

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 5, 2019

**MEMORANDUM FOR:** Christopher J. Roscetti, Technical Director  
**FROM:** J.W. Plae and D. Gutowski, Resident Inspectors  
**SUBJECT:** Los Alamos Activity Report for Week Ending July 5, 2019

**Plutonium Facility–Conduct of Operations:** Last Thursday, workers in a material management room discovered an unexpected powdery residue underneath a brush in a glovebox that is supposed to be swept clean following activities. They paused work and reported their discovery. The material did contain plutonium. Pit Technologies Division management initiated a safety pause for work in this area due to concerns with this discovery and the recent criticality safety infraction (see 6/28/2019 report). They briefed the workforce and resumed activities using deliberate operations.

**Area G–Safety Basis:** The plan and schedule for achieving an improved, modern safety basis remains uncertain. When standing up the EM Field Office in 2015, DOE-EM leadership recognized that the Basis for Interim Operations (BIO) that served as the safety basis since 2012 was no longer appropriate given that nuclear operations were reasonably expected to extend well past the nominal 5-year lifetime envisioned by DOE-STD-3011. As such, in May 2016 the EM Field Office contracted with a vendor to write a new Documented Safety Analysis developed in accordance with DOE-STD-3009-2014. The EM Field Office received that safety basis (see 3/23/2018 report) and after review and revisions ultimately transmitted it unapproved to N3B for further alignment with their current approach (see 3/22/2019 report). In April 2019, N3B responded to the EM Field Office proposing an alternate approach that instead involved improving the existing BIO in order to realize mission benefits. Notably, N3B proposed continuing to follow DOE-STD-3011-2002 for the improvements, representing a departure from the previous desires of DOE-EM leadership to move forward to a DOE-STD-3009-2014 derived safety basis. The EM Field Office subsequently established a draft review schedule and began developing a review plan to capture the overall safety basis strategy. EM-LA has not yet formally responded to the N3B approach.

Last Thursday, N3B personnel determined the recent potential inadequacy of the safety analysis related to material at risk limits in Building 412 constituted a positive unreviewed safety question (see 6/21/2019 report). Restrictions on introduction of material to the facility will remain in place until the BIO is updated.

**Nuclear Criticality Safety and Safety Basis:** Last week, a nuclear criticality safety analyst updating a criticality safety evaluation document (CSED) for building TA-35-02 discovered that the facility could exceed the upper safety limit for criticality if the bounding material configuration were analyzed with a more representative methodology. The analyst noted similar concerns for TA-35-27 and TA-66-1. The Nuclear Engineering and Nonproliferation Division primarily uses these facilities, which are all less than hazard category 3 (HC-3). While their inventories exceed HC-3 threshold quantities, a sufficient portion of the material is in the form of sealed sources, of which some do not contribute against material-at-risk inventory limits because they are certified. The CSEDs had originally concluded that criticality accidents were not credible due to the nature of the process. If criticality accidents were credible, the facilities would need to be hazard category 2 per DOE-STD-1027. Management paused fissile operations in these facilities and criticality safety analysts determined that all three facilities are in a safe condition. Criticality safety personnel determined that the current material limits for TA-66-1 were acceptable, although a non-implemented material limit increase was not acceptable. They plan to revise the current CSED for TA-66-1 to include the more representative methodology to demonstrate that the current TA-66-1 limits are acceptable. Triad and NNSA personnel are evaluating the impacts of the new model on criticality safety for TA-35-27 and TA-35-2. The current actual inventories in these facilities are safe. Fissile material movement restrictions will remain in place until the CSEDs for these facilities are revised.