The Secretary of Energy
Washington, DC 20585

July 11, 2005

The Honorable Richard B. Cheney
President of the Senate
Washington, D.C. 20510

Dear Mr. President:

We are pleased to submit to Congress the enclosed report concerning plutonium storage at our Savannah River Site, located near Aiken, South Carolina. This report was mandated by Congress in Section 3183 of the Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314). Section 3183 directed that the Defense Nuclear Facilities Safety Board (Board) conduct a study of the adequacy of facilities at the Savannah River Site for the storage of plutonium, and that it submit to Congress and the Secretary of Energy a report on that study. Congress further mandated in Section 3183 that not later than six months after the Board's report is submitted to Congress, and every year thereafter, the Secretary and the Board each submit to Congress a report on the actions taken by the Secretary in response to proposals in the report.

The Board submitted its report, "Plutonium Storage at the Department of Energy's Savannah River Site," both to Congress and the Secretary of Energy by letters dated December 1, 2003. Our first report on the actions being taken by the Department of Energy in response to the eight proposals contained in the Board's report was submitted to Congress by letters dated June 16, 2004. Our second report is enclosed. Since submission of our first report, the Department has: (1) made progress on a plan for disposition of excess plutonium at the Savannah River Site; (2) completed a revised study of plutonium storage options at the site; (3) determined that unnecessary combustibles will be removed from the K-Area Material Storage facility, and (4) decided not to utilize Building 235-F for extended storage of plutonium or for future stabilization and packaging operations.

If you need additional information, please contact me or Ms. Jill L. Sigal, Acting Assistant Secretary for Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,

Samuel W. Bodman

Enclosure

05.1435

The Secretary of Energy
Washington, DC 20585

July 11, 2005

The Honorable J. Dennis Hastert
Speaker of the U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Speaker:

We are pleased to submit to Congress the enclosed report concerning plutonium storage at our Savannah River Site, located near Aiken, South Carolina. This report was mandated by Congress in Section 3183 of the Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314). Section 3183 directed that the Defense Nuclear Facilities Safety Board (Board) conduct a study of the adequacy of facilities at the Savannah River Site for the storage of plutonium, and that it submit to Congress and the Secretary of Energy a report on that study. Congress further mandated in Section 3183 that not later than six months after the Board's report is submitted to Congress, and every year thereafter, the Secretary and the Board each submit to Congress a report on the actions taken by the Secretary in response to proposals in the report.

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If you need additional information, please contact me or Ms. Jill L. Sigal, Acting Assistant Secretary for Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,

Samuel W. Bodman

Enclosure

The Secretary of Energy
Washington, DC 20585
July 11, 2005

The Honorable John Warner
Chairman, Committee on Armed Services
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

We are pleased to submit to Congress the enclosed report concerning plutonium storage at our Savannah River Site, located near Aiken, South Carolina. This report was mandated by Congress in Section 3183 of the Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314). Section 3183 directed that the Defense Nuclear Facilities Safety Board (Board) conduct a study of the adequacy of facilities at the Savannah River Site for the storage of plutonium, and that it submit to Congress and the Secretary of Energy a report on that study. Congress further mandated in Section 3183 that not later than six months after the Board's report is submitted to Congress, and every year thereafter, the Secretary and the Board each submit to Congress a report on the actions taken by the Secretary in response to proposals in the report.

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If you need additional information, please contact me or Ms. Jill L. Sigal, Acting Assistant Secretary for Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,

Samuel W. Bodman

Enclosure

cc w/enclosure: The Honorable Carl Levin
Ranking Minority Member

The Secretary of Energy
Washington, DC 20585
July 11, 2005

The Honorable Duncan L. Hunter
Chairman, Committee on Armed Services
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

We are pleased to submit to Congress the enclosed report concerning plutonium storage at our Savannah River Site, located near Aiken, South Carolina. This report was mandated by Congress in Section 3183 of the Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314). Section 3183 directed that the Defense Nuclear Facilities Safety Board (Board) conduct a study of the adequacy of facilities at the Savannah River Site for the storage of plutonium, and that it submit to Congress and the Secretary of Energy a report on that study. Congress further mandated in Section 3183 that not later than six months after the Board's report is submitted to Congress, and every year thereafter, the Secretary and the Board each submit to Congress a report on the actions taken by the Secretary in response to proposals in the report.

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If you need additional information, please contact me or Ms. Jill L. Sigal, Acting Assistant Secretary for Congressional and Intergovernmental Affairs, at (202) 586-5450.

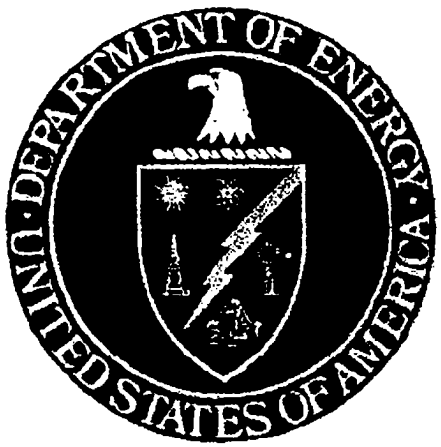
Sincerely,

Samuel W. Bodman

Enclosure

cc w/enclosure: The Honorable Ike Skelton
Ranking Minority Member

Second Report to Congress On Actions Taken by the Department of Energy In Response to the Proposals in the Defense Nuclear Facilities Safety Board's December 2003 Report to Congress on Plutonium Storage at the Savannah River Site



Department of Energy
June 2005

Report to Congress on Actions Taken by the Department of Energy in Response to the Proposals in the Defense Nuclear Facilities Safety Board's December 2003 Report to Congress on Plutonium Storage at the Savannah River Site

Introduction

Section 3183 of the Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314) directed that the Defense Nuclear Facilities Safety Board (Board) conduct a study of the adequacy of the K-Area Materials Storage (KAMS) facility and related support facilities at the Savannah River Site (SRS), such as Building 235-F, for the storage of defense plutonium and defense plutonium materials. That statute also required that the Board submit to Congress and the Secretary of Energy a report on that study, including any proposals the Board considers appropriate to enhance the safety, reliability, and functionality of KAMS. Congress further mandated in Section 3183 that not later than six months after the Board's report is submitted to Congress, and every year thereafter, the Secretary and the Board each submit to Congress a report on the actions taken by the Secretary in response to the proposals, if any, included in the report.

The Board submitted its report, "Plutonium Storage at the Department of Energy's Savannah River Site," both to Congress and the Secretary by letters dated December 1, 2003. That report presented conclusions of the Board's study, and identified several proposals for enhancing the safety, reliability, and functionality of plutonium storage facilities at SRS.

This report is the second one submitted to Congress by the Secretary of Energy on the actions being taken by the Department of Energy (DOE) in response to the proposals contained in the Board's December 2003 report on plutonium storage at SRS.

Board's Proposals

The Board's December 2003 report contains eight proposals; two on the plutonium disposition program, five on the suitability of facilities (one on KAMS and four on Building 235-F), and one on remote monitoring and retrieval of material. Those proposals are listed below.

Plutonium Disposition Program

- Expedite the development of a complete, well-considered plan for the disposition of all excess plutonium to preclude unnecessary extended storage of plutonium at SRS.

- Conduct a new study of available options for the storage of plutonium at SRS.

Suitability of Facilities

KAMS

- Install fire protection systems and eliminate unnecessary combustibles in KAMS.

Building 235-F

- Establish an acceptable safety basis for stabilization and packaging of plutonium and extended storage of plutonium in the facility.

- Conduct a systematic evaluation of the safety systems to determine needed upgrades.

- Perform a structural analysis assessing seismic adequacy measured by current acceptance criteria. Since the facility has a new extended mission, the structural analysis should be based on ground motion equivalent to that used in the analysis for a new facility at SRS.

- Decontaminate unused process cells.

Remote Monitoring and Retrieval of Material

- Develop and implement validated procedures for the handling and intrasite shipment of plutonium containers, including damaged containers.

Status of Actions Taken by DOE in Response to the Board's Proposals

Plutonium Disposition Program

Board Proposal: Expedite the development of a complete, well-considered plan for the disposition of all excess plutonium to preclude unnecessary extended storage of plutonium at SRS.

DOE Actions: In order to preclude unnecessary extended storage of plutonium at SRS, DOE plans to establish a disposition path for all plutonium at the site. A Critical Decision-0 (CD-0) package for a plutonium vitrification project at SRS has been prepared, pursuant to DOE Order 413.3, "Program and Project Management for the Acquisition of Capital Assets." This Order describes the normal process that DOE uses for managing capital projects, and an appropriate National Environmental Policy Act (NEPA) review would be performed as part of the project.

The proposed project would establish the capability in the 105-K facility to prepare for disposition of the plutonium at SRS that is not suitable for use in mixed-oxide (MOX) fuel (and, if necessary or desired, plutonium that is MOXable) by vitrifying it in lanthanide

borosilicate (LaBS) glass. In addition, this project is being sized to vitrify additional plutonium in the event that further plutonium consolidation occurs. The small containers of LaBS glass would then be placed into Defense Waste Processing Facility (DWPF) canisters and filled with high-level waste glass in a manner that would permit disposal at the geologic repository planned for construction at Yucca Mountain. The Department is also working to include LaBS glass in the license application it is currently developing for Yucca Mountain. The proposed plutonium vitrification process includes the activities described below.

Oxidation: Oxidation receives DOE-STD-3013 containers with plutonium metal from storage. The plutonium metal is converted to an oxide in Direct Metal Oxidation Furnaces and the resultant oxide is packaged in convenience cans. The output from Oxidation is transport cans of oxide that are sent to Feed Preparation.

Feed Preparation: Feed Preparation receives 3013 containers of oxide from storage and transport cans of oxide from Oxidization. The output from Feed Preparation is batching cans with 2 kg of crushed/screened oxide, with a particle diameter less than 1 mm, that are sent to Milling/Mixing.

Milling/Mixing: The Milling/Mixing process step combines the plutonium feed with LaBS glass frit. Milling/Mixing is accomplished using an attritor mill to produce the necessary particle size to ensure dissolution and incorporation of the plutonium into the glass and a homogenous mixture. The resulting mix is loaded into melter batch cans and sent to Vitrification. Plutonium oxide feed is received into the Milling/Mix glovebox from the Feed Preparation glovebox.

Vitrification: In Vitrification the Plutonium feed/LaBS frit mixture is vitrified into glass cans using a Cylindrical Induction Melter (CIM). The CIM is a compact, high temperature (1600° C capability) melter. A Platinum/Rhodium (Pt/Rh) vessel is used to contain the melt and a Pt/Rh drain tube is used to discharge the molten glass. The resultant glass cans are transported to Bagless Transfer.

Bagless Transfer: The Bagless Transfer allows the glass can to be removed from the glovebox in a non-contaminated state by emplacing the glass can in a bagless transfer can. The bagless transfer system previously utilized in FB-line is expected to be the basis for the bagless transfer system for the plutonium vitrification effort. The bagless transfer cans are transported to Magazine Loading/Storage, Canister Load/Ship.

Magazine Loading/Storage, Canister Load/Ship: The Magazine Loading/Storage, Canister Load/Ship receives bagless transfer cans, assembles cans into magazines, stores magazines, and assembles can-in-canister assemblies that are suitable for filling with high-level waste (HLW) glass in DWPF.

DWPF Modifications: Specific modifications to DWPF will be required to allow for receipt and handling of can-in-canister assemblies. The can-in-canister assemblies differ from typical DWPF canisters in that they contain significant quantities of special nuclear

material, emit a significant amount of radiation, and weigh significantly more. Safeguards measures, including the potential use of a protective force, will be necessary for receipt and movement of the can-in-canister assemblies. Specific shielding and/or remote operation measures will be required to handle the canisters. Due to the weight of the can-in-canister assembly, modifications to existing canister handling equipment (loading dock, forklift, crane, etc.) will likely be required.

Non-Nuclear Material Handling: Non-Nuclear Material Handling provides for the receipt and storage of non-radioactive materials and containers used in the process. A storage building outside of the Security Area will be provided to facilitate off-site vendor receipts. This building will supply approximately a one month supply of materials, and will provide the space needs as well as storage level requirements for the materials.

Waste Handling/Loading: The Waste Handling/Loading handles waste generated from this process. This activity removes waste from the generation point, performs the appropriate measurements, packages waste, and prepares waste for shipment to the disposal location.

Balance of Plant: The Balance of Plant makes up the support functions required by the plutonium vitrification process and administrative support.

It is believed this plutonium vitrification process is very promising, and is estimated that if Conceptual Design begins in fiscal year 2006 (congressional approval is required, since the cost of Conceptual Design is estimated to be greater than $3 million), the capability can be operational in time to complete vitrification of all surplus non-pit plutonium currently at SRS and placement of the vitrified plutonium into DWPF canisters consistent with the current schedule to complete operation of DWPF. The Department's fiscal year 2006 budget request to Congress includes $10 million to begin Conceptual Design for the project.

Board Proposal: Conduct a new study of available options for the storage of plutonium at SRS.

DOE Actions: In July 2004 the Department completed an update of the previous study of SRS plutonium storage. Based on the assumptions used to prepare that study revision, the July 2004 update supported continued use of KAMS and Building 235-F for plutonium storage, pending disposition utilizing the vitrification capability described above. However, subsequent to completion of the study update, Design Basis Threat (DBT) Guidance was again revised in October 2004. As a result of that substantial increase in security requirements, and based on the potential safety issues associated with the use of Building 235-F that have been identified by the Defense Board and its staff, DOE has now decided to utilize only Building 105-K for storage of plutonium and for future stabilization and packaging operations. Building 235-F will be deinventoried of all plutonium-239 by the end of 2006 in order to avoid the expenditure of significant funding to bring the facility's security into compliance with the new DBT Guidance and that

would be required to make the safety upgrades necessary to allow continued use of the facility. Since the Department has no near-term plans to ship additional plutonium to SRS and the July 2004 update of the SRS plutonium storage facility study also included an option to consolidate the missions of KAMS and Building 235-F by modifying the Building 105-K facility to include functions that were proposed for Building 235-F, there is no need at this time to further revise the July 2004 update of the SRS plutonium storage study.

Suitability of Facilities

KAMS

Board Proposal: Install fire protection systems and eliminate unnecessary combustibles in KAMS.

DOE Actions: Given the currently planned life of KAMS, the cable combustible load in the actuator tower above the facility will be removed at the earliest opportunity, thus eliminating unnecessary combustibles. Additionally, based on ongoing evaluations incorporating the recent change in strategy to utilize only Building 105-K for plutonium storage, stabilization and packaging, a determination will be made by the end of August 2005 regarding installation of fire detection and suppression capability in and around KAMS.

Building 235-F

Board Proposal: Establish an acceptable safety basis for stabilization and packaging of plutonium and extended storage of plutonium in the facility.

DOE Actions: As stated previously, Building 235-F will be deinventoried by the end of 2006; it will not be used to store plutonium-239 beyond then nor will it be used for stabilization or packaging of plutonium. Therefore, all proposals related to Building 235-F in the Board's December 2003 report to Congress on plutonium storage at SRS are considered closed.

Board Proposal: Conduct a systematic evaluation of the safety systems to determine needed upgrades.

DOE Actions: All proposals related to Building 235-F in the Board's December 2003 report to Congress on plutonium storage at SRS are considered closed, as stated above.

Board Proposal: Perform a structural analysis assessing seismic adequacy measured by current acceptance criteria. Since the facility has a new extended mission, the structural analysis should be based on ground motion equivalent to that used in the analysis for a new facility at SRS.

DOE Actions: All proposals related to Building 235-F in the Board's December 2003 report to Congress on plutonium storage at SRS are considered closed, as stated above.

Board Proposal: Decontaminate unused process cells.

DOE Actions: All proposals related to Building 235-F in the Board's December 2003 report to Congress on plutonium storage at SRS are considered closed, as stated above. (Note that the holdup material in the process cells will be removed or immobilized as part of the decontamination and decommissioning effort that will take place following deinventory of Building 235-F.)

Remote Monitoring and Retrieval of Material

Board Proposal: Develop and implement validated procedures for the handling and intrasite shipment of plutonium containers, including damaged containers.

DOE Actions: In its June 2004 first annual report to Congress on SRS plutonium storage, the Board stated that DOE has completed all necessary actions concerning this proposal and this action is considered closed.