

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 9, 2024

TO: Katherine R. Herrera, Acting Technical Director
FROM: A. Holloway and C. Stott, Resident Inspectors
SUBJECT: Pantex Plant Activity Report for Week Ending February 9, 2024

Anomalous Unit: CNS production technicians discovered deformation and cracking on a weapon component in a nuclear explosive cell. This week, given the uniqueness of this discovered condition and the unknowns regarding its cause, personnel from CNS process engineering, CNS nuclear explosive safety (NES), and design agency system engineering determined that the nuclear explosive met the criteria to be considered an anomalous unit (see 3/26/21 report). The resident inspectors attended a planning meeting where various NPO, CNS, and design agency organizations discussed potential paths forward. Currently, the project team is proposing to stage the nuclear explosive within an enhanced transportation cart until a suitable disassembly process can be developed and approved for use.

Nuclear Explosive Safety: Last year, CNS prohibited most nuclear explosive operations on a certain weapon program after a design agency sent formal notification that they could no longer support the program's mechanical insult weapon response rules (see 10/20/23 and 10/27/23 reports). Per NNSA Supplemental Directive 452.2, for ongoing nuclear explosive operations on each weapon program, NNSA must conduct a NES Study (NESS) every 10 years to evaluate the operations at Pantex and establish a new NES baseline. In consultation with the project team, NNSA previously scheduled a NESS for this program to occur before the 10-year expiration date of May 2024. As resolution of necessary weapon response changes and nuclear explosive operating procedure revisions may persist beyond the May 2024 timeframe, NPO sent a memo to NNSA headquarters this week providing a one-year extension to complete this study, as well as outlining provisions to ensure production technician readiness. Furthermore, if weapon response is received prior to the lapse of the extension, NPO noted resumptive actions within its memo, including a safety basis revision, production technician refresher training, and commencement of the NESS as soon as possible but no more than three months after resumption of operations.

Conduct of Operations: CNS process engineering provides option trees within the nuclear explosive operating procedures to account for variability in the process (e.g., whether some weapon components release from each other during disassembly). This week, CNS production technicians chose the correct path in an option tree but did not follow all the required actions. During the investigation, CNS personnel discussed that while the option tree lists two possibilities based on the configuration of a certain weapon component, the majority of these steps in either option are related to preparing the unit and facility to allow technicians to vacate the cell. For this occurrence, the technicians did not leave the facility and therefore appropriately did not perform those actions. However, the option selected contained one step—not related to leaving the facility—which directed the technicians to continue operations using a procedural appendix. The technicians did not execute this step, as they believed all tasks were related to exiting the facility, and instead continued onto the next sequential task. The certified production technician recognized the discrepancy shortly after commencing additional operations. In response, CNS intends to evaluate the language of the option trees within the operating procedure and identify improvements from a human factors perspective.