

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 11, 2022

**TO:** Christopher J. Roscetti, Technical Director  
**FROM:** Brandon Weathers, Resident Inspector  
**SUBJECT:** Oak Ridge Activity Report for Week Ending March 11, 2022

**DNFSB Staff Activity:** Members of the technical staff observed Isotek's Contractor Operational Readiness Review for the Initial Processing Campaign (see 3/4/22 report).

**Fire Protection:** Around midnight on Monday, a transformer outside of Building 9212 caught on fire. The Y-12 fire department extinguished the fire using a fire hose after an initial attempt to extinguish it with handheld fire extinguishers was unsuccessful. As a result of the power interruption, CNS reported occurrences for multiple nuclear facilities due to the loss of annunciation for the criticality accident alarm systems. No nuclear operations were occurring at the time of the event. CNS also filed an occurrence for the fire itself. The transformer was beyond its design life but had passed its 5-year preventive maintenance activities in July 2021.

**Nuclear Criticality Safety:** Nuclear criticality safety and process engineering personnel discovered that a drain on a piece of equipment in Building 9204-2E was missing its required drain cover. The drain is a passive design feature that is credited in the nuclear criticality safety evaluation. The drain cover helps ensure that the drain is not blocked or obstructed by items. The drain cover was designed to be welded to the drain. When investigating this issue, the personnel found that the drain covers on two lathes were next to the drains. A system engineer determined that the covers had been welded in place but had broken off of the drains. When the condition was discovered, operators were not performing work activities with the lathes and the drains were free of obstructions. Operations management placed the equipment out of service. Nuclear criticality safety personnel provided guidance to replace the drain covers prior to resuming operations. CNS convened an investigation and identified a gap that the nuclear criticality safety evaluation expectations were not fully flowed into the operating procedure. The operating procedure steps that applied to the drains required that operators inspect the drains to ensure they are not obstructed, and also ensure that the enclosure interior is free of all unnecessary objects, tools, or debris that could obstruct the drains. The operating procedure did not explicitly mention the drain covers. CNS found that the evaluation for potential degradation of the passive design features called for the drain covers to be inspected prior to each operation. CNS created actions to revise the operating procedure to clarify the requirements. The exact time that the drain covers broke off is not known. The last nuclear criticality safety operational review that documented an inspection of the drains was in 2015. The passive design feature degradation evaluation was last revised in 2018. It is possible that the drain covers could have been off for several years. CNS identified similarities between this event and an event last year where a nuclear criticality safety control was not properly implemented for Building 9204-2E glovebox operations (see 8/20/21 report). CNS is working on a corrective action from the previous event to reinstitute periodic criticality safety evaluation implementation verification reviews. That corrective action could have also helped proactively identify other criticality safety control implementation issues that were recently discovered. Two examples are the wet vacuum system conductivity probe position event (see 1/7/22 report) and the event where metal chips were not removed from a glovebox (see 3/4/22 report).