DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 18, 2006

MEMORANDUM FOR: J. K. Fortenberry, Technical Director
FROM: M. J. Merritt, DNFSB Site Representative
SUBJECT: Lawrence Livermore National Laboratory (LLNL)
Report for Week Ending August 18, 2006

DNFSB Staff Site Activity: Staff member T. Hunt was at LLNL this week observing the readiness assessment for disposition of Object-77.

Readiness Assessment for Legacy Item Disposition: LLNL commenced a readiness assessment (RA) this week to disposition a legacy item referred to as Object-77. The LLNL RA team conducted interviews, reviewed analyses and procedures, and observed dry runs of the operations to be performed. A National Nuclear Security Administration (NNSA) team consisting of Livermore Site Office (LSO) personnel and an individual from the NNSA Service Center observed the LLNL RA. The Board's staff observed the conduct of the RA, as well as the performance of the dry runs.

The activity to disposition this item presents unusual challenges to the facility. The facility's work control process is well suited to support routine activities, but is not ideal for this unique, one-time activity. Using the facility's work control process for this activity necessitated the generation of several documents containing specific work controls to prevent or mitigate potential hazards. The hazards associated with this work include radiation, contamination, criticality, deflagration, high pressure, and other industrial hazards. To safely conduct this activity, general controls contained in the Facility Safety Plan and an Operational Safety Plan have been supplemented by specific controls contained in critical lift plans, work permits, an emergency response plan and special assembly procedures.

The procedures and plans invoke facility safety programs and engineered safety devices. LLNL has designed and constructed special equipment, developed specific machining techniques, and performed extensive analyses to confirm the adequacy of the engineered equipment. Even with the special equipment and techniques, rigorous implementation of conduct of operations will be critical to the success of the activity. For example, certain procedures to be used are designated as "continuous use" as defined by the Nuclear Materials Technology Program (NMTP) Conduct of Operations Manual. Invoking this level-of-use procedure requires instructions to be read aloud and for the steps to be performed in sequence. The continuous use procedures may undergo field changes as long as the changes are properly authorized and do not degrade safety.

During the performance of dry runs of the activity this week, several deficiencies were observed. The radiological controls were inadequate, conduct of operations lacked rigor, mockup training did not effectively validate procedures, field changes were authorized without specific direction and thorough evaluation, and installation of specially designed equipment was problematic. Overall, readiness to operate had not been established and thus commencement of the RA was premature. It is not clear that the LLNL RA team shared this opinion.

As a result of the lack of preparation, the NMTP Program Leader suspended the RA on the third day. The program personnel have been directed to make the necessary changes and conduct a management self-assessment prior to restarting the RA process for this activity. NNSA will conduct its RA after completion of the LLNL RA and review of the LLNL report.