

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 29, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: A. Gurevitch, M. Bradisse (acting), and C. Berg (acting), Resident Inspectors
SUBJECT: Pantex Plant Activity Report for Week Ending October 29, 2021

Staff Activity: The resident inspectors attended nuclear explosive safety (NES) study group deliberations regarding the introduction of two additional weapon program operations into the newer vacuum chamber facility, including discussions on multi-unit operation requirements.

Electrostatic Discharge (ESD) Event: In late August, while performing operations on a unit in a nuclear explosive cell, a production technician felt a static electrical discharge between himself and tooling encasing the unit (see 9/3/21 report). Last week, CNS facility engineering personnel released an evaluation detailing testing performed to ascertain the probable cause of the ESD event. In this evaluation, CNS investigated potential sources—such as the high explosive mat, special tooling, and dissipative footwear—and determined that radiation-shielding aprons worn by the production technicians were the most credible cause. Additionally, CNS developed and executed a testing plan for acceptance of radiation-shielding aprons for use (see 9/17/21 report).

CNS transmitted to NPO a justification for continued operations (JCO) to resume nuclear explosive operations on two weapon programs using these approved aprons. With approval of this JCO, all operations originally paused following this event will be allowed to resume. CNS plans to employ this strategy until a long-term solution (e.g., implementation of radiation-shielding aprons into the special tooling program) can be implemented.

In September, CNS and design agency personnel met and determined the unit involved in the ESD event met the anomalous unit criteria. Last week, based on further investigation into causes of the event, these organizations reconvened, reevaluated that determination, and decided the unit did not meet those criteria. This week, a NES study group convened to evaluate CNS's interim strategy to resume operations utilizing the approved radiation-shielding aprons. The resident inspectors and headquarters staff members observed the project team briefings and NES study group deliberations. The NES study group will continue deliberations and drafting of their report next week.

Safety Basis: The CNS production tooling department instituted an improvement initiative to weigh all special tooling and provide safety analysis engineering (SAE) with bounding weights. As a result, CNS identified tools that had an actual weight larger than that listed in the safety analysis. Based on these non-bounding special tooling weights, SAE declared a potential inadequacy of the safety analysis (PISA), determined it represented an unreviewed safety question, and submitted an evaluation of the safety of the situation to address these weight discrepancies (see 8/6/21, 8/13/21, and 10/15/21 reports). CNS continues to analyze actual tooling weights and as expected identified additional non-bounding values; on Thursday, SAE declared another PISA to capture these discrepancies. CNS did not institute any operational restrictions as the hazards impacted by this tooling weight change still screened per the existing weapon response or were otherwise adequately controlled by the existing safety analysis.