DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 1, 2024

TO: Timothy J. Dwyer, Technical Director
FROM: Sonia G. Thangavelu, Ph.D., Cognizant Engineer
SUBJECT: Nevada National Security Site (NNSS) Report for October 2024

DNFSB Staff Activity: The Board's staff conducted no onsite activities in October.

Positive Unreviewed Safety Question Determinations (USQDs) for High Energy Initiator (HEI) Vulnerability at NNSS Facilities: The Device Assembly Facility (DAF), On-Site Transportation (OST), and Principal Underground Laboratory for Subcritical Experimentation (PULSE) safety bases rely on a specific administrative control (SAC) to use only HEIs for a subcritical experiment (SCE) device. The use of HEIs prevents inadvertent firing of the high explosive due to radio frequency, electrostatic discharge, and electromagnetic interactions. Misson Support and Test Services, LLC (MSTS) and the design laboratories identified that an alternate mode of initiation (i.e., vulnerability) introduces the potential for an electrostatic discharge to malfunction the HEI and undergo a violent reaction. The vulnerability is typically controlled through various factors integrated in the SCE device design and evaluation of experiment-specific components; however, it is not described in the safety basis. Therefore, MSTS concluded that reliance on the SAC alone to address the vulnerability does not ensure adequate protection. On September 17–18, 2024, MSTS declared three positive USQDs and issued an operational restriction to prohibit SCE assembly at DAF, SCE transport via OST, and SCE receipt at PULSE. MSTS is currently developing an evaluation of the safety of the situation for each safety basis affected and evaluating impacts to upcoming SCE campaigns.

First Quarter Start Up Notification Report (SNR): On October 2, 2024, MSTS submitted the first quarter SNR for fiscal year 2025 as required by DOE Order 425.1D, *Verification of Readiness to Start Up or Restart Facilities* to Nevada Field Office for approval. The SNR removed the small-scale dynamic vessel experiment readiness activities and updated the contractor readiness assessment (CRA) schedule for the coordinate measurement machine activity. The readiness schedule for the enhanced staging project remained unchanged. The SNR added the 6-foot vessel SCE CRA as a new activity at PULSE and identified MSTS and Los Alamos National Laboratory as the startup authorization authorities (SAAs).

Start Up Authorization for Radioactive Material Operations at DAF: As mentioned in the NNSS monthly report for August 2024, MSTS and Lawrence Livermore National Laboratory (LLNL) completed a CRA for a new radioactive material operation at DAF. The CRA team submitted its report and identified two strengths, three opportunities for improvement, and three findings, but concluded DAF personnel can safely commence the new operation. On September 26, 2024, MSTS and LLNL (as the joint SAAs) submitted a formal letter to authorize start-up of the operation as a new hazard category 2 nuclear activity at DAF.

Technical Safety Requirement (TSR) Violation at Joint Actinide Shock Physics Experimental Research (JASPER) Facility: The TSR requires minimum staffing if target assemblies are present, and during vehicle operations. On September 26, 2024, a vehicle was used in the JASPER limited area yard while two JASPER buildings were in warm standby mode, without minimum staffing. Once notified, the facility manager returned to the JASPER facility, re-established TSR compliance, and remained onsite until vehicle operations were complete. Material movements did not occur at the time of the event.