

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 5, 2015

MEMORANDUM FOR: S.A. Stokes, Technical Director
FROM: R.K. Verhaagen and J.W. Plaue
SUBJECT: Los Alamos Report for Week Ending June 5, 2015

DNFSB Staff Activity: D.K. Andersen, R.L. Jackson, and J.L. Shackelford were onsite this week to receive an overview of design and construction activities associated with Plutonium Infrastructure Strategy, attend safety basis training, and discuss the Chloride Extraction and Actinide Recovery process.

Safety Basis: On Monday, LANL transmitted to the Field Office for information an updated version of the Safety Basis Improvement Plan. Notable future deliverables include: (1) a revised staffing analysis; (2) instituting the Safety Task/Action Tracker for the New Information process; (3) incorporating the “Do it Right the First Time” storyboarding for the development of safety basis deliverables; (4) updating the Technical Safety Requirements for each facility to incorporate material-at-risk applicability statements, limiting conditions for operations-like action statements and completion times, operability determinations/performance criteria to facilitate placing credited design features out-of-service for maintenance or emergency exercises (5) studying the need for similar action to #4 for Specific Administrative Controls; and (6) ensuring security and emergency exercise/drill plans are evaluated through the Unreviewed Safety Question process.

Plutonium Facility–Safety Systems: Last Thursday, LANL provided the NNSA Deputy Administrator for Defense Programs with their scope analysis and recommendations for Phase III of the TA-55 Reinvestment project. In accordance with NNSA direction, LANL considered the following sub-projects: (1) fire alarm system replacement, (2) upgrading the active confinement ventilation system to safety class, and (3) separating non-seismically qualified structures from the safety class fire water supply loop. Of the three subprojects, LANL recommended only pursuing the fire alarm system replacement based on increased cost estimates, completion of structural modifications and implementation of operational practices to reduce risk in recent years, and the potential to transfer programmatic activities to future modular additions. The briefing notes that repair/update of the ventilation system will be required independent of the active confinement decision. NNSA management is expected to make a decision within the next month.

Area G–Safety Basis: Field Office, DOE-EM, and LANL personnel conducted several meetings this week to discuss the validity of crediting the pipe overpack containers (POC) with a damage ratio of zero, as indicated in DOE-STD-5506 (see 5/15/15 weekly). The experimental basis referenced in DOE-STD-5506 includes a single fire test performed with four POCs in 1997. Three of the POCs utilized polyethylene-housed drum filters and the fourth used a metal-housed drum filter (note that there is a separate metal-housed filter on the pipe component on all POCs). During the test, the poly housing failed, which provided a sufficient vent path for fire insulation to off-gas. The pipe components in these containers were unaffected and experienced peak temperatures of less than 200 °F. In contrast, the metal housing did not fail and pyrolysis products pressurized the drum sufficient to blow off the lid within three minutes. This resulted in direct exposure of the pipe component to the fire and subsequent degradation of the pipe O-ring and filter gasket. LANL has exclusively utilized the metal-housed filters causing Federal personnel to question the use of a damage ratio of zero. The Field Office has enquired about using the poly filters or a plastic bung plug as a type of fusible vent path.