DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 2, 2019

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

DNFSB Staff Activity: Chairman J.B. Hamilton and A. Powers were on site July 16th. During their visit, they toured the Device Assembly Facility (DAF), National Criticality Experiments Research Center, and Area 3 of the Radioactive Waste Management Complex (RWMC). During the walk down at DAF, the Chairman observed the location where the material from the Savannah River Site is currently being staged. In addition, the Chairman had discussions with NNSS personnel on the status of ongoing and planned missions/operations at DAF.

RWMC Potential Inadequacy of the Safety Analysis (PISA): During July, NNSS was notified by the Y-12 National Security Complex (Y-12) that shipments of waste under the approved waste profile that had been received at RWMC from the 2013 to 2018 time frame were potentially non-compliant with the NNSS Waste Acceptance Criteria (WAC). Specifically, the Y-12 shipments included small pressurized gas cylinders and actuators. With regard to the pressurized gas, the NNSS WAC states, "Compressed gases as defined by 49 CFR 173.115 ***shall not*** be accepted." The RWMC safety basis requires all containers accepted for storage or disposal at RWMC to meet the requirements in the NNSS WAC. Therefore, the current safety basis does not analyze hazards associated with a pressurized gas cylinder. Mission Support and Test Services, LLC (MSTS), declared a PISA due to this unanalyzed hazard and determined it resulted in a positive unreviewed safety question (USQ). From the USQ process, MSTS concluded that the safety basis should be updated to include an evaluation of the waste with the pressurized gas cylinders for all applicable operations in the RWMC. Separately, based on a Y-12 analysis and the actuator configuration, MSTS concluded that the small amount of reactive material in the actuator did not pose a significant hazard. Lastly, MSTS declared a technical safety requirement violation for failure to comply with the NNSS WAC.

U1a Complex PISA: During the annual system health review for the U1h hoist conveyance safety catch system, MSTS was not able to identify any test data or vendor analysis to substantiate the assumed deceleration rate that the hoist cage will experience if a loss of wire-rope tension occurs with the U1h cage in a dynamic or moving condition. The deceleration rates listed in the U1a Complex safety basis were calculated from a static drop test of the cage. For a moving cage, it is possible that the deceleration rate could be higher and the current safety basis may not be bounding or conservative. A higher deceleration rate could also impact the location identified for placement of the limit switch for the U1h hoist control system. Using a more conservative deceleration rate for the current location may not be sufficient to prevent the U1h cage from impacting the hoist frame or shaft bottom. The U1h hoist conveyance safety catch system and hoist control system are both safety significant controls credited to protect an experimental package during transfers in the U1h cage. During July, MSTS declared a PISA associated with the deceleration rate calculation and determined it resulted in a positive USQ. MSTS plans to revise the U1a Complex safety basis to include any new testing or calculations that are performed to document the U1h cage deceleration rate for a dynamic condition and its impact on the location selected for the hoist control system limit switch.