DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 11, 2002

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: C. H. Keilers, Jr.
SUBJECT: Los Alamos Report for Week Ending January 11, 2002

Facility Operations and Maintenance: This week, LANL announced its intention to compete the laboratory's maintenance and services contract, which has been held by Johnson Controls Northern New Mexico (JCNM) since 1997. Current contract value is about $145M. In the announcement, LANL indicated that the contract needs to be competed in keeping with the recent operations realignment and the different approach being pursued for facility operations and maintenance.

Chlorine Dioxide Event: On Tuesday, an uncontrolled energetic reaction occurred in a non-radioactive chemical laboratory in TA-54 West. The laboratory is in the same building as a component decontamination shop (e.g., for respirators). The site rep understands that two researchers were working to develop a chloride dioxide hydrate that could be safely packaged, transported, and stored when one observed an unexpected temperature increase and both began to evacuate the room.

The subsequent reaction ruptured and plastically deformed a 3,000 psi-rated pressure vessel, destroyed a fume hood, and generated energetic missiles that perforated walls and caused significant damage. Due mostly to their alertness and quick action, the two researchers escaped without serious injury. The site rep believes that appropriate immediate and supplemental actions were then taken, including timely communications to workers and the public of the nature of this event. LANL has initiated an investigation. At this stage, DOE and LANL are asking the right questions about work authorization, hazards communication, hazard analysis, and implementation of controls.

Critical Experiments Facility (TA-18): On Wednesday, the TA-18 Facility Manager suspended operations of PLANET due to a reliability issue with the antiquated reactivity control system. PLANET is a general purpose vertical assembly machine used frequently for criticality training. Criticality is achieved by stacking enriched uranium plates on a fixed upper platform and a movable lower platform. The latter is positioned by a hydraulic lift and a fine-control stepper motor.

This week, during maintenance on the stepper motor control system, the lower platform began to rise toward the upper platform without operator action. Since the assembly had been unstacked to half that required for criticality, personnel safety was assured before the maintenance began. However, this is the fifth failure of this control system in the last 7 weeks. In the other cases, the control system failed to move the lower platform on command; however, in this case, the platform appears to have moved on its own. No critical operations were done in the time between the first and the final failure. To address the reliability issue, LANL plans to install a new control system, potentially resulting in a 2 to 4 month impact on related programs.

Quality Assurance: LANL has several initiatives underway to improve safety, quality, project management, and formality of operations. Many of these resulted from internal LANL reviews and external reviews by DOE, the Board, and other organizations (site rep weekly 8/17/01). In the past, LANL has astutely identified problems and creatively developed solutions but has had difficulty in instituting lasting change. The site rep has observed that progress appears to be occurring now in formality of operations, but early steps to achieve institutional quality assurance improvements have not materialized as expected. This may warrant increased management attention.