

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 4, 2022

TO: Christopher J. Roscetti, Technical Director
FROM: A. Gurevitch and M. Bradisse (acting), Resident Inspectors
SUBJECT: Pantex Plant Activity Report for Week Ending March 4, 2022

Facility Electrical Bonding: Last year, a subcontractor to CNS completed work to replace a deluge fire suppression system with a wet pipe sprinkler system in a nuclear explosive bay. In August 2021, the CNS facility representatives returned the facility back to service. The resident inspector notes that multiple CNS organizations conducted walkdowns of the replaced system and concurred with the return to service.

Last week, a DNFSB staff member identified that an engineered electrical bond clamp, which should have been attached, was instead disconnected from the new wet pipe sprinkler system at the facility wall penetration (see 2/25/22 report). This penetration bond is a credited design feature to maintain the safety class facility Faraday cage. The bonding and Faraday cage mitigate high-voltage electrical ingress into the bay by directing current to ground and away from nuclear explosives. CNS immediately conducted an extent of condition for all nuclear explosive facilities where fire protection construction had been performed in the past four years, focusing on electrical bonding, and found no similar issues.

At the event investigation, personnel identified multiple gaps, including: (1) the original scope of the design change package and construction drawings did not identify the fire protection system interface with the bonding cable or provide instructions to remove or reinstall it; (2) the subcontractor removed the bonding cable but did not have authorization to do so; (3) the subcontractor did not reattach the bonding cable and left a portion of the bonding clamp balanced over the equipment interlock door; and (4) the disconnected cable was not identified during various walkdowns as part of authorizing the facility return to service or during the past six months when the facility was operational. CNS plans to hold a causal analysis to prevent recurrence of similar events.

Nuclear Explosive Safety (NES): The resident inspector observed an ongoing NES change evaluation. The NES study group (NESSG) reconvened this week to continue evaluating the proposal to conduct new operations on a weapon program containing conventional high explosive main charges (see 2/25/22 report). The NESSG continued deliberations and performed a second facility walkdown to observe additional aspects of the operations.

Safety Basis: Last month, CNS discovered a potential inadequacy in the safety analysis when they identified a discrepancy in the linear accelerator total weight (see 2/25/22 report). CNS determined that the existing weapon response, as recorded in the safety basis, may not adequately bound the unit impact and toppling scenarios with this increased weight. However, the currently credited design feature to prevent these scenarios (i.e., rail stops) has been found to be adequate, since the engineering calculations for this feature bounds the correct weight. Thus, CNS has demonstrated that the engineered feature will perform its safety function. CNS safety analysis engineering is revising the safety basis and plans to develop an evaluation of the safety of the situation.