

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 24, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: A. Gurevitch, M. Bradisse (acting), and C. Berg (acting), Resident Inspectors
SUBJECT: Pantex Plant Activity Report for Week Ending September 24, 2021

Staff Activity: The resident inspectors conducted walkdowns of operations within nuclear explosive bay and cell facilities, observing appropriate responses to and personnel notifications following (1) a hoist malfunction and (2) a special tooling issue during disassembly of one unit requiring a safe and stable determination. The staff members also noted excellent coaching and mentoring between technicians during the nuclear explosive operations.

High Pressure Fire Loop (HPFL): The Pantex technical safety requirements (TSR) for the HPFL specify a weekly surveillance requirement to verify the engine coolant temperature for each diesel fire pump to confirm it exceeds a minimum temperature, ensuring a quick diesel engine startup and sufficient flow of water is provided to facility fire suppression systems within a specified period of time. Per the TSRs, the diesel fire pump is operable only if the engine coolant temperature is maintained at 95 °F or greater. This week, impairment and restoration technicians performed preventive maintenance on one diesel pump—which included conducting this surveillance requirement—and notified the CNS facility representative that it failed to meet the required minimum temperature. CNS identified the incident as a performance degradation of any safety class structure, system, or component when not required to be operable. In this case, given the required number of diesel fire pump with water supply tank configurations were still operable, no limiting conditions for operation were required to be entered.

At the critique for this event, participants noted failure of the engine block heater led to this failed surveillance requirement. Further, NPO personnel identified similar block heater failures over the past few years. CNS personnel noted that the shorter than expected life expectancy of these block heaters is likely due to the wiring supplied by the manufacturer, which cannot tolerate the supply power to these heaters and subsequently degrades. CNS plans to use this additional information when conducting the causal analysis for this event. As a corrective action, CNS will repair or replace the degraded block heater.

Special Tooling Program: In response to DNFSB Recommendation 2019-1, CNS revised the special tooling program within the safety basis—as well as the special tooling design manual—to require that all code welds are visually inspected and all welds in the credited load path are verified through either load testing or enhanced nondestructive examination (NDE) techniques beyond visual examination (see 4/9/21 report). Of note, enhanced NDE techniques include radiographic, ultrasonic, magnetic particle, or liquid penetrant inspection. In late June, CNS transmitted to NPO its plan to implement this new weld verification requirement, ensuring compliance for both existing and new special tooling (see 7/2/21 report). NPO approved this weld verification implementation plan last month and, in its approval letter, required CNS to provide monthly status update briefings. While CNS will assess the verification method most appropriate for each special tooling design, the preferred method at this time is applying weld load testing to satisfy this requirement. During this testing, the applied load will be the maximum value supported by the tooling during operations increased by a defined safety factor.