

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 10, 2010

MEMORANDUM FOR: T. J. Dwyer, Technical Director
FROM: B. Broderick and R.T. Davis
SUBJECT: Los Alamos Report for Week Ending September 10, 2010

Waste Operations: On Friday, the site office approved an Evaluation of the Safety of the Situation (ESS) for Material Disposal Area-B (MDA-B) that was submitted by LANL to address waste in Enclosure 1. As noted on August 27th, LANL sample analysis of waste retrieved and staged in Enclosure 1 indicates that approximately 2.9 Ci of Pu-239 equivalent contaminated soil and debris is present in the container, which exceeds the 0.52 Ci limit for the MDA-B radiological facility. The path forward detailed in the ESS includes 1) placing a contaminated pipe component that was retrieved into a 55-gallon drum, 2) removing this component from MDA-B, 3) returning the remaining soil and debris to the MDA-B pit and, 4) covering the contaminated soil with at least 4 inches of overburden. The ESS notes that these actions will reduce the MAR below radiological levels and render the site safe and compliant with existing safety analysis. The site office response included a condition of approval that precludes additional excavation activities at MDA-B until a robust radioactive material monitoring system can be demonstrated including site office concurrence.

Plutonium Facility: Last week, LANL management submitted a revised ESS related to the discovery of potentially explosive ammonium nitrate in two safety class HEPA filter plena in the Plutonium Facility basement. The revised ESS includes a discussion of the mechanism thought to be generating the ammonium nitrate. Both affected plena abut closed front maintenance hoods which are separated by metal doors that do not create air-tight seals. The plena and maintenance hoods are connected to different portions of the ventilation systems. The maintenance hoods that abut the two affected plena share a ventilation flow path with Plutonium Facility restrooms that are cleaned using products that contain ammonia. The ESS postulates that ammonia from the restrooms is being drawn into the filter plena from the maintenance hoods through the unsealed door, where it then reacts with nitric acid vapors being exhausted from process gloveboxes. This generation mechanism would explain why ammonium nitrate is only being created between the first and second stages of credited HEPA filters in the affected plena. The ESS proposes two new compensatory measures. First, sealing the interface between the HEPA plena and maintenance hoods to prevent ammonia intrusion and second, prohibiting work with heat or ignition sources inside the basement rooms housing the affected plena. The ESS also seeks approval to resume aqueous nitrate operations in Plutonium Facility that have been suspended since the ammonium nitrate was discovered.

Chemistry and Metallurgy Research Building (CMR): On Thursday, LANL personnel transferred ten drums containing approximately 40 g of Cm-244 from CMR to Area G. The shipment was significant because this small quantity of curium translated into roughly 40 kg of Pu-equivalent MAR, an amount about five times greater than all other MAR in the facility combined. This material will reside at Area G in pipe overpack containers staged inside a metal transportainer until it can be transferred to another programmatic user or disposed as transuranic waste.

Transuranic Waste Operations: On Monday, LANL began an outage at the WCRR repackaging facility to accomplish a number of important maintenance and safety improvements including 1) installation of fire suppression capability in the repackaging glovebox, 2) relocation of the oil-filled transformer to greater than 25 feet from the facility and 3) resolution of seismic anchorage issues associated with the drum lift. The WCRR outage is expected to last until late-October.