

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 4, 2015

MEMORANDUM FOR: S.A. Stokes, Technical Director
FROM: R.K. Verhaagen and J.W. Plaue
SUBJECT: Los Alamos Report for Week Ending September 4, 2015

DNFSB Staff Activity: R.K. Verhaagen attended hazard analysis training at DNFSB Headquarters.

Plutonium Facility–Nuclear Criticality Safety: On Thursday, LANL’s independent assessment team outbriefed the results of their review of the nuclear criticality safety program and its implementation at the Plutonium Facility. The 15-member team conducted their review using DOE-STD-1158 and included observation of seven fissionable material evolutions and three relevant meetings. Overall, the team noted improvements in the formalization of criticality safety on the floor, worker adherence to procedure, and the relationship between operations staff and criticality staff. As outbriefed, the team identified three noteworthy practices, nine findings, and 22 observations. Findings and observations of note include: (1) some employees involved with operations using fissile material were not familiar with the criticality safety policy; (2) out of service equipment still connected to active systems are not evaluated to determine frequency for review; (3) procedures do not adequately implement all requirements of the institutional directive on conduct of operations; (4) there is not a clear and consistent understanding of the training requirements for a person in charge; and (5) the review process for the fire department’s pre-incident plan does not ensure review by criticality safety personnel.

Safety Basis: On Thursday, LANL safety basis management submitted to the NNSA Field Office for approval three Evaluation of the Safety of the Situation (ESS) documents related to the use of damage ratios (DR) for pipe overpack containers (POC) at the Plutonium Facility, Area G, and the RANT Shipping Facility (see 7/24/15 weekly). For a POC in a fire event, the existing technical basis for a DR relies on four fire tests performed in 1997. This basis is questionable because all four POCs tested used filter types that are no longer used and the POCs did not contain combustible waste material, which might produce pyrolysis gases under fire conditions. As such, there is no relevant fire test data for the actual containers in their current manner of use at LANL until further tests or analyses are completed. For Area G and RANT, the ESSs note that no safety concerns exist given the state of operations and safety basis implementation. For the Plutonium Facility, the ESS proposes use of a DR of 0.1 for transuranic waste storage in the basement and the outdoor waste storage pads. For the latter, a new limit on the size and position of a refueling vehicle associated with operations adjacent to one of the waste pads will also be included. The ESS cites as the basis for using a DR of 0.1 the puncture by a forklift tine, which is the most conservative insult to the POC covered in DOE-STD-5506. The ESS proposes a DR of 1.0 for the first floor of the Plutonium Facility.

Emergency Management: This week, members of the Los Alamos County Fire Department completed their practical exercise for refresher training on glovebox firefighting (see 11/21/14 weekly). The training included approach, assessment, and mitigation of fires involving pyrophoric material such as plutonium. During the practical, small teams of firefighters talk through some actions with the trainers and demonstrate other actions such as applying manual extinguishment agent in a glovebox and using a Type D fire extinguisher through a glovebox glove. During the practical, firefighters do not use breathing apparatus in order to facilitate communications with the trainers. Additionally, the trainers are actively coordinating with Plutonium Facility management to ensure that the corrective actions associated with extinguishment agent in that facility are reflected in this training.