

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 14, 2007

**MEMORANDUM FOR:** J. Kent Fortenberry, Technical Director  
**FROM:** B. Broderick and C. H. Keilers, Jr.  
**SUBJECT:** Los Alamos Report for Week Ending December 14, 2007

Eyler, Plaue, Shuffler, and Stokes were here this week reviewing the RLWTF replacement project.

**Accident Investigation Criteria:** Last week's report discussed the final dose, recently assigned, from a contaminated puncture wound that occurred in January. While the whole-body dose was less than the applicable DOE criteria for a federal investigation, the bone-surface dose exceeded the organ dose criteria (ref: DOE O 225.1A). The time lapse between the event and the dose assignment (11 months) illustrates a challenge for effectively applying the criteria and launching a timely federal investigation.

**Plutonium Facility (TA-55):** On Monday, two electricians working on the switchgear upgrade project shorted two wires that, unbeknownst to them, were energized. This led to a partial power loss in half the building, including partial loss of continuous air monitoring. Because of the upgrade project, the facility is not in a normal lineup; while attempting to restore power, operators took actions that led to a near-complete power loss in that half of the building, including loss of lab-room ventilation (Zone 2). Next, because of changing air pressure, ventilation in the other half of the building was secured. Throughout the event, the facility ensured primary confinement by maintaining glove-box exhaust ventilation (Zone 1); personnel also took appropriate actions, including orderly exit from the facility.

LANL review identified several problems. The integrated work documents were not at the work-site. These work documents had also not been updated to reflect that two fuses were in place, energizing these leads. The facility had learned a week earlier, during weather-related power disruptions, that these fuses were required for the operations center to have an accurate indication of the status of the electrical lineup. The intent was to pull the fuses when hazardous work was being conducted, but the hazard was not recognized for the cabinet being worked. TA-55 has suspended electrical work for this project pending improvements to supervision, configuration management, and work control.

**Radioactive Liquid Waste Treatment Facility (RLWTF):** LANL now expects to restore most of the transuranic (TRU) waste treatment capability in Spring 2008 and install a new drum tumbler next summer. The safety of this operation depends, in part, on the amount and concentration of TRU waste coming from TA-55. NNSA has identified a need to confirm the adequacy of the controls at TA-55 that limit this inventory to less than the hazard category 2 (HC-2) threshold (i.e., 55 Ci, Am-241).

**RLWTF Replacement Project:** The replacement facility is in an "enhanced" preliminary design phase. While it has a HC-2 designation, the current design does not meet expectations for a HC-2 nuclear facility (site rep weekly 10/19/07). The HC-2 designation is driven by an assumption that the TRU treatment tanks are full of liquid that is at the waste acceptance criteria (WAC) concentrations, thereby maximizing the facility's ability to tolerate an extended shutdown of treatment operations.

However, the mission-need does not appear to require this much capacity: the operating strategy assumes TRU treatment only about 20 hours per month (i.e., 13 % utility, assuming a 40-hour week). It would also take 6 and 30 months for the facility to accumulate radioactivity to the HC-2 threshold, assuming WAC and normal concentrations, respectively. A better strategy might be to ensure the facility can minimize down-time, maximize utility, and minimize in-process inventory. This would require ensuring the adequacy of inventory-limiting controls in the generator facilities (e.g., TA-55).