

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 12, 2011

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending August 12, 2011

Nuclear Material Packaging: In a letter dated August 10, 2011, the Livermore Site Office (LSO) directed the laboratory contractor to update the implementation plan for nuclear material packaging and safe storage. LSO requested that the update reflect the actions needed to address safe storage beyond the end-state of the inventory reduction project and ensure compliance with Department of Energy Manual 441.1-1, *Nuclear Material Packaging Manual*. LSO further specified that the updated plan include implementation strategies, management functions, and milestone dates. The implementation plan update is due to LSO on September 15, 2011.

Plutonium Facility: On August 11, 2011, fissile material handlers successfully punctured without incident the bulging juice can containing plutonium-238 salts (see weekly report dated July 29, 2011). The puncturing was performed under a work permit with supplemental work instructions. The handlers transferred the juice can from the existing overpack drum, placed it into a SAVY-4000 container—a new, engineered container developed to meet Manual 441.1-1 requirements and recently obtained from the Los Alamos National Laboratory—for transfer from the air glovebox where it was stored to a nearby inert glovebox. The can was punctured in the inert atmosphere using a non-sparking tool while contained in the SAVY-4000 (with lid removed). All handling was performed using protective over-gloves and while wearing a full-face air purifying respirator.

Waste Storage Facilities: In a letter dated August 11, 2011, LSO notified the contractor that the federal review of the safety basis annual update had been discontinued following the identification of inappropriate material-at-risk (MAR) values in the accident analysis. Department of Energy Standard 5506-2007, *Preparation of Safety Basis Documents for Transuranic Waste Facilities*, allows for the use of a statistical MAR distribution in transuranic waste containers. The contractor utilized the statistical MAR distribution derived for LLNL provided in an appendix to Standard 5506. LSO noted that this distribution was based on historical inventories and that the distribution used for the safety basis ought to reflect the existing inventory. LSO requested the contractor propose a schedule to resubmit a revised annual update within 30 days.

On August 4, 2011, the contractor declared a potential inadequacy in the safety analysis regarding an inconsistency between the dose conversion factors utilized to determine plutonium-239 equivalent curie (PE-Ci) values in transuranic waste containers and those utilized for the accident analyses in the safety basis. Specifically, the safety basis utilized dose conversion factors from the *International Commission on Radiological Protection Publication 72*. In practice, the contractor had determined the PE-Ci values for drums using dose conversion factors based on the waste acceptance criteria for the Waste Isolation Pilot Plant, which utilized a different set of factors (*Internal Dose Conversion Factors for Calculation of DOSE to the Public*, DOE/EH-0071, July 1988). There are significant differences in dose conversion factors for various radionuclides between the two references. Based on an extent of condition review, the contractor determined that this issue also impacted the onsite transportation safety document.