

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 24, 2017

MEMO TO: Steven Stokes, Technical Director
FROM: Ramsey Arnold and Zachery Beauvais
SUBJECT: Pantex Plant Report for Week Ending March 24, 2017

DNFSB Staff Activity: J. Anderson observed the ongoing W76 Nuclear Explosive Safety Study.

Stuck Component: Nuclear explosive cell operations on a single unit were paused earlier this month, following discovery of a stuck detonator cable assembly (DCA). The DCA does not appear to be damaged. Similar conditions were discovered on a unit of the same program in February 2015 and dispositioned in August 2015 (see 2/13/15 and 8/28/15 reports). Specific operations to address this condition, referred to as “cut and cap”, are approved as a credible deviation on a different weapon program, but are not currently addressed in the safety analysis for the paused unit. In order to process the 2015 unit, Pantex received unit-specific weapon response from the design agency (DA) and used the information to conduct the operations under a justification for continued operations (JCO). In their safety evaluation report for that JCO, NPO directed CNS to pursue non-unit-specific authorization for cut and cap operations on that program, and update the safety basis to allow it. This week, CNS safety analysis engineering (SAE) requested weapon response information from the DA in order to analyze cut and cap operations for all future instances that require it on this program. Operations remain paused.

Potential Inadequacy of the Safety Analysis (PISA): Last week, SAE declared two separate PISAs, pausing certain operations on the respective programs. On one program, SAE identified that the potential hazard of a production technician (PT) tripping into a unit while carrying the task exhaust is currently unanalyzed, and a control is not implemented to address the hazard posed by a PT tripping while carrying a specific component. On the other program, SAE identified the potential for the Collaborative Authorization Safety-Basis for Total Life-Cycle Environment (CASTLE) software tool to artificially provide a lower frequency for certain accident scenarios during disassembly operations in nuclear explosive bays. Upon further review, this resulted in a negative unreviewed safety question determination. Because CASTLE also includes a safety factor, SAE determined that the increase in accident frequency was still less than the previously analyzed accident frequency.

Special Nuclear Material Processing Corrective Actions: CNS conducted, and the resident inspectors attended, multiple corrective action development and causal analysis meetings held in response to a recent technical safety requirement violation. The violation occurred when quality assurance technicians processed legacy pits that were authorized in their procedure, however, the procedure lacked the necessary combustible controls (see 2/10/17 report). CNS identified corrective actions to communicate lessons learned, specifically, to exclude the affected legacy pit types from packaging and surveillance procedures, and to revise the local work instruction for preparing combustible loading dispositions (CLD). Fire protection and process engineering intend to reinforce the expectations for the flow down of combustible control changes identified through CLDs. While the team identified a credible set of corrective actions to prevent recurrence of the specific event, the resident inspectors note that the specified actions do not address potential gaps in the broader process of verifying that controls, systems, and personnel are ready to perform surveillance work on pit types that have not been recently processed. CNS intends to conduct an extent of condition review that may identify additional corrective actions.