DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 7, 2012

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending December 7, 2012

Hardened Engineering Test Building: On December 5, 2012, the Livermore Site Office (LSO) approved without conditions the annual update to the safety basis. As part of the review process, the laboratory contractor withdrew the request to add storage of tritium shipping container to the scope of work for the facility. Another notable change is the removal of oxygen monitors, the building paging system, and the seismically qualified bridge crane as designated Equipment Important to Safety. The contractor has 120 days to implement the new safety basis.

LSO, the contractor, and elements of National Nuclear Security Administration Headquarters continue dialog on the future programmatic portfolio for engineering testing in the facility. The current dialog is focused on determining the feasibility and cost estimate associated with meeting security requirements for periodic Security Category I activities. The baseline scope of work under analysis examines a one week test every other year, which is covered in the existing safety basis.

Plutonium Facility: Recently, the facility received a shipment of legacy items containing plutonium-238 (see weekly report dated August 3, 2012). Program personnel have begun planning a new process to perform an elemental separation using ion exchange. The primary objective of this separation is to recover uranium-234 for national programmatic needs, and as a by-product, purified plutonium-238. The scope of work for this activity is not currently fully defined, but personnel will likely need to consider potential new hazards presented by the energetic reactions of ion exchange resin, hydrogen gas generation from radiolysis, and other radiation degradation concerns associated with frequent gram quantity operations involving this high-specific activity radionuclide.

Nuclear Material Packaging: Program personnel are currently working with plutonium-238 materials. Existing approved procedures continue to allow this high-hazard material to be packaged in unsuitable containers such as paint cans and juice cans, contrary to best practices used elsewhere around the complex. Newly generated packages of plutonium-238 produced using these container types will likely be categorized as “high risk” necessitating near-term repackaging as part of implementation of Department of Energy Manual 441.1-1, *Nuclear Material Packaging Manual*. As a result, the Site Representative believes it would be prudent to expedite the use of SAVY containers for these operations.

Tritium Facility: On Monday, facility personnel completed installation of the particulate filter samplers to the existing exhaust stack monitoring system (see weekly report dated November 30, 2012). Workers also successfully completed the electrical system modifications to the facility. As anticipated in the work package, the cycling of the fans on and off resulted in the release of additional debris from the stack, which was observed and collected. The particulate filters were in place to sample some of this cycling and the first set of filters has been removed for analysis. Facility personnel held meetings this week to discuss: (1) the analysis plan for the filters and (2) options to further investigate the material condition of the stack (e.g, borescope camera, ultrasonic testing, etc.).