

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 17, 2010

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending September 17, 2010

Tritium Facility: In a letter dated September 13, 2010, the Livermore Site Office (LSO) provided the Laboratory direction and comments on the submitted safety basis update (see weekly report dated July 2, 2010). LSO specifically identified that the hazard analysis lacked conservatism for fire and deflagration scenarios for the protection of the facility worker. LSO further noted that some of the issues resulted from a lack of common understanding with respect to the consequence binning for facility workers. As a result, LSO directed the use of specific consequence range bins for qualitative assignment of facility worker hazards (e.g., high = consequences > 100 rem, moderate = $25 \leq$ consequences ≤ 100 , etc). Furthermore, LSO directed that events involving highly oxidized tritium releases from fires or deflagration be binned as a “high” consequence unless otherwise justified for the scenario. Several of the LSO comments also indicate disagreement with the assumptions and methodology used for the determination of facility worker consequences. Department of Energy Standard 3009, *Preparation Guide for US Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*, does not provide clear requirements regarding the assumptions, methodologies, and consequences binning for facility workers. Overall, LSO directed the Laboratory to reevaluate the hazard and accident analysis, incorporate the directed consequence binning, reevaluate the control selection for fire and deflagration scenarios, and resolve the 126 comments within 90 days.

Fire Protection: The approved safety basis for the Tritium Facility identifies combustible loading as a Specific Administrative Control (SAC). The SAC is implemented through a combustible loading survey governed by an informational use administrative control procedure and supplemented with a standard developed by the Fire Protection Engineering group. LSO and the Laboratory recently identified the need to revise the procedure to incorporate formal combustible loading surveys for two rooms which had been previously excluded. One of these rooms is currently utilized for quality assurance storage and is subject to frequent changes in the transient combustible loading. This particular room was also the topic of a LSO comment on the submitted safety basis (see discussion above). LSO identified that under the submitted safety basis this particular room is authorized to store tritium up to the increment limit of 30 g; however, this room is excluded from the technical safety requirement modes, including the combustible loading SAC. For this situation, the proposed safety basis is consistent with the existing authorization under the approved safety basis. Facility management is currently prohibiting radioactive material from the room; however, the room is adjacent to other rooms where radioactive material is permitted and is not separated by a credited fire barrier.

Feedback and Improvement: On September 17, 2010, the Nuclear Materials Technology Program (NMTP) held a periodic safety and security briefing. In addition to the regular briefing topics, the Work Control Manager briefed interim and long term improvements to work control processes. The NMTP Leader also emphasized awareness of safe practices as work tempo increases to meet end of the fiscal year deadlines. This month, the Weapons and Complex Integration Directorate, which includes NMTP, issued a revision to their *Feedback and Improvement Plan*. The revision incorporated additional criteria to define issues of management concern where the conduct of a critique may be useful.