

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 7, 2019

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

DNFSB Staff Activity: The Board's staff conducted no onsite activities at NNSS during May.

Device Assembly Facility (DAF) Water Tank Inspections: As discussed in the NNSS Monthly Report for March 2019, Mission Support and Test Services, LLC (MSTS), completed the inspections of the credited DAF firewater tank and the non-credited water tank that feeds the credited firewater tank. For the credited water tank, the inspection report identified the same interior corrosion issues as a previous inspection that was conducted in 2015. To address this issue, the inspection report recommends sandblasting all interior areas and applying multiple coats of epoxy to the entire tank. In addition, the report also recommends installing a passive cathodic protection system to protect the tank from future corrosion. The inspection report for the non-credited water tank stated that the interior of the tank was in good condition and did not appear to show any signs of corrosion. However, the report still recommends installing a passive cathodic protection system. MSTS is developing an engineering evaluation to determine the path forward to address the seismic and corrosion deficiencies for the credited water tank.

Joint Actinide Shock Physics Experimental Research (JASPER) Facility Events: During April, Lawrence Livermore National Laboratory (LLNL) personnel identified damage to the muzzle end of the JASPER launch tube. The damage was caused by a recent experiment that involved surrogate material (i.e., non-actinide material) where fragments from the impact of the projectile with the target came back towards the launch tube hitting the crown of the muzzle. For experiments using surrogate material, LLNL is not required to use the ultrafast closure valve system (UCVS). For experiments using actinide material, the primary target chamber (PTC) is equipped with the UCVS to seal the chamber and confine radioactive material. The sealed UCVS also confines energetic debris. During April, MSTS held a critique for this event. In the critique report, MSTS stated that debris impacting the launch tube for surrogate experiments is a normal occurrence at JASPER, especially on high velocity experiments, and is considered to be expected wear-and-tear. MSTS stated that the damage is typically minor and can be repaired by honing or polishing. However, for this instance, MSTS decided to replace the damaged launch tube and retain it as base material to be machined into a 40 mm launch tube for later use at JASPER. During May, MSTS and LLNL personnel replaced the launch tube and conducted additional surrogate experiments with the new launch tube.

In addition to this April event, towards the end of May, LLNL personnel identified damage to the gas breech area and other consumable parts within the secondary confinement chamber after a separate non-actinide experiment. The damage was likely due to the petal valve being installed backwards in the acceleration reservoir. MSTS conducted a critique for this event and plans to replace this launch tube.