

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 31, 2020

**TO:** Christopher J. Roscetti, Technical Director  
**FROM:** Matthew Duncan and Brandon Weathers, Resident Inspectors  
**SUBJECT:** Oak Ridge Activity Report for Week Ending January 31, 2020

**DNFSB Staff Activity:** M. Bradisse and D. Shrestha were at Y-12 to conduct a review of out-of-service systems and components in Building 9212 that were previously identified by CNS as not meeting the current requirements of the nuclear criticality safety program (see 10/25/19 report). The staff members walked down all readily accessible systems and components with uranium holdup greater than 700g U-235 or that lack a fissile material mass estimate due to difficulty in obtaining non-destructive assay measurements. They also walked down many out-of-service systems and components that contain less than 700g U-235.

**Nuclear Criticality Safety:** Since initially reporting that 48 out-of-service systems and components lack an active nuclear criticality safety analysis basis for the uranium holdup in them, CNS has been working on several actions to address the condition. Two of the four components that did not have non-destructive assay measurements have been measured and contain U-235 masses less than originally assumed (see 10/25/19 report). Progress has been made to prepare to clean out the fissile material from two systems that contain some of the highest masses of U-235. Cleanout of these systems is currently scheduled for February. CNS also plans to resolve the uranium holdup found in a portable dry vacuum system later this year (see 8/16/19 report). Following the initial notification of the unanalyzed holdup, CNS agreed to complete additional nuclear criticality safety analyses to document the basis for subcriticality of the out-of-service systems and components with greater than 700g U-235 (see 11/8/19 report). Last week, CNS issued a report documenting these additional analyses and generic nuclear criticality safety criteria to be applied to future criticality safety evaluation cancellations. Out-of-service equipment evaluations are also being conducted for Buildings 9215, 9204-2E, and 9720-5. The resident inspectors observed the field walkdown of 9720-5 this week. The walk down was led by the nuclear criticality safety engineer lead for the facility and included the criticality safety officer and nuclear material control and accountability personnel.

**Radiological Protection:** An employee working in a Building 9204-2E quality evaluation glovebox cut a finger through the glove on a sharp piece of stainless steel, requiring special bioassay. Results are not yet available. CNS is reviewing several potential improvements such as glove selection and training. Separately, a system engineer detected radiological contamination on a shoe while frisking at a boundary control station in Building 9212. The response was appropriate and the maximum activity was well below reportable thresholds. It had been 116 days since the last personnel contamination. CNS had been averaging approximately two per month over the past several years.

**Building 9212:** CNS revised the criticality safety evaluation for the reduction sand separator to resolve an issue where an assumption was not identified as a requirement and therefore was not flowed down as a control to the operating procedure (see 11/1/19 report). The revised analysis determined that the concern turned out to be unfounded as failed reduction runs would not send more uranium to the sand separator, eliminating the need for a control.