

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 23, 2010

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

The Site Representative was out of the office Wednesday through Friday.

**Hardened Engineering Test Building:** Facility personnel recently completed repairs to correct ventilation system hardware. During a fall 2009 intrinsic radiation measurement activity, the health physicist observed that air flow was incorrect (i.e., positive flow from the measurement bay into the operations room rather than negative). The ventilation system is identified in the safety basis as equipment important to safety with a contribution to safety that “maintains negative pressure within the high bays so that exhaust air is directed through the HEPA (high efficiency particulate air) filters.” The safety basis further describes the system as creating negative pressure inside the bays “with respect to the rest of the building and the outside” and specifies the pressure difference between the bays and the atmosphere as 0.05 inches of water. The facility engineer investigated the physical configuration of the ventilation system, which revealed that it did not match its drawings and that this condition likely existed since changes were made to the system during a HEPA filter replacement activity in 2003. Specifically, the engineer found ducting that was improperly located with respect to the appropriate dampers for the ventilation trains for both bays in the facility. This discrepant configuration resulted in “marginally effective control” of the ventilation in the bays, which may have been further complicated by installation of an updated thermostat. Personnel noted the resulting incorrect pressure differential for the first time during the fall activity, despite a history of successful radiation measurement activities. In the interim prior to the completion of the corrective repairs, facility personnel improved flow with a few adjustments and required smoke testing before measurements involving radioactive materials.

**Tritium Facility:** This week, facility personnel expected to complete modifications to the natural gas system. The modifications, which have occurred during the past several months, included the removal of valves that were no longer needed, installation of an updated seismic valve, re-plumbing of the supply to the water heater, and re-routing of gas ventilation lines. Several of these modifications were intended to correct code compliance and minimize the potential for natural gas to be circulated through the ventilation system. Specifically, in the winter of 2008/2009, the Facility Representative and members of the Board’s staff observed natural gas odors in the radioactive materials area. Facility personnel believed the situation resulted from the intake of small gas quantities under certain atmospheric conditions.