

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 23, 2010

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending July 23, 2010

B. Broderick was at the Laboratory this week augmenting the Site Representative Office.

Plutonium Facility: On July 22, 2010, facility management approved a work permit to recover from the unexpected exothermic reaction witnessed by a handler while processing uranium compounds containing lithium with water (see weekly report dated July 16, 2010). The work permit authorized phase 1 of the recovery plan which includes: (1) sampling each of the three containers of material, (2) reconfiguring the material from their current containers and location to several crucibles placed in a furnace, and (3) characterization of the material via elemental analysis and x-ray diffraction (XRD). The work permit supplements existing Operational Safety Plans for these operations to acknowledge the new hazard of reactive materials. New controls for this hazard include staging Metal-X fire agent in the inert glovebox to be used for XRD sample preparation, limiting the sample sizes to less than 2 g each, and isolating aqueous solutions from the workstation. The next phase of the recovery will cover stabilization of the material based on the results of the characterization. Facility management is waiting on the completion of recovery before making determinations on reporting and the need for a critique.

Emergency Management: On July 20, 2010, the annual nuclear criticality exercise was performed at the Plutonium Facility. The criticality exercise also served as the required annual Emergency Planning Hazards Assessment exercise. This year's scenario involved an over mass condition caused by worker error. One worker sustained simulated effects of acute radiation exposure (i.e., vomiting and confusion). A second worker simulated to have fallen and sustained a head injury during the rapid evacuation. Exercise play included re-entry into the facility by Alameda County Fire Department personnel to retrieve the second worker and handling both workers and responders as contaminated. Transport and treatment of the patients at Health Services had been planned, but was prematurely terminated due to a real world event. Recovery planning was also exercised at the institutional level for the first time. In past years, recovery planning was simulated at the facility level only. An after action report, including lessons learned and corrective actions is in development.

Livermore Site Office (LSO): On July 21, 2010, LSO issued a Periodic Issues Report containing two issues relevant to the nuclear facilities. First, a weakness was identified regarding the skill of the craft process utilized by the Facilities and Infrastructure maintenance workers for noise hazard analysis and protection. The weakness notes that the nuclear facility work control process expects craft personnel to self-identify and control noise hazards when "skill of the craft" is cited; however, a mature process was not in place for this function. Second, a weakness was identified regarding the state of Plutonium Facility compliance with a requirement in the Environment, Health and Safety Manual for replacing housekeeping HEPA filters within a 10 year period from the date of manufacture or arrival of the filter. The weakness notes that some filters exceed this time frame, although the actual number has not been determined. The weakness also notes that a clear basis for the requirement was not provided and that the safety significant filtration function of the glovebox exhaust system is not impacted by the housekeeping filters. LSO is separately investigating the age requirement on the confinement function provided by the housekeeping filter housing, which is part of the safety significant glovebox system.