

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 3, 2010

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending December 3, 2010

DNFSB Staff Activity: On December 2, 2010, staff members held a teleconference with Livermore Site Office (LSO) and Laboratory personnel to discuss the results from the recent review of the nuclear facility training program.

Nuclear Material Packaging: On December 2, 2010, LSO and Laboratory personnel met to discuss a number of questions that were recently raised on the adequacy of packaging for plutonium-238 materials. The questions originated from an observation the LSO Facility Representative made regarding the bagout bag associated with the plutonium-238 containing item involved in the continuous air monitor alarm on October 7, 2010 (see weekly report dated October 15, 2010). The bag was used to reintroduce the item into a glovebox and was observed to be degraded and partially melted following three days of storage. This prompted initial questions in early November on the melting point of the bag material and associated technical basis for packaging (e.g., wattage limits, configurations, temperature monitoring, etc), as well as the immediate adequacy of other stored items containing plutonium-238.

Two weeks after these questions were raised Laboratory personnel retrieved an item from the vault containing the highest wattage of plutonium-238 in the inventory (about 8 watts). The item was packaged about 18 months ago and upon inspection was found with corrosion on the outside of the inner container (a paint can) and the inside of the outer container (a juice can). The inside of the paint can was normal. In the Site Representative's opinion, this evidence suggests attack of the mild tinned steel by hydrochloric acid generated through radiolysis of the polyvinyl chloride bag material by incidental alpha contamination on outside of the paint can—a phenomenon learned elsewhere through contamination events and personal uptakes.

The Laboratory has not reached a conclusion on the cause or significance of the corrosion. An update to the technical basis to fully consider plutonium-238 is in development. LSO and Laboratory personnel are also discussing the necessity of additional actions for other packages produced in the same glovebox line and interim packaging controls for ongoing plutonium-238 operations.

Emergency Management: Recently, the Laboratory began this year's series of annual nuclear facility familiarization tours for Alameda County Fire Department personnel. The Laboratory developed and began using facility briefing topic lists to support the effort. The lists provide a set of high level topics (e.g., locations of hydrants) and are identical for all of the nuclear facilities. Using the current list, the quality of the tours is highly dependent on the knowledge and experience of the tour leaders, a Facility Safety Officer and the Fire Protection Engineer. A tour conducted on Wednesday for the Plutonium and Tritium facilities provided more information than contained on the topic list. LSO is currently assessing the development and change control of the topic lists, conduct, and overall administration of the tours.

Livermore Site Office: On November 24, 2010, LSO transmitted to the Laboratory a Periodic Issues Report (PIR). This PIR contained 10 issues of relevance to the nuclear facilities.