

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 25, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending June 25, 2021

Nuclear Criticality Safety: Building 9212 operators had another instance of discovering an unexpected material form while performing activities in a glovebox (see 6/11/21 report). As noted in last week's report, one of the previous discoveries was ultimately found to be an allowable material (see 6/18/21 report).

A system engineer noticed a pile of "wetted black solids" underneath a hood in Building 9212 that is used to press uranium metal chips into briquettes. CNS reported the event as a nuclear criticality safety deficiency since the material was discovered outside of the intended process. Operators collected the material and performed non-destructive assay measurements, which confirmed the presence of U-235.

CNS discovered that the mass of enriched uranium in a hopper below a dust collector in Building 9212 was greater than the limit established in the nuclear criticality safety evaluation for this location in the exhaust system. CNS also reported this as deficiency. The overloaded hopper was one of six and the other five hoppers contained U-235 masses below the applicable mass limit. Nuclear criticality safety personnel concurred with a plan to perform an air pulse to move the material holdup from the hopper into a favorable geometry discharge tube below the hopper. That operation was successful in bringing the mass in the hopper below the mass limit.

Building 9204-2E: CNS has been working to troubleshoot and repair welding equipment that had been taken out of service. Prior to approval of a test plan, and without authorization from the shift manager, a weld was performed under the proposed test parameters.

Building 9212: CNS violated a technical safety requirement at the oxide conversion facility for the third time this year (see 4/16/21 and 5/28/21 reports). CNS has been working to restart the oxide conversion facility for most of 2021 and was in a limiting conditions for operation that required the scrubber to be operable while the primary containment is not intact. The scrubber became inoperable because the required vacuum was lost between the atmosphere and the enclosures for the hydrogen fluoride cylinder and vaporizer. The vacuum was lost due to a site-wide loss of compressed air that caused a hydrogen fluoride cylinder enclosure door gasket to deflate. CNS has encountered several challenges with operating the oxide conversion facility over the past several years (see 4/26/19 and 4/30/21 reports). CNS is implementing a safety basis supplement that was recently approved by NPO. It should limit the potential for future technical safety requirement violations associated with operability of the scrubber.

The wet vacuum system level detection system failed a monthly surveillance involving a function test. A credited valve reopened and thus failed to maintain isolation of the vacuum trap. The vacuum trap failed this surveillance in May 2020 and CNS was not able to identify a specific cause for the failure (see 5/22/20 report). In April, another vacuum trap similarly failed its monthly surveillance (see 4/16/21 report).