DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 6, 2016

TO: Steven Stokes, Technical Director
FROM: Bradford Sharpless, Idaho Cleanup Project Cognizant Engineer
SUBJECT: Idaho National Laboratory (INL) Report for April 2016

DNFSB Staff Activity: Board's staff member D. Brown attended the Integrated Waste Treatment Unit's fluidization workshop at INL on April 12. The Board's staff provided an average of 1.3 man-weeks of on-site oversight per month for the first seven months of fiscal year 2016.

Advanced Mixed Waste Treatment Project: While preparing the documentation to support the movement of waste boxes stored in the Advanced Mixed Waste Treatment Project's (AMWTP) WMF-631 structure, planners identified a box containing 927 Fissile Grams Equivalent of Pu^{239} (FGE). The Stacked Overmass Box Storage Area (SOBSA), in which the box had been stored, has an upper criticality safety limit of 800 FGE per container. On April 4, 2016, the Advanced Mixed Waste Treatment Facility's Plant Shift Manager notified the Department of Energy's (DOE) Facility Representative that a criticality working requirement had been violated. AMWTP's Nuclear Facility Manager subsequently conducted a management review to identify the events leading to the violation.

When the box was generated, it was initially assayed as containing 421 FGE and placed in an Isolation Storage Area (ISA) (as required for any box containing >380 FGE). The fissile material content of the box was later upgraded by an Expert Technical Review to 927 FGE. No additional controls were necessary to continue to store the box in the ISA.

In March 2016, this box was designated for movement to support the storage of new equipment in the ISA. Prior to moving the box from the ISA to the SOBSA, operators verified that it met the SOBSA's FGE limits for criticality safety by checking its associated FORM-1291 ("Request for Criticality Safety Evaluation" form). However, the FORM-1291 had not been updated (there was no requirement to do so) to show the change in assessed content from 421 FGE to 927 FGE. The operators then moved the box to the SOBSA, erroneously believing that it met the criticality safety limits for the new storage area. When the box was later found to be noncompliant with the SOBSA's criticality safety limits, it was returned to an ISA within two hours.

There are multiple documents for each waste box that an operator might use to determine its FGE content. In this case, the Waste Tracking System and the box's "move sheet" were also available and showed the correct FGE value for the box. The management review determined that OI-11, the operating instruction for moving the waste boxes, does not specify which of these documents must be used. AMWTP's managers issued a long term order specifying which (most current) document should be used to verify the FGE value for a box to be moved. The long term order also directs that a new criticality safety evaluation be performed (and that a new FORM-1291 be generated) when the FGE value for a container is changed. The components of the long term order will be permanently incorporated into AMWTP's procedures when the procedure changes are reviewed and approved by DOE's Carlsbad Field Office.