DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 12, 2004

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: C. H. Keilers, Jr.
SUBJECT: Los Alamos Report for Week Ending March 12, 2004

Integrated Safety Management (ISM): LANL is investigating two unrelated radiological events that have occurred within the last week: (1) Last Thursday (3/4), a CMR chemist received contamination on her lips, chin, and neck (up to 18k dpm) while working in a hood. Decontaminating the worker extended over a two day period. The worker was pouring a 3 M nitric acid and plutonium/uranium solution into a column in the hood. Room surveys found contamination on the floor and the hood's sash lip. (2) This Tuesday (3/9), two LANSCE workers discovered that they were working in an uncontrolled, unrecognized High Radiation Area (~170 mrem/hr neutron) and immediately exited. Preliminary dose estimates are low (7and 25 mrem). The workers were replacing equipment in one flight path of the Lujan Center while beam was on in the two adjacent flight paths. Work planning appears to have been based on radiation surveys with beam secured in the two adjacent flight paths. As a result of this event, LANL has suspended Lujan flight path maintenance and construction activities.

Authorization Basis (AB): LANL senior management recently established an executive committee to track NNSA and LANL progress on AB issues and re-prioritize effort, as appropriate. During the last year, NNSA and LANL AB staff have focused on accident analysis and risk reduction for TA-54 Area G and paid much less attention to other activities. Four nuclear facilities have ABs that are 5 to 8 years old. The TA-55 AB is 7 years old, and its AB update has been waiting for approval for nearly 2 years. Since November, LASO has disapproved one AB update, and LANL has withdrawn three. While Area G risk reduction is important, more balanced AB priorities appear warranted.

Chemistry and Metallurgy Research Building (CMR): The CMR AB is 5 years old. LANL owes NNSA an AB update next month, including a review of functional classification of safety systems. CMR has systems that may be playing a safety class role but are not now designated as safety class. For example, CMR has a containerization program intended to ensure that material not in active use is placed inside robust safes to protect it during catastrophic events. Last Fall, items within these safes were found packaged inconsistent with that during qualification tests (site rep weekly 10/31/03). LANL plans to include this storage system as a safety class design feature in next month's AB update.

Engineered Controls: LANL has several initiatives underway that could improve conduct of engineering and maintenance if fully developed and implemented, including: (1) the engineering standards manual, which captures requirements; (2) institutional administrative procedures that standardizes practices to meet those requirements; (3) and an institutional systems engineering program, including deployed systems engineers who would be trained and qualified to these requirements and procedures.

The engineering standards manual is the most mature of these and includes, for example, disciplinary design requirements, but not design processes or review requirements. It was made applicable last Fall to both facility and non-weapon programmatic work. The institutional systems engineering program started training personnel last September. It is currently limited to just facility work; however, a recent LANL tentative list of vital safety systems indicates that nearly two-thirds of these systems are programmatic (i.e., 59 of 93). The administrative procedure development effort is part of the Integrated Facility Management Program and is vital if LANL is to standardize engineering and maintenance practices across the lab. While well-conceived, this effort is also only applicable so far to LANL facility work and has had limited effectiveness, perhaps because it needs more senior management support. This week, NNSA began explicitly assigning personnel to perform oversight of LANL vital safety systems, which is positive.