DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 1, 2005

MEMORANDUM FOR: J. K. Fortenberry, Technical Director
FROM: Michael J. Merritt, DNFSB Site Representative
SUBJECT: Lawrence Livermore National Laboratory
Report for Week Ending July 1, 2005

Plutonium Facility Occurrence: On June 24, 2005, the Plutonium Facility criticality alarm system was inadvertently activated (ORPS report OAK–LLNL-LLNL-2005-0049). In general, the response by facility personnel was appropriate, however, personnel in the Radioactive Material Area (RMA) did not evacuate the facility in a manner consistent with their training. Rather than evacuating the facility immediately (as required), the RMA personnel considered the alarm to be false based on control room radio communications, then proceeded to the change area to doff their anti-contamination clothing. This response is considered unacceptable by facility management and an investigation is underway to evaluate the personnel response and the cause of the inadvertent alarm.

Initial indication is that the cause of the inadvertent alarm was failure by an alarm technician to follow the procedure for performing monthly checks of the criticality alarm system. The surveillance procedure specified that a key be placed in the "horn disconnect" position, but the operator placed the key in the "horn manual override" position in error which resulted in activation of the alarm. Facility management is currently evaluating issues involving procedural compliance and conduct of operations (see weekly report dated June 24, 2005).

On June 7, 2005, a criticality exercise was conducted in the Plutonium Facility (see weekly report dated June 10, 2005). During this exercise, RMA personnel evacuated the facility immediately as required. Less than three weeks later, response by personnel was less than adequate. This difference may be an indication that the facility exercises are rehearsed and do not reflect how personnel would respond during an actual emergency.

Radioactive Waste Management Occurrence: During waste management activities in Building 695, controls for beryllium protection may not have been adequate. Repackaging of beryllium-contaminated waste was performed for six days ending on June 17, 2005. Sampling results received on June 23, 2005, indicate beryllium levels that were higher than expected (ORPS report OAK–LLNL-LLNL-2005-0047). The sampling results indicate that the beryllium eight-hour time-weighted average (TWA) level was 5 micrograms per cubic meter. This level is above the permissible exposure limit (PEL) eight-hour TWA limit of 2 micrograms per cubic meter. Beryllium was detected on the other days, but was below the PEL. On all days, the workers directly involved with the waste handling were wearing full-face Powered Air Purifying Respirators with a protection factor of 100. Further evaluation by the Livermore Site Office Facility Representative reveals that other personnel in the facility were not wearing respirators. The personnel without respirators were positioned outside of a barrier rope that was nominally 20 feet from the work, however, the distance to the barrier may have been less on portions of the perimeter. A review is being conducted to identify what additional controls are necessary to resume beryllium operations.