DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 10, 2012

MEMORANDUM FOR: T. J. Dwyer, Technical Director
FROM: B.P. Broderick and R.T. Davis
SUBJECT: Los Alamos Report for Week Ending August 10, 2012

Plutonium Facility: On Thursday, Plutonium Facility management declared two Potential Inadequacies of the Safety Analysis (PISAs) associated with the 2011 Documented Safety Analysis (DSA) post-seismic accident scenario. The first PISA is associated with the potential for a post-seismic fire in the facility basement. As part of the DSA evaluation, LANL performed a probabilistic analysis to determine the likelihood of a fire following a seismic event based on historical information. The evaluation identified a probability of a post-seismic fire per facility square foot. When using this value for the Plutonium Facility, the DSA only used the laboratory area and did not include the basement area.

The second PISA is associated with the leak path factor used for the accident scenario. The software calculation used as the technical basis for the leak path factor included material involved in both a spill and a fire that provides an integral result; however, the DSA uses different leak path factors for the contribution from a fire and spill. Both of these issues were identified by the Board's staff during a review of the DSA earlier this year and communicated to NNSA by Board letter on June 18, 2012.

Safety Basis: This week, the site office provided direction to LANL on use of deposition velocities for nuclear facility safety basis calculations. Previously, LANL recommended continued use of 1 cm/sec despite this value being non-conservative (the site specific calculation for the Transuranic Waste Facility Project was 0.4 cm/sec) because of other conservatisms in safety basis calculations. The site office directed LANL to use a deposition velocity of 0.4 cm/sec for the Transuranic Waste Facility Project and to submit a resource loaded plan to identify reasonably conservative dispersion parameters for other facilities and projects in December.

Sealed Sources: Building 214 in Technical Area 36 is a radiological (i.e. less than Hazard Category 3) facility used to perform instrument calibration activities. A number of sealed sources are not counted against Building 214's radiological material inventory for facility hazard categorization purposes based on the sealed source exclusion provision of DOE-STD-1027. This week, facility management discovered that two cesium sources and one americium-beryllium source may not meet all applicable requirements to be excluded from the facility's inventory because these sources have exceeded their manufacturer-specified recommended working life. Adding these previously excluded sealed sources to the facility's inventory caused the Hazard Category 3 threshold to be exceeded. In response, facility management suspended affected operations and began executing proceduralized actions to address the inventory limit violation.

The Building 214 issue was discovered as part of an on-going extent of condition review that was prompted by a similar discovery in a Technical Area 16 facility in late May 2012. In response to the Technical Area 16 event where a facility exceeded its material inventory limit (and the Hazard Category 3 threshold) because two sealed sources were found to no longer meet inventory exclusion requirements, laboratory management took positive action to perform a systematic and thorough extent of condition review and to evaluate laboratory processes for tracking and managing sealed sources. This week's discovery at Building 214 underscores the importance of both successfully completing the extent of condition review and ultimately improving the laboratory's process for managing sealed sources that are excluded from facility inventory limits.