DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 19, 2020

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending June 19, 2020

Nuclear Criticality Safety: CNS nuclear criticality safety personnel have responded to several events in Building 9212 as operations resumed following the earlier operational pause in that facility due to the Y-12 COVID-19 response. CNS personnel recently discovered liquid on two occasions in the casting furnace area. The first instance involved a hydraulic leak that resulted in accumulation of hydraulic fluid on the floor of a furnace enclosure. In the field report, the criticality safety engineer noted that the source appeared to be an active leak from the hydraulic ram. In January, CNS found a nearly identical situation of hydraulic fluid that is believed to have leaked from the hydraulic ram in the same furnace enclosure. On Monday, CNS found a small amount of liquid (assumed to be water) inside the casting line under a different furnace. CNS is investigating the event to determine the source of the water. The most likely source is the cooling water system. In March 2019, CNS found a leak in the casting cooling water system that resulted in a nuclear criticality safety deficiency (see 3/15/19 report). The criticality safety evaluation credits all water lines and hydraulic lines inside the casting line enclosures as passive design features to prevent leaks at up to one and a half times the maximum system pressure.

During the ultrasonic chip cleaning readiness assessment, NPO personnel noticed a small amount of liquid near the bottom weld of one cylinder on a two-cylinder chip dolly in Building 9212. After the NPO and CNS personnel responded to the situation per the appropriate abnormal operating procedure, the CNS criticality safety engineer inspected other chip dollies in the area and found one that had a similar condition. Earlier this year, CNS discovered liquid around the same weld on five chip dollies in Building 9215 (see 4/10/20 report). CNS has not identified the source of the liquid and to date the events have not entered the CNS event investigation process.

Last week, CNS personnel discovered a small amount of water in a stainless steel pan used to store enriched uranium metal after it has been pickled in Building 9212. The suspected source of the water was condensation. A similar event occurred last June (see 6/18/19 report). As a corrective action from the previous event, CNS added a warning to the pickling procedure to inform that operators that condensation can form if the material is not dried sufficiently. However, the procedure does not have an explicit step to verify the material condition prior to covering the pan with a bonnet and the warning is in a reference use section of the procedure.

CNS personnel found several unlabeled bags of waste products stored in Building 9212 cabinets. CNS performed qualitative non-destructive assay measurements of the bags and two failed. Failure of the qualitative measurement indicates the presence of fissile material, but does not provide a measurement of the quantity of fissile material. Following guidance from nuclear criticality safety personnel, operators moved the two bags to an approved fissile storage array. CNS plans to perform a quantitative measurement to determine the amount of fissile material in the bags.