DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 20, 2010

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending August 20, 2010

DNFSB Staff Activity: On August 16–18, 2010, D. Kupferer was at the Laboratory augmenting the Site Representative Office. On August 20, 2010, the Board's staff held a teleconference with Livermore Site Office personnel to discuss efforts underway to respond to the Board letter regarding activity-level work planning dated June 14, 2010.

Plutonium Facility: On July 29, 2010, the Laboratory issued the critique report on the degradation of the Emergency Battery Lighting System and the associated technical safety requirements (TSR) violation for failure to enter the limiting condition on operations (LCO) (see weekly report dated June 25, 2010). The TSR violation also triggered the Laboratory to perform a causal analysis. The causal analysis identified the root cause of the TSR violation as inadequate training for the individuals responsible for performing the surveillance. Specifically, the report identified that Facility Operations, the organization responsible for ensuring that LCOs are met and required actions are taken when surveillance requirements are not met, and the System Engineer were unaware of the consequences associated with exceeding the three day completion time frame to restore the lighting system to an operable condition (beyond this time frame, the TSRs require a change in the operational mode of the affected rooms). The corrective action identified for this root cause was retraining to reinforce requirements associated with TSR surveillances, LCO entry, procedure compliance, and reporting protocols. Corrective actions for other identified issues include the following:

- Establish a formalized change-out frequency for batteries and light bulbs in the Emergency Battery Lighting System
- Clarify the surveillance procedure that entry into the LCO is required when an operability condition is not met
- Update the *Nuclear Materials Technology Program Conduct of Operations Manual* with additional guidance for control of equipment and system status
- Evaluate the minimum stock of batteries and light bulbs to support change-outs

On August 11, 2010, fissile material handlers detected a leak in the limited volume closed loop cooling system supporting an in-progress plutonium casting operation. The handlers responded appropriately and the situation was determined to be safe from a criticality safety standpoint. Program personnel determined that approximately seven liters of water had leaked and collected at the bottom of the furnace well. A work permit was developed to recover from the situation and troubleshoot the cooling system. While executing the work permit, handlers identified that the prerequisite task of removing the plutonium from the glovebox could not be performed under the control specified in the work permit, so they appropriately paused work and notified the Facility Safety Office. Specifically, the work permit referenced moving the plutonium, which had solidified in the feed crucible, to another glovebox under an Operational Safety Plan (OSP); however, the mass of the melted plutonium in the crucible exceeded the mass limit for a single item and was not separately analyzed as an approved item in the OSP. This week, criticality safety personnel completed an evaluation supporting the planned move. Recovery and troubleshooting efforts are expected to resume next week.