

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 1, 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 September 1, 2023

**Staff Activity:** The resident inspectors and members of the Board’s staff attended training and orientation for the upcoming Approved Equipment Program Volume I Nuclear Explosive Safety (NES) Master Study. During this master study, a NES study group will evaluate the Pantex electrical and supplemental equipment programs, including those related to the design, fabrication, and use of electrical testers.

**Special Tooling:** Last month, while raising a nuclear explosive off the floor using a Bomb Stand, production technicians noted that the unit began to lower on its own (known as back drive). CNS executed a procedure to replace the degraded stand and continue operations with a different copy of the same design (see 8/11/23 and 8/18/23 reports). Following disassembly of the degraded stand, CNS Metrology measured critical dimensions of the back drive spring and the associated cylinder. CNS tooling engineers designed the Bomb Stand such that the outer surface of the back drive spring frictionally interfaces with the inner surface of the cylinder to prevent movement of the unit without intentional technician input. CNS tooling engineers discovered that the outer diameter measurements of the circular back drive spring did not meet the acceptance criterion in every plane. Previously, CNS Metrology provided the cognizant engineer a single, averaged measurement to compare to the acceptance criterion. CNS believes that such a dimensional discrepancy would explain a back drive event. Tooling engineers met with the resident inspectors and discussed potential corrective actions, including more robust dimensional acceptance criteria in the associated preventive maintenance procedure and trending of spring measurements acquired during maintenance to provide assurance of component reliability. The resident inspectors note that these actions may help mitigate future occurrences.

**Nuclear Explosive Safety:** This week, NPO transmitted to CNS the results of a recent NES change evaluation related to a retest of nuclear explosive electrical circuitry that provided an out-of-range value during a resistance test. The NES study group did not document any findings, opportunities for enhancement, or deliberation topics during this evaluation.

A NES study group also completed an evaluation of proposed changes to the site procedure defining the trouble call process (i.e., responding to abnormal results from electrical equipment during setup, self-check, or testing of nuclear explosive circuitry). CNS revised the procedure, including changing its level-of-use and adding additional instructions, to address a previous operational safety review finding (see 7/28/23 report). The proposed revision, however, also modified the definition of “Technical Authority”—personnel authorized by CNS to perform troubleshooting calls—to expand from *qualified Pantex engineers* to a broader group. The study group documented one opportunity for enhancement against this change, noting it “could lead to inadequacies in the selection, training, or qualification of personnel performing the role of Technical Authority if not monitored and controlled.” The study group also generated three deliberation topics, including the need for future studies to evaluate qualification of Technical Authorities and implementation of the troubleshooting process for specific electrical testers.