

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 7, 2003

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: C. H. Keilers, Jr.
SUBJECT: Los Alamos Report for Week Ending November 7, 2003

The staff held two tele-conferences with NNSA and LANL this week on the Board's August 19th letter on WETF lightning protection and CMR electrical systems (e.g., power to ventilation).

Lightning Protection: NNSA and LANL are increasingly relying on NFPA 780 lightning protection systems as safety-related engineered controls for nuclear facilities (site rep weekly 6/6/03). The NNSA Site Office asserted this week that the NFPA-780 lightning protection system for the Weapons Engineering Tritium Facility (WETF) needs to be Safety Class and needs improvements to reduce risk. LANL expects an outside expert to report on possible improvements next week. Besides WETF, the Critical Experiments Facility (TA-18) also has an NFPA-780 lightning protection system designated as Safety Class. Per LANL, CASA 1 and 3 NFPA-780 deficiencies have been corrected, and are undergoing inspection. CASA 2 deficiencies require a system overhaul that has been designed. LANL has also proposed designating NFPA-780 systems as Safety Significant in several other nuclear facilities. NNSA and LANL may need to better define institutionally the criteria for operability, maintenance, and configuration management for these systems, based on explicit rationale traceable to the accident analyses, and then demonstrate these systems will fulfill their assigned safety function. This has not yet happened for lightning protection systems.

Chemistry and Metallurgical Research Building (CMR): The CMR replacement facility (CMRR) is in conceptual design. Several key decisions, such as the extent of CMR upgrades and the appropriateness of the current CMR safety basis (a BIO and interim TSRs), have hinged on CMRR being ready in the 2010 time-frame. The site rep understands that CMRR is now not expected to be ready until sometime well after 2010. It may be worthwhile for NNSA and LANL to periodically review previous assumptions and conclusions (e.g., from cost-benefit analyses) in light of CMRR progress and assess the merit of potential improvements versus the continued risk of operating without them. This week, LANL informed the staff it is initiating such a review for the safety basis.

Transportation: This week, LANL suspended on-site shipments of fissile material until emergent questions are resolved on procurement testing of shipping containers. Specifically, the containers (DOT 7A) are required to be capable of withstanding several tests, including a pre-conditioning series of 1-foot drops on each quarter followed by a 1 to 4 foot free drop in a configuration causing the maximum damage (required drop height set by mass). It appears that one source for these containers may not have been conducting the pre-conditioning drops and that, when conducted, tested containers were failing at a lower mass than expected. LANL plans to invoke weight restrictions based on full testing of these containers and then resume on-site fissile shipments in a deliberate manner.

Plutonium Facility (TA-55): One of several questions remaining before startup of the new Pu-238 scrap recovery line is the manner and pedigree of verification of acid concentration during the precipitation process in order to avoid an energetic acid-HAN reaction. LANL asserts that this would be a non-energetic "effervescent" reaction that would not challenge the safety-significant glovebox. LANL bases this conclusion on an experiment (7M acid and 2M HAN) documented in a viewgraph presentation. This appears to the site rep as substandard justification upon which to justify control selection. While NNSA has accepted this, NNSA has also requested and LANL will propose a TSR administrative control – most likely as part of a two-person verification program.