DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 19, 2012

MEMORANDUM FOR: T. J. Dwyer, Technical Director
FROM: R.T. Davis and R.K. Verhaagen
SUBJECT: Los Alamos Report for Week Ending October 19, 2012

Staff members T. Chapman, J. Deplitch, M. Helfrich and J. Pasko were onsite this week to review the LANL Emergency Management Program. The staff conducted field walk-downs of emergency response capabilities and plans at the Plutonium Facility, the Chemistry and Metallurgy Research Building, Area G and the Weapons Engineering Tritium Facility.

Plutonium Facility – Seismic Safety: On Thursday, the site office directed LANL to complete an addendum to the Plutonium Facility safety basis to address the Unreviewed Safety Question (USQ) associated with the facility structural performance. The site office did not take action on the LANL submission of an Evaluation of the Safety of the Situation (ESS) for this USQ. Instead the site office requested that a safety basis addendum be developed and submitted for approval that addresses the steps identified under *Exigent Circumstances* in the DOE memorandum dated September 17, 2012, concerning *Adequate Protection*. These steps were identified by DOE for "an unusual situation … where no viable control strategy exists to prevent or mitigate the consequences in one or more of the accident scenarios from exceeding the EG [Evaluation Guideline]." The site office also provided specific comments on the ESS to be addressed in the safety basis addendum and requested completion of this action concurrent with submittal of the seismic project execution plan (due November 7th) provided there was no schedule impact and no later than November 14th regardless.

Plutonium Facility – Criticality Safety: This week, Plutonium Facility management declared a Potential Inadequacy in the Safety Analysis (PISA) based on criticality safety concerns for vault rooms B and I. These rooms had been operating under a Justification for Continued Operations (JCO) since 2007 because criticality safety evaluations included a neutron poison (boron) with inadequate documentation that the boron was present. Without the poison, criticality safety controls were not adequate to prevent criticality under all normal and credible abnormal conditions. In September, LANL completed a new criticality safety evaluation that did not include the boron and exited the JCO; however, a separate calculation for the interaction between floor and drawer locations was identified this week that assumes the presence of boron. Plutonium Facility management suspended operations and entered mode 2 for these vault rooms pending resolution of the PISA. Identification of this issue was prompted by questions from site office personnel.

Weapons Engineering Tritium Facility (WETF): WETF management declared a Technical Safety Requirement (TSR) violation based on the failure to meet overpressure protection requirements for the Tritium Waste Treatment System (TWTS), Tritium Gas Handling System (TGHS), and the Hot Inlet System (HIS). The failure to meet the TSR requirements stemmed from inadequate historical calculations of over-temperature setpoints for these systems that did not include uncertainty calculations in their determination. TWTS over-temperature setpoints were found not to comply with the ASME Boiler and Pressure Vessel Code as required by the TSRs for overpressure protection. TGHS and HIS over temperature setpoint calculations could not be shown to comply with institutional engineering standards applicable at the time these calculations were made. Updated setpoint determinations that included uncertainty calculations revealed that the original setpoints were not protective of a credited operating parameter contained in the deflagration limit calculation.