

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 8, 2019

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SUBJECT: Pantex Plant Activity Report for Week Ending November 8, 2019

Weapons Operations: CNS management paused weapons operations site-wide this week. This follows a similar management decision in September (see 9/6/19 report).

High Pressure Fire Loop (HPFL): In October, Pantex experienced a leak in an electrofusion coupling within the HPFL. The leak resulted in the loss of fire water to a nuclear explosive cell and project delays for an ongoing lead-in upgrade for a separate cell facility. After excavating the area around the leaking coupling, CNS engineers discovered that the coupling was misaligned and adjacent to a concrete thrustblock, both likely contributors to the early failure. CNS project engineers, system engineers and maintenance work planners developed a maintenance package to install a new electrofusion coupling. Previous electrofusion coupling installation has typically been performed by outside contractors; however, CNS management decided to use in-house maintenance resources to perform this work. This required qualifying specialized equipment and plastic welding techniques to perform the work. CNS maintenance personnel performed tests on electrofusion couplings and high density polyethylene piping before installation. Two couplings failed the testing this week. Due to these failures, CNS engineering directed the use of a butt weld to fix the leak. In addition to the quality and technical challenges, CNS and subcontractor personnel have experienced safety issues completing this project including inadvertently cutting fire protection system signal cables during excavation.

Charge Generation: While evaluating an actionable deliberation topic from a 2016 operations safety review (OSR), CNS safety analysis engineers identified a potential inadequacy in how charge generation hazards related to certain items used in nuclear explosive operations are evaluated in the approved hazard analysis reports for four weapons programs. Specifically, the inadequacy relates to dielectric materials and equipment listed in pre-shift setup steps in the associated nuclear explosive operating procedures, such as Kimwipes. In their tasking letter for the 2016 OSR, NPO directed that CNS evaluate electrostatic discharge hazards associated with the use of non-static dissipative Kimwipes for all programs and notify safety analysis engineering of any newly discovered hazards. As an immediate operational restriction, CNS management restricted the execution of any of the affected operating procedures. CNS safety analysis engineers determined the situation to represent an unreviewed safety question.

Legacy Safety Analysis Issues: During an ongoing extent of condition review (see 9/28/18 report), CNS safety analysis engineers identified a discrepancy with the application of a worker safety weapon response rule for detonator cable assembly handling hazards and an unanalyzed hazard related to rolling equipment impacting nuclear explosives in the ultimate user configuration. These issues, determined to represent potential inadequacies of the safety analysis, impact one weapon program. As an immediate operational restriction, production technicians will segregate DCAs when placed on benchtops and restrict the equipment allowed in the near vicinity of nuclear explosives in the ultimate user configuration.