DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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December 14, 1999

Brigadier General Thomas F. Gioconda
Acting Assistant Secretary
for Defense Programs
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0104

Dear General Gioconda:

The staff of the Defense Nuclear Facilities Safety Board (Board) recently reviewed the progress on stabilization and packaging activities in accordance with the Implementation Plan for Recommendation 94-1, *Improved Schedule for Remediation in the Defense Nuclear Facilities Complex*, at Los Alamos National Laboratory (LANL). The Department of Energy (DOE) has made progress on meeting some of the commitments made in the Implementation Plan, however, the Implementation Plan no longer reflects the current planning at LANL for several key activities. It is essential that LANL's programs be reconciled to DOE's Implementation Plan commitments.

The Board notes that LANL has now declared nearly a metric ton of its plutonium to be excess to programmatic needs and within the scope of Recommendation 94-1. The Implementation Plan commits to packaging such material to meet the long-term plutonium storage standard, DOE-STD-3013, *Stabilization, Packaging, and Storage of Plutonium-Bearing Materials*. While LANL's intent is to ultimately package this material to meet the standard, the site does not have a schedule for this effort nor has DOE directed LANL to start packaging this material. LANL should start packaging its excess plutonium materials to DOE-STD-3013 as soon as practicable. Additionally, the site received plutonium-238 material from Mound which is in questionable condition and may be losing its integrity within the packaging. This plutonium-238 material needs to be evaluated and stabilized or disposed of as appropriate.

LANL is actively processing plutonium residues, but is at risk of failing to meet its Implementation Plan commitment for completing legacy residue processing. There are several actions the site could take to help meet the commitment. LANL is electing to process newly generated residues ahead of legacy residues, and is processing residues that could be disposed of directly. The Board believes priority should be given to processing legacy high-priority residues, which are more likely to have vulnerabilities in material condition and packaging than newly generated residues. Furthermore, it may be more expeditious and efficient to dispose of lower grade, low-risk residues instead of processing them. The Board also notes that LANL did not process any of the site's unsheltered containers last year and does not have a path forward for accomplishing this processing. The Board believes that sufficient priority and resources need to be applied to process these containers as committed to in the Implementation Plan.

The enclosed staff report is forwarded for your information and use as appropriate. If you have comments or questions on this matter, please do not hesitate to contact me.

Sincerely,

John T. Conway
Chairman

c: The Honorable Carolyn L. Huntoon
Mr. Mark B. Whitaker, Jr.

Enclosure

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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

November 30, 1999

MEMORANDUM FOR: G. W. Cunningham, Technical Director
J. K. Fortenberry, Deputy Technical Director

COPIES: Board Members

FROM: R. E. Kasdorf

SUBJECT: Review of Progress on Implementation of Recommendation 94-1 at Los Alamos National Laboratory

This report documents an issue reviewed by the staff of the Defense Nuclear Facilities Safety Board (Board). Staff members R. E. Kasdorf and R. E. Tontodonato and outside expert J. A. Leary assessed progress on stabilization and packaging activities in accordance with the Implementation Plan for the Board's Recommendation 94-1, *Improved Schedule for Remediation in the Defense Nuclear Facilities Complex*, at Los Alamos National Laboratory (LANL). The staff's major observations are summarized below.

Plutonium Metal and Oxide. Revision 1 of the Implementation Plan indicated that essentially all plutonium metal and oxide at LANL was needed for programmatic uses, and therefore was outside the scope of Recommendation 94-1. The Implementation Plan did note that any material declared as excess in the future would be stabilized and packaged for long-term safe storage, consistent with the recommendation. LANL has now declared nearly a metric ton of plutonium to be excess.

- All metal has been repackaged into sealed containers. Additionally, since 1998 oxides have been packaged into an upgraded configuration using a screw-lid container with a filtered vent. Pre-1998 oxides are typically stored in nested slip-lid cans and are being repackaged when accessed for other purposes.

- LANL now plans to package excess metal and oxide to meet DOE-STD-3013, *Stabilization, Packaging, and Storage of Plutonium-Bearing Materials*. However, there is no schedule for this effort. Contractor representatives indicated that the Department of Energy (DOE) had not directed them to start repackaging. The site is also reluctant to begin repackaging material before local issues associated with the seal welding of the outer STD-3013 container have been resolved. The staff believes LANL could proceed with stabilization and packaging into inner containers and, if necessary for temporary storage, place these containers into screw-lid containers until the weld issues have been resolved.

- About 6 years ago, LANL received plutonium-238 material from Mound that has not been opened since that time. This material is essentially in an unknown condition. LANL has noted an increased neutron radiation emission that may indicate the material is losing its integrity within the packaging. The staff believes this material needs to be evaluated and stabilized or disposed of as appropriate.

Plutonium Residues. LANL has developed a risk-based methodology for prioritizing residue processing. This methodology is applied to newly generated as well as legacy residues. LANL is actively processing most residue types.

- LANL has now processed all residues that were considered the highest-risk. There remains a large quantity of high-priority legacy residues scheduled to be processed by 2005 in accordance with the Implementation Plan. LANL personnel expressed little confidence that this schedule could be met without increased resources. LANL has the required processing capacity, but has taken the position that additional resources are needed to fully utilize that capacity.

- LANL is electing to process newly generated residues ahead of legacy residues, and is processing residues which could be disposed of directly. From the standpoint of risk reduction, it would be prudent to give priority to the processing of high-priority legacy residues, which are much more likely to have vulnerabilities in the condition of packaging or material. The staff also believes it may be more expeditious and efficient to dispose of lower-grade, low-risk residues instead of processing them.

- During the past several years, LANL appears to have been losing ground in the residue management effort. The total inventory of residues has increased despite the progress made in eliminating legacy residues.

- In the Implementation Plan for Recommendation 94-1, DOE committed to processing unsheltered containers at LANL by 2005. However, LANL did not process any containers last year and does not have a plan or path forward for accomplishing this processing. LANL considers these containers to be low-risk and does not believe sufficient vault space is available for material that would be removed from the containers. Nonetheless, the staff believes these items represent a risk that ought to be addressed promptly. These containers remain outdoors, rely on mechanical closures, and contain a significant quantity of plutonium. Space is available in the vault of the Chemistry and Metallurgy Research Facility to accommodate their contents.

Deactivation and Decommissioning. The staff received a brief overview of deactivation and decommissioning (D&D) activities at LANL. About 200 structures are considered excess and could be targeted for D&D. A few of these structures are major facilities, including Technical Area (TA)-21 (precursor to TA-55), TA-3 (Ion Beam Facility), TA-2 (Omega West Reactor site), and TA-33 (Tritium Facility). The fiscal year 2000 plan is to decontaminate 9 minor structures