



The Secretary of Energy
Washington, DC 20585

May 28, 2004

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, D.C. 20004-2941

Dear Mr. Chairman:

Thank you for providing the Department of Energy (DOE) with a copy of the Defense Nuclear Facilities Safety Board's (Board) December 2003 report to Congress on the study of plutonium storage at the Savannah River Site (SRS).

The Board's report identifies eight proposals for enhancing the safety, reliability, and functionality of plutonium storage facilities at the SRS. As you know, Section 3183 of the Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314) mandates that both the Board and the Department of Energy submit to Congress reports on the actions taken by the Department in response to those proposals. In March 2004, DOE personnel met at the SRS with members of the Board's staff to discuss some of the proposals, concerns, and specific recommendations contained in the Board's December 2003 report. More recently, Department personnel met with the Board's staff to discuss an initial draft of the Department's response to Congress.

In order to facilitate preparation of your forthcoming report to Congress, enclosed is a brief summary of actions the Department is currently taking in response to, or associated with, the proposals in your December 2003 report to Congress. You will note that we have taken actions to be responsive to all eight proposals. As these activities are completed during the next year, the Department will brief the Board on our proposed course of action. In the interim, we will continue to work with your staff on these matters.

If you have any further questions regarding this information, please contact me or Ms. Jessie Hill Roberson, Assistant Secretary for Environmental Management, at (202) 586-7709.

Sincerely,

A handwritten signature in black ink that reads "Spencer Abraham". The signature is fluid and cursive, with the first letters of "Spencer" and "Abraham" being significantly larger and more prominent.

Spencer Abraham

Enclosure



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

The Board's report contains eight proposals; two on the plutonium disposition program, five on the suitability of facilities (one on the K-Area Materials Storage (KAMS) and four on Building 235-F), and one on remote monitoring and retrieval of material. Each of those proposals is listed below, followed by the current status of actions associated with the proposal.

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 the Savannah River Site (SRS).

DOE Actions: DOE is conducting a preliminary investigation into a potential vitrification process that could be used at SRS to prepare excess plutonium that cannot be fabricated into mixed oxide fuel for potential disposal in a deep geologic repository. This process would incorporate plutonium in small cans of lanthanide borosilicate glass. These small cans of plutonium-bearing glass would then be placed in Defense Waste Processing Facility canisters, surrounded with high-level waste glass. DOE is investigating the use of an existing SRS facility that could be adapted for installation of the vitrification capability. Any facility chosen would undergo a complete evaluation for its intended mission, and any required upgrades would be performed. The results of the feasibility study are to be provided to the Assistant Secretary for Environmental Management no later than August 1, 2004.

DOE is currently in the process of preparing a license application for a spent fuel repository at Yucca Mountain. Although DOE has done analytical work regarding disposal of plutonium immobilized in ceramic at Yucca Mountain, it has not done analysis specific to disposal of vitrified plutonium there. Accordingly, given the very preliminary nature of the investigation DOE is conducting into the feasibility of vitrifying plutonium in this fashion, the license application DOE is currently developing does not analyze or assume disposal of vitrified plutonium at Yucca Mountain. In conjunction with other aspects of its investigative work into the vitrification process, DOE will also seek to determine what kind of analytical work might be called for to support a potential license amendment that could allow it to dispose of the vitrified plutonium at Yucca Mountain, assuming DOE decides it is seriously interested in pursuing this course of action. Any serious planning by DOE concerning potential disposal of plutonium immobilized in this fashion at Yucca Mountain would, of course, require DOE to develop the necessary information to support such a license amendment and to seek and obtain the U.S. Nuclear Regulatory Commission's approval of such a license amendment.

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

DOE Actions: The Department is updating the November 2000 study concerning the storage of plutonium at SRS. The study update is expected to be completed by June 30, 2004.

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

DOE Actions: DOE will evaluate the results of pending revisions to safety and fire hazards analyses to determine what actions are needed. In April 2003, DOE directed the contractor to revise the current safety basis documentation for KAMS to reflect a facility life that extends beyond 10 years. As part of this facility life extension evaluation, a new Fire Hazards Analysis (FHA) for KAMS is also being performed. The revised analyses are expected to be completed by September 2004.

(The following four proposals all concern 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: A revised safety basis and FHA are currently scheduled to be completed and submitted to DOE by April 2005. In conjunction with the decision last year to pursue a project to install a DOE-STD-3013 container surveillance, packaging and storage capability in Building 235-F, DOE directed the contractor in April 2003 to upgrade the 235-F safety basis for the remainder of the facility to be commensurate with such an extended facility mission. The safety basis revisions will result in one set of 10 CFR 830 (*Nuclear Safety Management*)-compliant Documented Safety Analysis (DSA) and associated Technical Safety Requirements for the 235-F facility.

Plutonium stored in 235-F would be removed and prepared for disposition, as described above in the Department's actions regarding the Board's first proposal, prior to the plutonium stored in KAMS; this will significantly reduce the amount of time any plutonium would have to be stored in 235-F. For example, if plutonium vitrification began at SRS in 2011 with a throughput to allow completion by 2018, then all plutonium-239 would be removed from Building 235-F no later than 2014.

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

DOE Actions: A systematic evaluation of safety systems to determine needed upgrades will be performed as part of the ongoing revision to the safety basis. As part of the normal process of development of a 10 CFR 830-compliant safety basis, a systematic evaluation of the required safety systems is conducted to ensure those systems can perform their required functions. For existing facilities, the safety systems must be

evaluated to ensure they can perform the required safety function identified by the accident analysis performed as part of the revision to the safety basis. The process at SRS used to perform this evaluation is called a backfit analysis. All active safety systems identified by the new 235-F DSA will have a backfit analysis performed to ensure they can perform their required safety function. If any upgrades to safety systems are needed, they will be identified based on the analysis. DOE will review the backfit analysis as part of its DSA approval process.

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: A structural analysis of Building 235-F and its outlying buildings is being conducted to current acceptance criteria, as part of the DSA upgrade discussed above. New soil settlement evaluations are also being conducted to identify the maximum expected differential settlement from a design basis seismic event. Building 235-F and outlying structures will then be analyzed to determine the overall effect of the seismic event on safety systems. Any modifications to safety systems to ensure they can perform their required functions during and after a seismic event would be made prior to extending the current facility mission. Since 235-F is an existing facility, the structural analysis is being conducted based on ground motion equivalent to that used for an existing facility at SRS. However, a structural analysis for Building 235-F and its outlying structures based on a ground motion equivalent to that used in the analysis for a new facility at SRS is also being performed. DOE will evaluate the results from these facility structural analyses to determine what course of action will be required to provide adequate protection to the public and workers from postulated accidents.

Board Proposal: Decontaminate unused process cells.

DOE Actions: A feasibility study is being performed to determine whether the cells can be decontaminated or whether the plutonium-238 within the cells can be immobilized such that it would not be released during any design basis accidents in the facility. An assay of these process cells is also currently in progress to provide a better determination of the actual amount of plutonium remaining. Based on the results of the feasibility study, expected to be completed by October 2004, DOE will determine what course of action will be appropriate. It should be noted that the safety basis upgrade and systematic evaluation of the resulting safety systems must be consistent with the path forward from this feasibility study.

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

DOE Actions: WSRC- RP-99-01027, "Memorandum of Agreement Between the Nuclear Materials Management Operations Business Unit and the FB-Line Project Closure Business Unit," Revision 2, with an effective date of April 13, 2004, describes

the responsibilities and requirements for shipment of containers with plutonium from KAMS to F-Area. The handling and intrasite shipment of plutonium-bearing containers at SRS is an ongoing process that utilizes DOE Orders and site procedures. The ability to ship simulated damaged containers from KAMS to F-Area was demonstrated during the Operational Readiness Review for KAMS. Prior to any shipment, a detailed engineering review would be performed based on the specific damage to the shipping container. A generic procedure for F-Area to receive a damaged container has recently been approved.