DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 18, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending June 18, 2021

DNFSB Staff Activity: M. Sautman was in Oak Ridge to work with the resident inspectors.

Building 9204-2E: When performing an annual surveillance of chip dolly cylinders, operators check whether solvent is covering the uranium metal chips and add solvent if the chips are uncovered. During a recent surveillance, operators saw no solvent or metal chips in one of the cylinders and that the material resembled a powder. The presence of contaminants has restricted CNS's ability to process material stored in the Building 9204-2E chip dollies (see 11/15/13 report). Leakage from the chip dollies and loss of solvent via evaporation that results in uncovering the uranium metal has been a long-standing and recurring issue in Building 9204-2E (see 12/13/13 and 1/15/21 reports). CNS intends to transfer the material from the existing chip dollies into new chip dollies. However, new chip dollies may not solve the problem if they are used to store material for an extended period of time (see 4/10/20, 6/19/20, and 7/24/20 reports). CNS is increasing the frequency of the surveillance to check the solvent level of the Building 9204-2E chip dollies, but the resident inspectors have previously noted inconsistencies in surveillance intervals between Buildings 9204-2E, 9215, and 9212 (see 4/30/21 report).

Building 9212: CNS recently discovered that charge masses from castings performed in April were greater than allowed for a specific casting stack due to a conduct of operations error. This was a nuclear criticality safety deficiency although the mass had been analyzed in the evaluation.

Nuclear Criticality Safety: Last month, a nuclear criticality safety engineer learned that water has been present and will likely continue to accumulate in an elevator pit in Building 9212 and reviewed the applicable criticality safety evaluation. The elevator can be used while transporting fissile material, but the analysis for a spill of solution from a safe bottle did not consider that additional liquid could be present. CNS entered its process for evaluating potential nuclear criticality safety issues and implemented compensatory measures. Last Friday, CNS reported this in DOE's Occurrence Reporting and Processing System due to the need for additional controls. CNS plans to look for similar issues across the site and revise two criticality safety evaluations with additional analysis and controls.

CNS continued to investigate the two instances of finding material that resembled pellets during recanning operations (see 6/11/21 report). Production personnel determined that the Y-12 generated material had been previously burned in a furnace and not all the metal converted to oxide. That material form is analyzed and allowed per the governing criticality safety evaluation. Administrative control of that container was rescinded. CNS filed a nuclear criticality safety deficiency for containers in the Highly Enriched Uranium Materials Facility (HEUMF) that are suspected to contain uranium nitride pellets from the external entity. Those pellets are not an approved material form for the recanning operation or for their storage container in HEUMF.