DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 21, 2023

TO: Christopher J. Roscetti, Technical Director
FROM: C. Stott and C. Berg (acting), Resident Inspectors
SUBJECT: Pantex Plant Activity Report for Week Ending April 21, 2023

Nuclear Explosive Safety (NES): Last month, while conducting disassembly activities within a nuclear explosive cell, the production technicians found that the workstand supporting the unit would not function as designed and would not allow continuation of operations. Though the nuclear explosive is in a safe and stable configuration, the workstand trunnions will no longer adequately raise and lower the unit (see 3/31/23 report). Subsequently, CNS executed a nuclear explosive engineering procedure (NEEP) to determine the cause of the workstand trunnion issue, but could not identify a repair option that would permit continuing operations using the current workstand. Consequently, CNS developed a second NEEP to (1) remove the unit from the workstand using existing special tooling and the facility hoist, (2) switch the workstand with an operational copy, and (3) place the unit into the new workstand. Of note, during the workstand exchange, the nuclear explosive will be rested on a container and pad—away from these operations—as well as supported by the facility hoist and under the control of two technicians.

This week, a NES study group evaluated these proposed operations and provided its conclusions—i.e., zero deficiencies and two deliberation topics—to NPO. The first deliberation topic involved concerns related to lightning strikes during the hoisting activity. To alleviate this concern, CNS decided to request a two-hour clear weather window prior to conducting these operations. In addition, the second deliberation topic discussed the two positive measures present to prevent impacts to the unit during hoisting. For this topic, the study group concluded that use of both the facility hoist and trained technicians to control the unit, as well as limiting tripping hazards within the area, were satisfactory measures to prevent such an event. However, they cautioned that non-essential personnel within the facility should be minimized during this activity. Finally, at the conclusion of its report, the study group identified that the proposed operations satisfy the NES standards and requirements established within DOE directives.

35-Account Material: Per the safety basis, high explosive (HE) mats are credited for their hardness and electrostatic dissipative properties, depending on the specific operation in which they are to be employed. Earlier this week, CNS found that certain HE mats—believed to be procured from one production lot—may in fact come from multiple lots. Therefore, while Pantex personnel did test the dissipative properties of some of these mats, CNS could not assert that these testing results were applicable to all the procured items. In response, CNS declared a Stop Work Event to prevent further use of the affected mats, preliminarily categorized the incident as a safety basis noncompliance, and scheduled an event investigation for next week.

Safety Basis: Last week, CNS declared a potential inadequacy of the safety analysis (PISA) related to an increase in the electrostatic discharge (ESD) hazard parameters for the Vacuum Chamber System (see 4/14/23 report). Per the current weapon response provided by the design agencies, the resulting higher ESD insult to the nuclear explosive would still screen and not require any additional controls. As a result, this week, CNS determined that the PISA did not represent an unreviewed safety question.