

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 3, 2006

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: C. H. Keilers, Jr.
SUBJECT: Los Alamos Report for Week Ending March 3, 2006

Jordan, Owen, Schapira, and Tontodonato were here this week reviewing status of contract transition.

Fire Suppression: LANL has determined that about a third of the 2,100 sprinkler heads in TA-55 and about an eighth of the 4,600 heads in CMR have some issue that may compromise functionality; a few other LANL nuclear facilities are also affected to lesser extent. Upon review, NNSA and LANL have also concluded that the riser pressure in TA-54 RANT facility is adequate (site rep weekly 2/24/06).

TA-55 continues in stand-by and plans to replace all the sprinkler heads on the main floor (~970) and all the suspect heads in the basement this month and then to return to normal operation. The new lab-room heads will have a lower actuation temperature than current heads and generally should respond faster and reduce the release during a fire. LANL also intends now to address a long-standing issue involving low flow to a few hydraulically remote lab-room heads (site rep weekly 4/4/03). CMR has terminated normal operations for lab-rooms with suspect heads and established fire watches. Many of the CMR suspect heads appear to be in non-lab-room spaces, such as the filter towers; by focused repairs using available stock, CMR replaced many of the suspect heads in lab-rooms this week.

TA-55 Confinement Strategy: LANL has completed its refined analyses of confinement strategies (site rep weeklies 9/23/05, 9/16/05). LANL asserts there are two dominant accident scenarios: a major earthquake and a Pu-238 lab-room fire. For the former, LANL proposes completing current plans to seismically upgrade glove-box supports as safety-class. For the latter, LANL proposes retaining several existing controls plus installing a new safety-class door midway down the corridor that runs adjacent to the Pu-238 lab-rooms; the door is being designed now and may be installed this month.

For the Pu-238 lab-room fire, LANL needs to demonstrate about a factor of 75 reduction in leakage by either an engineered or administrative safety-class control. LANL proposes the following controls (factor of reduction is provided in parenthesis): current passive confinement features, such as exterior doors that are assumed closed within 5 minutes, based on refined wind boundary conditions (x4.8); the new mid-corridor door (x2.6); current Pu-238 lab-to-corridor doors, closed within 1 minute (x2.5); Pu-238 containerization and material-at-risk reduction (x2.0). The analyses assume a 10-minute ramp release from glove-boxes in a fire (x1.2) and safety-class combustible controls. Building exit training for workers and short-response sprinkler heads also increase margin. Ventilation, fire suppression, and fire alarm systems remain safety-significant with upgrades anticipated to improve their reliability.

Pu-238 Operations: It is not yet clear that LANL's confinement analyses adequately consider all scenarios, including Pu-238 scenarios. TA-55 has a significant Pu-238 residue inventory, much of it combustible and some of it in poor containers (e.g., slip lid). Opening a disposition pathway has slipped for years; pyrolysis is now suppose to start in July and stabilize these residues by early 2007.

Pu Containers: It is unclear how LANL's confinement analyses address scenarios with Pu outside glove-boxes. TA-55 has about 10,000 items; 60 % are in standard cans that may be thermally limited; 40 % are in weaker non-standard cans; 9 % have additional risk attributes; and 1 % are an elevated risk and have been moved to a glove-box or over-packed. Relatedly, TA-55 has deconned and down-posted the vault from a contamination area; respirators are still required when handling non-standard cans.