

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 20, 2023

TO: Katherine R. Herrera, Acting Technical Director
FROM: C. Berg, Acting Resident Inspector
SUBJECT: Pantex Plant Activity Report for Week Ending January 20, 2023

Out-of-Tolerance Electrical Test: CNS Process Engineering develops nuclear explosive operating procedures (NEOP) with option trees, providing flexibility and permitting the technicians to execute various options depending on the outcome of a procedural step (e.g., an electrical test). This week, while conducting an electrical resistance test as part of assembly operations within a nuclear explosive bay, the product technicians received an out-of-tolerance measurement (i.e., the electrical tester provided an overrange reading). Despite the out-of-tolerance measurement, the production technicians executed *Option 1* of the NEOP—for an acceptable resistance measurement—and continued operations. Subsequently, during a quality hold point, CNS Quality personnel identified the out-of-tolerance reading and the use of the inappropriate branch of the option tree. Upon notification of the event, the Production Section Manager paused any further operations on the unit.

At the event investigation, CNS participants noted that the production technicians should have entered *Option 2* of the procedure—for an out-of-tolerance reading—which would have resulted in the appropriate organizations (e.g., CNS Process Engineering and Tester Design Engineering) being contacted. These organizations are responsible for responding to such an occurrence and narrowing down the potential causes of the out-of-tolerance reading, such as an issue with the tester equipment, the component(s) being measured, or the electrical connection between them. In this case, though delayed about a day from the initial electrical test, CNS inspection of the electrical tester equipment identified no anomalies. As a result, CNS developed a nuclear explosive engineering procedure (NEEP) to disconnect some of the weapon components and assess whether the electrical connections are acceptable; if so, CNS plans to replace two of the three components and reperform the electrical test.

While initially categorized as a *Management Concern*, CNS determined that the event did not meet any reportability criterion within the DOE Occurrence Reporting and Processing System. The investigation, however, did result in two actions related to execution of the above NEEP and evaluation of a possible change to the NEOP. In addition, for those disciplined operations issues that contributed to the event, CNS plans to develop corrective actions during the causal analysis. Of note, the production technicians commenced execution of the NEEP at the end of the week.

Nuclear Explosive Safety (NES): Last week, CNS declared a technical safety requirement (TSR) violation when design agency personnel used an orange stick and personal eye reticle magnifier to gauge the depth of a weapon component defect on a nuclear explosive (see 1/6/23 and 1/13/23 reports). This week—following further discussions with NPO—CNS recategorized the event as both a TSR violation and a violation of the general NES rule that requires nuclear explosive operations to be performed in accordance with approved, written procedures. While both the NEOP and other site procedures contain language permitting component inspections, NPO and CNS determined it was not sufficient to permit the activities conducted by the design agency personnel; consequently, they found that the component inspection violated the NES rule.