

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 6, 2020

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending November 6, 2020

Y-12 Welding Program: Last week, CNS paused all construction (not including the Uranium Processing Facility), maintenance, and other non-weapons welding activities at Y-12. CNS weld engineers identified a potential problem, dating back to March 2000, with how American Society of Mechanical Engineers (ASME) welder performance qualifications have been applied at Y-12. CNS discovered the issue with welder performance qualifications while developing a non-conformance report for a separate issue regarding the use of inappropriately sized equipment to qualify welders for some applications. Since at least 2012, Y-12 has used a mandrel diameter that is too large per ASME Boiler and Pressure Vessel Code requirements when performing a guided bend test for test coupon material thicknesses less than 3/8 inch. CNS identified the bend test welder qualification issue on September 21, but did not enter a draft non-conformance report into the non-conformance system database until October 8. CNS also had not entered this issue into the event investigation process or evaluated whether it was a potential inadequacy of the safety analysis (PISA). On October 22, CNS convened a critique meeting under the event investigation process and afterward identified the second issue on October 27. CNS entered the new information process for the first issue on October 22 and determined it was not a PISA. A PISA evaluation is ongoing for the second issue. At the critique meeting, personnel acknowledged that documentation and communication of the first issue were less than adequate. CNS is working through multiple corrective actions—including re-validating welding code compliance—that must be completed prior to resuming welding activities. CNS reported a management concern under DOE Order 232.2A for a “welding programmatic weakness.”

Nuclear Criticality Safety: NPO recently started a reactive assessment of the large geometry exclusion area program due to recent nuclear criticality safety infractions and their associated corrective actions (see 9/11/20 report). Since December 2019, CNS has been working to correct significant issues with the program (see 12/6/19, 1/17/20, and 3/15/20 reports).

Last Friday, operators noticed liquid inside a stainless steel pan containing enriched uranium metal. When the nuclear criticality safety engineer responded, most of the liquid had evaporated and only trace amounts of liquid were observed on the surface of the material. Operators have discovered liquid inside the stainless steel pans before (see 6/28/19 and 6/19/20 reports). CNS considered the June 2019 event a nuclear criticality safety deficiency. The June 2020 event was not recorded as an infraction. The most recent event was classified as a minor non-compliance.

NPO approved a revision to the CNS nuclear criticality safety program. The primary change was incorporation of a Central Technical Authority position regarding Y-12 legacy facilities that cannot demonstrate compliance with a DOE Order 420.1C requirement for ensuring subcriticality under abnormal conditions initiated by design basis events (see 7/26/19 report). In the approval letter, NPO directed that CNS delete and not exercise an allowance for the CNS Chief Nuclear Criticality Safety Engineer to use the technical deviations process for “other limited uses” that he or she determines are appropriate.