**DEFENSE NUCLEAR FACILITIES SAFETY BOARD**

June 24, 2011

**MEMORANDUM FOR**: Timothy Dwyer, Technical Director
**FROM**: Jonathan Plaue, DNFSB Site Representative
**SUBJECT**: LLNL Activity Report for Week Ending June 24, 2011

**Emergency Management:** This week, the Superblock facilities each held their annual Emergency Planning Hazards Assessment (EPHA) exercises. The week began with refresher briefings for key personnel and a check of emergency supply cabinets prior to Tuesday's exercise. This year's exercise represented an important step toward the evolution of preparedness assurance for the Nuclear Materials Technology Program (NMTP). For the first time, the scenario involved concurrent events at three of the facilities resulting from a simulated magnitude 4.6 earthquake. In the Plutonium Facility, the earthquake scenario resulted in alarms associated with continuous air monitors and a natural gas boiler. In the Tritium Facility, a startled worker dropped a 20 Ci tritium target vessel. In the Hardened Engineering Facility, a worker fell in a staircase and sustained a broken arm. Given the earthquake scenario, Alameda County Fire Department personnel were simulated to be unable to respond to the Superblock and facility personnel were required to assist themselves. In addition, several key response positions were also filled by personnel new to those roles. On Thursday, a separate exercise was held at the Radiography Facility. The scenario was similar—a magnitude 4.6 earthquake resulting in a worker injury and the need for the facility personnel to assist themselves.

Overall, the response from the facilities to these relatively simple abnormal events was good. During the hot wash, facility management recognized the need to obtain additional hand held radios and associated channels—several response personnel relied upon cell phone capabilities that would not be assured in a real event. The full after action report is expected in a few weeks.

In the Site Representative's opinion, as the emergency program matures, it will be important for NMTP and the institution to increase the challenge and reduce the artificialities of exercise scenarios to enable improved validation of effective response. For example, the contractor's choice to utilize the EPHA exercise to fulfill the requirement for an annual nuclear criticality response severely limited the scenario. Specifically, Plutonium Facility personnel were directed to perform an immediate evacuation (a crash-out through exterior doors typically only required for a criticality event) rather than a rapid evacuation (a quick orderly exit using normal means). The facility has never exercised this type of a rapid evacuation. Likewise, some scenarios may result in non-trivial interfaces with security personnel that have never been drilled or exercised.

**Livermore Site Office (LSO):** LSO recently completed an assessment of Plutonium Facility's Evacuation Voice/Alarm Audio Warning and Building Paging System (EVA AW/P). The assessment was driven by questions raised during an April 2010 malfunction where building paging capability, which provides the fire alarm, was temporarily lost (see weekly report dated April 16, 2010). LSO concluded that both the ability to detect a loss of AW/P system operability and the resulting compensatory actions (primarily a fire watch) driven by the technical safety requirements were adequate. LSO noted a change made by the Alarms Group to automatically reset the EVA system after two minutes; however, as discussed during last week's review by the Board's staff, neither this change nor the entire site wide EVA system are under the software quality assurance program. LSO also noted acceptable guidance, equipment, and training for fire watch personnel, including the ability to supplement the existing guidance with hand written instructions, as necessary.