

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 4, 2015

**TO:** Steven A. Stokes, Technical Director  
**FROM:** Matthew P. Duncan, Cognizant Engineer  
**SUBJECT:** Lawrence Livermore National Laboratory Report for August 2015

**Plutonium Facility:** The upcoming fire suppression system modification will temporarily disconnect the flow path for firewater from both the domestic water system and the backup firewater tanks. As a result, both the safety class and defense-in-depth portions of the fire suppression system will be rendered inoperable. LLNL requested LFO approval of a one-time deviation from the Technical Safety Requirements for the fire suppression system. Specifically, LLNL is proposing to continue in the maintenance mode for up to ten days to perform the modifications to the system. Without the deviation, LLNL would be required to begin to transition to the repair mode after seven days. This would require significant movement of hazardous and radioactive materials within the facility due to the requirements associated with being in the repair mode. Because the action statement in the limiting conditions for operation allows three days to fully transition to repair mode, this deviation would result in a negligible increase in risk beyond what LFO has already accepted. All programmatic activities will be suspended while the facility is in maintenance mode. All hot work not associated with the modification will not be authorized. In addition, LLNL plans to establish a fire watch after normal work hours. LFO personnel plan to provide enhanced oversight during this time.

Separately, LLNL submitted a justification for continued operations to LFO. It contains three compensatory measures: (1) hydrogen operations are curtailed with some exceptions where LFO has approved operations with limited material at risk, (2) chlorination activities are suspended and will not resume without LFO approval, and (3) plutonium hydride may not be stored in a certain location without facility manager approval.

There were two minor events at the Plutonium Facility:

- The criticality alarm system malfunctioned and did not reset properly following an emergency exercise. LLNL personnel successfully returned the system to service.
- A momentary power outage shut down a vacuum pump and affected some continuous air monitors. No credited safety systems were affected.

**Safety Basis:** As reported last month, LLNL declared a potential inadequacy in the safety analysis after discovering that some safety basis calculations used embedded computer code that had not been verified in accordance with LLNL's software quality assurance requirements or identified on its list of approved safety software. Laboratory management completed an evaluation of the safety of the situation and concluded that no compensatory measures are required. LLNL plans to add the specific versions of the software used in the calculations to their software inventory list as inactive software, which will make their past use compliant with LLNL's software quality assurance requirements, but not allow use for future calculations. LFO is evaluating this proposal.

**Hardened Engineering Test Building:** LFO approved LLNL's request to use the new electron beam welder on items containing depleted uranium.