

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 19, 2008

MEMORANDUM FOR: T. J. Dwyer, Technical Director
FROM: B. Broderick and R.T. Davis
SUBJECT: Los Alamos Report for Week Ending September 19, 2008

Plutonium Facility: This week facility personnel recognized a condition where 3 uncredited containers bearing Pu-238 were incompletely submerged in the vault water bath. Compensatory measures stemming from a 2006 potential inadequacy of the safety analysis (PISA) and positive unviewed safety question (USQ) require uncredited containers to be fully submerged. The control derived to ensure this condition is satisfied relates to maintaining the water in the vault water bath above a certain level. However, the water level control was based on assumptions associated with container dimensions and storage configurations. These assumptions were not protected and operators were not aware that certain container sizes and storage configurations could defeat the intent of the control. As a result, the water level was maintained at the prescribed level, but this did not prevent uncredited containers from being stored in an incompletely submerged state. Upon recognition of this situation, facility management remediated the condition, reengaged the PISA process and revised the ineffective compensatory measures associated with the legacy PISA.

TRU Waste Operations: Waste storage dome door restraints are credited for preventing doors from becoming wind-borne missiles that can impact transuranic waste drums. The approved Area G DSA states that door restraints will survive wind speeds up to 96 mph. A calculation performed in 2007 determined that the door restraints will fail at lower wind speeds than identified in the DSA. The new information provided by this calculation does not appear to have been formally captured and acted on at the time. A cognizant system engineer rediscovered this information while conducting a vital safety system assessment (VSSA) of the door restraints. As a result, management declared a PISA.

The SER approving the current Area G DSA mandates that vehicle barriers be credited as safety-significant and comply with NRC NUREG 6190 to prevent errant vehicles from impacting waste storage domes. A 2005 NNSA site office assessment identified that the vehicle barriers could not meet NUREG 6190. This prompted a TSR violation and the institution of compensatory measures that have evolved and been strengthened several times since 2005. However, the vehicle barriers have never been modified to comply with NUREG 6190 and still cannot perform their credited safety function. This information was reviewed as part of a VSSA, prompting another PISA.

Conduct of Engineering: Performance of VSSAs played a direct or indirect role in the declaration of each PISA discussed above. These assessments appear to be providing an effective mechanism for identifying latent vulnerabilities in credited safety systems caused by outdated, non-compliant safety bases and lack of robust Formality of Operations. VSSAs for most safety-class and safety-significant systems in LANL nuclear facilities are scheduled to be completed by the end of FY09.

Safety Basis: Once an applicable issue is identified, the PISA process provides a formal, systematic, and transparent mechanism to determine appropriate compensatory measures and helps inform NNSA's understanding of risks. In each of the three cases above, once issues were identified through VSSAs or other means, facility management promptly declared PISAs. This type of timely and conservative utilization of the PISA process is an important tool for effectively managing emergent issues and vulnerabilities as they are identified through efforts to reach 'core' compliance with Formality of Operations and to implement modern, compliant DSAs once they are approved.