

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 3, 2011

MEMORANDUM FOR: Timothy Dwyer, Technical Director
FROM: Jonathan Plaue, DNFSB Site Representative
SUBJECT: LLNL Activity Report for Week Ending June 3, 2011

Nuclear Material Programmatic Operations: In a memorandum dated May 31, 2011, the Deputy Administrator for Defense Programs tasked LLNL with the role of lead design agency for the Life Extension Program (LEP) for the W78 warhead. The design agency role will result in a significant amount of design work, engineering, and testing, including work with nuclear material, for LLNL during the next several years. The first production unit of the W78-1 is planned for 2021. According to NNSA's current plan, any required security category 1/2 nuclear material work will transition to other sites after 2012, while smaller quantity nuclear material work will continue at LLNL. Site contractors have begun analyzing workloads and floor space constraints to determine how to implement this approach.

This week, the laboratory contractor received endorsement from the Livermore Site Office (LSO) to move forward with a limited duration campaign to recover and provide plutonium metal to the Los Alamos National Laboratory. The campaign will utilize the hydride/dehydride/casting (HYDEC) capability to process legacy pits received from Pantex and is expected to run from July to November 2011. Deinventory related needs for HYDEC have been completed. The contractor has also received a request from the Idaho National Laboratory to utilize HYDEC and the proposed chlorination system to support a demonstration disposition process for legacy fuel materials from the Zero Power Plutonium Reactor; however, approval and funding for this work are still under evaluation.

Nuclear Criticality Safety: On May 25, 2011, Materials Management personnel recognized that the results from a completed mass measurement indicated that a stored item of nuclear material exceeded the criticality safety limits for its storage location. Personnel subsequently stopped work, secured the area, and made appropriate notifications of the potential criticality non-compliance. The contractor's analysis of the event indicated that personnel inaccurately estimated the nuclear material mass of the item before it was transferred to storage and measurement. The unique nature of this item—a piece from a legacy developmental weapon component that had experienced some corrosion—made estimation challenging; however, the final estimated value met the limit only by several grams and should have triggered additional scrutiny. Overall, facility personnel developed a recovery plan and re-established compliance by the end of the day. The event was determined to be a severity level 4 infraction.

Facility management recognized that several similarities existed between this event and another over mass event that occurred in March 2011 (see weekly report dated April 8, 2011). In both events, estimates were made that approached the limit for the proposed destination location and were later determined by measurement to be inaccurate. As a result, facility management met with room supervisors and program personnel to reinforce the need to be cautious and consult management when item estimates approach the destination limit. The Materials Management supervisor further directed his staff to take these actions when accepting material any time the computer system used for materials accountability warns that the proposed move exceeds 90 percent of the destination limit. Management plans to further emphasize these practices during an upcoming Feedback and Improvement meeting.