

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 28, 2008

MEMORANDUM FOR: T. J. Dwyer, Technical Director
FROM: B. Broderick and R.T. Davis
SUBJECT: Los Alamos Report for Week Ending November 28, 2008

Transuranic Waste Operations: Last Sunday, a deflagration occurred during remote drum venting operations at Area G. The affected drum contained roughly two Pu-239-equivalent curies of material that was cemented into 35 one gallon containers and packed in a 55 gallon drum in the 1980's. The deflagration did not cause energetic ejection of drum contents and the venting enclosure was not breached so all resultant contamination was contained in the enclosure. Five operators involved in the evolution were taken to the hospital after reporting respiratory distress thought to be caused by chemical vapors emanating from the newly vented drum or combustion products from the deflagration. All operators have reported back to work, although one remains on medical restriction.

The cause of the deflagration remains unclear and investigation continues. Eight operators were maintaining the TSR-controlled 90 foot separation distance from the HEPA-filtered enclosure when the event occurred. Personnel reported hearing an abnormally loud noise when the spark-resistant venting tool punctured the 55 gallon drum and almost immediately thereafter smelled an unusual sulfurous odor. Three operators outfitted in personnel protective equipment and respirators (the balance of operators were in street clothes) made a re-entry into the enclosure, observed evidence of a deflagration, and exited the area. Soon after, the five operators developed respiratory symptoms.

The LANL Emergency Management and Emergency Response groups and the Los Alamos Fire Department were notified and responded to the event. Laboratory HAZMAT personnel characterized the drum using thermography to detect any residual combustion. When none was observed, they re-entered the enclosure and plugged vent holes with sample ports, thereby resealing the 55 gallon drum. While the Fire Department did transport the five affected operators to the hospital, they never entered Area G to survey the scene of the deflagration. The affected drum has since been decontaminated, re-secured in a filtered 85 gallon overpack and restored to a segregated and tightly controlled unvented drum storage array pending further investigation and the development of a path forward.

Weapons Engineering Tritium Facility (WETF): Last week WETF management declared a TSR violation related to credited containment vessels known as Standard Tubs. The maximum allowable working pressure (MAWP) of Standard Tubs is required to be identified and protected. Some tubs contain legacy tritium-bearing components that are known to be over-pressurized, and the TSR violation was based on a long period of indeterminacy as to whether a worst case failure of the legacy components would exceed the MAWP of the tubs. Despite the TSR violation, the ultimate conclusion was that the MAWP of the Standard Tubs would not be exceeded under worst case conditions.

This week, new information surfaced that a critical parameter used in calculating worst-case pressures inside the tubs was in error. Recalculated maximum internal pressures show that the MAWP for two tubs is approached, but not exceeded under normal ambient temperature (i.e. 20°C); but is exceeded under credited fire conditions (i.e. 120°C). In response, WETF management has declared a potential inadequacy of the safety analysis. The two affected tubs are stored in an access-restricted room with stringent combustible loading limits. An initial justification for continued operations (JCO) is being prepared for interim storage and a follow-on JCO is planned to remove the legacy components from tubs and reclaim their tritium to eliminate the pressure hazard (site rep weekly 11/21/08).