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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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November 21, 2001

The Honorable Spencer Abraham
Secretary of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1000

Dear Secretary Abraham:

The Defense Nuclear Facilities Safety Board (Board) appreciated the November 8, 2001, briefing regarding the nuclear materials stabilization programs provided by the Department of Energy's (DOE) Office of Environmental Management (EM) and National Nuclear Security Administration (NNSA). These stabilization programs have been undertaken by DOE in response to the Board's Recommendation 94-1, *Improved Schedule for Remediation in the Defense Nuclear Facilities Complex*, and Recommendation 2000-1, *Prioritization for Stabilizing Nuclear Materials*.

The Board requested this briefing in a letter dated March 23, 2001, which also established reporting requirements regarding the stabilization programs at the Savannah River Site (SRS) and Los Alamos National Laboratory (LANL). DOE's written response to the reporting requirements was provided to the Board on September 19, 2001. The Board understands that DOE is currently preparing a revision to the January 19, 2001, Implementation Plan for Recommendations 94-1 and 2000-1. As discussed with the representatives from DOE-EM and NNSA on November 8, 2001, the Board has several suggestions concerning the revised Implementation Plan.

Savannah River Site. The present plan to install equipment in FB-Line to stabilize and package plutonium metals and oxides in accordance with DOE-STD-3013, *Stabilization, Packaging, and Storage of Plutonium-Bearing Materials*, represents the most expeditious means of completing this packaging effort at SRS. During visits to SRS in July and November 2001, the Board discussed stabilization and packaging issues with site personnel. On the basis of those discussions and review of conceptual design information, the Board believes the revised Implementation Plan should include the following attributes:

- Stabilization and packaging of plutonium metal should be addressed by commitments separate from those related to plutonium oxide. Because the existing plutonium metal items at SRS are already in seal-welded inner cans, final packaging can be completed much sooner for metal items than for plutonium oxides, which require thermal stabilization and double packaging. Providing a separate, earlier commitment for packaging of plutonium metal will help preclude contamination events such as that which occurred in the FB-Line vault in September 1999. New equipment for this packaging is expected to be installed during 2002. Final packaging of plutonium metal into outer containers should be completed by mid-2003.
- All plutonium stabilization and packaging should be completed by mid-2006.

In its September 19, 2001, response to the Board's reporting requirements, DOE concluded that the possible extended storage (up to 50 years) of plutonium at SRS would not lead to any safety issues as long as the material was packaged to meet DOE-STD-3013. The Board agrees that DOE-STD-3013 is an appropriate standard for stabilization and packaging of plutonium for long-term storage. However, the K-Area Material Storage (KAMS) facility, which will be relied upon for such storage at SRS, is an aged facility and was never intended to provide more than interim storage. Maintaining KAMS for prolonged use beyond its design life could prove to be impractical.

Los Alamos National Laboratory. In December 1999, the Board informed DOE that LANL was at risk of failing to meet the Secretary's Implementation Plan commitments. Nearly 2 years later and almost 8 years after Recommendation 94-1 was issued, there is no longer a defined schedule for stabilizing LANL's excess nuclear materials. DOE's September 19, 2001, letter indicates that an integrated schedule and plan will be prepared, but does not identify overall expectations for the stabilization program or commit to a date for completing the plan. Furthermore, DOE's letter indicates that LANL is using a process hazard analysis approach to prioritize materials for processing. As explained to the Board's staff, LANL's approach would not consider attributes such as the reactivity of the material or the condition of its packaging in assigning priority for stabilization.

The Board is aware that the Office of Defense Programs (DP) is continuing to review the stabilization program and provided supplemental funds for fiscal year (FY) 2001. While these additional funds are a positive sign for the future, they are too late to ensure continuity in the LANL stabilization program. Personnel needed for the stabilization effort have been shifted to other priority activities at LANL, and DOE's response to the reporting requirements indicates that it will take 2½ years to replace them. If this is the case, LANL's stabilization capabilities will not be fully operational until FY 2004.

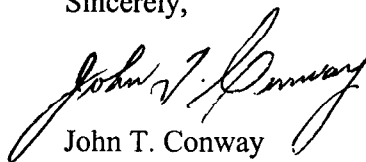
The Board believes the stabilization program at LANL would be improved if the revised Implementation Plan included the following elements:

- As previously noted by the Board, the age of residues should be considered as a significant factor in establishing priorities for processing because older items are more likely to have vulnerabilities in material condition and packaging. Presently, LANL continues to process newly generated residues because they are readily available and because doing so ensures that the projects that generate the residues provide funding for their stabilization.
- LANL should pursue direct disposal of entire surplus material categories instead of evaluating each individual package as it is retrieved from the vault to determine if it will be disposed or processed to recover plutonium. During the briefing provided on November 8, 2001, DP personnel indicated that a significant portion of the FY 2001 supplemental appropriation for Recommendation 94-1 activities was being applied to long-lead items for new process lines at LANL to support chemical processing of residues for the recovery of plutonium. These new processing capabilities will not be available for several years. Other DOE sites, notably the Rocky Flats Environmental Technology Site, have been highly successful in pursuing direct disposal of entire categories of surplus residues. A similar approach at LANL would significantly reduce processing and simplify the disposition effort.

- While developing the integrated schedule for residue stabilization, DOE should establish target milestone dates that are accelerated with respect to the January 19, 2001, Implementation Plan. The Board believes stabilization and disposition of excess residues can be reasonably achieved by 2008. Every effort should be made to accelerate that date. If the schedule cannot be accelerated to complete processing by 2006, the packaging for those materials which will remain beyond 2006 should be upgraded to comply with DOE's *Criteria for Interim Safe Storage of Plutonium Bearing Solid Materials* to better ensure safe storage.
- Excess plutonium metal and oxide should be packaged into DOE-STD-3013 containers consistent with the January 19, 2001, Implementation Plan. It would be advantageous for DOE to use outer container packaging equipment similar to that already operational at other DOE sites, rather than developing new equipment for LANL. The Board agrees that DOE's current intent to prepare an integrated plan for upgrading the material condition and packaging for both excess and programmatic plutonium metal and oxide material is appropriate. The Board believes a target date of 2006 for completion of this packaging effort would be reasonable.
- Stabilization of unsheltered containers should be reinitiated so that at least one container is processed per year, including this fiscal year—as originally committed. The Board notes that additional containers are expected to be generated in the future, and that consideration needs to be given to the associated need for an increased processing rate. While LANL's plan to weld caps on access ports on the containers would help guard against a leak to the environment, consideration should still be given to providing a filtered shelter for the containers until they can be stabilized.

The Board understands that DOE intends to submit new Implementation Plan commitments for materials stabilization at SRS by the end of 2001 and to submit commitments for LANL at a later date. The Board looks forward to receiving this information and, in the interim, urges DOE to press forward with stabilization work at those sites.

Sincerely,



John T. Conway
Chairman

c: The Honorable Jessie Hill Roberson
Brigadier General Ronald J. Haeckel
Mr. Mark B. Whitaker, Jr.