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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700, Washington, D.C. 20004-2901
(202) 694-7000



May 27, 1999

The Honorable Bill Richardson
Secretary of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1000

Dear Secretary Richardson:

In the early 1990s, the Department of Energy (DOE) made preparations for consolidated storage of the large inventory of special nuclear material in Building 371 at the Rocky Flats Environmental Technology Site (RFETS). Reviews conducted by the Defense Nuclear Facilities Safety Board (Board) indicated that activities to prepare Building 371 for this potentially extended storage role were neither logically structured nor sufficiently broad in scope to ensure that the material would be safely stored. Accordingly, the Board issued Recommendation 94-3, *Rocky Flats Seismic and Systems Safety*, recommending that DOE take a systematic approach for evaluating the suitability of Building 371 for the proposed consolidated storage mission. DOE subsequently determined that substantial upgrades were needed to Building 371's structure, systems, components, and safety basis.

Although the long-term consolidated storage mission for Building 371 was abandoned, DOE concluded that some of the identified upgrades were needed even for a short-term storage mission. The Board and its staff encouraged a phased approach to implementing the recommendation, so that DOE could determine the most cost effective options for providing safe storage of material at the site.

The Board's staff recently reviewed progress on implementation of the last phases of the recommendation. The upgrades to Building 371 needed to ensure safe storage for the near term have been satisfactorily completed. The ability of this building to store material safely has been greatly improved since the recommendation was issued. Therefore, the Board believes the objectives of Recommendation 94-3 have been met and considers the recommendation closed.

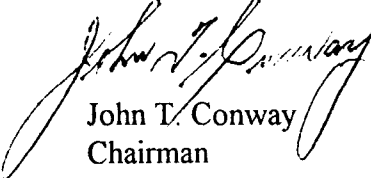
Plutonium at RFETS is currently planned for consolidation at the Savannah River Site (SRS) in a K-Area facility and the 235-F facility by 2004. These are still serviceable, but aged facilities, that will eventually require replacing or upgrading. For the longer term the Board has been led to believe that DOE planned to construct a new multiple-purpose Actinide Packaging and Storage Facility (APSF) to consolidate and safely store such materials from SRS, Hanford, and RFETS. Such a facility would also serve as a staging area for actinides to be prepared for final disposition. In a May 10, 1999, letter from Mr. James M. Owendoff, Acting Assistant Secretary for Environmental Management, the Board was informed that DOE had

proposed reprogramming \$44 million from APSF at SRS to other projects at the site. Further, the plan to consolidate storage of actinides in a new, modernized APSF is being revisited. The implications of delays and/or decision to forego construction of a new APSF at SRS on the continued safe storage of actinides at RFETS and Hanford need to be carefully considered. In particular, if Building 371 is given a longer storage mission than heretofore planned, additional upgrades to the building may be warranted. The Board would then consider it necessary to reopen the questions of adequacy of that structure for the longer term.

This matter is brought to your attention because it represents a change in the program of risk reduction to which DOE committed in response to Board Recommendation 94-1.

The Board is prepared to discuss this matter further with you, if you wish. The enclosed staff report is provided for DOE's information and use. If you have any questions on these matters, please do not hesitate to call me.

Sincerely,



John T. Conway
Chairman

c: Mr. James M. Owendoff
Mr. Mark B. Whitaker, Jr.
Ms. Jesse Roberson

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

May 4, 1999

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

COPIES: Board Members

FROM: R. Kasdorf

SUBJECT: Evaluation of Progress on Recommendation 94-3, Rocky Flats
Environmental Technology Site

This memorandum documents a review conducted by members of the staff of the Defense Nuclear Facilities Safety Board (Board) J. Blackman, R. Kasdorf, and D. Owen regarding progress in meeting the commitments in the implementation plan for Recommendation 94-3, *Rocky Flats Seismic and Systems Safety*.

Background. The Board issued Recommendation 94-3 to ensure that the large quantity of special nuclear material at the Rocky Flats Environmental Technology Site would be safely stored. In response to the recommendation, the Department of Energy (DOE) determined that upgrades to the structure, systems, and components of Building 371, as well as to the safety basis, were needed. The Board and its staff closely followed DOE's progress on this matter to ensure that DOE would take a valid systems engineering approach to evaluating and developing upgrades and integrate this approach into project management. The implementation plan for the recommendation has been revised twice. Fundamentally, the plan has remained focused on:

- Preparing the structure, systems, and components of Building 371 for safe, suitable storage of the site's plutonium or providing an acceptable storage alternative.
- Providing an updated Building 371 authorization basis and establishing operations in conformance with this authorization basis.

Progress in Building 371. The staff evaluated the status of Recommendation 94-3, including progress in completing safety upgrades to Building 371. The upgrades needed to ensure safe storage for the near term as committed to in the implementation plan have been satisfactorily completed.

DOE also committed to determining whether additional upgrades to enhance safety would be needed should the building have a longer, interim storage mission. DOE's current plan is to ship all material off site in the next few years. The site determined, based on risk reduction

considerations, that for an interim storage mission, the plutonium oxides should be moved to the sub-basement, the floor above this area should be reinforced, and plutonium holdup should be removed. The staff does not believe that reinforcing the floor would provide a sufficient increase in safety to be warranted, given the likelihood of the beyond design basis accident scenario considered (a 37,500 year return earthquake large enough to collapse the building) and the cost of the upgrade. Shipment of material off site is pending startup of the plutonium stabilization and packaging system, DOE issuance of the plutonium disposition Record of Decision, and certification of the 9975 shipping container.

The Board's staff believes the objectives of Recommendation 94-3 have been met and that the recommendation may reasonably be closed. However, it would be appropriate for DOE to report to the Board on the need to complete the interim storage upgrades should it become apparent that progress is not being made toward shipping material off site consistent with the implementation plan.

Building 371 Plutonium Stabilization and Packaging System. The plutonium stabilization and packing system (PuSPS) is being installed in Building 371 to stabilize and package the site's plutonium metal and oxides. The Board's staff observed installation of the associated glovebox equipment in Building 371. The glovebox is a safety-class component, and its anchorage is required for seismic stability. The anchorage used a nonstandard application of Hilti Kwik bolts and is not typical of the installations previously used on site.

The Board's staff observed the installation of the glovebox anchorage and was concerned that the anchor bolts may not have been properly installed, potentially reducing their load capacity. When the staff asked various personnel involved in installation of the glovebox how the anchorages had been installed, there were significant differences in the responses. Further review with DOE and contractor engineering, construction management, and crafts personnel indicated that "skill of the craft" had been used for this nonstandard installation; no written instructions had been provided to craft personnel to ensure the floor anchors would be properly installed.

Improper installation of Hilti Kwik bolts had been encountered at the site during the installation of fire suppression system upgrades in Building 371 last year. Lessons learned from those efforts do not appear to have been applied to the PuSPS project. The site is pursuing resolution of the staff's concern.