

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 19, 2011

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending August 19, 2011

Livermore Site Office (LSO): In response to observations made by the Board's staff during a recent review of safety system design, functionality, and maintenance, LSO staff have initiated an analysis of the Plutonium Facility's safety basis. The analysis is intended to examine the adequacy of flow-down of safety functions, functional requirements, and performance criteria from the hazards analysis. While initially targeted at the systems the Board's staff assessed, LSO intends to expand this review to all safety systems in the Plutonium Facility.

Plutonium Facility: On August 17, 2011, one of the facility increments lost its normal power supply. The safety class diesel generator and associated automatic transfer switch activated as designed and established emergency power to the increment. Facility personnel brought work activities to an orderly stopping point and placed the radioactive materials area in standby mode as required by the technical safety requirements. Troubleshooting activities identified the source of the issue as a faulty circuit associated with a light emitting diode indicator on a breaker control panel—the diode circuit is wired in parallel with the closing switch. Facility personnel restored normal power after about 25 hours on emergency power and are following up on the diode issue with the manufacturer. During the power outage, the contractor determined that there was a need to seek a temporary deviation from the prohibition of nuclear material handling while in standby mode in order to allow for the movement of shipping containers. LSO approved the request and the shipping containers were moved.

On August 12, 2011, the contractor transmitted to LSO a safety basis amendment in support of a new planned programmatic activity. The contractor documented the scope of work for this activity—an experiment involving nuclear material and explosives—in a set of viewgraphs. Based on these viewgraphs, the contractor determined that one new hazard event was necessary for the safety basis, as well as a change to the language of an existing specific administrative control (SAC). The revised SAC states: "Operations with high explosives and metal encapsulated special nuclear material are limited to 10 g of high explosive in a room." The new hazard table event scenario postulates a detonation of high explosives leading to radioactive material release. The event was determined to pose high unmitigated consequences to a worker with an extremely unlikely frequency. The contractor credited the building structure to protect the worker from this potential hazard and also cited the experimental chamber and assembly design as an applicable control. LSO is reviewing the submittal.

Conduct of Engineering: On August 16, 2011, the contractor held the final engineering design review for the experimental chamber and assembly design discussed above. The apparent objective of the review was to authorize equipment procurement and fabrication; however, an additional design review is planned prior to operations and completed safety notes and procedures were not available as suggested by the institutional design review procedure. Viewgraphs were the only design media available during the review. The Site Representative noted that classification issues prevented the attendance of the environment, safety & health team members, though a representative from the Facility Safety Office was in attendance.