DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 5, 2003

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: C. H. Keilers, Jr.
SUBJECT: Los Alamos Report for Week Ending December 5, 2003

Martin and Stevenson were on site this week participating in a dynamic experiments design review.

Integrated Safety Management (ISM): Last Wednesday (11/26), LANL issued the results of its investigation into the five TA-55 workers exposed to toxic vapors (i.e., refrigerant degradation products) while soldering a piping joint for a rerouted coolant line (site rep weekly 10/3/03). The identified direct cause was worker failure to recognize abnormal conditions. The root causes were failures in the ISM process: specifically in defining the work, identifying the hazards, ensuring performance. Many organizations were involved. Roles and responsibilities were not clearly identified. Communications were disjointed. Organizations made assumptions about other organizations' responsibilities for hazard analysis and development and verification of controls. The radiological hazard was the focus to the exclusion of other hazards. There was no effort to incorporate and resolve different requirements contained in various work documents. The LANL investigation team concluded that the interim work control improvements now underway could conceivably have prevented the accident had they been in place at that time – particularly, the requirements for a single person-in-charge, clear roles and responsibilities, and verification walk-downs. The LANL team also identified areas where the interim work control improvement effort needs to be strengthened.

Waste Operations: Last Friday (11/28), the NNSA Site Office approved with comment the upgraded safety basis for the TA-54 (Area G) solid waste operations (site rep weekly 5/9/03). The analyses of the postulated accident scenarios predict high consequences for several low probability events. LANL is limited in available engineered controls. NNSA approved TRU waste containers, pallet banding, waste storage domes and door restraints as safety class; approved the lightning protection system as safety significant; and approved shaft covers, pit overburden, and SeaLand containers (for fiberglass reinforced plywood crates) as other design features. The key administrative controls are inventory limits. This includes an NNSA-imposed requirement to meet the Quick-to-WIPP commitment – ship off-site about 2,000 drums of dispersible, higher-source term material by September 2004. NNSA directed LANL to submit within 60 days a plan for stepping down the material-at-risk limit over time.

The site rep agrees with the high priority NNSA has assigned to the Quick-to-WIPP initiative. This is the best near-term action available to achieve significant risk reduction in Area G. On engineered controls, the specification of functional requirements and the assurance that the selected design features will meet requirements are substandard; however, it appears that nearly all the engineered controls available without major capital investment have been pursued. The site rep also believes that NNSA and LANL should pursue operation of the Decontamination and Volume Reduction System (DVRS), which is unfunded for FY-04. DVRS could address plywood crate integrity concerns, reduce collocated combustible and radioactive inventory, and thereby reduce risk (site rep weekly 9/19/03). While SeaLand containers may be appropriate for crates that won't be processed for some time, that pathway increases crate handling and associated risks and may become an excuse to delay processing the crate contents into a form acceptable for WIPP. DVRS is their only foreseeable disposition path.

Quality Assurance (QA): NNSA in its approval letter for the Area G safety basis identifies several quality issues with the LANL safety analysis. Separately, on Tuesday, the NNSA Service Center reported similar quality issues with the LANL SAFEKEG Safety Analysis Report for Packaging (SARP). Besides common quality concerns, transportation container certification issues such as these may affect DOE capability to perform its missions and achieve risk-reduction throughout the complex.