

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 9, 2012

MEMORANDUM FOR: T. J. Dwyer, Technical Director
FROM: B.P. Broderick and R.T. Davis
SUBJECT: Los Alamos Report for Week Ending March 9, 2012

Management: This week, LANL senior management announced the selection of two key contractor positions. First, Jeff Yarbrough was selected as the Associate Director for Plutonium Science and Manufacturing replacing Carl Beard, who is now the Principal Associate Director for Business and Operations. Second, Charles Anderson was identified as the Associate Director for Nuclear and High Hazard Operations. Mr. Anderson has been acting in this position for approximately 8 months.

Chemistry and Metallurgy Research Building (CMR): The CMR TSRs credit a flammable gas control to limit the quantity of flammable gases such that the lower flammability limit (LFL) cannot be exceeded in a storage volume if the entire contents of a gas source are released. On February 15th, CMR personnel discovered a small propane bottle in an unmarked and nondescript plumber's kit stored in a cabinet. This source and storage configuration did not comply with the requirements of the flammable gas control in the CMR TSR document. In response, facility management entered the applicable TSR action statements, relocated the propane bottle to a compliant storage location, and initiated an extent of condition review to identify any similar problems elsewhere in CMR.

This week, as part of the extent of condition review, CMR personnel discovered another propane bottle in an identical plumber's kit that was stored in a location where the LFL could be exceeded if the bottle released its entire contents. In response, facility management again took appropriate response actions and declared a TSR violation. The extent of condition review will continue until all required areas of the facility have been searched for inappropriately stored flammable gases.

Weapons Engineering Tritium Facility (WETF): Facility procedures require WETF gloveboxes to be leak tested by drawing a vacuum on the affected glovebox and measuring the pressure rate-of-rise and then pressurizing the affected glovebox and measuring pressure rate-of-fall. This week, WETF personnel were performing the vacuum portion of the leak testing procedure when oxygen alarms annunciated inside affected glovebox sections. Operators immediately terminated the test and purged the glovebox sections with nitrogen, forcing the oxygen into the Low Pressure Receiver (LPR) intake section of the Tritium Waste Treatment System. Oxygen readings inside the glovebox sections reached a maximum of about 5.5%, but oxygen readings inside the LPR remained well below 1%.

The WETF safety basis includes a Specific Administrative Control (SAC) that is designed to reduce the probability of forming a deflagrable mixture of gases inside the LPR. This SAC is applicable to open glovebox maintenance (e.g. maintenance that requires a glovebox window to be removed) and other operations that could intentionally introduce enough oxygen into the LPR to challenge the limiting oxygen concentration (LOC) for combustion. When applicable, this SAC requires material at risk to be "segmented" within affected glovebox sections by closing and tagging valves. During a critique for the oxygen alarm event, facility management recognized that the LPR oxygen concentration never approached the LOC of 5% in this instance; however, upset conditions during glovebox leak testing could credibly challenge the LOC in the LPR. The ability to challenge the LOC in the LPR would invoke SAC requirements, including segmentation. Since MAR was not formally segmented during the glovebox leak testing evolution, facility management declared a TSR violation.