

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 24, 2004

**MEMORANDUM FOR:** J. K. Fortenberry, Technical Director  
**FROM:** Michael J. Merritt, DNFSB Site Representative  
**SUBJECT:** Lawrence Livermore National Laboratory (LLNL)  
Report for Week Ending December 24, 2004

**Plutonium Facility Safety Priorities:** Recent correspondence between the Livermore Site Office (LSO) and LLNL indicates a need to prioritize near-term actions to address current safety issues relating to the Plutonium Facility. On December 20, 2004, LSO received a proposed plan of action from LLNL. Included in this plan are actions to address issues related to configuration management of vital safety systems and a path forward for some recent findings of the Office of Independent Oversight and Performance Assurance (OA) relative to the existing Safety Analysis Report. The plan also proposes an extension to the schedule for completing the Documented Safety Analysis (DSA) for the Plutonium Facility (from January 15, 2005 to May 27, 2005).

The LLNL plan identifies a number of compensatory measures to be implemented to ensure confidence in the continued safe operation of the facility. These compensatory measures include:

- System engineer walk downs of all vital safety systems;
- Increased frequency of key surveillances;
- Reduction of material-at-risk in laboratory rooms; and
- Programmatic work scope reduction.

LLNL plans to complete walk downs by system engineers in February 2005 and “red-line” drawings by the end of April 2005. The Engineering Manager will review the results of the walk downs. Beginning in January 2005, LLNL will increase the frequency of key surveillances by a factor of two for most vital safety systems. The material-at-risk in laboratory rooms would be limited to half of the currently authorized amounts. However, justification to maintain the current inventory limits for specific rooms is in the plan.

The plan identifies a need for additional funding to implement the necessary upgrades to the configuration management program. The funding is primarily to hire additional system engineers and safety analysts. Additionally, the plan discusses impacts on program work; one program expected to be deferred is the processing and repackaging of inactive actinide materials.

**Tritium Facility Occurrence:** On December 16, 2004, Tritium Facility management determined that a potential inadequacy exists in the facility’s safety analysis and reported an occurrence (ORPS report OAK–LLNL–LLNL–2004–0070). The potential inadequacy deals with the hazard potential of x-rays emanating from surfaces contaminated with tritium. The Bremsstrahlung x-rays are produced when beta particles from tritium decay decelerate as they pass near the nuclei of atoms in nearby structural materials. Facility management believes that there are no adverse effects on the safety of facility workers because of the relatively low radiation doses and controls in place that minimize exposure to tritium. Nonetheless, facility management is evaluating the hazard to determine if any additional controls are necessary.