

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 6, 2003

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: C. H. Keilers, Jr.
SUBJECT: Los Alamos Report for Week Ending June 6, 2003

Broderick, Gwal, Jordan, and White were here reviewing electrical and lightning protection systems.

Weapons Engineering Tritium Facility (WETF): During the next 2-3 months, WETF intends to transition to its new authorization basis (AB), which was approved in April 2002. The new AB mandates several systems as safety class – intended to protect the public. These include tritium storage containers and the NFPA 780 lightning protection system. Questions have lingered for more than a year on the adequacy of these systems to perform safety class functions: such as, the high temperature sealing requirements for the tritium storage containers and the level of operability required for the lightning protection system (site rep weeklies 4/26/02, 5/31/02, 11/15/02, Board letter 8/6/02). In March, a lightning protection consultant to LANL reported on the system and concluded that it is unlikely to prevent arcing in areas used for tritium handling and storage (i.e., fulfill its safety class function), but that the containers themselves are robust to lightning effects. Given that WETF is operating now and in transition to the new AB, it appears worthwhile for NNSA and LANL to assign high priority to quickly addressing these issues.

Lightning Protection Systems: NNSA and LANL are increasingly relying on NFPA 780 lightning protection systems as safety-related engineered controls for nuclear facilities. This may be inappropriate, particularly for safety class systems. Besides WETF, the new Critical Experiments Facility (TA-18) AB specifies an NFPA 780 system as safety class, and the proposed TA-54 waste operations AB would specify an NFPA 780 system as safety significant. A Board letter last August and a DOE headquarters on-site review last September questioned the appropriateness of depending on NFPA-780 systems for nuclear facility controls (site rep weekly 9/20/02). These appear to be examples where more in-depth design/backfit review is warranted to ensure each engineered control will perform its designated safety function and that practical operability requirements are defined.

Plutonium Facility (TA-55): On Tuesday, TA-55 reported a high fixed head air sample reading (53 DAC-hrs weekly sample) in a room that was subsequently found to have a small nearby area of removable contamination. LANL is investigating what work was recently performed in this room.

Also on Tuesday, a worker opened a container of Pu-238 via a glovebox glove and then discovered contamination on one of his surgeon's gloves. RadCon personnel responded. After personnel surveys, the room was evacuated and controlled. Subsequent investigation identified a relatively new glove with a tear (installed in April). Two local fixed head air samples were elevated (max: 472 DAC-hrs daily sample), but there were no skin contaminations, and nasal swipes were negative. The 5 affected personnel are being placed on diagnostic bioassay. The site rep observes that there was a similar Pu-238 glove tear in January (site rep weekly 1/17/03). It may be appropriate to confirm that sufficient controls are in place to prevent glove-tears, particularly for Pu-238 operations.

Chemistry and Metallurgical Research Building (CMR): The CMR AB specifies that ventilation is safety significant because it protects the public and worker from releases from spills and moderate fires (along with safety class fire suppression). However, the electrical power needed to run ventilation is general service and doesn't have a diesel generator backup. Functional classification of electric power, as well as emergency lighting to facilitate evacuation, may warrant reconsideration.