

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 13, 2023

TO: Katherine R. Herrera, Acting Technical Director
FROM: Frank Harshman and Clinton Jones, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for the Week Ending January 13, 2023

Building 9995: CNS restored water pressure to a fire suppression system that had been isolated due to a freeze event (see 12/30/22 report). Shortly after restoring the system, lab personnel who were inspecting the system for leaks discovered a sprinkler head in the ceiling had actuated. This resulted in water rapidly entering the vault area where uranium samples are stored flooding some sample carts and wetting items throughout the room. The area was immediately evacuated, the fire suppression system isolated, and an administrative boundary was established per CNS's abnormal condition involving fissile material procedure. CNS declared an occurrence for a loss of one or more nuclear criticality documented controls such that an accidental criticality is possible from the loss of one additional documented control. As a result of the floodwater, most of the room including the large geometry exclusion area buffer area had standing water up to one inch deep. A cart containing dozens of small uranium sample bottles was filled with water resulting in fully submerged and floating uranium sample bottles. Another cart, also loaded with small sample bottles, was directly edge-to-edge with the flooded cart violating spacing requirements established in the criticality safety evaluation. In addition, the cart's work-surface and the exterior of the sample bottles appeared to be wet. Multiple plastic bags containing contaminated material were also sitting on the floor in the floodwater.

The resident inspector, the building 9995 NPO facility representative, and the NPO associate deputy manager for operations conducted a walkdown of the building to inspect the damage from this event along with the recovery efforts from the previous freeze event. The lab director briefed the group on CNS's actions to date and planned actions to complete recovery from this event. CNS had re-established the spacing requirements of the touching carts and inspected each of the wetted sample bottles for water intrusion. The noncompliant sample bottles were subsequently placed on a dry cart and the cart was segregated. CNS then collapsed the administrative boundary to the area of the noncompliant carts so that electrical safety checks of the area could be completed. After the electrical safety check, CNS continued cleanup efforts and commenced maintenance on the effected systems.

Building 9215: The resident inspectors attended the event investigation and critique for a supply fan failure and subsequent sprinkler head activation that occurred during the recent freezing event (see 12/30/22 report). The responsible manager identified the sprinkler head activation resulting in water flowing throughout the building as the only gap. Details about the event were documented including a five-minute delay in the isolation of the water supply to the sprinklers. The fire department representative brought this up as a concern due to the operations center directing them to wait for the shift manager to arrive and authorize the isolation of the system. The fire department had completed a walkdown of the facility to verify there was no fire. The resident inspectors questioned: 1) why the fire department was required to wait to isolate a system that was flooding a building 2) if it was verified there was no fire and if this was an expectation of operations management. As a result, CNS added an additional action to evaluate the requirements for isolation of wet pipe systems by the fire department.