

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 4, 2007

MEMORANDUM FOR: J. K. Fortenberry, Technical Director
FROM: M. J. Merritt, DNFSB Site Representative
SUBJECT: Lawrence Livermore National Laboratory (LLNL)
Report for Week Ending May 4, 2007

Legacy Item Disposition: This week, LLNL completed the first and second phases of the disposition project of a legacy item referred to as Object-77. The first phase was completed early in the week and consisted of the transfer of the item from its storage location to a laboratory room for disposition activities. This phase required the startup of a new (uncontaminated) work station. Startup activities included equipment checks and the establishment of applicable criticality safety and radiological controls. The first phase was successfully completed and no deficiencies were observed.

The second phase of the disposition project occurred at the end of the week. Accomplishment of this phase posed the highest potential safety risk to the workers from hazards including radiation exposure, radioactive contamination, criticality, deflagration, and high pressure. The objective of this phase was to install a pressure baffle on the item and place the item in a glovebox for further disassembly. The glovebox would then be connected to the facility glovebox exhaust system and purged with inert gas. The fissile material handlers (FMHs) performed this phase in full personal protective equipment (PPE) consisting of anti-contamination and NOMEX suits – both with hoods – plus powered air purifying respirators. This phase was also successfully completed. During this phase, the LLNL team successfully demonstrated the implementation of safety controls integrated through the use of procedures, special equipment, and FMH proficiency. The conduct of operations of the FMHs was disciplined and the implementation of radiological controls and ALARA techniques was effective. The Site Representative observed all operations associated with this project. The final phases of this project involve drilling operations to relieve a potential pressure buildup and disposition of the nuclear material. The project is expected to be complete within a few weeks.

Plutonium Facility Critique Report: The Plutonium Facility manager recently released a critique report related to a contamination event that occurred on April 5, 2007. This critique report is an early indication that the critique process (see weekly report dated March 23, 2007) is being effectively utilized in the facility. During the event, a permanent alpha continuous air monitor (CAM) alarmed in a room located in the Plutonium Facility's Radioactive Materials Area (RMA). During the next several hours, three other CAMs in connecting rooms, both permanent and portable, alarmed. Prior to the initial CAM alarm, a stainless steel sample was being transferred to a metallograph machine after the sample was ultrasonically cleaned and removed from a workstation in a connecting room.

The critique report was thorough and appropriately established the facts and apparent causes of the event. Corrective actions identified in the report include the need to (1) evaluate current practices associated with handling small plutonium samples outside of engineered enclosures, (2) implement controls in the procedure to address possible contamination dispersal mechanisms, and (3) provide refresher training on conduct of operations so that FMHs will properly respect postings (in this case "potentially contaminated") until they are confirmed to be inapplicable.