DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 27, 2009

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending November 27, 2009

The laboratory was closed Thursday and Friday for the Thanksgiving holiday and the site representative was out of the office on Wednesday.

Plutonium Facility: On Monday, several plastic bottles containing radioactive solutions were found to be bulging (i.e., pressurized) in the glovebox where they were being stored. These bottles, some of which appeared to have released a portion of their contents, contained waste solutions resulting from a demonstration project to process a batch of legacy items. Laboratory personnel assessed the situation, consulted with additional subject matter experts, and developed a recovery plan to stabilize the situation. The containers were vented and the contents transferred to another container without incident. A critique has been scheduled for next week.

Unlike most of the activities performed in the facility, this particular processing activity consisted of an aqueous phase chemical separation of a high specific activity radionuclide from other materials. The process results in the separated radionuclide, which can either be further recovered for reuse or disposed of as waste, and a radioactive waste solution that requires solidification prior to disposal. For programmatic reasons, a decision was made to perform the solidification activity in a workstation located in a different room from where the separation was performed. As a result, these liquids accumulated in the processing glovebox while backlogs with the counting equipment delayed the start of solidification processing. In September, questions were raised regarding the adequacy of the change control and safety analysis performed in support of a decision to consolidate these solutions into a large jug. In particular, potential concerns were discussed regarding gas generation hazards (flammability and pressurization), material compatibility (chemical and radiolytic), and ergonomics. Soon thereafter the solution was transferred out of the large jug and efforts to initiate solidification processing began. However, solidification processing ceased after the first batch was completed due to resource limitations, continued counting room delays, and a potential new programmatic interest in the solutions. The remainder of the solutions were not handled until they were discovered bulging on Monday.