

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 20, 2003

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: C. H. Keilers, Jr.
SUBJECT: Los Alamos Report for Week Ending June 20, 2003

Plutonium Facility (TA-55): Last Thursday, two TA-55 workers had skin contamination as a result of a glovebox glove failure in Pu-239 aqueous operations. The workers discovered the contamination when they frisked their hands and feet at the lab room exit. Radcon personnel responded and controlled the room. One worker had a positive nasal smear. One fixed head air sample was elevated (16 DAC-hrs). The two workers were decontaminated and placed on diagnostic bioassay. This is similar to other recent events (site rep weeklies 5/23/03, 6/6/03, 6/13/03).

Because of recent glove failures, TA-55 management curtailed non-essential glovebox work. TA-55 has approximately 7,000 pairs of glovebox gloves and recognizes that they constitute the weakest link in its glovebox confinement system – an engineered control. There is a high reliance on administrative controls, particularly proper frisking at the glovebox after removing hands from the gloves. During the curtailment, the facility is training workers on recent experiences, best glovebox practices, glove inspection; inspecting frequently used gloves (those not requiring step-ladder access); inspecting each glovebox for sources of acute insult to gloves (i.e., pinch points, sharp objects, heat/abrasion sources); and performing a sampling inspection on newer gloves.

Recommendations 94-1/00-1: LANL is making progress in design and procurement of large vessel clean-out equipment for the Chemistry and Metallurgical Research Building (CMR) Wing 9 – a Recommendation 94-1 milestone (site rep weekly 3/21/03). Equipment is now being procured. However, the safety analysis, including preliminary functional classification, is lagging. It is being worked, but programmatic risk (i.e., cost, schedule, scope) is increased until it is satisfactorily shown that the safety analysis and the design are sound and in phase with each other.

Weapons Engineering Tritium Facility (WETF): The WETF safety strategy depends on tritium storage containers, considered to be Safety Class (site rep weeklies 6/6/03, 5/2/03). The safety basis assumes the containers are capable of withstanding 120 C. NNSA has directed LANL to pursue higher temperature container seals (i.e., 250 C) to increase thermal margin; however, new questions are emerging that cast doubt on container high-temperature performance (i.e., above 120 C), such as pressure gage integrity and decreasing container material strength with temperature. It appears prudent to address these questions quickly, given the importance of the containers. A worthwhile objective at this point may be to increase overall thermal margin, if practical, but retain a lower temperature rating for safety analysis that is consistent with current uncertainties in the failure modes.

Authorization Basis (AB): Last Fall, the NNSA Site Office approved the LANL on-site transportation safety document (TSD) and associated Technical Safety Requirements – TSRs (site rep weekly 11/29/02). NNSA prefers that LANL shipments fully comply with Department of Transportation (DOT) requirements. However, in some cases, such packages are not available. The TSD provides a framework for developing controls that ensure overall safety. LANL intends to capture and propose the activity-specific controls in transportation plans for NNSA approval.

Progress on these transportation plans has been slow. They play a key role in specifying the controls that NNSA and LANL are depending on for specific shipments – to the point where they may need to be considered, all or in part, as the TSRs for specific shipments. There is some confusion on this aspect, which may warrant clarification.