

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 9, 2020

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending October 9, 2020

DNFSB Staff Activity: A headquarters staff team had a multi-day teleconference with NPO personnel as part of a complex-wide DOE oversight review. The discussions covered the current oversight framework as well as interpretation and application of DOE oversight directives.

Building 9206: In fiscal year 2020, CNS made significant progress in deactivating Building 9206 and preparing it for an eventual hazard category downgrade and turnover to DOE Office of Environmental Management. CNS deactivated 16 systems, which notably included the complete deactivation of the primary extraction system. Several of the systems deactivated over the past year were systems that handled liquids containing uranium. CNS plans to deactivate 18 systems in fiscal year 2021 and has already completed work for the first of those systems. Overall, CNS has completed 50% of the system deactivations and is on track to complete the remaining deactivation and downgrade activities within the next five years.

Nuclear Criticality Safety: CNS issued a report that ranked legacy out-of-service equipment in Building 9215 based on nuclear criticality safety risk. In performing the evaluation, CNS categorized the equipment based on mobility of fissile material, pre-existing nuclear criticality safety analysis, amount of uranium holdup, and the confidence of the holdup data. CNS found that many of the systems and components were not physically isolated and a few of them contain liquid. Some systems are bounded by an effective or suspended criticality safety analysis, but others are not. CNS also noted that two of the largest pieces of equipment do not have a holdup mass estimate due to challenges with obtaining accurate nondestructive assay measurements. CNS completed a similar nuclear criticality safety risk ranking of out-of-service equipment for Building 9212 last year (see 10/25/19 report). Personnel used the results from the Building 9212 evaluation to inform the system isolation and cleanout activities that are part of the Building 9212 transition strategy. There is not a current project to isolate and clean out the out-of-service equipment in Building 9215 that reflects the results of the nuclear criticality safety risk ranking.

In September, CNS completed the final phase of cleanout activities to remove uranium holdup from the Building 9212 out-of-service carbon burner and destructive distillation units (see 12/14/18 and 11/8/19 reports). CNS removed over a kilogram of uranium. This is a meaningful accomplishment to reduce the nuclear criticality safety risk of out-of-service equipment.

Personnel recently performed a walkdown and borescope inspection of out-of-service chip burning equipment in Building 9212. This equipment was part of a nuclear criticality safety deficiency due to a lack of nondestructive assay data to quantify the potential uranium holdup within it (see 10/25/19 report). A 2013 Y-12 contractor assessment recommended inspection of this equipment, but that recommendation was not acted upon by B&W or CNS (see 9/25/20 report). The walkdown team did not identify any significant uranium accumulation in the components that could be inspected. CNS is evaluating ways to access and inspect the other equipment in this area. CNS plans to permanently isolate and clean out this system in 2021.