

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 21, 2018

TO: Steven A. Stokes, Technical Director
FROM: B. Caleca and K. Sullivan, Acting Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending June 22, 2018

Building 9212 Ultrasonic Chip Cleaning: CNS personnel held a fact finding for the Ultrasonic Chip Cleaning criticality safety evaluation (CSE). Ultrasonic Chip Cleaning is a series of ultrasonic wash cycles with a cleaning solvent to remove contaminants from uranium chips. From 2007 through 2013, a variety of changes were made to the type of cleaning solvent used. As a result of the new solvent, a chemical reaction between the solvent and mineral oil created a gel-like substance which accumulated in ultrasonic chip cleaning process tanks and piping. During the extent of condition walkdowns in April 2018 related to the uranium accumulation events, personnel noted the black color of the liquid in the process tanks. Operations personnel stated the black color, assumed to be related to the gel-like substance, had gotten progressively worse over the last several years. Following subsequent nondestructive analysis measurements in June 2018, CNS determined that there was uranium holdup in the process tanks and piping due to the gel-like substance. The CSE for Ultrasonic Chip Cleaning did not analyze uranium holdup, because it was assumed the process liquid would be flushed out of the system. CNS personnel are revising the CSE and determining if chip processing can occur without Ultrasonic Chip Cleaning. A potential alternative includes multiple rinses of the chips with water. If this is determined to not be possible, CNS personnel will utilize the revised CSE and determine a method for reducing accumulation in process tanks and piping.

Building 9212 Holden Gas Furnace: An Operational Safety Board (OSB) was held prior to authorization to restart Holden Gas Furnace (HGF) operations. The primary procedure change relates to the frequency with which cleanouts of the furnace occur. Previously, cleanouts occurred on a quarterly basis, and were not dependent on the tempo of operations, or type or quantity of material. It was discovered that twice in 2017, the HGF cleanout material exceeded the criticality safety limit (see 2/16/18 report). The new procedure for HGF cleanouts bases the frequency on the quantity and material forms processed. The OSB also identified several post-start actions.

Building 9202 - Tower Water System Leak: Building 9202 is a low-hazard facility that is used for production support functions and technology development. Early on the morning of June 17, facility personnel discovered water ingress into one of the facility's rooms. Proper notifications were made and water was isolated to the facility, however over 60,000 gallons of water had already accumulated in the lower parts of the building. CNS personnel held a fact finding on June 20 to discuss the cause and potential follow-on actions. The source of the water leak was a flexible tube on an HVAC unit slipping off its connection. This unit had been recently maintained and the connection used has not previously been known to fail in this manner. CNS personnel at the fact finding anticipated developing an extent of condition assessment to ensure similar water leaks are not credible for other Y-12 facilities.

Building 9212 Casting: CNS personnel resumed casting operations on June 14, following the strategy outlined in the Casting Enhanced Oversight Management Plan. The initial operation tempo set for casting was limited to a maximum of 2 casts per line per run, for a maximum of 16 casts per line. This initial set was completed on June 18, 2018. CNS personnel began cleanouts on June 19, and cleanout work is ongoing. The data gathered from the initial runs and cleanouts will be used to verify casting process improvements, and evaluate if any further changes to casting operations are necessary.