DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 30, 2024

TO: Timothy J. Dwyer, Technical Director
FROM: A. Holloway and C. Stott, Resident Inspectors
SUBJECT: Pantex Plant Activity Report for Week Ending August 30, 2024

Special Tooling: Last week, CNS paused operations for a certain weapon program after discovering two copies of the lifting and rotating fixture with the same component failure. The lifting and rotating fixture is used to physically support and maintain control of nuclear explosives during operations. Upon disassembly of the failed lifting and rotating fixtures, CNS discovered complete shearing of the portion of the component—a pawl-type feature—that prevents uncontrolled rotation of the nuclear explosive. CNS Tooling and Machine Design issued an engineering evaluation to assert that failures of this component do not degrade the safety functions of the fixture. CNS contends that a completely sheared pawl will be captured in-place and can still be relied upon to preclude dropping or uncontrolled rotation of the unit. Of note, this same component is used in several lifting and rotating fixtures for multiple weapon programs. In the engineering evaluation conclusions, CNS states that operations involving these lifting and rotating fixtures can resume if the fixtures are "handled carefully during [nuclear explosive] operations." More specifically, CNS recommends that production technicians "hand assist the unit during any rotation" and "ease the fixture into the desired orientation."

Additionally, last week, while transferring a unit between an enhanced transportation cart and a bay stand, CNS production technicians discovered that the operation could not be completed due to an interface issue between the cart and stand. Upon closer examination, CNS tooling and machine design personnel identified that the axle bolts that attach the front wheels to the cart—which straddle the bay stand stanchions during material transfers—were attached backwards. This discrepant configuration resulted in the bolt ends interfering with the bay stand stanchions during cart placement. After discovery of this condition, CNS paused operations and subsequently returned the unit to its previous facility. The CNS special tooling program manager initiated an extent of condition evaluation and discovered only one other cart with incorrectly configured wheel axle bolts; CNS had previously tagged out and removed the cart from service for maintenance.

During the event investigation, CNS noted that while special tooling program personnel annually remove these bolts on every cart for axle lubrication, there are no notes or flags on the cart drawing to highlight proper orientation of the bolts during reassembly. CNS developed resumptive actions to generate an engineering evaluation and associated procedure to permit transferring of the unit into a cart with axle bolts in the correct orientation. Additionally, CNS plans to brief the tooling mechanics and tooling review teams on the details of this event, emphasizing requirements related to bolt orientation following maintenance activities. The resident inspectors note that PFO personnel and CNS management questioned if actions should be developed to specify correct axle bolt orientation on the cart drawing. CNS responded that the investigation and critique processes are only to develop actions necessary to return to production; a follow-up causal analysis meeting will be held to determine corrective actions, which may include special tooling drawing updates.