DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 20, 2018

MEMORANDUM FOR: Christopher J. Roscetti, Technical Director
FROM: J.W. Plaue and D. Gutowski, Resident Inspectors
SUBJECT: Los Alamos Activity Report for Week Ending July 20, 2018

DNFSB Staff Activity: On Wednesday, a staff team conducted a teleconference with LANL and NNSA Field Office personnel to discuss questions concerning the technical justification for using a dose conversion factor discussed below. This was a follow-up to questions originally submitted to the site in September 2017. B.K. Caleca observed a kick-off meeting for the column capital testing program that supports the ongoing seismic analysis of the Plutonium Facility.

Plutonium Facility–Safety Basis: Subsequent to discussion with the Board's staff, LANL safety basis personnel entered their New Information process. The concern is a lack of technical justification for using dose conversion factors associated with Type-S biokinetic solubility for plutonium-238 oxides. Specifically, ICRP-71, which supports the ICRP-72 coefficients referenced in DOE-STD-3009-2014, details multiple human and canine studies that indicate the behavior of plutonium-238 oxide is more consistent with Type-M solubility. This matters because Type-M has a dose conversion factor about three times higher than Type-S. Additionally, LANL's internal dosimetry team issued a report that examined how well various biokinetic solubility models fit bioassay data for a population of 160 Plutonium Facility workers that experienced plutonium-238 intakes between 1997 and 2017. The report indicates that approximately 50 percent of the intakes were best explained by biokinetic solubility models with dose conversion factors of Type-M or greater.

Plutonium Facility–Fire Protection: Last Friday, workers observed smoke in a glovebox containing a welding system within the Power Source Assembly Area, which is a building adjacent to the Plutonium Facility that handles encapsulated plutonium-238 heat sources. At the time, no radioactive or hazardous materials were in the glovebox, as they were conducting a test weld following adjustments to the fixture. The workers pressed the emergency stop button and one sought further guidance from the operations center. Operations center staff instructed them to pull a fire alarm and evacuate. Subsequent response actions revealed that paper media within three filters had burned. Fact-finding participants noted an overall good response and coordination with the fire department, but also identified some areas for improvement. The areas included inconsistencies in work control documents regarding the reliance on inert atmosphere within the welding box, the need to utilize infrared imagery earlier in the response, the need to replace the filters with non-combustible media, and the lack of drills within this facility.

Transuranic Waste Facility (TWF): On Wednesday, TWF personnel held a post-job review after a worker inadvertently actuated the seismic power cutoff system by placing a piece of a combo square tool on one of the sensor units. Post-job personnel noted excellent response and quicker recovery from the event than previous instances. Notably, the work was associated with the installation of covers over the sensor units to prevent inadvertent actuation from hailstones. TWF personnel plan to replace the units with redesigned components intended to correct this and other problems in September 2018.

Weapons Engineering Tritium Facility: On Wednesday, facility personnel successfully loaded a second hydride transport vessel (HTV). Once LANL is reinstated for use of the Bulk Tritium Shipping Package, use of HTVs will facilitate removal of bulk tritium gas from the facility.