DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 6, 2017

TO: Steven A. Stokes, Technical Director
FROM: Matthew P. Duncan, Cognizant Engineer
SUBJECT: Lawrence Livermore National Laboratory Report for December 2016

DNFSB Staff Activity: J. Plaue provided oversight at the laboratory on December 13–14, 2016.

Radiography Facility: On July 7, 2016, the Facility Manager for Building 239—the Radiography Facility—declared a potential inadequacy of the documented safety analysis due to a question regarding an assumption in a calculation that evaluates the peak temperature, due to a postulated fire, at the surface of the metal barrier of a component containing plutonium. Further details about the question and its potential significance can be found in the July 2016 and August 2016 reports. On December 13, 2016, the laboratory transmitted a newly completed calculation to the Livermore Field Office. The calculation no longer uses the questionable assumption. The laboratory plans to propose a change to the documented safety analysis to cite the new calculation as the basis for assuming that a plutonium component will not be damaged during a fire. In addition, the documented safety analysis would also modify the Specific Administrative Control that specifies a minimum standoff distance between a plutonium component and any significant combustible materials. Until the change is submitted to and approved by the Livermore Field Office and implemented by the laboratory, the laboratory intends to keep active the compensatory measure that limits the quantity of plutonium in the facility. The laboratory expects all of these actions will be completed by July 7, 2017.

Plutonium Facility: As discussed in the May 2016 and June 2016 reports, the laboratory proposed changing the documented safety analysis and technical safety requirements to allow unattended off-hours furnace and ion milling operations in Building 332, the Plutonium Facility. The Livermore Field Office approved the changes with a condition of approval that requires glovebox gloves adjacent to hot exposed surfaces to be restrained. In addition, the field office imposed a temporary operational restriction that requires prior field office approval for unattended sintering furnace operations during the weekend and a limit on how long the furnace and glovebox can be operational without a visual inspection.

Headquarters Oversight: As noted in the September 2016 report, the Department of Energy's Office of Emergency Management Assessments conducted a limited scope performance test of Lawrence Livermore National Laboratory's Emergency Programs Organization. The report has been completed and is available at https://energy.gov/ea/downloads/enterprise-assessments-assessment-lawrence-livermore-national-laboratory-emergency. There were three findings for the laboratory where they had not (1) fully integrated consequence assessments with emergency classification and protective action decision-making, (2) provided continuous, effective, and accurate communications among response components, and (3) implemented a verification and validation process, associated with previous findings, that verifies that corrective actions have been put in place and validates that the corrective actions have been effective in resolving the original findings, thereby preventing recurrence. There were two and twelve opportunities for improvement identified for the Livermore Field Office and the laboratory, respectively.