

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 15, 2023

TO: Katherine R. Herrera, Acting Technical Director
FROM: A. Holloway and C. Stott, Resident Inspectors
SUBJECT: Pantex Plant Activity Report for Week Ending December 15, 2023

Staff Activity: As part of the Pantex Safety Basis Re-design Project, NNSA is pursuing a Pantex-specific alternate methodology on safety basis development for nuclear explosive operations. Board staff members J. Anderson, F. Bamdad, C. Berg, Z. Demeke, M. Duncan, J. Heath, and F. Ruz-Nuglo joined the resident inspector staff, along with members of NNSA and CNS, for a hybrid meeting to review the proposed alternate methodology. Specific discussion topics included identification, screening, and control selection for hazard scenarios; control effectiveness evaluations; defense-in-depth concepts; and chemical release scenarios. NNSA and CNS personnel were generally receptive to staff team feedback and incorporated a number of the staff comments and edits.

Suspect/Counterfeit Hardware: Last week, during a seismic qualification walkdown, CNS system engineering personnel identified suspect/counterfeit hardware utilized in a nuclear explosive facility currently in repair mode (i.e., not containing any material of concern). In particular, CNS found grade 5 bolts without proper head markings used to affix an override switch to the facility structure for the safety-class blast door interlock system. During extent of condition reviews of three other nuclear explosive facilities also currently in repair mode, more suspect/counterfeit bolts were identified in safety-class systems, such as blast door hinge bolts and fire protection piping flange bolts. Subsequently CNS system engineering personnel conducted extent of condition reviews of all nuclear explosive facilities, as well as some special nuclear material facilities, and found other suspect/counterfeit bolts without head markings, but they were limited to securing blast door hinge shrouds. Consequently, these fasteners did not provide as significant of a structural function.

In 1995, a previous Pantex contractor had discovered a total of 369 suspect/counterfeit bolts in these facilities, which includes the recently identified fasteners. At that time, Pantex facility configuration control personnel attempted to establish a testing methodology to accept the bolts using a hardness testing device and incorporate this testing within the site's suspect/counterfeit procedure. Current CNS system engineers could not locate the results or any follow-up activities from this qualification testing. As a result, it is unclear to the resident inspectors whether Pantex had previously addressed these suspect/counterfeit bolts or tracked their qualification status. CNS system engineers plan to calculate the worst-case load on the bolts to endorse their continued use within an engineering evaluation.

Loss of Two-Person Control: Per DOE Order 452.2 requirements, CNS must implement the two-person concept "to ensure no lone individual has unrestricted access to a nuclear explosive." Last week, CNS nuclear explosive safety personnel encountered a situation where a single production technician had access to a nuclear explosive while other technicians in the area were neither in a position to detect nor respond to their actions. CNS categorized this event as resulting in an adverse effect on nuclear explosive safety (i.e., violation of the two-person concept) and took necessary corrective actions.