DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 1, 2019

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

DNFSB Staff Activity: The Board's staff did not conduct any onsite activities at NNSS during January.

U1a Complex Evaluation of the Safety of the Situation (ESS): As mentioned in the NNSS Monthly Report for December 2018, Mission Support and Test Services, LLC (MSTS), developed an ESS for the potential inadequacy of the safety analysis related to the high explosives design limit for the confinement vessels for experiments at the U1a Complex. During January, the Nevada Field Office approved the ESS. The ESS includes an operational restriction that limits the amount of high explosives that can be introduced to the U1a Complex to 2 kg TNT-equivalent. The national laboratories have confirmed that the next planned experiment will contain less than 2 kg of high explosives. Therefore, the new operational restriction from the ESS will have no impact on their upcoming experiment. In addition, the ESS states that the facility procedures will be revised to enforce the new operational restriction and that the safety basis will be revised during the next annual update. MSTS is planning to perform the safety basis annual update during this summer.

U1a Complex Confinement Vessel: As mentioned in the NNSS Monthly Report for November 2018, MSTS identified several quality assurance concerns with the confinement vessel to be used for the next experiment at the U1a Complex. These concerns included non-conformances with American Society of Mechanical Engineers Boiler and Pressure Vessel Code Section VIII Division 3. In particular, the vessel did not meet requirements that were intended to minimize and/or prevent the risk of brittle fracture and identify any surface defects. For each of the non-conformances, MSTS determined that the vessel could be used-as-is and developed a technical justification for its determination. MSTS plans to use this confinement vessel for the next planned experiment.

Joint Actinide Shock Physics Experimental Research (JASPER) Experiment: During January, the JASPER facility executed an experiment shot using surrogate material to test and verify the functionality of the new flash x-ray and continuous x-ray. The flash x-ray is used to capture the speed of the projectile during the experiment. The continuous x-ray triggers the safety significant ultra-fast closure valve system after the projectile passes. The ultra-fast closure valve system closes the opening in the primary target chamber into which the projectile is shot and seals the chamber to ensure the material-at-risk is confined after an experiment. The newly installed equipment functioned as designed during the experiment.