DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 6, 2025

TO: Technical Director
FROM: Nevada National Security Sites (NNSS) Cognizant Engineer
SUBJECT: NNSS Report for May 2025

DNFSB Staff Activity: The DNFSB staff did not conduct onsite activities in May.

Evaluation of the Safety of the Situation (ESS) of Lithium Ion based Uninterruptible Power Supply (UPS) at Device Assembly Facility (DAF): As mentioned in the April 2025 NNSS monthly report, Mission Support and Test Services, LLC (MSTS) declared a positive unreviewed safety question determination for an unanalyzed facility-wide blackout condition involving the UPS system in the DAF safety basis. On May 6, 2025, the Nevada Field Office approved the ESS and concluded that continuous implementation of the operational restriction (e.g., restricting high explosive operations only to buildings that contain emergency lighting backup tubes) as a compensatory measure allows for safe operations at DAF. MSTS plans to update the safety basis to address the unanalyzed condition.

Near Miss Event in Cygnus Testbed at Principal Underground Laboratory for Subcritical Experimentation (PULSE): Prior to the start of operations on the dual-axis Cygnus radiography machine, PULSE personnel perform a pre-operational sweep of the testbed area. The sweep consists of verbally announcing that a sweep is being conducted, visually confirming that personnel have exited the area, and turning off the lights in the zero room. The pre-operational sweep ensures personnel are not present during operation of the Cygnus machine, given the hazards (e.g., radiation, high voltage, and pressure) that could impact the worker. On January 22, 2025, two PULSE personnel performed the pre-operational sweep procedure, but did not identify that an individual was still present in the zero room. The individual did not respond to the announcement that a sweep was being conducted but later recognized a high-radiation condition was imminent. At that point, the individual exited the area, causing an engineered interlock to deactivate and dump the Cygnus capacitor charge to the ground per design. As a result of the event, MSTS stopped work for Cygnus operations and instituted several corrective actions, including revisions to sweep procedures, the presence of approved managers to monitor sweep performance, and the retraining of personnel on conduct of operations in high-radiation areas. On March 27, 2025, MSTS issued a causal analysis report. The report identified three causes and concluded a combination of factors—namely, less-than-adequate sweep performance, an ambiguous sweep procedure, and human performance error precursors — contributed to the event. The report concluded that if the individual had remained in the area during the experiment, the individual's radiation exposure level would be equivalent to negligible background exposure, falling well below the established NNSS administrative dose control limit. MSTS is currently performing an extent-of-condition review of other high-radiation and high-explosive operations across NNSS facilities to determine whether similar vulnerabilities exist and identify additional opportunities for improvement. MSTS will issue the extent-of-condition report in June 2025.

Equipment Failure Event at PULSE: On April 15, 2025, a welding machine caught fire during underground welding operations. The fire watch immediately extinguished the fire, and NNSS Fire and Rescue responded to confirm that the fire was fully extinguished. MSTS stopped work, initiated an investigation, and removed the welding machine from the underground for inspection. MSTS determined that the cause of the fire was a fault that occurred in the machine. MSTS suspended welding activities in PULSE and removed all welding machines from the underground to perform an extent-of-condition inspection. MSTS is currently pursuing a formal safety investigation.