

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 3, 2006

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: C. H. Keilers, Jr.
SUBJECT: Los Alamos Report for Week Ending February 3, 2006

Anderson was here this week and will be here next week augmenting site rep coverage.

Plutonium (Pu) Facilities: Since at least 1999, the Pu storage standard (DOE STD-3013) has identified a potential for container failure due to a Pu metal and iron eutectic at about 400 °C and has stated that storage in stainless steel containers appears acceptable up to 250 °C. Recently, NNSA and LANL have begun to rely on container integrity to address fire scenarios and the TA-55 confinement strategy issue; however, LANL analyses for several nuclear facilities indicate temperatures in the range of 400°C to 600 °C or higher for unmitigated fires involving moderate combustible levels.

This week, LANL declared a potential inadequacy in safety analysis (PISA) for several nuclear facilities, including TA-55, due to the eutectic issue (site rep weekly 1/6/06); compensatory measures include identifying storage locations that have Pu metal and ensuring combustible loading reviews are current. Separately, LANL has slipped their proposal for resolving the TA-55 confinement strategy issue to March 31^d to allow time for an independent technical peer review; impact on DOE's ability to meet the Secretary's commitments under Board Recommendation 04-2 is unclear at this time.

Am-241 Contamination Event: The Type B investigation report discussed last week captures in one place a number of longstanding NNSA and LANL issues, such as the observation that radiological facilities receive insufficient independent oversight. Some of the needs identified include: facilities ensuring that radiological hazards are appropriately communicated, LANL institutionally ensuring that the integrated work management (IWM) initiative is consistently applied, the NNSA site office (LASO) expanding its oversight to radiological facilities, and NNSA headquarters setting oversight expectations for LASO (site rep weeklies 11/4/05, 9/23/05, 8/12/05, 7/29/05, 7/8/05).

Radiological Facilities: Since 1997, NNSA has approved downgrading more than a dozen LANL nuclear facilities to radiological status; in a few cases, NNSA and LANL credited ANSI source encapsulation or DOT special form packaging when downgrading, as permitted by DOE STD-1027. Without these exclusions, these facilities would be considered nuclear facilities (Hazard Category 2 or 3) and would have analyses done and controls implemented per the Nuclear Safety Management rule (10 CFR 830 subpart B) to prevent or mitigate accidents such as fires. Because of these exclusions, some of these facilities have radioactive inventories comparable to nearby Hazard Category 2 or 3 nuclear facilities but much less rigor in oversight and in development and implementation of controls.

On Wednesday (2/1), NNSA disapproved excluding both Pu metal and oxide items from the inventory sums for LANL radiological facilities categorized using the DOE STD- 1027 exclusion; NNSA cited the eutectic issue for metal items and the lack of justification for oxide items; this appears to reverse the previous downgrade decisions and to make 10 CFR 830 subpart B applicable to these facilities.

The site rep observes that, based on review of the references cited in DOE STD-1027, the technical basis for the prior exclusions seems insufficient to ensure that a fire in a downgraded facility will not result in a significant on-site or off-site release. Specifically, with the possible exception of the DOT Type B containers and ANSI Class 5 and 6 sealed sources, it appears that the required container testing would not demonstrate package integrity under a representative unmitigated fire scenario (e.g., 400 °C to 600 °C or higher). This may have implications to other DOE sites (site rep weekly 7/29/05).