

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 1, 2012

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending June 1, 2012

Conduct of Engineering: On May 24, 2012, laboratory contractor personnel conducted final engineering design reviews covering two new gloveboxes for materials characterization and dissolution. These gloveboxes were fabricated in 2003 and were recently modified for near-term installation in the Plutonium Facility. The Site Representative observed weaknesses in the design review process similar to those previously noted (see weekly reports dated July 15 and 22, 2011), including the following:

- Reviewers were provided a set of viewgraphs ahead of the review; no other design media was provided. Two reviewers expressed concern that they were unable to provide substantive review based on this limited, informal design information.
- The viewgraphs contained very limited information on the scope of work to be performed in these gloveboxes, the associated hazards, or the controls necessary for safety. Furthermore, the viewgraphs lacked comprehensive design inputs, requirements, and criteria.
- During discussions, two hazards emerged that did not have controls accounted for in the design: (1) an explosion hazard due to flammable solvents without an oxygen monitor interlocked to an electrical isolation device (as used in a similar existing glovebox) and (2) a centrifuge without shrapnel protection (historically placed in glovebox floor well by design).
- Personnel exhibited confusion between the roles and objectives for the final engineering design review versus the Facility Acceptance Process.
- Responses to questions on the proposed aggressive schedule revealed budgetary pressures associated with completing installation for both gloveboxes by October 2012.
- The dissolution box was brought into the facility for installation this week without resolution of the centrifuge issue. It is unclear who accepted the associated programmatic risk and potential cost impacts of performing rework in an operating nuclear facility should a floor well, or any other substantive design changes, later be required for this glovebox.

Transuranic Waste Management: During follow-on discussions regarding implementation of compliant nuclear material packaging (see weekly report dated May 25, 2012), Livermore Site Office (LSO) personnel clarified that the majority of the estimated 643 items to be repackaged will likely eventually be declared as transuranic waste. The contractor plans to overpack these items into improved containers until they can be dispositioned as waste. Many of these items are salt residues, which are categorized as high risk packages and pose a significant radiological exposure hazard. In an idealized process, workers would place these residue containers, which are currently well characterized and sealed for safeguards purposes, directly into waste drums, thereby eliminating the risks associated with additional handling for interim repackaging. Impediments to this idealized case, include: (1) LSO personnel currently believe that the *Contact-Handled Transuranic Waste Instructions* require each of these containers to be opened and their contents emptied into the drum to be captured by video, (2) the contractor is currently not setup to utilize pipe overpack containers, which safely permit significantly higher curie loadings compared to normal waste drums, and (3) the contractor's existing strategy for disposing of these wastes involves placing items in drums with lower curie contents as they are generated during the next several years. LSO personnel intend to investigate potential improvements to this situation.