

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 9, 2011

MEMORANDUM FOR: T. J. Dwyer, Technical Director
FROM: B.P. Broderick and R.T. Davis
SUBJECT: Los Alamos Report for Week Ending September 9, 2011

Weapons Engineering Tritium Facility (WETF): At WETF, the safety significant tritium monitoring system is credited to detect high tritium concentrations and provide a local alarm to prompt worker evacuation. Last week, four tritium monitors that had recently been recalibrated at the LANL Calibration Laboratory had their TSR-level surveillances performed to confirm operability upon reinstallation. A step in the WETF surveillance procedure requires a qualified operator to verify the tritium high level alarm to be set at $7,000 \mu\text{Ci}/\text{m}^3$. The procedure then calls for the operator to verify that the high level audible alarm sounds at a tritium concentration less than $10,000 \mu\text{Ci}/\text{m}^3$, which is a TSR requirement. A qualified WETF operator performed the surveillance procedure and initialed completion of the set point verification and the audible alarm confirmation steps. During the course of testing, operations center personnel noticed unanticipated system responses and called in the Cognizant System Engineer (CSE) to investigate. The CSE discovered that although the TSR surveillance had been completed and documented as satisfactory, the tritium monitor set point had never been changed from the Calibration Laboratory default setting of $99,000 \mu\text{Ci}/\text{m}^3$, as required by the surveillance procedure, and therefore could not have audibly alarmed at a level below $10,000 \mu\text{Ci}/\text{m}^3$, as required by the TSRs. Upon discovery, WETF management entered applicable action statements for the tritium monitoring system Limiting Conditions for Operation (LCO), fixed the tritium monitor set point issue, and successfully re-performed the TSR surveillances. WETF management has taken other actions to address the significant procedure compliance issues associated with this event.

Plutonium Facility: This week, the site office completed a Safety Evaluation Report for a revised Justification for Continued Operation (JCO) associated with handling and storage of heat-source plutonium (HS-Pu) material containers. This revised JCO addresses three Potential Inadequacies of the Safety Analysis (PISAs) that were identified for HS-Pu between November 2010 and January 2011. The site office response also approves removal of previously identified operational restrictions following implementation of the revised JCO controls. The JCO identifies a specific administrative control implemented as a LCO that requires welded HS-Pu containers inside gloveboxes to meet the performance criteria at the glovebox fire temperature of 1800°F or have a limited time (two weeks) to be present in the glovebox (and count toward the applicable glovebox material at risk limits). The JCO is scheduled for implementation within 90 days.

Plutonium Facility – Seismic Safety: Recently, the site office submitted to NNSA-Headquarters the Project Execution Plan that includes strategy, cost, scope, schedule and identified funding sources to complete upgrades that ensure mitigated consequences for worst case seismic accident scenarios do not challenge the offsite evaluation guideline. This submittal is identified as a deliverable for Recommendation 2009-2. The plan includes the following: 1) upgrades to address deficiencies identified in the SAFER evaluation to meet facility performance assumptions 2) credit analyzed and approved fire-rated containers with reduced damage ratios 3) upgrade glovebox support stands to meet PC-3 requirements for gloveboxes that process plutonium in the molten state 4) upgrade the fire suppression system to meet PC-3 requirements and 5) upgrade appropriate portions of the ventilation and support systems to meet safety-class and PC-3 requirements.