

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 18, 2005

MEMORANDUM FOR: J. K. Fortenberry, Technical Director
FROM: Michael J. Merritt, DNFSB Site Representative
SUBJECT: Lawrence Livermore National Laboratory (LLNL)
Report for Week Ending November 18, 2005

DNFSB Staff Site Activity: Staff member J. Plaué was at LLNL observing activities in Radioactive and Hazardous Waste Management facilities and assisting the site representative in assessing Plutonium Facility resumption activities.

Tritium Facility Evaluation of Safety: On November 7, 2005, the Livermore Site Office (LSO) completed a Safety Evaluation Report/ Evaluation of Safety (EOS) for the Tritium Facility. The LSO review evaluated a Potential Inadequacy in the Safety Analysis (PISA) for the hazard of low energy 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.

LLNL management had previously concluded 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 (see weekly report dated December 24, 2004). A subsequent Unreviewed Safety Question Determination (USQD) was determined to be negative. In the EOS, LSO concluded that the exposure to Bremsstrahlung x-rays is low and poses a negligible unmitigated consequence to the worker and is bounded by the current Documented Safety Analysis.

Radiography Facility Operations: Radiography of a pit was performed in the Radiography Facility again this week. The work was completed in accordance with the Facility Safety Plan, the pit surveillance procedure, and the specific radiological controls identified in the work permits. However, shortly after beginning radiography operations, a continuous air monitor (CAM) positioned in the radiography bay alarmed. The personnel exited the area in accordance with the facility procedures and training requirements. The hazard control technician performed additional checks and determined that no actual elevated alpha airborne activity existed and the alarm was not caused by radon decay. The hazard control technician then considered other possible causes of the CAM alarm and concluded that the placement of the CAM in close proximity to the radiography device was the likely cause of the alarm. The CAM was relocated to the passageway leading to the radiography bay and no further CAM alarms occurred. The site representative has initiated discussion with the LLNL lead Certified Health Physicist to determine what phenomenon may have caused the CAM unit to alarm in the absence of high energy alpha particles.

Plutonium Facility Resumption: Several more nuclear activities are nearly ready to begin operational trial periods. This week, work stations in various laboratory rooms conducted final checks following the protocol documented in the *Process for Standing-Up Workstations to Limited Operations*. As part of the final preparations, gloves in many of the gloveboxes were checked for integrity and changed as necessary. Unnecessary equipment, waste, and combustible materials were removed to comply with the facility Administrative Control Procedure for housekeeping.