

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 18, 2011

**MEMORANDUM FOR:** Timothy Dwyer, Technical Director  
**FROM:** Jonathan Plaue, DNFSB Site Representative  
**SUBJECT:** LLNL Activity Report for Week Ending March 18, 2011

**Tritium Facility:** A year ago this week, the Livermore Site Office (LSO) approved a Justification for Continued Operations (JCO) taken in response to concerns outlined in a letter from the Board dated January 27, 2010. The JCO provided technical safety requirement coverage to assure the operability of the fire detection and alarm system (FDAS) and the tritium room monitors. In particular, the tritium room monitors were identified to compensate for questions in the safety significant glovebox boundary and the FDAS was identified for lack of a credited control to protect workers during fire scenarios. During the course of the year, the Laboratory submitted a revised safety basis based on a newly performed hazards analysis. LSO identified concerns with this submittal and the Laboratory again revised the document. LSO is currently completing their review and approval process of the latest revision (see weekly report dated January 7, 2011) and anticipates issuance of a Safety Evaluation Report in late April 2011.

This week, tritium program personnel reviewed options to resolve issues with the Tritium Grinder System (TGS). The TGS has not operated since late last year, primarily due to unexpected air ingress into the system observed mid-way through trial period operations. Tritium program personnel suspected the source of the air leakage was the sealing surface of the debris gate valve and recently inspected and cleaned these surfaces. The inspection was performed under a work permit, which authorized a worker to physically enter the chute in a double set of anti-contamination clothing and a HEPA powered air purifying respirator. Contamination levels for the job were high; approximately 3 million dpm/100 cm<sup>2</sup> in the chute with 19k dpm detected on lapel monitoring equipment. Following the job, tritium contamination was detected on the inside of the respirator; however, subsequent bioassay results indicated minimal uptake (~1 mrem). Tritium program personnel are evaluating options to provide a reliable seal including additional periodic worker entries for cleaning, development of remote tooling for cleaning, and an engineering design change.

The TGS was intended to recover tritium from commercial and military products, such as telephone dials and building exit signs, for programmatic use. At this point, approximately two percent of the roughly 1.5 million British telephone dials have been processed. The extraction rate observed to date has been about 10 percent; however, high levels of tritium oxidation are expected in this batch due to the air ingress. As a result, the tritium is no longer usable from a programmatic standpoint and an alternative means will need to be developed to empty the collection vessel. LSO is currently examining the future of TGS operations and exploring alternatives to dispose of the remaining tritiated products.

**Training:** On March 14, 2011, LSO approved the Training Implementation Matrices (TIMs) for the Superblock facilities (see weekly report dated October 29, 2010). LSO directed the Laboratory to complete actions listed in TIMs by April 30, 2011, as part of implementation of Department of Energy Order 426.2, *Personnel Selection, Training, Qualification, and Certification Requirement for DOE Nuclear Facilities*. These actions include updates to institutional and facility level training manuals, as well as improvements to the systematic approach to training.