

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 8, 2022

TO: Christopher J. Roscetti, Technical Director
FROM: Austin R. Powers, Cognizant Engineer
SUBJECT: Nevada National Security Site (NNSS) Report for June 2022

DNFSB Staff Activity: A. Powers visited the site during the week of June 6 to perform walk downs at the various defense nuclear facilities, accomplish activities necessary to maintain site and facility access, and discuss the status of updating safety basis documents.

Device Assembly Facility (DAF) Seismic Analysis Update: As discussed in the NNSS Monthly Report for August 2021, a subcontractor hired by Mission Support and Test Services, LLC (MSTS), finalized its soil-structure interaction (SSI) analysis report. The SSI analysis is the first step in analyzing the impacts of the increased seismic hazard, originally identified in the 2007 site-specific probabilistic seismic hazard analysis (PSHA), on the credited structure at DAF. In June, MSTS personnel informed the Board's staff that the subcontractor responsible for the SSI analysis revised the final report to address recommendations from a peer review team. Of note, the subcontractor completed a slope stability evaluation and found that the berm at DAF is not expected to fail due to the increased ground motions. The subcontractor has attached the new evaluation to the final report and made additional edits to the executive summary, which is currently being reviewed by the peer review team. MSTS personnel also stated that the same subcontractor was hired to perform the building evaluation. This evaluation will analyze the building's response to the increased ground motions with the consideration of the SSI effect. The subcontractor has developed a plan on how it will perform this evaluation and expects that it will take a year to be completed. Next fiscal year, MSTS plans to initiate a separate effort to evaluate the other controls that are credited to perform a safety function during and after a design basis earthquake (e.g., anchored overhead equipment). The SSI analysis, building evaluation, and seismic controls evaluation meet the requirements of Department of Energy Standard 1020-2016, *Natural Phenomena Hazards Analysis and Design Criteria for DOE Facilities*, to perform a facility condition assessment after an increased seismic hazard is identified through a PSHA.

DAF Safety Basis Update: The Nevada Field Office (NFO) approved a change notice to the DAF safety basis. In this change notice, MSTS introduced the coordinate measuring machine (CMM), which is a computer-controlled device that allows the national weapons laboratories to precisely inspect and measure a subcritical experiment package (i.e., radioactive material mated with high explosives) during assembly operations. The introduction of the CMM created new unique hazards at DAF that were not previously evaluated. As a result, MSTS analyzed scenarios where the CMM inadvertently impacts a high explosives configuration. To reduce the risk associated with these hazards, MSTS credited the CMM system as safety significant, which requires the operations to be performed with a calibrated system. In addition, MSTS revised two existing specific administrative controls to be applicable to CMM operations. From its review, NFO personnel identified two conditions of approval. The conditions of approval require MSTS personnel to perform an evaluation for the CMM system to ensure that the control can be relied upon during a seismic event and revise the safety basis to incorporate the results of technical evaluations related to quality assurance (including software quality assurance and commercial grade dedication) to demonstrate that the system can perform its safety function when needed.