

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 1, 2012

**MEMORANDUM FOR:** T. J. Dwyer, Technical Director  
**FROM:** B.P. Broderick and R.T. Davis  
**SUBJECT:** Los Alamos Report for Week Ending June 1, 2012

**Weapons Engineering Tritium Facility (WETF):** This week, WETF management declared a Potential Inadequacy of the Safety Analysis (PISA) due to non-conservative oxygen readings for the Oxygen Monitoring System (OMS). The safety significant OMS is used to monitor oxygen concentrations in the Tritium Waste Treatment System Low Pressure Receiver (LPR) and the Tritium Gas Containment System (i.e. gloveboxes). During a review of a 2010 calculation last week, WETF management identified that OMS readings are dependent on pressure at the oxygen sensor and would indicate non-conservative values (i.e. less than the actual oxygen concentration) if the pressure at the sensor fell below the calibration pressure (the OMS is calibrated at atmospheric pressure).

For the LPR, a sample loop that includes a back pressure regulator is used to monitor LPR contents; however, the regulator failed several years ago and has not been repaired or replaced. A manual bypass valve that bypasses the regulator has been used to maintain a back pressure on the oxygen monitor since that time, but there is no surveillance for this pressure and the oxygen monitor's pressure dependence is not addressed in the safety basis. In addition, the setpoint calculation for the OMS does not address pressure uncertainty. Evaluation of this pressure, which is periodically recorded by a facility control system, indicates that the pressure at the sensor has routinely been well below atmospheric pressure. After this issue was recognized last week, the OMS was declared inoperable for both the LPR and glovebox systems and appropriate TSR Limiting Conditions for Operation were entered.

**Transuranic Waste Operation:** As part of Area G closure activities, LANL plans to startup Fiberglass Reinforced Plywood (FRP) box processing operations in Dome 375 and in the Dome 231 Permacon later this year (box processing is currently performed in Building 412). LANL has constructed a new larger Permacon containment structure in Dome 375 and plans to revise the safety basis to include processing greater than Hazard Category (HC) 2 quantities of waste in this Permacon. Area G personnel plan to perform a concurrent contractor readiness assessment in October for both the Dome 231 and Dome 375 operations prior to processing FRP boxes with greater than hazard category 3 quantities. A federal readiness assessment will be conducted for HC 2 operations in Dome 375.

**Safety Basis:** Last week, NNSA NA-1 Supplemental Directive Guide 1027, *Guidance on Using Release Fraction and Modern Dosimetric Information*, was formally added to the prime contract for management and operation of LANL. Among other things, this Supplemental Directive uses updated dose conversion factors to modify the threshold inventory values used to determine when a facility must be classified as an HC 2 or 3 nuclear facility, which requires the development of a Documented Safety Analysis. The new inventory threshold values generally allow more radiological material to be present in a facility before it must be classified as HC 2 or 3 (for example, under the new guidance, a facility can contain up to 38g of Pu-239 or 26g of weapons-grade Pu and remain below the HC 3 nuclear facility threshold, up from 8.4g or 6g, respectively). The NNSA site office has requested that laboratory management submit an implementation plan for applying the Supplemental Directive before any changes are made based on the new guidance. Ultimately, several LANL facilities including the Radiological Laboratory and Utility Office Building are expected to attempt to invoke the new inventory threshold values to allow a greater quantity of material to be present in the facility while remaining less than HC 3.