DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 3, 2021

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

Fallen Shotcrete at the U1a Complex: In addition to using rock bolts for ground control at the U1a Complex, Mission Support and Test Services, LLC (MSTS), personnel also install chain-link fencing along the walls and ceiling of the mined tunnels. Once installed, MSTS applies a layer of shotcrete (concrete projected at high velocity) over the fencing. MSTS uses the chain-link fencing and shotcrete for dust control, ground support, and aesthetic purposes. In late October, MSTS personnel identified fallen shotcrete on the tunnel floor in the U1a Complex. The shotcrete fell in an existing drift associated with the Enhanced Capabilities for Subcritical Experiments project (not in the existing Zero Room where subcritical experiments are executed nor on the path where experimental packages are transferred to the existing Zero Room). After identifying the fallen shotcrete, MSTS removed additional unstable pieces in the area and conducted an extent of condition to proactively remove loose material in other vulnerable areas underground. MSTS plans to institutionalize this practice as a routine activity and has already improved the stability of several suspect areas.

Explosion-Proof Spheres at the Radioactive Waste Facilities (RWF): As discussed in the NNSS Monthly Report for April 2021, MSTS performed nonintrusive characterization for the two explosion-proof spheres staged in the Transuranic Waste Pad Cover Building at the RWF. MSTS performed these tests to determine if there is a vent path for the spheres. A vent path would ensure that any potential hydrogen generated in the spheres would not be retained, allowing the spheres to be transported to the Idaho National Laboratory (INL) safely. From these tests, MSTS found multiple valves to be open or partially open and did not detect any explosive gases. In October, MSTS placed balloons on outlets of the explosion-proof spheres to test for potential venting. MSTS kept the balloons on the outlets for one week and visually inspected them on eight different occasions. MSTS did not observe any visible change in the balloons (i.e., no presence of gas in the balloons). MSTS communicated the results of this test to INL personnel. Prior to shipping the spheres to INL for processing, NNSS and INL personnel still need to complete several actions (e.g., develop an interface agreement between the two sites and a transportation plan). MSTS anticipates shipping the spheres to INL this spring.

Device Assembly Facility (DAF) Implementation Verification Review (IVR): As discussed in the NNSS Monthly Report for July 2021, the Nevada Field Office approved a change notice to the DAF safety basis. The change notice supports the addition of new credited racks in a DAF building for staging containerized radiological material. The change notice also includes an updated description for the onsite transfer case, the removal of an in-service inspection for the DAF structure, and changes to the material-at-risk limit and definition. In September, 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 one pre-implementation finding related to performing the in-service inspection for the new racks once the applicable procedure is published. MSTS verified that all the controls, assumptions, and conditions identified from the change notice were satisfactorily implemented.