

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 5, 2024

TO: Katherine R. Herrera, Acting Technical Director
FROM: Sonia G. Thangavelu, Cognizant Engineer
SUBJECT: Nevada National Security Site (NNSS) Report for December 2023

DNFSB Staff Activity: The NNSS contractor, Mission Support and Test Services, LLC (MSTS) is rewriting the Device Assembly Facility (DAF) documented safety analysis to comply with Department of Energy Standard 3009-2014, *Preparation of Nonreactor Nuclear Facility Documented Safety Analysis*, to improve safety and protect workers and the public. On December 12, 2023, the Board sent a letter to the Secretary of Energy that highlighted safety issues with the DAF 90% complete documented safety analysis. The Board's letter requested a brief on the actions the Nevada Field Office (NFO) has taken or plans to take to ensure that the site contractor is submitting high quality safety basis documents and that the issues in the 90% complete DAF documented safety analysis are addressed. The Board staff conducted no onsite activities in December.

Positive Unreviewed Safety Question Determination (USQD) for Measurement Standard (MS) Container Vulnerability at DAF. MS containers are metal containers used to hold uranium or plutonium in metal or oxide form for use in radioactive material experiments and are considered sealed sources once filled. MS containers are credited as safety class components in the DAF safety basis with a performance criterion to maintain containment of material and prevent its pressurized release. The containers are certified and tested per American National Standard Institute Standard N43.6-1997, *Sealed Radioactive Sources – Classification*, to withstand a fire at 800°C for one hour. The DAF safety basis postulates a design basis fire in a DAF building caused by ignition of 15 gallons of insulating oil spilled from a portable radiography machine. The accident analysis assumes the fire extends over a period of 81 seconds and develops an upper layer gas temperature of 982°C. MSTS concluded the temperature at which the MS container is tested is lower than the modeled fire temperature and that the safety basis does not provide a technical basis to justify a MS container can perform its safety function at 982 °C. On November 21, 2023, MSTS entered the potential inadequacy in the safety analysis process. This resulted in a positive USQD for MS containers. MSTS issued a timely order to restrict portable radiography machines containing more than 3 gallons of insulating oil from entering DAF. MSTS is developing an Evaluation of the Safety of the Situation for submittal to NFO for approval.

Start-up Notification Report. In December, MSTS submitted the start-up notification report for the second quarter of fiscal year 2024 to NFO, as required by Department of Energy Order 425.1D, *Verification of Readiness to Start Up or Restart Nuclear Facilities*. In the report, MSTS highlights the scheduled start date for the coordinate measuring machine contractor readiness assessment (CRA) at DAF changed to facilitate procedure validations with the machine. Also, MSTS changed the scheduled start date for the oxide handling CRA to allow time to complete the management self-assessment that commenced on December 4, 2023.

Waste Processing at Radioactive Waste Management Complex. MSTS processed 39 shipments of low-level radioactive waste and 6 shipments of mixed low-level radioactive waste.