DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 11, 2023

TO: Timothy J. Dwyer, Acting Technical Director
FROM: A. Holloway, C. Stott, and C. Berg (acting), Resident Inspectors
SUBJECT: Pantex Plant Activity Report for Week Ending August 11, 2023

Special Tooling: Last week, while conducting operations in a nuclear explosive bay during the graveyard shift, the production technicians utilized a Bomb Stand with associated lifting fixture to reposition a unit. While raising the nuclear explosive off the ground, they noted that the unit began to lower on its own at a rate of a few inches per minute (known as *back drive*). Notably, the technicians did not identify such a lowering when previously using the Bomb Stand to raise the lifting fixture without the extra weight of the unit. In response, the technicians lowered the unit back down into its handling gear, which established a safe and stable configuration.

CNS Process Engineering developed a nuclear explosive engineering procedure to allow the unit to be removed from the Bomb Stand, which permits replacement of the stand and continuation of operations. These recovery activities require the lifting fixture to be disengaged from the unit and raised above it using the existing Bomb Stand. As a result, CNS Tooling and Machine Design engineers evaluated the stand to determine if it could fulfill its functional requirements, including maintaining "positive control and structural integrity for anticipated normal loads." These engineers found that the Bomb Stand can fulfill its functional requirements; however, they noted that "[m]aintaining position and controlling movement" is not such a requirement. Furthermore, the engineering analysis stated that *back drive* is not expected during the recovery process as the Bomb Stand will only be required to raise the lifting fixture without the extra weight of the unit. Nevertheless, CNS Tooling and Machine Design engineers recommended that the production technicians maintain control of the Bomb Stand hand wheel as necessary to mitigate any *back drive* during the recovery process. Upon removal of the Bomb Stand from the nuclear explosive bay, CNS will assess the failure mechanism to determine the cause of the *back drive* and implement additional corrective actions as necessary. Concurrently, CNS plans to continue operations with the replacement Bomb Stand of the same design.

While evaluating the recovery process, CNS Safety Analysis Engineering (SAE) identified the potential drop height for the special tooling (i.e., the lifting fixture) may be greater—by a factor of two—than that analyzed within the safety basis. As a result, this week, SAE declared a potential inadequacy of the safety analysis (PISA) and subsequently determined it represented an unreviewed safety question due to the potential increase in hazard consequences. CNS did not implement any operational restrictions as a result of this determination, citing that existing controls—e.g., the Bomb Stand—adequately prevent the event.

High Pressure Fire Loop (HPFL): Following a planned electrical outage, CNS completed required surveillance to verify operability of a diesel-powered HPFL pump, including proper engine temperature. Although the electrical breaker for the engine block heater was open, the temperature was sufficient to pass surveillance requirements due to recent operation of this HPFL pump for a separate test. During the critique, CNS decided to change procedural prerequisites to prevent preconditioning equipment during future surveillance activities. CNS discovered and corrected the mispositioned breaker to return the pump to an operable status.