

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 5, 2019

**TO:** Christopher J. Roscetti, Technical Director  
**FROM:** Austin R. Powers, Cognizant Engineer  
**SUBJECT:** Nevada National Security Site (NNSS) Report for March 2019

**DNFSB Staff Activity:** The Board's staff conducted no onsite activities at NNSS during March.

**U1a Complex Contamination Event:** As discussed in the NNSS Monthly Report for February 2019, MSTS discovered contamination on and near the confinement vessel after the execution of an experiment. During March, Mission Support and Test Services, LLC (MSTS), and the national laboratories conducted a performance review of the confinement vessel, including visual inspections, fastener torque verifications, and radiography. MSTS identified cracks in fastener washers but found no evidence that the cover plates on the vessel were fractured. To avoid the risk of releasing more radioactive material, MSTS did not perform any additional tests on the vessel. MSTS and the national laboratories decontaminated the vessel and taped off the ports to cover potential release points. Consistent with prior experiments, MSTS has entombed the vessel at the U1a Complex.

The U1a Complex documented safety analysis (DSA) credits the vessel to confine the radioactive material. However, the DSA identifies the possibility of the confinement vessel releasing radioactive material following the execution of an experiment as a deficiency. The compensatory measures for this deficiency include the confinement provided by the Zero Room and a specific administrative control for post-experiment re-entry into the Zero Room. Following this experiment, the re-entry team identified the contamination in the Zero Room, and MSTS found no contamination outside of the Zero Room. Therefore, MSTS concluded that all of the credited controls performed as required in the DSA.

**Device Assembly Facility (DAF) Seismic Hazard Assessment:** The NNSS Monthly Report for December 2018 noted that MSTS was preparing to finalize the DAF seismic hazard reports, package them with the peer review report, and write a letter to the Nevada Field Office (NFO) recommending to not update the 2007 probabilistic seismic hazard analysis (PSHA). MSTS submitted this package to NFO in January 2019. NFO approved the MSTS recommendation in March with the condition that MSTS incorporate a slight increase for the design response spectra at frequencies above 33 Hz to account for the results from the recent seismic hazard assessment. MSTS plans to use the 2007 PSHA response spectra, including the recommended increase, to restart the soil-structure interaction (SSI) analysis and develop in-structure response spectra. The SSI analysis will evaluate the building's response to the increased seismic hazard and determine whether the facility meets its credited safety function for seismic events. MSTS anticipates completing the SSI analysis in 2020 and then using the SSI results to evaluate the response of safety-related structures, systems, and components in the facility to the revised seismic hazard.

**DAF Water Tank Inspections:** In March, MSTS completed the inspections of the credited DAF water tank and the water tank that feeds the credited water tank. After finalizing the inspection reports and completing an engineering evaluation, MSTS will determine the path forward to address the seismic and corrosion deficiencies for the credited water tank.