

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 12, 2024

**TO:** Katherine R. Herrera, Acting Technical Director  
**FROM:** A. Holloway and C. Stott, Resident Inspectors  
**SUBJECT:** Pantex Plant Activity Report for Week Ending January 12, 2024

**Fire Protection Equipment Seismic Qualification:** Last year, the Board's staff reviewed the replacement of wood-framed false ceilings within two nuclear explosive cells, which included replacement of the deluge fire suppression systems (see 9/15/23 report). During this review, the staff questioned the use of cast iron fittings that were installed in the replaced fire systems. DOE Standard 1066, *Fire Protection*, states that "[t]he following sprinkler components should not be used: ... [c]ast iron pipe fittings." In addition, DOE/EH-0545, *Seismic Evaluation Procedure for Equipment in U.S. Department of Energy Facilities*, discourages the use of cast iron components due to poor seismic performance.

This week, CNS determined that the presence of cast iron in the fire suppression riser for these two cells may affect their seismic qualification. CNS categorized this occurrence as a violation or noncompliance of a credited hazard control specified in the safety analysis for these facilities. Furthermore, CNS declared a potential inadequacy of the safety analysis, paused operations within these facilities, and performed an extent of condition review of other potentially affected nuclear explosive facilities. At this time, CNS has not identified any other impacted facilities. Furthermore, CNS implemented an operational restriction to prohibit material of concern (e.g., explosive and special nuclear material components) from being within the fall-down distance of the fire riser, except when such material is moved in a transportable configuration.

**Nuclear Explosive Operations:** Last month, CNS retrieved a certain piece of special tooling inadvertently left within an assembled unit (see 12/29/23 report). This week, during an investigation, CNS personnel identified a procedural adherence gap related to a nuclear explosive engineering procedure (NEEP) step prescribing the removal of the tooling. As a corrective action, CNS plans to brief all technicians of this weapon program on reader-worker-checker expectations. Outside of the investigation, the resident inspectors questioned the inclusion of "if necessary" within this procedural step. CNS process engineering personnel intend to remove the language prior to future use of this NEEP.

In response to the ongoing adverse trend of events involving conduct of operations, CNS intends to enhance the reader-worker-checker process (i.e., the process for communicating and then executing nuclear explosive and special nuclear material operations). CNS plans to finalize the enhanced reader-worker-checker process in the coming weeks and implement it in the coming months. Based on discussions during recent event investigations, CNS intends to incorporate the following enhancements: (1) requiring technicians to repeat back a summary of the procedural step before performing the associated action versus a simple acknowledgement of understanding, (2) recording each technician's specific role (i.e., reader, worker, or checker) while executing the procedure, (3) specifying the role that more experienced certified technicians will fulfill for various operational scenarios to provide mentorship and disseminate best practices, and (4) clarifying the expectations for the checker role. Once finalized, CNS intends to train all operations personnel on this enhanced process.