

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 7, 2020

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

DNFSB Staff Activity: J. Abrefah, A. Miller, D. Shrestha, and S. Thangavelu were at Y-12 this week to continue a review of technical deviations for nuclear criticality safety evaluations (see 11/22/19 report). The review team conducted interviews with CNS and NPO personnel.

Separately, DNFSB staff members met with NPO to discuss the Y-12 data reported in the DOE annual metrics report for nuclear criticality safety programs (see 1/24/20 report).

Nuclear Criticality Safety: During a monthly radiological contamination survey of empty fissile material storage containers (lock box dollies) in Building 9212, a radiological control technician discovered that one of the lock boxes contained a pan used to store enriched uranium. The loaded lock box had been stored for four days in an area that was only approved for storage of empty fissile material containers. Storage of fissile material in this area is a nuclear criticality safety control violation. A second nuclear criticality safety control violation occurred because the fissile material was unattended while outside of an approved storage location.

When a violation of nuclear criticality safety requirements is discovered, personnel are required to establish a 15 foot administrative boundary and enter the procedure for an abnormal condition involving fissile material. This did not occur. The area supervisor, Building 9212 shift manager, lead radiological control technician, plant shift superintendent, and nuclear material control and accountability personnel were notified. Without advice or direction from nuclear criticality safety personnel, the fissile material was moved back to its approved storage location. Several hours later, a nuclear criticality safety engineer became aware of the event. The lack of notification and involvement of nuclear criticality safety personnel is in violation of the nuclear criticality safety program. The root cause analysis performed in 2018 for the uranium accumulation discoveries in Building 9212 (see 3/30/18 report) identified a lack of communication between the nuclear material control and accountability, operations, and nuclear criticality safety organizations as a contributing factor. Several actions aimed at preventing a similar event and improving training on responding to abnormal conditions were proposed during the event investigation. On Wednesday, CNS reported this event as a 10-1 occurrence under DOE Order 232.2A. Operations remain suspended in the portion of Building 9212 where the event occurred.

Building 9212: While performing a technical safety requirements surveillance, an anhydrous hydrogen fluoride (HF) detector located inside of the HF cylinder enclosure alarmed for a short period of time. CNS suspects that residual HF had been present in the HF cylinder pigtailed. An NPO facility representative that had been providing oversight of the operation noted an effective response that used revised alarm response procedures that had been improved due to lessons learned from the event last year where HF detectors inside the enclosure alarmed while a cylinder was connected (see 4/5/19 report). In particular, communications were very effective. As with the previous event, the airborne HF was safely scrubbed and neutralized as designed.