

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 1, 2024

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

DNFSB Staff Activity: During the week of February 7, a DNFSB staff team participated in discussions with Mission Support and Test Services, LLC (MSTS) and Nevada Field Office (NFO) personnel for the seismic faults review at the Principal Underground Laboratory for Subcritical Experimentation (PULSE) facility. The staff team discussed topics related to fault characterization, age of faults, and design of seismic-related controls for the major modification projects at PULSE.

Evaluation of the Safety of the Situation (ESS) for Measurement Standard (MS) Container Fire Vulnerability at Device Assembly Facility (DAF). In November 2023, NFO approved the 2022 annual update to the DAF and National Criticality Experiments Research Center documented safety analysis (DSA) with two conditions of approval and two issues for the next update. The condition of approval requires MSTS to provide a technical basis to justify that the MS containers will perform their safety function during an evaluation basis fire. As mentioned in the NNSS monthly report ending in December 2023, MSTS declared a positive unreviewed safety question determination (USQD) for the safety class MS container's ability to perform its safety function in the event of a 15-gallon pool fire in the radiography building. In January, MSTS submitted the ESS to NFO for approval. The ESS identifies a timely order (implemented as a compensatory measure) to restrict portable radiography machines containing more than 3 gallons of insulating oil from entering DAF. MSTS stated the DAF DSA includes fire modeling data that show a 3-gallon hydraulic oil pool fire will not exceed the conditions for which the MS container has been tested (800°C for 1 hour). In February, NFO approved the ESS. NFO agreed with the MSTS technical justification and concluded this will allow closure of the condition of approval for MS containers. NFO further stated the timely order will remain in place until the DAF safety basis is revised, approved, and implemented.

Potential Inadequacy in the Safety Analysis (PISA) for Linear Accelerator (LINAC) Oil at DAF. In conjunction with the MS container PISA, MSTS identified that the fixed radiography LINAC machine in DAF contains 62 gallons of transformer oil per the manufacturer specifications. The DAF DSA incorrectly states that the LINAC machine does not contain transformer oil. In January, MSTS entered the PISA process and declared a positive USQD. MSTS placed an administrative hold on the radiography building and issued two operational restrictions that prohibit high explosives and radiological material in the building. In February, MSTS submitted an ESS with proposed compensatory measures to NFO for approval. NFO did not approve the ESS and disagreed with the MSTS technical analysis and proposed compensatory measures. MSTS will resubmit the ESS with additional fire modeling and analysis to justify removal of the compensatory measures.