

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 4, 2019

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

DNFSB Staff Activity. Board's staff member R.G. Quirk was on site from December 17-21, 2018, providing routine oversight of ongoing INL activities. The Board's staff has averaged 1.33 person-weeks per month of on-site oversight for the first three months of fiscal year 2019.

Technical Analysis of ARP V Drum Lid Ejections. In December 2018, Fluor Idaho RPT-1662, *Technical Analysis of Drum Lid Ejections – ARP V*, was publically released. The investigation's conclusion is that an oxidation reaction, initiated during repackaging involving depleted uranium, generated sufficient heat to accelerate the hydrolysis of beryllium carbide. This secondary reaction yielded methane gas and internal pressure sufficient to eject four drum lids and expel a portion of the drum contents. Corrective action recommendations noted in the report include remotely raking reactive waste, holding for 24 hours, and thermally monitoring the waste prior to packaging. These actions would provide a zero-energy verification.

ARP V Drum Event Corrective Action Plan (CAP). Fluor Idaho PLN-5710, *ARP V (WMF-1617) Drum Event Corrective Action Plan*, addresses the judgments of need (JON) associated with the root and contributing causes identified in RPT-1659, *Formal Cause Analysis for ARP V (WMF-1617) Drum Event at the RWMC*. The two root causes were identified as management's failure to continue developing an effective safety culture over a number of years and to fully understand, establish, and implement adequate process controls for treating waste that lacked documented origin or process information. The causal analysis also noted eight contributing causes, ranging from ineffective oversight of the repackaging process to failure to analyze the extent of condition following the December 2017 boxline fire event and apply lessons learned. There are 71 corrective actions listed in the CAP.

DOE-ID, with comments received from the Office of Environmental Management, completed a review of Fluor Idaho's drum event CAP, PLN-5710. As currently written, DOE-ID concluded that the CAP does not adequately address all of the conclusions and JONs identified in RPT-1659. Fluor Idaho is expected to update PLN-5710 to address all comments.

Failure to Follow Quality Assurance (QA) Non-Conformance Procedure. Workers failed to follow proper procedures for nonconforming waste bags at the Accelerated Retrieval Project (ARP). As a result, drum transfer bags were modified and placed in service without required QA checks. As a part of the pre-operational checks, workers perform a "tug test" on bag seams that are heat-welded and occasionally separate. In early November, a large number of the bags were failing the test. The shift operations manager sent some failed bags to the Radioactive Waste Management Complex (RWMC) maintenance shop to be repaired. The shop used a minor maintenance work order (WO) to perform the work, not realizing that the items were Quality Level (QL)-3 (the WO specifically excludes work on items above QL-4). About a dozen modified bags were used to package waste from ARP VIII. Fluor Idaho is in the process of locating these drums. All RWMC workers are to receive refresher training on QA processes.