

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 18, 2023

TO: Timothy J. Dwyer, Acting Technical Director
FROM: A. Holloway, C. Stott, and C. Berg (acting), Resident Inspectors
SUBJECT: Pantex Plant Activity Report for Week Ending August 18, 2023

Staff Activity: The resident inspectors observed and evaluated the first week of facility walkdowns and presentations associated with the Approved Equipment Program Volume Two Nuclear Explosive Safety (NES) Master Study. This master study focuses on both the qualified container and special tooling programs at Pantex.

Nuclear Explosive Safety: This week, CNS declared a Stop Work Event due to emerging concerns surrounding two weapon safety components on two programs. As a result, CNS conservatively removed ten nuclear explosive operating procedures from active status, preventing further operations involving or relying on these safety components until additional information could be acquired by Pantex and the design agencies. A NES change evaluation will be convened early next week to assess the safety implications of these emerging concerns.

Project Quality: Over the past few years, Pantex has undertaken a significant effort to upgrade the flame detection systems within its defense nuclear facilities. As part of this project, a subcontractor procured anchor bolts and installed them within three nuclear explosive bays. These bolts serve a safety class function to ensure the installed equipment will remain in place during and after a design basis seismic event without failure. However, the subcontractor procured these fasteners directly from a vendor that CNS recently removed from the Pantex Quality Approved Supplier List (QASL). Furthermore, CNS Project Quality Engineering (PQE) personnel did not identify this error during their review of the fastener purchase order last year.

Earlier this month, PQE identified the discrepancy, noted the use of the inappropriately procured anchor bolts in the three nuclear explosive bays, and generated a nonconformance report. CNS categorized the incident as both a safety basis noncompliance and a performance degradation of a safety class structure, system, or component when not required to be operable.

To mitigate future events, CNS plans to add PQE personnel to the updated QASL distribution and brief personnel on QASL verification requirements when reviewing purchase orders. Additionally, during the event investigation, the resident inspectors and NPO facility representatives questioned whether other fasteners had been procured from the vendor—following its removal from the Pantex QASL—and installed during other construction projects. As a result, CNS developed a corrective action to perform an extent of condition review on this topic. Finally, prior to returning these facilities to an operational mode and permitting nuclear explosives into them, CNS plans to physically test the anchor bolts to ensure they can perform their safety function during design basis seismic events.

Special Tooling: While raising a nuclear explosive off the floor using a Bomb Stand, the production technicians noted that the unit began to lower on its own (see 8/11/23 report). CNS executed a nuclear explosive engineering procedure to replace the degraded stand and has commenced teardown of the equipment this week to further investigate the failure mechanism.