

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 12, 2017

MEMO TO: Steven Stokes, Technical Director
FROM: Ramsey Arnold and Zachery Beauvais
SUBJECT: Pantex Plant Report for Week Ending May 12, 2017

Damaged Detonator Cable Assembly (DCA): During disassembly operations last week, production technicians discovered a cut DCA. The nuclear explosive operating procedure contains a deviation to address a cut or broken DCA and a safety management program key element specifies that PTs will tape visibly damaged portions of the DCA with two layers of insulating tape, but the specific configuration and location of the cut prevented this from being executed. Based on conflicting indicators, it is unclear whether the damage to the DCA occurred during or prior to the current disassembly operations. The resident inspectors observed an anomalous unit determination meeting conducted by personnel from CNS and the cognizant design agency. The CNS nuclear explosive safety representative determined that the damage to the DCA met the criteria to declare the unit anomalous, per the DOE Nuclear Explosive Safety Order. NNSA, CNS, and the design agency will form an ad hoc project team to develop a path forward to continue disassembly of the unit.

Conventional High Explosive Impact Hazards: CNS process, tooling, and safety analysis engineering (SAE) personnel continue to develop a path forward to address hazards related to a potential inadequacy of the safety analysis (PISA, see 3/17/17 report), later determined to be a positive unreviewed safety question (USQ). During an extent of condition evaluation performed as part of the USQ determination, CNS SAE identified additional hazards without credited, preventive controls related to the possibility of mechanical impacts to main charge high explosives. Specifically, SAE determined that preventive controls were not in place to address potential drops of the main charge when moved by hand from a bench-top fixture to an adjacent transfer cart, drops of equipment onto the unit, or PT falls onto the unit. The current weapon response rules specify a low mechanical impact energy as the minimum screening threshold for drops onto an unspecified surface. CNS plans to request refined weapon response specific to the surface materials on the bench-top and transfer cart to allow greater margin in the accident scenario. The resident inspectors observed demonstrations provided to NPO personnel of the applicable process steps, as well as proposed controls to address the falling man hazards within the initial PISA scope. Nuclear explosive cell operations on this program remain paused.

Special Tooling Program: In response to the NPO conditional approval of the CNS quality assurance program description (QAPD, see 12/21/16 report), CNS completed an analysis to better define the gaps in NQA-1 application for weapon-related items including special tooling, 35-account material, testers, and containers. CNS has also developed an implementation plan to address the gaps identified by the analysis and become consistent with Title 10, Code of Federal Regulations, Part 830, Subpart A. Regarding special tooling, CNS will develop a pilot effort on a representative set of special tooling prior to full implementation of NQA-1 across all special tooling. Prior to the NPO conditional approval of the QAPD, CNS also began development of a separate pilot effort to perform destructive load testing on a piece of special tooling to better understand its yield and failure load paths and validate analytical methods (see 4/15/16 and 7/1/16 reports). The initial testing is expected to be completed in July 2017 with additional analysis scheduled for completion by January 2018. Once complete, these two special tooling pilot programs have the potential to improve the pedigree of the overall special tooling program.