

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 25, 2011

**MEMORANDUM FOR:** Timothy Dwyer, Technical Director  
**FROM:** Jonathan Plaue, DNFSB Site Representative  
**SUBJECT:** LLNL Activity Report for Week Ending February 25, 2011

**DNFSB Staff Activity:** On February 22, 2011, staff members Anderson, Beauvais, Gibson, and Shackelford held a follow-up teleconference with personnel from the Livermore Site Office (LSO) on the proposed safety basis for the Tritium Facility.

**Plutonium Facility:** Last week, fissile material handlers completed recovery and stabilization of the uranium lithium compound involved in the exothermic event (see weekly report dated July 16, 2010). The stabilization effort, which began in December 2010, was completed without incident. Overall, the aqueous treatment method resulted in about 75 L of contaminated rinse liquid, which was solidified and packaged into two waste drums. The Laboratory plans to package the material according to Department of Energy Standard 3013-2004, *Stabilization, Packaging, and Storage of Plutonium-Bearing Materials*, and transfer it to the Savannah River Site for ultimate disposition.

**Tritium Facility:** On February 22, 2011, the Nuclear Materials Technology Program Leader issued the report from a critique analyzing the unexpected tritium contamination found on the exterior of six tritium waste drums. The drums involved contained debris originating from the Tritium Grinder System and from Army part operations. In November 2010, one drum was found to have increased contamination levels a day after it had been surveyed and decontaminated. On January 6, 2011, two additional contaminated drums were discovered in the Tritium Facility during a pre-release survey. The next day, three additional contaminated drums were discovered at Radioactive and Hazardous Waste Management (RHWM) during routine swipe surveys. The tritium contamination levels observed ranged from about 1k to 13k dpm/100 cm<sup>2</sup>. For perspective, the free release criterion for tritium is less than 10k dpm/100 cm<sup>2</sup>.

The critique identified issues concerning variations observed in the radiological survey techniques employed by the Health and Safety Technicians (HSTs). In particular, the critique observed that the Discipline Action Plan utilized by the HSTs provided general guidance on the number and location of swipes; however, in practice HSTs were implementing this guidance differently, which may have contributed to some of the detected contamination. The critique also identified a concern regarding potential tritium permeation through the seals and gaskets of the drums, which could lead to continued contamination issues at the Laboratory or during receipt inspection at the ultimate disposal site. In response, the facility manager formed a committee to review and document any necessary improvements to waste drum handling and survey practices. The committee also examined options to package the drums in 85 gallon overpacks or utilize transportainers as a secondary contamination barrier. Facility personnel are in the process of monitoring six drums, including the use of a heating blanket to simulate temperature changes, to better understand the drum performance. Management is determining an overall path forward. In the interim, tritium drum shipments to RHWM have been suspended.