

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 13, 2019

MEMORANDUM FOR: Christopher J. Roscetti, Technical Director
FROM: J.W. Plaue and D. Gutowski, Resident Inspectors
SUBJECT: Los Alamos Activity Report for Week Ending September 13, 2019

Transuranic Waste Management–Safety Basis Inconsistencies: Last Friday, the NNSA Field Office conditionally approved Triad’s evaluation of the safety of the situation (ESS) concerning the interaction between polyols and nitric acid (see 8/16/2019 report). The field office noted that Triad did not provide a supporting basis for modeling the energetic reaction using a respirable release fraction of 2×10^{-3} , which corresponds to a pressurized release from a container that fails at 25 psig. They further noted that the DOE handbook release fraction for failure above this pressure threshold is an order of magnitude higher and would raise the dose estimate such that safety class controls would be required. As such, the NNSA Field Office requested that Triad provide within 30 days a basis for the bounding pressure of a drum failure. They also directed Triad to elevate the current visual examination practices to a Specific Administrative Control to prevent the comingling of polyols and nitric acid.

Similar potentially incompatible materials may exist within waste containers stored at Area G; however, the EM Field Office and N3B maintain their existing safety basis adequately covers this hazard. They assert that the hazard is appropriately modeled as a flammable gas deflagration using a release fraction of 5.4×10^{-4} consistent with DOE-STD-5506-2007. Notably, DOE has yet to update this standard to reflect lessons learned from energetic reactions in waste drums at the Waste Isolation Pilot Plant and Idaho National Laboratory.

Area G–Safety Basis: Several safety basis documents await action by the EM Field Office including: (1) a response to N3B’s April 2019 proposal to upgrade the Basis of Interim Operations (BIO) in lieu of using a Documented Safety Analysis (see 7/5/2019 report); (2) formal comments on the BIO annual update that N3B submitted in March 2019; and (3) approval of the ESS (see 6/21/2019 report) and Justification for Continued Operations (see 8/9/2019 report) regarding the Building 412 material-at-risk issue.

Conduct of Operations: Last month, Triad analysts completed the causal analyses for the March and June level one non-compliance nuclear criticality infractions at the Chemistry and Metallurgy Research (CMR) Building and the Plutonium Facility (see 3/15/2019 and 6/28/2019 reports). In both events, workers erroneously placed containers with nuclear material in unanalyzed floor locations. For the CMR event, the analysis determined that there were inadequacies in the assessment of changing work scope and training. For the Plutonium Facility, the analysis determined that there was a lack of first line management engagement during practice and during the first performance of the activity. Both reports provide a series of recommended actions to address the issues. For CMR, recommended actions include revising command media to address timely use of nuclear material control and accountability software, revising the fissile material operations review procedure to evaluate collocated operations, addressing training deficiencies, and promulgating lessons-learned. For the Plutonium Facility, recommended actions include formalizing expectations for persons-in-charge, evaluating the creation of a floor storage location, and addressing several training issues.