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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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To the Congress of the United States:

In Section 3183 of the National Defense Authorization Act for Fiscal Year 2003, Congress directed the Defense Nuclear Facilities Safety Board (Board) to conduct a study of the adequacy of plutonium storage at the Savannah River Site (SRS). In response to the proposals made in the Board's study, *Plutonium Storage at the Department of Energy's Savannah River Site*, dated December 1, 2003, the Board and the Secretary of Energy are required under Section 3183(d) of the National Defense Authorization Act for Fiscal Year 2003 to submit annual reports on the actions taken by the Secretary to address the Board's proposals. This is the Board's fourth annual report on the Department of Energy's (DOE) actions to address the Board's proposals from this study.

In this study, the Board made proposals concerning the suitability of facilities planned for storing plutonium at the SRS, the remote monitoring and retrieval of plutonium, and the DOE plutonium disposition program.

PROPOSALS CONCERNING THE SUITABILITY OF FACILITIES

DOE originally planned for extended storage of plutonium at SRS in two facilities—the K-Area Materials Storage (KAMS) facility and Building 235-F (235-F). Both were 50-year-old facilities that did not meet modern safety standards. The Board proposed safety upgrades to ensure the safety, reliability, and functionality of these facilities for plutonium storage.

Status of DOE Actions. As noted in the previous Board reports, DOE decided to (1) consolidate the excess plutonium currently at SRS into the KAMS facility and (2) not use 235-F for extended storage. The Board agreed with this decision, which obviates the need for safety upgrades to 235-F. Subsequently, DOE reconfigured the KAMS facility such that SRS can now consolidate all of the DOE's excess plutonium into this facility.

The Board considered the KAMS facility to be a robust structure that could be made suitable for extended storage by establishing an appropriate fire protection system and eliminating unnecessary combustibles. The combustible materials of concern have been removed. DOE is in the process of adding a fire detection system for the storage areas in the KAMS facility and expects to complete installation in early October 2007. The addition of this fire detection system permits plutonium to be stored safely in the KAMS facility until dispositioned by DOE. DOE further plans to add a limited fire suppression system in a small analytical room in the KAMS facility and expects to provide funding for completion of this fire suppression system in fiscal year 2009.

PROPOSAL CONCERNING REMOTE MONITORING AND RETRIEVAL

At the time of the Board's initial 2003 storage study, DOE's plans for handling, moving, and shipping a damaged, potentially contaminated container from the KAMS facility for further disposition had not been defined and validated. The Board proposed that DOE develop and implement validated

procedures for the handling and intrasite shipment of plutonium containers, including damaged containers. As reported in the Board's first annual report on this subject, DOE has completed all necessary actions concerning this proposal.

PROPOSALS CONCERNING THE PLUTONIUM DISPOSITION PROGRAM

The Board proposed that DOE expedite the development of a complete, well-considered plan for the final disposition of all excess plutonium to preclude unnecessary extended storage of plutonium at SRS. The Board also proposed that DOE conduct a new study of available options for the storage of plutonium at SRS but DOE subsequently decided to consolidate the SRS plutonium material into the KAMS facility. The Board supported this decision and, consequently, agreed the proposed study was no longer needed.

Status of DOE Actions. Several previous National Environmental Policy Act (NEPA) decisions have laid the groundwork for plutonium disposition at SRS:

- *Interim Management of Nuclear Materials (IMNM) Final Environmental Impact Statement* (DOE/EIS-0220, October 1995)
- *Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement* (DOE/EIS-0229, December 1996)
- *Surplus Plutonium Disposition Final Environmental Impact Statement* (DOE/EIS-0283, November 1999)

Based on the approved Records of Decision for these environmental impact statements, DOE previously chose to pursue plutonium disposition via the Mixed-Oxide Fuel Fabrication Facility (MFFF) and a plutonium immobilization facility. As planned, this approach also envisioned some additional plutonium disposition via the H-Canyon Facility at SRS. Although DOE cancelled its plans for the original plutonium immobilization facility, the overall plan remains largely the same. Namely, surplus weapon-useable plutonium is to be dispositioned via (1) the Pit Disassembly and Conversion Facility (PDCF) and MFFF, (2) a new plutonium disposition facility, and (3) the H-Canyon Facility.

DOE continues to pursue this so-called three-pronged approach—PDCF/MFFF, a new plutonium disposition facility, and the H-Canyon Facility. On August 17, 2006, the Deputy Secretary of Energy approved Critical Decision 1-A, the selection of a preferred alternative, for the Plutonium Disposition Project. The preferred alternative was a plutonium vitrification process to be installed in the K-Reactor Facility at SRS. On March 28, 2007, DOE issued a Notice of Intent to Prepare a Supplemental Environmental Impact Statement for Surplus Plutonium Disposition at the Savannah River Site (72 Federal Register 14,543, March 28, 2007). This supplemental environmental impact statement will evaluate the environmental impacts of several options, including the plutonium vitrification process as currently defined by the three-pronged approach. DOE plans to issue a draft supplemental environmental impact statement by January 2008.

Because of Congressional inquiries regarding the plutonium disposition plan, DOE commissioned a panel of experts to review the plan. The panel completed its review and issued a report, *Business Case, DOE's Proposed Baseline Approach for Disposing of Surplus Plutonium*, in April 2007. This report

concludes that the three-pronged approach will meet United States national security and nonproliferation objectives, reduce security costs, and support DOE's efforts to consolidate nuclear materials in the DOE complex.

Progress in plutonium consolidation and disposition has been and continues to be slow. To date, surplus plutonium remains stored at Hanford, Lawrence Livermore National Laboratory, and Los Alamos National Laboratory. In its planning documents, DOE states that future progress is subject to appropriate NEPA review and the availability of funding.

CONCLUSION

For excess plutonium currently at SRS, the KAMS facility will provide adequate extended storage when the fire detection system upgrades proposed by the Board are completed by DOE.

For excess plutonium located at other sites, DOE has not made progress in consolidating this plutonium at SRS because it lacks an agreed-upon disposition pathway for excess plutonium out of the State of South Carolina. As such, each site continues to maintain its excess plutonium inventory.

The DOE planned disposition that utilizes MFFF, plutonium vitrification and H-Canyon Facility is reasonable. The Board believes consolidation of excess plutonium into a single, robust facility suitable for extended retrievable storage is logical from a *safety* perspective. DOE should aggressively pursue consolidation of its excess plutonium.

The Board believes that the initial purpose of the report requested by Congress has been satisfied. The addition of the fire detection system permits plutonium to be stored safely in the KAMS facility until dispositioned by DOE. Remaining modifications to the KAMS facility are planned and straightforward. The Board will follow these modifications, as well as DOE's effort to execute its plutonium disposition strategy.

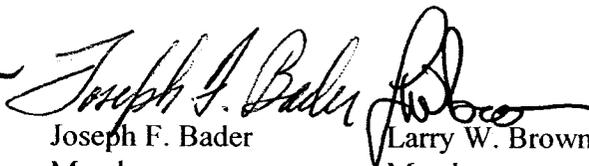
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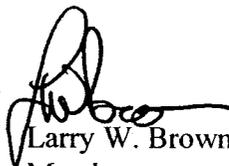
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