DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 29, 2016

MEMORANDUM FOR: S.A. Stokes, Technical Director
FROM: R.K. Verhaagen and J.W. Plaue
SUBJECT: Los Alamos Report for Week Ending April 29, 2016

Area G–Inappropriately Remediated Nitrate Salts (RNS): This week, Area G operators completed removal of the lids from the standard waste boxes containing the RNS waste as part of implementing phase 1 of revision 5 of the Evaluation of the Safety of the Situation (ESS). Of the 46 boxes covered in phase 1, 39 have had their lids removed. The seven remaining boxes will undergo an integrated process for lid removal and pressure relief device installation as part of phase 2.

On Tuesday, LANL management received approval from NNSA and DOE-EM on phase 2 of revision 5 of the ESS. As part of the approval, the NNSA Cognizant Secretarial Officer noted that the installation of the pressure relief devices will significantly reduce the likelihood of a self-initiated thermal runaway; however, he concluded that the risks associated with the RNS wastes will not be completely eliminated due to the absence of additional conclusive statements from LANL. As a result, he emphasized the importance of all the planned controls and compensatory measures. Additionally, he noted the March loss of electrical power event (see 4/1/16 weekly) and requested weekly status reports on LANL's ongoing effort to ensure the availability of backup power. Given Tuesday's approval, Area G personnel will commence their Management Self-Assessment for phase 2 on Monday. Full implementation of the balance of the controls will follow completion of phase 2.

Safety Basis: On Wednesday, LANL management declared a Potential Inadequacy of the Safety Analysis (PISA) at Area G and the Plutonium Facility regarding certain sealed sources used for a piece of transuranic waste assay equipment known as the High Efficiency Neutron Counter (HENC). These sources, which the Carlsbad Field Office has specified for use throughout the complex, consist of highly dispersible contents—actinide oxides mixed in a diatomaceous earth matrix—welded into steel containers that are fire rated to survive a 400 °C insult. Preliminary results of fire modeling for one of the HENC units currently at Area G and planned for use at the new Transuranic Waste Facility indicates that fire temperatures could exceed 1000 °C due to significant quantities of plywood and plastic used in its construction. LANL analysts' initial review concluded that at this temperature the sources could be expected to undergo a pressurized release as opposed to the ordinary thermal insult currently reflected in the safety analysis. This change results in an increase in the amount of radioactive material released by a factor of nearly 1200. Management at both facilities conducted fact-findings and initiated operational restrictions that mainly involve storing the sources in fire-rated safes, ensuring operations with the sources are continuously attended, and excluding nearby use of fuels. Concerns with the respirable release fraction associated with these sources first originated in a Board letter dated June 11, 2012.

Plutonium Facility–Nuclear Materials Management: Plutonium Facility personnel recently conducted a bimonthly inventory as part of their nuclear materials control and accountability (MC&A) program. During these inventories, personnel perform a visual inspection on nearly all of the containers of nuclear material in the facility outside of the vault. The inventory is performed twice—first by the operations group as a pre-inventory check and then a second time by MC&A personnel. The Site Representatives note that these inventories represent an ideal opportunity for personnel to identify and record the container type for each item. Currently a large fraction of the container types are unspecified in the nuclear material management database, as noted in DNFSB Tech-39.