

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 6, 2019

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending September 6, 2019

Building 9204-2E: To perform leak tests of components, operators raise and lower the components in and out of a small vessel using a friction band lifting fixture and a crane. Last week, an operator lifted a component out of the vessel after performing a leak test. While it was suspended in the air, he cleaned the vessel and the component. He cleaned the component by wiping it with cheesecloth wetted with the usual solvent and separately with an additional solvent not typically used as directed by his management for troubleshooting purposes. After being suspended for approximately two minutes, the component suddenly separated from the lifting fixture and fell approximately four feet. No one was injured. Operations personnel responded with appropriate conservatism by backing off fifteen feet, securing the area, and making notifications. Nuclear criticality safety evaluated the situation and determined it could have been field correctable by operations personnel. Notably, scenarios involving dropped components are analyzed in criticality safety evaluations. After nuclear criticality safety provided authorization to lift the component, a more detailed inspection found no significant damage. The component was not breached and there was no spread of contamination.

The Y-12 site manager suspended the use of friction band lifting fixtures in Building 9204-2E pending further evaluation. At the fact finding meeting, the participants evaluated whether the use of the second solvent might have contributed to the incident and whether its use had been analyzed and allowed by procedure. They determined it was unlikely as the amount of solvent on the cheesecloth was minimal and it was not applied near the interface of the component and the friction band lifting fixture. In addition, the reference use procedure governing general handling of the components specifically authorizes its use. The resident inspector and others at the fact finding meeting walked down the area and noted the friction band lifting fixture's set of two fastening mechanisms were not identical. CNS performed additional research and held a critique. They determined the engineering drawings did not match aspects of the friction band lifting fixture that had been used. In addition, a drawing had been updated in 2014 to specify a torque to be used but that had not been incorporated into the procedure. Finally, inspections performed by equipment, testing, and inspection personnel check for degradation but may not require them to compare the equipment being inspected to engineering drawings.

CNS is considering several corrective actions to prevent recurrence. Prior to this event, there was an action assigned to the CNS engineering and maintenance organizations to clarify expectations for conducting the type of visual inspections required for this equipment. This action was created as a result of finding missing cap screws on a different type of lifting fixture in Building 9204-2E last May. The action had not yet been completed when the recent drop occurred. Both events will be considered in completing the action. Eight years ago, a large weapon component dropped approximately four feet while it was being hoisted into a multi-axis machining tool. The contractor chose to externally report that incident as a near miss (see 8/12/11 and 9/23/11 reports).