

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 15, 2022

TO: Christopher J. Roscetti, Technical Director
FROM: A. Gurevitch, Resident Inspector
SUBJECT: Pantex Plant Activity Report for Week Ending April 15, 2022

Special Tooling: To protect against direct lightning insults to nuclear explosives, hoisting operations for lightning sensitive components in nuclear explosive cells require some form of electrical isolation while actively using the hoist. Most facilities make use of an isolating sling—credited as a piece of special tooling—to hold the unit during lifting operations, such that the unit is electrically isolated from the hoist mechanism. However, per the facility technical safety requirements, two facilities cannot support the use of this special tool; in those cases, a dedicated isolation device is installed between the hoist and the crane assembly. This device electrically isolates the hoist, chain, and unit from the rest of the crane assembly, and therefore prevents direct lightning strikes to electrically sensitive components. The technical safety requirements mandate that this isolator be in place for all hoisting operations in these cells.

Pantex recently transitioned one of these two nuclear explosive cells from one weapon program to another. The previous program did not require the hoist to lift lightning sensitive components, and therefore did not require use of the isolator; however, the new program does require the hoist for these operations. Earlier this week, it was discovered that, while an isolator was delivered to cell, it was never installed prior to production technicians performing work under a nuclear explosive operating procedure. Once discovered, technicians contacted appropriate personnel. No hoisting operations were conducted without the isolator installed. As a result, NPO and CNS determined that there were no violations of the technical safety requirements.

The isolator cannot be installed while a nuclear explosive is present in the facility. As a recovery action, CNS plans to submit a safety basis supplement to allow continued processing of this unit until it is removed from the facility, at which point the isolator can be installed and normal operations resumed. As a compensatory measure to account for the lack of credited electrical isolation, CNS's current proposal is to require a clear-weather window for applicable hoisting operations. After discussions with CNS personnel, the resident inspector further notes that the necessity of the alternate isolator device may stem from issues related to a legacy weapon program. If the alternate isolator is not necessary for current weapon programs, these facilities could instead make use of the isolating sling used in the rest of the cells.

Safety Basis: This week, CNS declared a potential inadequacy of the safety analysis upon discovery of discrepancies associated with electrostatic discharge (ESD) parameters for operations on two weapon programs. Specifically, for three electrically conductive bags used to package weapon components, the ESD parameters were found to exceed values currently listed in the safety basis. For one weapon program, these new parameters exceeded the limits used within weapon response development to characterize component response during electrical insult scenarios. As a result, CNS implemented an operational restriction, prohibiting the use of those electrically conductive bags for packaging a specific component on that weapon program. For the second weapon program, the hazard remains bounded by the existing weapon response. Consequently, CNS did not put in place any operation restrictions.