DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 4, 2022

TO: Christopher J. Roscetti, Technical Director
FROM: C. Berg, Acting Resident Inspector
SUBJECT: Pantex Plant Activity Report for Week Ending November 4, 2022

Staff Activity: D. Andersen, J. Anderson, C. Berg, and R. Jackson conducted a teleconference with NPO and CNS to discuss welding program review follow-up questions (see 8/12/22 report).

Readiness Assessment: This week, NPO commenced the federal readiness assessment (FRA) associated with plutonium metal repackaging operations (see 9/16/22 report). The plutonium metal is currently packaged in 3013 cans, which are in turn packaged in Type B 9975 containers. The proposed operations will involve production technicians repackaging the 3013 cans into new, certified Type B 9975 containers in preparation for offsite shipment. The resident inspector observed and evaluated the FRA—including an emergency drill—relaying a few procedural improvements to the FRA team and CNS process engineering during operation demonstrations.

Safety Basis: The technical safety requirements state that facility crane assemblies shall be qualified to remain in place during a design basis seismic event—while supporting their rated load—without falling or assembly components falling. This week, a CNS system engineer identified a discrepancy between the existing jib configuration within two nuclear explosive cells and the configuration analyzed within the safety basis. The system engineer noted that stiffening rods were not present on the top of the jib arms, which provide additional strength to the structure. Per the safety basis engineering analysis, the stiffening rods are necessary to withstand loading conditions present during a seismic event. At the event investigation, participants noted that this discrepancy has existed in both nuclear explosive cells for over a decade. As a result of this discovery, CNS declared a safety basis non-compliance, and CNS safety analysis engineering (SAE) also determined the situation represented a discrepant-as-found condition due to the facility crane assemblies not matching the configuration analyzed within the safety basis.

Subsequently, SAE declared a potential inadequacy of the safety analysis and implemented an operational restriction prohibiting hoisting operations within the two facilities when a nuclear explosive is present. Upon further reflection, SAE conservatively revised the operational restriction and prohibited special nuclear material and explosives from being introduced into the facilities. Of note, at the time of discovery, both nuclear explosive cells were in repair mode without material of concern and will remain in that condition until this discrepancy is addressed.

Conduct of Operations: CNS held an event investigation related to the use of incorrect material during nuclear explosive operations. Specifically, material handlers had inadvertently selected incorrect shimstock and had not performed an independent verification—as required per their procedure—to ensure material adequacy. Following shimstock processing, CNS personnel delivered the material for production use. When eventually identified by production technicians—due to the greater thickness of the shimstock—CNS process engineering issued a Stop Work Event to prevent further use of the material. While CNS did develop corrective actions for this incident, the resident inspector notes that the actions are primarily to resolve unit nonconformances and do not address the main gaps leading to the incorrect material selection.