DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 4, 2005

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: T. D. Burns Jr. and C. H. Keilers, Jr.
SUBJECT: Los Alamos Report for Week Ending March 4, 2005

Bamdad, Jones, Jordan, and March were here this week reviewing fire protection, emergency response, TA-55 safety analyses, and CMRR project status. Also this week, NNSA, LANL, and the state of New Mexico signed a legally-enforceable consent order for environmental investigation and cleanup by 2015.

Fire Protection: At all but one LANL nuclear facility (TA-18), the highest-consequence nuclear accidents that NNSA and LANL have postulated involve fire. LANL has insufficient engineering staff to address fire protection issues, resulting in slow updates to fire hazard analyses (FHAs), incomplete action on FHA recommendations, and insufficient attention to timely and systematic analyses of trends. Furthermore, NNSA and LANL still need to address fire response staffing issues identified in a baseline needs assessment completed last June. A recent LANL reorganization and new management may elevate the visibility of fire protection issues and expedite LANL fully addressing these needs.

Critical Experiments Facility (TA-18): LANL is conducting Early Move activities and is considering uranium-based critical assembly operations without a clear authorization basis; NNSA appears to have informally accepted this situation. NNSA approved a TA-18 safety basis and its implementation plan in 2002 and amended both in 2003, assuming continued operation. During the last year, TA-18 has fallen behind on implementation, most notably for the safety-class temperature-based scram. Also, as part of implementation, TA-18 grayed-out sections of the technical safety requirements (TSRs) that were not yet implemented. These sections have not been updated, confusing operators on what is actually implemented and leading them to miss requirements, such as in-service inspections. LANL has not proposed nor has NNSA formally accepted the risk of TA-18 operating under these conditions.

Plutonium Facility (TA-55): TA-55 has no credible safety-class control to address a number of low-probability, high-consequence accident scenarios, since recent LANL analyses have shown the approved strategy based on passive ventilation is ineffective. This ought to be among the top 3 high-consequence nuclear safety issues at LANL, considering TA-55's enduring mission, its inventory and processes, its significant Pu-238 hazard, and its proximity to the public (site rep weeklies 12/24/04, 1/14/05, 2/4/05).

NNSA recently approved compensatory measures to address this; however, none of the compensatory measures qualify as safety-class, they are still being implemented, and they should not be relied on by themselves for an extended period. NNSA and LANL anticipate that within a month, LANL will propose and NNSA will take action on a set of interim TSRs that will address this and other known TA-55 safety basis issues for a longer period, such as a year. NNSA committed to specifying explicit functional classification, including safety-class assignments, and to specifying a time-limit for how long the interim TSRs are in effect. NNSA and LANL have struggled for years to correct TA-55 safety basis issues, and now the high priority assigned to TA-18 Early Move may interfere with timely resolution.

Longer term, NNSA and LANL may need to consider a suite of safety-class controls including active ventilation. Based on highly sophisticated analyses, LANL concluded that passive-mode building leakage is high and can vary widely (i.e., 20 to 70%). While the trends appear correct, the model is unrealistic and highly conservative. The selections of assumptions and possible solution strategies also

show a bias against considering active ventilation. For example, only 1 of 9 analytical cases presented had active ventilation; interpretation is difficult because this case also had time-limits on external door openings. This case was the most effective of those presented at minimizing building leakage (10%).