

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 7, 2015

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

**DNFSB Staff Activity:** E. Gibson, M. Duncan, and outside expert R. Green participated in two teleconferences with LLNL, LFO, and subcontractor personnel to discuss the draft Probabilistic Seismic Hazard Analysis update for LLNL.

**Safety Basis:** Earlier this year, LLNL had discovered 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. These results triggered a declaration of a potential inadequacy in the safety analysis and a positive unreviewed safety question. As one of the corrective actions, LLNL performed an extent of condition review to comprehensively evaluate all calculations cited in each nuclear facility's documented safety analysis. This effort uncovered ten additional calculations without the appropriate software quality assurance. Every nuclear facility was affected, with the exception of the Radiography Facility. In general, most were related to structural or seismic analyses. LLNL declared a potential inadequacy in the safety analysis, but does not believe any compensatory measures are required as the calculations were performed using widely distributed software commonly used for engineering applications.

**Plutonium Facility:** LLNL requested and LFO approved a proposal to modify the fire suppression system and how it is credited in the documented safety analysis. The fire suppression system supplies backup water to the exhaust duct sprays that protect the final HEPA filters from high temperatures during postulated fire scenarios. To increase the amount of firewater available, the 7500 gallon firewater tank will now be used instead of the 2500 gallon tank. The safety class nitrogen skid is no longer considered necessary and will be taken out of service. As a condition of approval, LFO required that the designation of alarms related to pressure in the firewater tank be upgraded to "defense-in-depth equipment important to safety."

While performing a weekly surveillance for the room ventilation system, LLNL determined that the differential pressure between a laboratory room and the corridor was outside of the allowable range per the Technical Safety Requirements. The room is currently being used for waste container storage. LLNL entered the appropriate limiting condition for operation and rebalanced the system.

**Hardened Engineering Test Building:** LLNL completed installation of a new electron beam welder. The current scope of operations prohibits welding items containing radioactive material. LLNL sent a request to LFO to allow welding items containing depleted uranium. LFO is evaluating the proposal.

**Waste Storage Facilities:** Late last month, LLNL declared a potential inadequacy in the safety analysis for pipe overpack containers. This month, LLNL determined that it is a positive unreviewed safety question.