

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 13, 2023

TO: Katherine R. Herrera, Acting Technical Director
FROM: C. Berg, Acting Resident Inspector
SUBJECT: Pantex Plant Activity Report for Week Ending January 13, 2023

Staff Activity: The acting resident inspector conducted walkdowns of various nuclear explosive operations and construction projects within defense nuclear facilities. Of note, for the remaining nuclear explosive cell requiring replacement of its false ceiling (see 12/30/22 report), the subcontractor has completed a significant portion of the project, including removing the old wood-framed false ceiling, installing new metal framing, and replacing the fire suppression system piping. Additionally, Pantex continues to replace high pressure fire loop (HPFL) ductile iron piping with high-density polyethylene to minimize corrosion-related leaks. Currently, four facilities—one cell and three bays—are undergoing HPFL lead-in replacement. Once complete, Pantex will have accomplished about 80% of this project for nuclear explosive facilities.

Conduct of Operations: Last week, production technicians paused nuclear explosive operations within a cell to allow CNS process engineering, CNS tooling engineering, and design agency personnel to approach the nuclear explosive and assess a component defect (see 1/6/23 report). During this activity, the design agency personnel acquired an orange stick from the technicians to physically touch the unit and gauge the defect depth. They also brought a personal eye reticle magnifier up to the unit to assist in visual examination of the defect. Following the investigation and critique, CNS initially categorized the incident as an event resulting in an adverse effect on nuclear explosive safety due to the magnifier representing unanalyzed equipment.

This week, the acting resident inspector attended a meeting between NPO and CNS personnel where they further discussed whether the above actions were allowed per the safety basis. Of note, one specific administrative control (SAC) states that only equipment that has been evaluated in the safety basis and is required by an approved process shall be brought near the unit. NPO and CNS determined that the SAC applies to the magnifier, as this equipment does not represent a personal item but rather equipment used to perform work. However, the magnifier was not explicitly allowed per the approved process (i.e., the nuclear explosive operating procedure). As a result, NPO and CNS decided that the event also constituted a technical safety requirement violation. In response to the incident, CNS plans to conduct a causal analysis and evaluate the process for allowing personnel to perform inspections of nuclear explosives and associated components. The acting resident inspector noted that clarifying expectations and explicitly documenting who may perform such work, as well as what materials are allowed near the unit during these inspections, would help prevent event recurrence.

Safety Basis: During a review of the hazard analysis report for one weapon program, CNS identified that the safety analysis for a specific operation evaluated the wrong weapon configuration. The discrepancy resulted in both the application of incorrect weapon response values, as well as the existence of an unanalyzed hazard to the correct weapon configuration within the safety basis. As a result, CNS Safety Analysis Engineering declared a potential inadequacy of the safety analysis but did not implement any operational restrictions due to an existing control (i.e., special tooling) that adequately prevents the hazard scenario.