements for opening the container in the chosen hood. CNS did not include Area 5 Deinventory Project containers in an earlier extent-of-condition review of material form code assignments due to generally having less information about the specific contents of those containers (see 3/12/21 report). CNS planned to review them as part of a later effort. However, for the containers in this event, relevant information was available to better define the material prior to opening the container.