

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 3, 2010

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending September 3, 2010

Work Planning and Control: In a letter to the Laboratory dated August 31, 2010, the Livermore Site Office (LSO) noted seven events that have occurred lab-wide during the past eight months that were either near misses or had safety precursor implications. With respect to the Nuclear Materials Technology Program (NMTP), LSO cited the unexpected exothermic reaction experienced while processing a uranium-lithium item and the continuous air monitor alarm experienced while opening a 10 year old package containing nuclear materials outside of a glovebox (see weekly reports dated July 16 and May 28, 2010). LSO further noted that the gap analysis and plan developed by NMTP in response to the Board's letter dated June 16, 2010, did not include compensatory measures for the gaps in the interim period until the plan is completed in December 2011. As a result, LSO directed the Laboratory to: (1) perform an analysis of recent events to determine common causes and underlying work control process and/or implementation weaknesses, (2) take immediate actions to ensure that work is performed according to work control documents that include adequate work scope descriptions and associated controls, (3) develop an interim work planning and review process for NMTP work activities, (4) provide LSO with information on NMTP actions and progress to ensure operations are described in sufficient detail to allow the current work planning process to identify associated hazards and implement controls, and (5) schedule monthly meetings with LSO to present progress on work control improvements. Actions 1, 3, and 4 were requested within 30 days.

Plutonium Facility: On August 31, 2010, NMTP submitted a safety basis amendment to LSO in support of a request to downgrade the safety significant portions of the Fire Suppression System (FSS) to equipment important to safety. The safety function of the safety significant portion of the FSS is to protect the flexible gaskets downstream of the final-stage HEPA filters for Increment 3 from the effects of a fire in the basement. The safety basis permits the storage of radioactive waste in the basement. The current safety significant designation was derived from a postulated fire in the basement resulting in an unmitigated consequence to the worker at 100 meters that was judged to require a safety significant control. The designation was not intended to protect facility workers and other controls (i.e., continuous air monitors) are credited for this scenario. NMTP asserted that the previous designation was conservative and that the consequences at 100 meters do not require safety significant controls. In accordance with Department of Energy Standard 3009, the Laboratory does not utilize quantitative criteria for designation of safety significant controls for facility workers or workers at 100 meters. The amendment proposed maintaining the existing combustible exclusion zone around the flexible gaskets, the prohibition on waste processing in the basement, and the requirement that waste be contained in rigid metal containers; however, none of these controls are technical safety requirements. NMTP cited reduced maintenance costs associated with the FSS as the driver for the proposed change. If approved, the change will enable NMTP to modify the existing fire water tank for the safety class portion of the FSS, eliminate the nitrogen gas skid support system, provide greater water supply margin, and simplify the associated surveillances. The safety class portion of the FSS protects the final stage HEPA filters from excessive heat. The water supply for the remainder of the FSS will continue to be the facility's main riser, which is fed by two separate water mains.