

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 21, 2022

TO: Christopher J. Roscetti, Technical Director
FROM: A. Gurevitch, M. Bradisse (acting), and C. Berg (acting), Resident Inspectors
SUBJECT: Pantex Plant Activity Report for Week Ending January 21, 2022

Staff Activity: The resident inspectors attended demonstrations associated with an ongoing nuclear explosive safety study (see 1/14/22 report).

Fire Suppression Systems: Last week, during preventive maintenance on the deluge fire suppression system in a nuclear explosive cell, craft workers reported that an escutcheon (a plate that seals the gap between a fire sprinkler head and the ceiling, primarily for cosmetic reasons) fell from a nearby sprinkler head. The escutcheon in this facility is comprised of two pieces, with one piece—the one that fell—being held to the sprinkler head only by friction. Of note, the safety class fire suppression system and its components are required to remain in place during design basis seismic events. As a result, at the event investigation, participants categorized the event as a safety basis non-compliance.

Following the event, CNS undertook an extent of condition review and identified similar escutcheon designs in four additional nuclear explosive cells. CNS paused operations in these affected facilities. In order to remove the escutcheon pieces, CNS facility engineering must wait for units in the affected facilities to be processed. Due to the minimal weight of the escutcheon piece, CNS requested the design agency evaluate if the potential impact hazard results in a screened weapon response, which would permit the resumption of operations without additional safety controls. Nonetheless, this week, CNS safety analysis engineering (SAE) determined that the event represented a potential inadequacy of the safety analysis (PISA), and later identified that the PISA represented an unreviewed safety question due to the increase in the probability of an accident and the malfunction of safety equipment.

Safety Basis: Earlier this month, CNS SAE determined that the currently credited control set did not address a specific hazard scenario (i.e., an electrical insult to a weapon component) on a warhead program and declared a PISA. As an operational restriction, CNS instituted the personnel evacuation specific administrative control (see 1/7/22 report). Last week, SAE determined that the PISA represented an unreviewed safety question due to an increase in probability for an accident scenario. Of note, per the operating procedure, technicians were already electrically bonding when conducting operations on this specific component. As a result, following discussions with NPO, SAE formally documented this practice as a second operational restriction to prevent the scenario. Pantex has resumed operations on this weapon program.

Flammable Liquid Cabinets: The safety basis for certain special nuclear material facilities contains an in-service inspection (ISI) requirement for flammable liquid cabinets within the interlocks. However, fire protection engineering did not perform this ISI for multiple years as this organization determined none was required due to the presence of a significant—though unrated—fire barrier between the cabinet and material of concern. This discrepancy was identified during a recent contractor readiness assessment. At the event investigation, participants categorized the event as a safety basis non-compliance.