

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 8, 2003

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: C. H. Keilers, Jr.
SUBJECT: Los Alamos Report for Week Ending August 8, 2003

Jordan, March, and Shields were on site this week to review LANL fire protection. Also, the site rep was at Pantex on Thursday to determine the status of laboratory support for Pantex operations.

Plutonium Facility (TA-55): On Tuesday, a continuous air monitor alarmed in a Pu-238 waste storage and management room while two workers were inventorying containers. The two workers evacuated and were found to have high facial, hair, and skin contamination and high nasal swipes (2,500 dpm max - nasal swipes). They were decontaminated, taken to LANL medical, and released. Initial dose assessments are expected in 2 weeks.

The affected room is sealed. LANL has suspended Pu-238 operations and is working on a recovery plan. The NNSA Site Office has begun a Type B investigation. The team arrives next week. The DOE Order 225.1A *Accident Investigations* criteria for a Type B include a single personnel exposure resulting in total effective dose equivalent between 10 and 25 Rem. LANL is fully cooperating.

During the critique on Wednesday, LANL personnel indicated the following. The containers have Pu-238 residues and waste (e.g., cheesecloth) that are to undergo pyrolysis. These containers are a can-bag-can configuration. The cans are of the slip-lid type and taped. The inner can and the plastic bag have filtered vents. Some containers have been there for years. After a while, some containers exhibit degradation – rust. Efforts were made in December 2002 and in March 2003 to pull out visibly rusted containers. The containers handled on Tuesday had no unusual visible characteristics.

The site rep has the following observations. While the cause of this event is unknown, the containers are suspect. LANL has made slow progress on Recommendation 94-1 nuclear material stabilization for several years. Progress improved in 2003. The 94-1 activities are intended to improve safe storage and expedite residue disposition. One key improvement TA-55 has made is development and widespread use of the TA-55 standard can design, basically screw-top cans with lid filters. The TA-55 standard cans have been available since about 1998 and provide a more robust packaging system than that described above. It is unclear why Pu-238 operations would continue to store their residues and wastes for years in a storage system that visibly degrades and is not the most robust system available – particularly since these materials are possibly the most hazardous radioactive materials in TA-55, at least by isotopics. After room stabilization, investigation, and recovery, expedited safe disposition of these materials may warrant high priority, regardless of whether they are the direct cause of this event.

Weapons Engineering Tritium Facility (WETF): On Thursday, WETF declared a positive unreviewed safety question determination on the temperature rating for standard tritium secondary storage containers, designated Safety Class. 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, questions have persisted for months on performance above 120 C (e.g., site rep weeklies 5/2/03, 6/20/03). LANL now believes the container aluminum body would fail at 165 C. The site rep observes that similar longstanding questions exist on function of the WETF lightning protection system, designated Safety Class (site rep weekly 6/6/03). Resolution of the container and lightning protection questions may affect previous conclusions on safety basis engineered controls, as well as what constitutes appropriate technical safety requirements (TSRs).