

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 9, 2011

**MEMORANDUM FOR:** Timothy Dwyer, Technical Director  
**FROM:** Jonathan Plaue, DNFSB Site Representative  
**SUBJECT:** LLNL Activity Report for Week Ending December 9, 2011

**Post-Deinventory Planning:** Program personnel have identified at least 17 gloveboxes that are in excess of programmatic needs. Many of these gloveboxes have not been utilized in more than 10 years. Several of these are thought to contain plutonium oxide holdup in the range of tens of grams. Preliminary plans call for many of the fissile material handlers associated with the deinventory effort to transition to glovebox removal tasks in fiscal year 2013. These handlers possess substantial knowledge of facility processes and operational history that make them ideally suited to safely execute the glovebox removal tasks. Program personnel are currently working to secure funding for this effort. Without funding, it is unclear how this skilled work force will be maintained.

**Hardened Engineering Test Building:** This week, a team completed the federal readiness assessment (RA) for the Shaker operation. The team identified: (1) approved changes to the safety basis documents concerning use of explosive release bolts were not fully implemented [pre-start], (2) the Independent Verification Review process performed by Nuclear Operations inappropriately stated full or satisfactory implementation [post-start], and (3) the plan of action for the contractor's RA inappropriately omitted the core requirement for conduct of operations, given that some Shaker staff had never operated in a nuclear environment [post-start]. The team also identified observations related to the lack of lock-out/tag-out steps in the operating procedure, emergency response, and Livermore Site Office (LSO) safety basis staffing.

**Emergency Management:** As part of the Shaker RA, contractor personnel performed their second operational drill under the developmental drill program. The drill scenario involved the response to observed smoke. Personnel reacted appropriately; however, the Site Representative notes that personnel evacuated the facility based on the decision of the facility manager. While this appears to be a prudent reaction, the Facility Safety Plan (FSP) and training dictate that workers do not automatically evacuate the facility in the event of a fire and instead follow directions provided on the paging system. This direction is typically given by the fire department upon arrival and not necessarily at the first indication of fire (i.e., smoke alarm, pull station activation, sprinkler flow, etc). Notification to facility management, facility management's response decisions, and subsequent direction to personnel are not part of the documented response to alarms and emergency conditions. The RA team noted as an observation that management notification was not required by the FSP.

**Startup and Restart:** Following a walk-down of the equipment, review of additional documentation, and consultation with a readiness subject matter expert from headquarters, LSO determined that a formal RA is required for the startup of the HYDOX process. HYDOX converts plutonium metal to oxide via hydride and nitride intermediates (see weekly report dated November 18, 2011). LSO noted that a control in the governing Operational Safety Plan (OSP) to ensure the complete elimination of plutonium hydride prior to introduction in the oxygenation furnace was unique and not an extension of other ongoing operations. The reaction of plutonium hydride with oxygen is highly exothermic. LSO is further reviewing the adequacy of the safety basis for this process, since the approved safety basis does not include a credited preventative control for this scenario.