

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 26, 2011

MEMORANDUM FOR: T. J. Dwyer, Technical Director
FROM: B.P. Broderick and R.T. Davis
SUBJECT: Los Alamos Report for Week Ending August 26, 2011

Weapons Engineering Tritium Facility (WETF): WETF Technical Safety Requirements (TSR) credit a containerization program that has specific provisions governing the labeling and allowed storage locations for containers that could exceed their rated design pressures under fire conditions. Pressure requirement compliance for individual tritium-bearing containers is tracked using a controlled spreadsheet that was designed to update container pressure conditions over time. This week, a WETF subject matter expert (SME) was reviewing the spreadsheet and recognized that a container known to exceed pressure requirements was now reflected as compliant. In investigating this situation, the SME identified an error in the spreadsheet algorithm used to calculate internal container pressure as a function of time. This error underestimated the amount of helium in-growth from tritium decay in a way that caused calculated container pressures to decrease rather than increase over time. Upon discovery of this issue, WETF personnel are systematically reassessing the pressure conditions of each tritium container in the facility. The extent of condition review continues. To date, one container has been newly identified as non-compliant with TSR containerization program requirements. As a result, WETF management declared a TSR violation.

Also this week, WETF personnel conducted an emergency exercise where an exercise controller fed simulated alarms into the WETF Integrated Control System in accordance with an Exercise Plan that had been approved and evaluated through the Unreviewed Safety Question process. All qualified WETF operations center operators evacuated the facility in response to simulated alarms. During the exercise-prompted evacuation, an actual high oxygen level alarm for the Tritium Waste Treatment System (TWTS) was received by the exercise controllers who remained in the facility. Receipt of a valid alarm was relayed to evacuated personnel and the exercise was suspended. However, before qualified personnel could return to the operations center, the unqualified operators observed conditions that they felt warranted action to introduce inert gas into the TWTS to dilute the oxygen concentration. After the unqualified personnel manipulated the system to initiate the dilution, qualified operators returned and oxygen levels fell and remained below alarm levels. In addition to evaluating issues related to unqualified personnel operating credited safety systems, WETF management is investigating both the cause and the safety basis implications of the unexpected influx of oxygen into the TWTS.

In response to these events, WETF management suspended container movements and gas handling operations, pending further investigation. The facility has been placed in Warm Standby mode.

Transuranic Waste Operations: This week, Area G management declared a TSR violation based on a failure to comply with minimum staffing requirements during transuranic waste operations. Area G TSRs require two technicians and a radiological control technician to be present when operations involving transuranic waste containers are performed inside waste storage domes. Recently, an NNSA facility representative observed a forklift operator transfer a standard waste box containing transuranic waste from one storage dome location to another without the required second operator. Area G management declared a TSR violation based on this facility representative observation.