

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 6, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: Austin R. Powers, Cognizant Engineer
SUBJECT: Nevada National Security Site (NNSS) Report for July 2021

DNFSB Staff Activity: During July, the Board's staff conducted a teleconference to discuss its review observations on the integrated criticality safety program at the National Criticality Experiments Research Center. The teleconference included personnel from Los Alamos National Laboratory, Mission Support and Test Services, LLC (MSTS), and Nevada Field Office (NFO). The Board's staff conducted no onsite activities during July.

Device Assembly Facility (DAF) Implementation Verification Review (IVR): As discussed in the NNSS Monthly Report for February 2021, NFO approved a change notice to the DAF safety basis. The change notice captures a new mission at DAF that allows the execution of experiments with radiological material mated to small quantities of high explosives in a vessel that is designed to contain high pressures. In June, MSTS completed the IVR, which is conducted to confirm the proper implementation of new or revised safety basis controls, for this change notice. In the final report documenting the IVR, MSTS identified several pre- and post-implementation findings (some were corrected during the review). The open pre-implementation findings include: the control that requires the vessel be closed prior to connecting the firing system to the experiment assembly was not identified in the applicable procedure and inspection criteria for verifying a closed vessel have not been established. The post-implementation findings include: an incomplete design and approval for the firing circuit; lack of verification that the vessel meets the applicable American Society of Mechanical Engineers code case; and inconsistent inspection and acceptance documentation for the vessel. MSTS verified that all the other controls identified from the change notice were satisfactorily implemented.

DAF Safety Basis Update: In June, NFO approved another change notice to the DAF safety basis. This change notice supports the addition of new credited racks in a DAF building for staging containerized radiological material needed for programmatic purposes. NFO concluded that the addition of the new staging racks did not introduce a new type of hazard scenario and did not impact the results of the existing accident analysis. MSTS designed the staging racks to hold containers with radiological material in a safe configuration, survive the design-basis earthquake (i.e., performance category 3 requirements), and withstand the design-basis fire (constructed with material that precludes warping or failure). MSTS also included an annual inspection to visually examine the staging racks for damage, corrosion, or other condition that could affect its structural integrity or ability to perform its safety function. In addition to the new staging racks, the change notice also includes: an updated description for the onsite transfer case so that it can be used for moving and staging subcritical experiment packages in DAF; the removal of the in-service inspection to perform an impedance test on the external DAF structure; the removal of the tritium material-at-risk limit in the DAF glovebox; and revision of the material-at-risk definition to exclude sealed sources that are less than a specific mass threshold. NFO did not identify any conditions of approval for the change notice but did identify one issue that needs to be addressed in the next annual update. The issue focuses on revising the safety basis to specify the appropriate directive for the explosive safety program.