

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 31, 2012

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending August 31, 2012

DNFSB Staff Activity: C. Martin observed a team from the National Nuclear Security Administration (NNSA) assess implementation of Department of Energy (DOE) Standard 3016, *Hazard Analysis Reports for Nuclear Explosives Operations*.

Quality Assurance: This week, a subject matter expert from NNSA Headquarters assessed implementation of software quality assurance through the examination of two safety significant systems in the Plutonium Facility: (1) the Fire Detection and Alarm System and (2) the Hydrogen Gas Control System. The assessment was undertaken, in part, to follow-up on concerns regarding the hydrogen system outlined in the letter from the Board dated December 13, 2011.

The expert identified 13 preliminary findings of noncompliance with requirements contained in DOE Order 414.1D, *Quality Assurance*, IEEE standards invoked by the laboratory contractor, and the Institutional Software Quality Assurance Plan. The findings were against the institutional program, implementation within the Nuclear Technology Material Program, and approval actions from Livermore Site Office (LSO). In general, the findings concerned inappropriate software risk-level grading methodology, missing software configuration management plans, and insufficient verification and validation testing. The expert also noted concerns with the lack of procurement records for these safety systems. LSO and the contractor are currently examining the impact of these findings on the operability of the systems and the scope of potential extent of condition reviews.

Support to Pantex Operations: This week, a four person team from NNSA Headquarters conducted an implementation review of DOE Standard 3016. The review team visited each design laboratory as part of the response to the letter from the Board dated August 3, 2011. The team's preliminary conclusions validated the Board's concerns and identified several additional areas for improvement. In general, the conclusions concerned: out-of-date procedures, inadequate training for weapons response personnel, incomplete documentation, and the need to improve the quality and frequency of self-assessment. The team also found that LSO did not effectively assure the quality of software used in the weapons response process and identified the need to perform a more in-depth review of the software packages used at Pantex and each of the design laboratories.