

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 15, 2010

MEMORANDUM FOR: T. J. Dwyer, Technical Director
FROM: B.P. Broderick and R.T. Davis
SUBJECT: Los Alamos Report for Week Ending October 15, 2010

Material Disposal Area (MDA)-B: This week, LANL personnel discovered that approximately 0.55 ²³⁹Pu-Equivalent Ci (PE-Ci) of material-at-risk (MAR) had been excavated from a retrieval pit and placed in a waste bin. This quantity of MAR exceeded the MDA-B MAR limit imposed to protect its designation as a less-than-Hazard Category 3 facility. In response, LANL management declared a potential inadequacy of the safety analysis and paused all excavation activity at MDA-B.

In late August, a similar MAR limit violation occurred at MDA-B. In response to the August event, excavation operations were suspended and the NNSA site office directed LANL to develop and implement enhanced radioactive material detection capabilities to provide higher confidence that important facility MAR limits could be protected via improved characterization of the quantity of MAR being unearthed during excavation. These new detection capabilities were in place this week and failed to prevent the MAR limit from being exceeded. Based on this recurrence, LANL senior management is evaluating options on how to resume and complete MDA-B environmental restoration activities in a compliant manner (site rep weeklies 10/8/10, 9/17/10, 9/10/10, 8/27/10).

Transuranic Waste Operations: Last Thursday, the LANL Associate Director for Nuclear and High Hazard Operations paused the conduct of a checklist contractor readiness assessment (CRA) required for startup of two heated transportainers at Area G based on the CRA team's discovery of several potentially significant safety basis-related findings.

Waste Isolation Pilot Plant (WIPP) waste acceptance criteria prohibit the presence of free liquids in transuranic waste drums. The heated transportainers are needed to ensure that any free liquids are in an unfrozen state prior to undergoing the radiographic characterization required by WIPP. The Area G safety basis restricts the aggregate amount of MAR allowed to be contained inside transportainers and within a 50 ft radius of their footprint. The CRA team found that the software program used by Area G to track inventory and ensure compliance with TSR MAR limits did not appear to effectively capture and account for MAR located inside a 50 ft radius of the heated transportainers. The CRA team also identified concerns related to the potential for hydrogen concentrations above the lower flammability limit to accumulate inside the heated transportainers. Area G engineering personnel had analyzed and ruled-out hydrogen deflagration hazards, but the CRA team found that key assumptions associated with transportainer drum loading and temperature from the engineering analysis had not been protected in operating procedures.

Plutonium Facility: This week, Plutonium Facility personnel recognized that sealed calibration standards containing ²³⁸Pu may present an over-pressurization hazard. There are more than 100 such standards in the Plutonium Facility and a smaller number of these standards in other LANL facilities. These standards were fabricated at the Mound Plant in the 1970's and documentation from that era indicates that the manufacturer only assured a five year safe operating life based on uncertainties related to material response to prolonged exposure to ²³⁸Pu. A great deal of relevant material response data now exists indicating that these sources are robust, but LANL is performing confirmatory analysis and is evaluating the situation through the New Information process.