

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 23, 2022

TO: Christopher J. Roscetti, Technical Director
FROM: J. Anderson and C. Berg, Acting Resident Inspectors
SUBJECT: Pantex Plant Activity Report for Week Ending September 23, 2022

Staff Activity: J. Anderson and C. Berg observed and evaluated an ongoing operational safety review (see 8/5/22 and 9/2/22 reports), as well as conducted walkdowns of various defense nuclear facilities. The acting resident inspectors noted a few opportunities to improve procedure content and enhance procedural compliance during nuclear explosive operations (e.g., adherence with defined unit approach routes).

Safety Basis: During development of a safety basis change package, CNS safety analysis engineering (SAE) declared a potential inadequacy of the safety analysis (PISA) when identifying discrepancies within the safety analysis report for vacuum chamber operations. Specifically, SAE discovered two hazard scenarios had not been analyzed in the safety basis documentation: (1) an enhanced transportation cart (ETC) impact into a unit due to a seismic event and (2) an ETC impact into a unit due to a tripping technician. On one weapon program, these hazard scenarios would lead to low-order consequences. In addition, CNS identified one scenario involving a technician trip into a unit where the analysis did not include the mass of the carried special tooling. When including the additional mass, the resulting higher impact energy exceeded the threshold used to assign weapon response for that hazard scenario.

SAE determined that existing controls—i.e., configuration approach (see 9/9/22 report) and personnel evacuation specific administrative controls—adequately address these tripping technician and equipment impact hazards. Afterward, SAE recognized that one piece of special tooling used in vacuum chamber operations (i.e., a support stand) is not credited for stability while freestanding and presents a credible topple hazard into a unit. When extending the PISA to capture this new information, CNS implemented an operational restriction to ensure this special tooling is staged six feet from the nuclear explosive when in certain configurations.

Conduct of Operations: While performing disassembly operations this week in a nuclear explosive bay, production technicians placed incorrect special tooling onto the workstand. Though the procedure directed installation of the *Forward Gap Fixture*, the technicians inadvertently installed the *Aft Gap Fixture*. Upon detection of the error, the technicians notified the production section manager, who contacted other appropriate organizations, including CNS engineering and nuclear explosive safety groups. Based on direction from these organizations, the unit was placed into a safe and stable configuration.

During the event investigation, CNS participants identified various factors contributing to the incident, including both pieces of special tooling being visually similar and having identification numbers with only one digit difference. CNS will develop a nuclear explosive engineering procedure to permit resumption of operations. Additionally, CNS plans to assess options to better differentiate the two tools (e.g., coloration or adding *Forward* and *Aft* markings onto the special tooling). The acting resident inspectors agree that such changes would be a beneficial improvement from a human factors perspective and should aid in mitigating event recurrence.