

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 1, 2019

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

DNFSB Staff Activity: D. Andersen, Y. Li, and A. Powers were on site during the week of October 14th to attend a working meeting on the Device Assembly Facility (DAF) soil-structure interaction (SSI) analysis. In addition, the staff performed walk downs at the various defense nuclear facilities and discussed the status of safety basis changes and ongoing operations.

DAF SSI Analysis: As discussed in the NNSS Monthly Report for March 2019, the Nevada Field Office (NFO) approved the Mission Support and Test Services, LLC (MSTS), recommendation to not update the 2007 probabilistic seismic hazard analysis (PSHA). With this approval, MSTS started the DAF SSI analysis using the 2007 PSHA results. During October, MSTS held a working meeting with its subcontractor, Carl J. Costantino and Associates (CJCA), for planning the DAF SSI analysis. The planning meeting provided an overview of past results from previous CJCA analyses of DAF completed over 10 years ago and allowed for discussion of studies to be executed prior to full-building finite element analysis. CJCA plans to perform the building finite element analysis with a System for Analysis of SSI (SASSI), a computer program commonly used for this specialized analysis. Studies underway by CJCA include a soil-to-structure interface modeling study and a mesh refinement study. CJCA plans to have the full-building analysis completed by early 2020. The results from this analysis will provide input into separate facility structure and equipment evaluations.

Radioactive Waste Management Complex (RWMC) Potential Inadequacy of the Safety Analysis (PISA): As discussed in the NNSS Monthly Report for June 2019, the Board's staff had an interaction with NFO and MSTS regarding the RWMC safety basis. During this interaction, the Board's staff raised several questions regarding the analyses associated with transuranic (TRU) waste accident scenarios. Specifically, the Board's staff questioned assumptions used in the accident analysis and how the accident analysis scenarios were consistent with Department of Energy Standard 5506-2007, *Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities*. During October, MSTS declared a PISA at the RWMC because the safety basis may not bound all authorized TRU waste activities. MSTS stated that the new information is the result of legacy issues with the safety basis. The dispersion analysis and dose consequence analysis have not been revised to reflect current guidance and methodologies and that these issues have the potential to result in non-conservative dose consequences. However, MSTS noted that the amount of TRU waste currently staged at the RWMC is significantly less than what is analyzed in the safety basis and, if an insult were to occur, the material form does not allow for it to be easily aerosolized and dispersed.

Enhanced Capabilities for Subcritical Experiments (ECSE) Project: As discussed in the NNSS Monthly Report for August 2019, MSTS has begun mining activities associated with the ECSE Project. During September, MSTS identified several newly installed rockbolts associated with the new drift that failed the pull test (likely due to the sand constituent in the alluvium). MSTS is currently analyzing alternative methods for installing the rockbolts for this area.