DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 2, 2006

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: C. H. Keilers, Jr.
SUBJECT: Los Alamos Report for Week Ending June 2, 2006

Contract Transition: Los Alamos National Security LLC began managing operations on Thursday.

Waste Operations: On Tuesday (5/30), Area G had a drum-drop event, resulting in 5 dented drums but no radioactive release and, fortuitously, no injuries. Specifically, a forklift operator picked up two pallets of heavier-than-expected drums from a three-pallet-high stack; while backing up, the forklift started to tip forward; 7 of the 8 drums slid off, fell to the ground, denting one drum in an adjacent row. Follow-up actions appeared appropriate. Opportunities for improvement include labeling heavier drums, better training of workers, and increasing focus on immediate actions for such events.

Pajarito Laboratory (TA-18): On May 23rd, NNSA headquarters (NA-10) announced its intent to accelerate transfer of Defense Programs activities out of TA-18 by 18 months (i.e., by Oct 1st, 2006) and not fund TA-18 infrastructure beyond FY-06. Feasibility to complete the transfer within the next four months is unclear right now. TA-18 has slid into limbo since its security downgrade last October; it still has a significant inventory of radioactive and other hazardous materials that warrant clear ownership and close management attention (site rep weeklies 10/28/05, 2/24/06, 4/7/06).

Legacy Nuclear Materials: LANL has a substantial legacy inventory throughout, particularly in TA-18, the plutonium facilities (TA-55, CMR), and waste storage (TA-54 Area G). This inventory drives the public and worker risks from LANL nuclear operations; it has nearly saturated storage for some facilities; its timely disposition affects not only safety but the lab's national security mission.

Several of LANL's highest-consequence postulated nuclear accident scenarios involve transuranic waste stored at Area G, which is near capacity. For example, the safety analysis approved in 2003 assumes that, without mitigation, a large earthquake would cause drums containing about 24 % of the Area G radioactivity to rupture without fire, leading to calculated off-site doses warranting about 2 to 3 orders of magnitude of mitigation. This week's drum-drop event illustrates that the drums are generally robust and that the safety analysis is conservative; however, the degree of conservatism is uncertain – particularly whether it constitutes 2 to 3 orders of magnitude. Updated analyses are due this month but are unlikely to improve the risk picture. Shipments to WIPP remain the primary mechanism for risk reduction.

TA-55 appears near capacity, pending more trailer startups on the safeguarded trailer pad, a temporary solution. It has unmitigated scenarios with calculated off-site consequences similar to Area G's. The highest involve Pu-238 lab room fires, exacerbated by an uncertain degree of building confinement. TA-55 has hundreds of grams of Pu-238 residues, some intermixed with combustibles in poor containers within gradually degrading plastic bags, stored in the room that was contaminated in Aug 2003; these conditions are similar to those assumed going into the worst-case accident scenarios.

TA-55 also has roughly 4,000 items in non-robust containers; these constitute a handling risk for the worker (e.g., the Dec 2005 vault contamination), and they could fail during a major accident. While TA-55 is pursuing more robust packaging, radiochemical stability is an issue, and processing has been postponed due to TA-50's transuranic liquid waste treatment problems. TA-55 would like to dispose of more residues, including the Pu-238 residues, with minimum handling and processing. This would likely require an unprecedented degree of coordination between NNSA, DOE-EM, LANL, and the WIPP contractor to establish optimum waste acceptance criteria, and a safe and efficient program.