

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 7, 2020

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending August 7, 2020

Building 9212: Last week, operators sheared several enriched uranium metal buttons in a Building 9212 glovebox and collected the pieces in a pan. While cleaning up, they noticed that some of the metal was glowing red. They backed away and contacted their supervisor, who contacted the shift manager and production support manager for the area. The supervisor then called 911 to request assistance. Fire department personnel and others responded and did not see any visible flame or smoke. A firefighter used coke (carbon microspheres) to extinguish the oxidation reaction. Later, with nuclear criticality safety personnel direction, the operators transferred the material to a can, and noticed one piece was still glowing and added additional coke. Facility personnel monitored the can overnight. The next morning, they rechecked the temperature of the can and then moved it out of the glovebox into an approved storage location. CNS preliminarily categorized this event involving “smoldering material” as a nuclear criticality safety deficiency.

Development: Last week, technicians used a saw to cut depleted uranium metal in a Development facility. After several hours of cutting, they noticed that some of the saw fines had started to smolder. A technician sprayed a small stream of coolant and water on the smoldering fines in an attempt to prevent ignition. Shortly after, another technician covered the fines with coke. They left the area and notified their supervisor, radiological control personnel, and called 911. The fire department responded and found no ongoing smoke or fire.

Nuclear Criticality Safety: Earlier this year, CNS completed walkdowns to identify legacy out-of-service equipment that could potentially contain fissile material holdup in facilities other than Building 9212, including Buildings 9215, 9204-2E, and 9720-5. This was one of the actions developed in response to the discovery that 48 out-of-service systems and components in Building 9212 did not meet current requirements of the Y-12 nuclear criticality safety program (see 10/25/19 report). The results of the walkdowns and subsequent evaluations have been documented for Buildings 9720-5 and 9204-2E. CNS completed the initial walkdown of Building 9215 in February and plans to complete that evaluation by the end of September (see 2/14/20 report).

For Building 9720-5, the walkdown team evaluated all gloveboxes, a hood, and some exhaust ductwork and filters. The team requested that non-destructive assay personnel scan some additional exhaust ducts. The results of the scan indicated the presence of a negligible amount of U-235 on the order of a gram. For Building 9204-2E, the walkdown team identified a single piece of equipment that was no longer in use but might have residual material. The criticality safety evaluation indicated it was only used for depleted uranium machining, so the team presumed some metal chips that were present were depleted uranium, not enriched uranium. At the team’s request, non-destructive assay personnel later confirmed the metal chips were depleted uranium. To date, CNS has not declared any nuclear criticality violations from these walkdowns and evaluations.