**DEFENSE NUCLEAR FACILITIES SAFETY BOARD**

November 2, 2018

**TO:** Christopher J. Roscetti, Technical Director
**FROM:** Timothy L. Hunt, Acting Cognizant Engineer
**SUBJECT:** Idaho National Laboratory (INL) Report for October 2018

**DNFSB Staff Activity.** Board's staff members did not conduct any on-site activities during October 2018. The Board's staff provided an average of 0.00 person-weeks per month of on-site oversight for the first month of fiscal year 2019.

**Unreviewed Safety Question (USQ) Determination on Exceeding Accelerated Retrieval Project (ARP) VII Bounding Limits.** As discussed in the INL monthly report for August 2018, in July, a Mound (parent) box was transferred from the Advanced Mixed Waste Treatment Project (AMWTP) to ARP VII to be repackaged into smaller daughter boxes because the parent box was too large to be processed or assayed at AMWTP. In order to accept the box at ARP VII, information provided by Mound was used to characterize the parent container with a radionuclide inventory of about seven plutonium-239 equivalent curies (PE-Ci). The sequence of events after the box entered ARP-VII has been updated as follows. The parent was broken down into six overpacks (daughters), which were returned to AMWTP for assay in August. The assay results for three of the daughter boxes exceeded the PE-Ci level in the safety analysis report for a repackage project box. The combined PE-Ci for all six daughters equaled 1955.33, exceeding the PE-Ci bounding limit of 160.5. On September 26, 2018, Fluor Idaho LLC deterrmined that that a USQ existed. An approved evaluation of the safety of the situation added two operational restrictions to allow movement and processing of Mound boxes to restart: (1) traffic in the path of a transport vehicle carrying Mound waste within ARP shall be restricted, and (2) a parent Mound box and/or that box's daughter packages shall be moved, staged, and processed as a single lot.

**ARP V Drum Breach.** The staff received and reviewed the Idaho Cleanup Project report titled, *Alpha 7 CAM Data Reconstruction for ARP V Drum Breach Incident*. This report documents a radiological evaluation of the CAM spectra data collected during the ARP V drum breach event. Two CAMs in the flow path of the drum breach location had retained spectra data before, during, and shortly after the first drum breach. This data was used to reconstruct the airborne concentrations and identify the primary radionuclides involved in the incident. Peak concentrations were observed to briefly approach 12,000 derived air concentration (DAC), then rapidly decline to approximately 1,000 DAC within the vicinity of the drum breach. Based on known drum contents and the alpha energies indicated by the CAM spectra, the primary contributors appeared to be plutonium-239 and americium-241. There did not appear to be any uranium present based on assessment of the spectra data. In summary, this event and spectra analysis supported the initial characterization information.

DOE headquarters released the Fluor Idaho causal analysis report for the ARP V drum breach, RPT-1659, *Formal Cause Analysis for the ARP V (WMF-1617) Drum Event at the RWMC*. The report includes two root causes and eight contributing causes. One root cause dealt with inadequate management controls when the feed stock changed, and the other concerned an inadequate safety culture that has existed for a number of years.