

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 13, 2011

MEMORANDUM FOR: T. J. Dwyer, Technical Director
FROM: B.P. Broderick and R.T. Davis
SUBJECT: Los Alamos Report for Week Ending May 13, 2011

Davis was offsite this week.

The staff held a teleconference with NNSA and LANL personnel to discuss the site's response to the recent discovery of an increased likelihood of structural failures in certain portions of the Plutonium Facility during postulated seismic events.

Weapons Engineering Tritium Facility (WETF): In July 2010, WETF successfully completed an NNSA Operational Readiness Review allowing the facility to restart programmatic tritium gas handling activities after an extended operational suspension during which personnel worked to address significant pressure safety and safety basis issues. Soon after completing work to support an important national security deliverable in September 2010, WETF personnel discovered that small amounts of oxygen were leaking into a portion of the Tritium Gas Handling System called the Hot Inlet System where the air could potentially mix with tritium to form a flammable or explosive atmosphere. In October 2010, facility management declared a Potential Inadequacy of the Safety Analysis based on this issue and suspended tritium gas handling operations. In November 2010, the NNSA site office approved a Justification for Continued Operations (JCO) that would allow WETF to resume tritium gas handling operations upon implementation of a series of compensatory measures designed to address the potential deflagration hazard associated with oxygen ingress. The JCO compensatory measures have not been implemented and programmatic tritium gas handling operations remain suspended.

Since November, facility management has focused attention on the creation of a new set of hazard analyses that include comprehensive evaluation of deflagration hazards related to oxygen leakage into the Hot Inlet and Tritium Gas Handling Systems. In late April, LANL management submitted a revised JCO that incorporates the results of the new hazard analysis. The revised JCO, which was approved by the NNSA site office this week, credits additional engineered and administrative controls including a new material at risk limit of 100 g (and 52 g tritium processing limit) for the Tritium Gas Handling and Hot Inlet Systems.

The new hazard analyses will eventually serve as the foundation for a major revision to the facility's DSA and TSRs scheduled to be submitted in 2012. In the interim, LANL submitted and NNSA approved an annual update intended to be an incremental improvement to the facility's existing safety basis.

This week, LANL management also responded to formal NNSA direction to provide planning information for mission, readiness, risk reduction, and safety management program improvement activities. Safety-related priorities discussed in the response include •continued overpacking of non-pedigreed legacy tritium containment vessels into robust containers; •disposition of Early Storage Unit tritium vessels that are known to exceed their Maximum Allowable Working Pressure; and • installation of mercury traps required to remove trace amounts of mercury contamination from bulk tritium gas before this material can be shipped offsite.