

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 10, 2020

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending April 10, 2020

COVID-19: CNS received NNSA approval to begin transitioning the Y-12 National Security Complex to a reduced mission critical operational status with most personnel offsite. A significant portion of offsite personnel will be working from home to the extent possible. Regarding nuclear safety, technical safety requirement surveillances and rounds required by criticality safety evaluations will continue.

Highly Enriched Uranium Materials Facility (HEUMF): CNS personnel learned that some enriched uranium metal in a container stored at HEUMF should be considered pyrophoric based on new information received when the material was officially declared as scrap last week. The uranium was known by an organization outside of Y-12 to have degraded in a manner consistent with uranium exposure to moisture. Due to the apparent surface area to mass ratio and likely presence of some amount of uranium hydride, the material should be handled as pyrophoric. Pyrophoric materials are not authorized for interim or prolonged low maintenance storage at HEUMF. CNS entered the new information process, determined this was a discrepant as-found condition and declared a potential inadequacy of the safety analysis. An unreviewed safety question determination will be performed. This situation was not discovered during the previous extent of condition reviews (see 11/30/18 report) as the pictures and description of the material had not been shared with Y-12 previously.

Nuclear Criticality Safety: Several two-cylinder chip dollies were found in Building 9215 with small amounts of liquid around a weld on the cylinders that suggest leakage had occurred. Nuclear criticality safety personnel responded to the discovery and opened a minor non-compliance issue for the situation. Two-cylinder chip dollies are used to store uranium chips generated by machining operations. In the cylinder, the uranium chips are covered with a solvent to slow the corrosion of uranium and reduce the potential of a fire due to rapid oxidation of the chips in air. The disposition paths for processing uranium chips have not been operational for an extended period of time, resulting in loaded chip dollies in Buildings 9212 and 9215 that have been stored for significantly longer than prior practice. The preferred disposition path of using the Building 9212 ultrasonic chip cleaning process prior to melting briquettes of chips in a casting furnace has not been used for the past two years. Use of an alternate disposition path of rinsing the chips, pressing them into briquettes, and burning them in the Building 9212 skull burner was stopped in November 2018 due to a briquette undergoing a pyrophoric reaction (see 12/7/18 report). During preparation activities for restarting the ultrasonic chip cleaning process, a concern was identified regarding the possibility of the solvent evaporating and potentially uncovering the uranium chips due to their extended storage time in Building 9212. Since Building 9215 has similar aged loaded chip dollies, this concern was shared with the responsible Building 9215 personnel and is being evaluated. Due to the site transitioning to the mission critical operational status, checking the solvent level and filling the cylinders was not an urgent activity this week. Building 9215 personnel plan to pursue the potential need to check and add solvent to the cylinders after normal operations resume.