

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 26, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending November 26, 2021

Highly Enriched Uranium Materials Facility: During a monthly surveillance, CNS discovered that a drum in the temporary staging area was not compliant with a key assumption in the documented safety analysis. The drum exceeded the temporary staging area time limit by approximately two weeks. CNS evaluated the contents of the drum, determined the drum could be compliantly stored elsewhere, then moved the drum. Consistent with Y-12's unreviewed safety question determination procedure, this discrepant as-found condition was fixed within three business days and not considered a potential inadequacy of the safety analysis. CNS did not report this in ORPS as a violation or noncompliance of a credited hazard control. There was no abnormal event investigation or critique, nor was an issue generated in the issues management system. There have been issues regarding container residence time for transient, interim, and prolonged low-maintenance storage in the past (see 1/24/20 report).

Nuclear Criticality Safety: CNS held a critique meeting for a casting mis-pour. A mis-pour is a type of abnormal casting where a significant mass of uranium is released from the intended geometry of the crucible and/or mold assembly. In this event, it appears that the mold housing separated and allowed molten uranium to leak out of the mold into an overflow trap. The operators responded appropriately per the abnormal operating procedure and nuclear criticality safety personnel assessed the situation and provided guidance for breaking and storing the material. CNS created a corrective action to evaluate a mold housing design change that reduces the risk of this type of anomaly. A similar event occurred in 2019 and mold design changes were considered, but no changes were made (see 2/1/19 report). The design changes may be more likely this time due to factors independent of this event. If the mold design is not changed, CNS will evaluate improving the mold inspection process.

CNS also held a critique meeting for a can that exceeded its mass limit by several hundred grams. The amount in the can also exceeded the same mass limit for the canning hood. The can became overloaded after an operator put a fourth briquette into the can per the reference use procedure. The response was appropriate. The process appears to assume that enough mass is lost from the original chips during cleaning and briquetting such that that two chip cylinders worth of briquettes would not violate the mass limit. The operator had noticed that the mass loss from these briquettes appeared to be less than usual. CNS intends to change the process and procedure to not rely on this non-conservative assumption.

Building 9204-2E: CNS completed a root cause analysis for the chip fire and issued a report (see 10/1/21, 10/15/21, and 11/5/21 reports). The report had two root causes, two contributing factors, and four opportunities for improvement. Some of the team's suggestions were that the operating procedure should be updated to include instructions for responding to chip fires in a cylinder, that employees need to be trained on the response, that the use of coke should be analyzed for fires in chip dollies, and that potential engineered controls should be evaluated to prevent fires during chip transfer operations. CNS is developing corrective actions.