DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 18, 2025

TO: Technical Director
FROM: Oak Ridge Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending July 18, 2025

Building 9212: Nondestructive Assay (NDA) lab personnel were performing NDA of a standard industrial 55-gallon drum that contained material from two exhaust stack filter cartridges. The initial scan of the drum exceeded the 350 g U-235 limit dictated by the Criticality Safety Evaluation (CSE). CNS personnel determined that two other drums were loaded with material from the same stack filter replacement activity. Nuclear Criticality Safety (NCS) personnel provided direction to place the additional drums under administrative control due to their potential to be out of compliance. NCS personnel, with shift manager and shift technical advisor concurrence, permitted NDA lab personnel to conduct a longer, more accurate, scan of the initial drum. NDA lab personnel determined that the initial drum had less than 350 g of U-235, including uncertainty, using the longer counting method. NDA lab personnel measured the remaining two drums under NCS guidance, and the drum that contained the bulk of the filter media was found to exceed the 350 g U-235 drum loading limit. NCS then provided guidance to transfer the overloaded drum to the sorting hood and to split the contents into three separate drums. The CSE allows for overloaded drums to be split in the sorting hood if their fissile mass, including uncertainty, is less than 700 g U-235. After splitting the contents, NDA lab personnel measured the newly created drums and confirmed that all drums were below the 350 g U-235 limit, including uncertainty. CNS held an event investigation, creating formal actions to evaluate the procedural guidance that was inadequate to prevent the creation of the overloaded drums.

Site Potable Water Towers: The YFO maintenance program manager set up a meeting with CNS utilities to determine the status of the recent water tower refurbishment. CNS manages two potable water towers as defense in depth measures that provide a source of water to both safety-significant and safety-class fire suppression systems in various nuclear facilities. The subcontractor hired by CNS to refurbish the towers found that, due to excessive corrosion caused by a lack of maintenance and undersized vent piping, structural steel needed to be repaired and replaced. CNS stated that repairs and refurbishment are completed on the towers except for installation of a new type of level-indicating system.

During a walkdown of the system performed by the resident inspector (RI) and YFO early last year, the RI identified a gap in the Y-12 site safety analysis report with respect to automatic level control of the potable water towers (see 7/12/2024 report). CNS plans to modify the current contract with the water tower subcontractor to include replacing the programmable logic controller (PLC) associated with water level control. This change will return the system to the originally analyzed design function, eliminating the need for manual surveillance when water pipe breaks occur onsite. CNS stated that these PLC repair efforts are fully funded, and the end goal is to restore full functionality to the water tower's level control system, including remote notification, trending, and alarming capabilities. The upgrade to the system will also include PLC redundancy in the event of failures. CNS did not provide an expected timeline for when the PLC repairs would be finished.