DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 15, 2011

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending July 15, 2011

Work Planning and Control: A team from the Office of Health, Safety and Security was at the laboratory this week assisting in an effectiveness review of the Integrated Safety Management system and work planning and control, including validation of the effectiveness of actions taken in response to the Board's letter dated June 14, 2010.

Tritium Facility: On July 12, 2011, the Livermore Site Office (LSO) issued a conditional approval of the safety basis. Consistent with LSO's response to the Board letter dated May 16, 2011, the safety evaluation report included six conditions of approval, including:

1. Development of a specific administrative control (SAC) for worker response to fires, including training and an associated annual fire drill
2. Retention of the safety significant designation for the gloveboxes housing the Tritium Process Station (TPS) and Tritium Science Station (TSS), including resolution of previously identified issues with the boundary and functional requirements
3. Retention of the glovebox glove integrity program inspections
4. Elevation of the seismic shut-off valves to Equipment Important to Safety
5. Revision of the SAC to limit the total hydrogen species in the TPS and TSS gloveboxes to 2 percent by volume
6. Development of safe shutdown procedures for room fires and tritium room alarms

LSO directed the contractor to resubmit a revised safety basis within 75 days. Overall implementation of the improved safety posture will likely be in early 2012, assuming typical review and implementation time frames.

Conduct of Engineering: There are currently at least four significant design and installation projects underway in the Nuclear Materials Technology Program (NMTP) nuclear facilities (Centralized Waste Processing Line, Shaker, Jerk Tester, and chlorination system). The design processes for this new equipment are governed by a combination of the Engineering Directorate's policies and the *NMTP Work Planning and Control Manual*. These documents provide mostly high-level expectations that require individuals to determine applicability and implementation method. For example, there are no explicit expectations for personnel to document design inputs or constraints. In practice, documentation appears to be driven by management and the need to communicate the design to the fabricator (e.g., drawings and parts lists). Written expectations are also minimal for the conduct of design reviews and the Facility Acceptance Process. These efforts tend to involve a group of experienced individuals reviewing a design primarily based on presentation slides. The Nuclear Weapon Engineering program recently acknowledged a need to improve in this area and issued supplemental expectations.

In the Site Representative's opinion, the level of rigor and formality is inconsistent with best practices around the complex and may be inconsistent with contractual requirements related to quality assurance and configuration management. While this style of design process may lead to acceptable results, it can unnecessarily burden facility and safety-related disciplines near the end of the design process and expose the mission to avoidable programmatic risks. The contractor's experiences with the Tritium Grinder System and Hydride/Dehydride/Casting System demonstrate these concerns.