

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 23, 2011

**MEMORANDUM FOR:** T. J. Dwyer, Technical Director  
**FROM:** B.P. Broderick and R.T. Davis  
**SUBJECT:** Los Alamos Report for Week Ending December 23, 2011

**Plutonium Facility:** Laboratory and NNSA management are focusing sustained attention on improving criticality safety and conduct of operations practices at the Plutonium Facility. The site office has heavily emphasized these improvements in FY12 contractual Performance Based Incentives (PBI) and LANL management is making meaningful progress in implementing changes to processes and training designed to improve criticality safety and conduct of operations performance.

In August, a troubling criticality safety infraction occurred at the Plutonium Facility that increased management concern over criticality safety and conduct of operations and highlighted the pressing need to address shortcomings and improve performance in these areas. In the August event, a researcher, who was a certified fissionable material handler (FMH), wanted a photograph of the results of a recent plutonium casting operation. The FMH accessed material in a glovebox that he was not authorized or released to work in and violated posted criticality safety limits by taking plutonium metal rods from two separate material locations and bringing them together in a single location. During this evolution, a second certified FMH entered the area and recognized the plutonium mass in the glovebox location significantly exceeded posted limits. The two certified FMHs then violated requirements for dealing with criticality safety infractions by re-accessing the affected glovebox and moving the rods back to their original locations.

In response to the significance of the August event and in reaction to prompting from the NNSA site office, LANL management is taking serious action to improve criticality safety and conduct of operations compliance. At the outset, LANL senior management re-assigned a highly experienced Plutonium Facility manager to work full-time on developing, coordinating, and executing improvement efforts. This dedicated manager and his working group began by drafting major revisions to the procedures that govern criticality safety program implementation and fissionable material transfers at the Plutonium Facility. The revised procedures provide much greater clarity in the roles, responsibilities, and requirements that apply to operators and supervisors during glovebox work and fissionable material transfers.

More recently, the dedicated improvement manager led an effort to completely overhaul the Plutonium Facility's FMH certification process. The new process involves classroom training with an exam, a performance demonstration, and an oral board. The new classroom training is well structured and well taught using many practical examples from Plutonium Facility operations and experiences to illustrate relevant criticality safety and conduct of operations concepts. The new performance demonstrations and oral boards are significantly more rigorous than anything required by the old certification process.

Taken together, it appears that the new FMH certification process is a more credible approach to instilling and then testing required knowledge and understanding than has been used in the past at the Plutonium Facility or is typically used elsewhere at the laboratory. All Plutonium Facility FMHs and their supervisors are currently undergoing recertification using the new process.