DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 10, 2012

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending February 10, 2012

Plutonium Facility: This week, contractor personnel conducted an Independent Verification Review (IVR) of recently approved changes to the safety basis. These changes included: (1) the downgrade of the Emergency Battery Lighting System and (2) changes to the Limiting Condition of Operation for the pressure differential on a workstation used for laser welding sealed-sources (see weekly reports dated March 25, 2011 and December 2, 2011). Livermore Site Office personnel shadowed this IVR, which should conclude early next week.

Nuclear Material Programmatic Operations: Program personnel continued efforts to setup equipment for a classified experiment to be performed in the Plutonium Facility. The experimental test chamber was recently installed into its final location in the facility. Facility personnel recently reviewed a work permit to support connection of the chamber to the facility's glovebox exhaust system and nitrogen supply system. A second work permit to install and test diagnostic and control system equipment is also under review. Both of these work permits explicitly forbid the use of nuclear materials or high explosives.

Glovebox Safety: A breach of a glovebox glove and resulting contaminated puncture wound of the involved worker represents a serious hazard to fissile material handlers. Although such serious glove breaches have not occurred recently at LLNL, these events have occurred at other sites with similar operations. With glovebox safety in mind, the Site Representative observed programmatic operations, discussed practices with handlers, and reviewed several Operational Safety Plans (OSPs) governing the observed work. Observations included the following:

- Most OSPs identified hazards associated with glove breaches—in some cases the hazards were explicitly linked to objects or activities, but most cases contained general warnings
- Glove breach hazards were captured under several different hazard categories, including loss of confinement, radiation exposure, hot surfaces, and material handling
- Controls were inconsistent and not obviously explained by differences in work scope—some OSPs identified a particular type of glovebox glove, some OSPs explicitly required use of holding devices or protective over-gloves for specific activities
- Many controls were left to the discretion of the worker to either identify what constitutes a sharps hazard or determine the feasibility of implementing a control (i.e., if sufficient dexterity could be maintained while using over-gloves)
- Handlers were generally cognizant of hazards to gloves, but adherence to required OSP controls was variable, as were individual choices to implement discretionary controls
- Protective over-gloves and holding devices were not uniformly available at workstations, though it was unclear if this was a result of insufficient supply or poor equipment staging
- Limited and unconsolidated command media and institutional guidance on glovebox safety related topics may have contributed to the observed inconsistencies
- Glovebox safety related subject matter expertise is provided as a collateral duty by several individuals who have higher priority work demands

In response to these observations, contractor management indicated that they would study opportunities for improvements and undertake efforts to combat handler complacency.