DEPARTMENT OF ENERGY

Interim Management of Nuclear Materials

AGENCY: Department of Energy

ACTION: Amended record of decision.

SUMMARY: On December 12, 1995, the U.S. Department of Energy (DOE) issued a Record of Decision (ROD) and Notice of Preferred Alternatives, 60 FR 65300 (December 19, 1995), for the final environmental impact statement, Interim Management of Nuclear Materials (IMNM EIS) (DOE/EIS–0220, October 20, 1995), at the Savannah River Site (SRS), Aiken, South Carolina. As part of its decision, DOE decided to construct a new facility, the Actinide Packaging and Storage Facility (APSF), to prepare, package, and store plutonium oxide and metal in accordance with DOE's plutonium storage standard, recently revised as Stabilization, Packaging, and Storage of Plutonium-Bearing Materials (DOE–STD–3013–2000). The APSF also was intended to provide space for consolidated storage of plutonium and special actinide materials at the SRS.

For several reasons, including project cost growth concerns, DOE is canceling the APSF project and instead installing the stabilization and packaging capability to meet the plutonium storage standard within Building 235–F, an existing plutonium storage and processing facility in F-Area at the SRS. DOE also will use existing SRS vault storage space, including space in Building 235–F, to store plutonium (and other nuclear material inventories) pending disposition.

FOR FURTHER INFORMATION CONTACT: For further information on the interim management of nuclear materials at the SRS, to receive a copy of the final IMNM EIS, or a copy of the 1995 IMNM ROD, contact: Andrew R. Grainger, NEPA Compliance Officer, U.S. Department of Energy, Savannah River Operations Office, Building 703–47A, Room 122, Aiken, South Carolina 29802 (800) 881–7292 Internet: drew.grainger@sr.srs.gov.

For further information on the DOE NEPA process, contact: Carol M. Borgstrom, Director, Office of NEPA Policy and Compliance (EH–42) U.S. Department of Energy, 1000 Independence Avenue, SW, Washington, DC 20585, (202) 586–4600, or leave a message at (800) 472–2756.

Additionally, DOE NEPA information, including the IMNM Final EIS and the 1995 IMNM ROD, can be found on the DOE NEPA web site at: *www.eh.doe.gov/nepa/.*

SUPPLEMENTARY INFORMATION:

Background

NEPA Review and Decisions

The U.S. Department of Energy (DOE) prepared a final environmental impact statement, Interim Management of Nuclear Materials (IMNM EIS) (DOE/EIS–0220, October 20, 1995), in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality NEPA implementing regulations, and DOE implementing procedures. The IMNM EIS assessed the potential environmental impacts of actions necessary to safely manage nuclear materials at the Savannah River Site (SRS), Aiken, South Carolina, until decisions on their future use or ultimate disposition are made and implemented. The IMNM EIS grouped the nuclear materials at the SRS into three categories: Stable, Programmatic, and Candidates for Stabilization. Some of the ''Programmatic'' and all of the ''Candidates for Stabilization'' materials could have presented environmental, safety and health vulnerabilities in their then-current storage condition. For materials that could present environmental, safety, or health vulnerabilities, the IMNM EIS evaluated processing alternatives to meet the new plutonium storage standard to ensure safe intermediate to long-term storage. The capability to meet the new storage standard did not exist at the SRS at the time of the preparation of the IMNM EIS, nor at any other DOE site. Subsequently, DOE has been working to establish this capability at its non-pit [1] surplus plutonium sites. Facilities providing this capability at the Rocky Flats Environmental Technology Site (RFETS, Golden, Colorado), Hanford (Richland, Washington), and Lawrence Livermore National Laboratory (Livermore, California) are nearing completion and startup. Stabilizing and packaging plutonium to the storage standard are generally the last steps in completing the stabilization process. The IMNM EIS considered two options for providing this stabilization and packaging capability at the SRS: (1) The construction of a new facility, APSF, and (2) the modification of Building 235–F in F-Area.

On December 12, 1995, DOE issued a Record of Decision (ROD) and Notice of Preferred Alternatives, 60 FR 65300 (December 19, 1995), on the interim management of several categories of nuclear materials at the SRS. As part of its decision, DOE decided to construct a new facility, the APSF, to enable plutonium oxides to be stabilized, and plutonium oxide and metal to be repackaged in accordance with DOE's plutonium storage standard, recently revised as Stabilization, Packaging, and Storage of Plutonium-Bearing Materials (DOE–STD–3013–2000). The APSF also was intended to provide space for consolidated storage of plutonium and special actinide materials at the SRS. Subsequently, DOE issued four supplemental RODs (61 FR 6633, 61 FR 48474, 62 FR 17790, and 62 FR 61099) to make additional decisions and/or modify existing decisions concerning the management of nuclear materials at the SRS. None of these subsequent decisions altered DOE's decision to construct the APSF.

In December 1996, DOE issued the Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement (Storage and Disposition PEIS) (DOE/EIS–0229). The Storage and Disposition PEIS, among other things, assesses the potential environmental impacts of alternative approaches and locations for storing weapons-usable fissile materials (plutonium and highly enriched uranium). DOE decided in the Storage and Disposition ROD (January 14, 1997, 62 FR 3014) to expand the storage capacity (from a nominal 2,000 storage positions to 5,000 storage positions) of the prospective APSF to accommodate at the SRS the storage of surplus non-pit plutonium to be received from RFETS, pending disposition. DOE also indicated in the Storage and Disposition ROD that DOE would pursue a strategy for surplus plutonium disposition that allows for immobilization of surplus weapons plutonium in glass or ceramic forms and burning of the surplus plutonium as mixed oxide (MOX)[2] fuel in existing reactors. The immobilized plutonium and the spent MOX fuel would be disposed of in a geologic repository.

Subsequently, in order to support the early closure of RFETS, DOE issued an amended Storage and Disposition ROD (August 6, 1998, 63 FR 43386) to allow the RFETS surplus non-pit plutonium to be sent to the SRS before completion of the APSF. Based upon the amended Storage and Disposition ROD, DOE undertook the K-Area Materials Storage (KAMS) project to modify and prepare existing space within Building 105-K to store surplus plutonium in shipping containers as received from RFETS, pending disposition. The first shipment of surplus plutonium from RFETS for

[1] A ''pit'' is a nuclear weapon component.

[2] A physical blend of uranium oxide and plutonium oxide.

storage in KAMS is scheduled to arrive in early calendar year 2001.

In November 1999, DOE issued the Surplus Plutonium Disposition Final Environmental Impact Statement (SPD EIS) (DOE/EIS–0283), which analyzed alternatives for the siting, construction, and operation of three surplus plutonium disposition facilities. These three facilities would accomplish pit disassembly and conversion, plutonium conversion and immobilization, and MOX fuel fabrication. DOE issued the Surplus Plutonium Disposition ROD on January 4, 2000 (65 FR 1608), which selected the SRS for all three of the new surplus plutonium disposition facilities.

Plutonium Stabilization and Storage Evaluation

In light of APSF project cost growth concerns, SRS program and overall DOE resource limitations, and an opportunity to increase the integration of the surplus plutonium storage and surplus plutonium disposition missions, DOE suspended the APSF project in January 1999, and undertook a systematic review of SRS stabilization and storage options. This review is documented in Evaluation of Savannah River Plutonium Storage and Stabilization Options (July 2000). The evaluation considered several options for managing DOE's surplus plutonium, pending disposition, including: completion of the as-designed (5,000 storage position) APSF project, construction of a further-expanded (10,000 storage position) APSF, and cancellation of the APSF project with surplus plutonium managed through other means (e.g., processed to allow consolidation to metal and/or stabilization and storage in existing modified facilities).

The key recommendations of the evaluation are: (1) Cancel the APSF project and (2) initiate a project to install stabilization and packaging capability in Building 235–F at SRS. The evaluation also recommends that DOE continue with the decision to transfer RFETS stabilized plutonium (packaged in DOE–STD–3013 storage containers within shipping containers) for storage in KAMS in unopened shipping containers. The evaluation also recommends that DOE store SRS stabilized materials in DOE–STD–3013 containers inside shipping containers in existing vaults in Building 235–F, and KAMS as necessary, pending disposition.

The evaluation determined that there would be basically no difference between the APSF and Building 235–F options regarding the completion dates of the capital improvements or the stabilization and packaging activities, but the estimated costs are different, particularly for the near-term. Over the 10-year evaluation period (FY 2001–2010), cost differences (in FY 2001 dollars) range from approximately $5.5 million to $230 million. The least costly options involve varying degrees of modification to Building 235–F. The capital cost for the recommended Building 235–F option is estimated to be $100 million to $250 million, which is $30 million to $180 million less than the lowest cost APSF option. The ''high'' capital cost estimate of $250 million for the recommended Building 235–F option was used in the evaluation to compare costs between the stabilization and storage options.

The evaluation considered options which could best meet the Department's stabilization and storage needs, given various factors, such as funding levels, de-inventory strategies, and surplus plutonium disposition schedules. Surplus plutonium disposition schedules most notably affected overall costs. Delays of approximately seven years or more to DOE's surplus plutonium disposition program would favor the more consolidated plutonium storage options (the APSF options) because operating costs for a large single storage facility are less than for multiple smaller facilities. Even though this ''payback'' would eventually occur if there were substantial delays to the surplus plutonium disposition mission, DOE believes there are more worthy unfunded projects that would provide earlier investment returns in carrying out DOE missions.

Interim Management of Nuclear Materials EIS

Alternatives

The IMNM EIS analyzed several alternatives, including the No Action alternative, for the interim management of eleven (11) types of nuclear materials at the SRS. All of the alternatives except the Continued Storage (No Action) would support DOE's objective of removing nuclear materials from vulnerable conditions and from vulnerable facilities in preparation for decontamination and decommissioning. The IMNM RODs include decisions to undertake stabilization and processing actions for ten (10) SRS nuclear material types. (DOE decided to continue existing actions for the ''Stable'' nuclear material types/category.) Six of these nuclear materials types—(1) plutonium and uranium stored in vaults, (2) Mark–31 targets, (3) aluminum-clad Taiwan Research Reactor fuel and Experimental Breeder Reactor–II slugs, (4) plutonium–239 solutions, (5) plutonium–242 solutions, and (6) neptunium–237 solutions—require, or could require, a new capability to stabilize and package the material to DOE's storage standard to complete stabilization for safe interim management. The latter two materials, plutonium–242 and neptunium–237, were categorized as programmatic materials in the IMNM EIS but were analyzed for completeness of the potential impacts from stabilization and packaging for long-term storage. DOE has since stabilized the plutonium–242 to oxide, and transferred it to the Los Alamos National Laboratory for programmatic use without undergoing stabilization and packaging to the storage standard. The neptunium–237 has yet to be stabilized, and a determination on program need or requirements for packaging to the storage standard has yet to be made. The need for neptunium–237 is being addressed in the Final Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility (DOE/EIS–0310, December 2000). A Record of Decision for that PEIS is expected to be issued in January 2001.

The IMNM EIS considered two options [see IMNM EIS, Chapter 2. Alternatives and Appendix C, pp. C–41 to C–45] for stabilizing, packaging, and storing plutonium to DOE's storage standard—(1) the construction of the new APSF, and (2) the modification of Building 235–F. The storage standard is designed to help ensure the safe storage of the materials for long periods (e.g., 50 years). Each option was designed to provide the capability to heat plutonium oxide materials to drive off residual and absorbed moisture; package stabilized material (oxides and metal) in at least two corrosion-resistant containers (a container within a container) without the use of plastics, hydrogenous compounds, or organic material; weld-seal the outer container in an inert atmosphere to ensure weld joint and container material integrity; and store the stabilized material and sealed containers.

In addition, the IMNM EIS considered modifications to the FB-Line in the F-Canyon building (Building 221-F) at the SRS to provide storage standard stabilization and packaging capabilities. Under decisions associated with the Final F-Canyon Plutonium Solutions Environmental Impact Statement (DOE/EIS–0219, December 1994) and ROD (February 22, 1995, 60 FR 9824), DOE added to the FB-Line a capability to package plutonium metal within a

single, inert gas-filled, welded container, without the need for plastic and other organic materials. However, DOE concluded that adding the full stabilization and packaging mission to the FB-Line facility would delay completion of the FB-Line's nuclear materials stabilization activities and the planned shutdown of the FB-Line facility.

Potential Environmental Impacts

The IMNM EIS analyzed potential impacts of alternatives for managing all SRS nuclear materials. Summaries of the potential impacts from the alternatives are presented in the IMNM EIS, Table 2–2 through Table 2–12 (pp. 2–48 through 2–58). The IMNM EIS analysis includes potential impacts from heating and repackaging activities to package plutonium to DOE's storage standard.

DOE has reviewed the IMNM EIS and determined that there are no substantial changes in the proposed modification of Building 235–F nor are there any significant new circumstances or information relevant to environmental impacts that would result from modifying Building 235–F. The analysis of potential environmental impacts and the description of the Building 235–F option in the IMNM EIS have not changed since the Final EIS was issued.

The IMNM EIS indicated that there would be minimal environmental impacts from the implementation of any alternative (including the APSF or Building 235–F options) in the areas of geologic, ecological, cultural, aesthetic, and scenic resources, noise, and land use. Impacts in these areas would be limited because facility modifications or construction of new facilities would occur within existing buildings or industrialized portions of the SRS. The existing SRS workforce would support any construction projects and other activities required to implement any of the alternatives, and thus negligible socioeconomic impacts would be expected from implementing any of the alternatives.

Emissions of hazardous air pollutants and releases of hazardous liquid effluents for any of the alternatives would be within applicable standards and existing regulatory permits for the SRS facilities. Similarly, for either the APSF or Building 235–F option for plutonium stabilization and packaging, potential transuranic waste, mixed hazardous waste, and low-level solid waste generated would be handled by existing waste management facilities. All of the waste types and volumes are within the capability of the existing SRS waste management facilities for storage, treatment, or disposal.

While the IMNM EIS indicated that potential adverse impacts to the environment, public, or workers would be small for the packaging and storage alternatives, there would be minor differences between the APSF ''new construction'' and the Building 235–F modification. The modification to Building 235–F would involve work in an existing and radiologically contaminated facility, thereby potentially leading to a small increase over the APSF option in radiological waste generation and construction worker exposure. Through the use of site administrative control limits, however, no worker would be expected to receive a radiological dose beyond that allowed for radiological workers from normal operations, or from facility modification work. Likewise, the existing waste management facilities are capable of handling the additional radiological waste that would result from the Building 235–F modification.

Environmentally Preferable Alternative

The IMNM EIS indicated that potential adverse impacts to the environment, public, or workers would be small for either the APSF or Building 235–F options. While small increases in radiological waste and worker radiological exposure could be expected from the Building 235–F modification option over the APSF option, both options would involve relatively small impacts, and thus neither could be deemed environmentally preferable over the other.

Decision

DOE is amending its previous decision (60 FR 65300) on how to provide a SRS capability for the stabilization and packaging of plutonium to the storage standard (recently revised to DOE–STD–3013–2000). Instead of constructing a new Actinide Packaging and Storage Facility (APSF), DOE will modify existing space within Building 235–F in F-Area. DOE will continue to use existing vault space in Building 235–F for interim storage pending disposition, and existing vault space in FB-Line for interim storage during stabilization actions. [By way of information, DOE previously had decided (63 FR 43386) to store RFETS surplus non-pit plutonium in new vault space established in Building 105–K, instead of in the APSF, pending disposition.]

This decision will allow DOE to stabilize and repackage plutonium to the storage standard within the same time-frame as would have a new APSF (or possibly up to two years sooner). It also allows DOE to accomplish plutonium stabilization and repackaging at a lower cost by cost-effectively integrating surplus plutonium storage activities with surplus plutonium disposition activities. The reduced capital expenditure requirements are more consistent with current and projected near-term budget resources.

Issued at Washington, DC, January 12th, 2001.

Carolyn L. Huntoon,

Assistant Secretary for Environmental Management.

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DEPARTMENT OF ENERGY

Office of Science; Office of Science Financial Assistance Program Notice 01–21; Advanced Modeling and Simulation of Biological Systems

AGENCY: U.S. Department of Energy (DOE).

ACTION: Notice inviting grant applications.

SUMMARY: The Offices of Advanced Scientific Computing Research (ASCR) and Biological and Environmental Research (OBER) of the Office of Science (SC), U.S. Department of Energy, hereby announce interest in receiving applications for grants in support of computational modeling and simulation of biological systems. The goal of this program is to enable the use of terascale computers to explore fundamental biological processes and predict the behavior of a broad range of protein interactions and molecular pathways in prokaryotic microbes of importance to DOE. This goal will be achieved through the creation of scientific simulation codes that are high performance, scalable to hundreds of nodes and thousands of processors, and able to evolve over time and be ported to future generations of high performance computers. The research efforts being sought under this Program Notice will take advantage of extensive information inferred from the complete DNA sequence, such as the genetics and the biochemical processes available for a well-characterized prokaryotic microbe; for example, *Escherichia coli* (*E. coli*). This notice encourages applications from the disciplines of applied mathematics and computer science in partnership with microbiology, molecular biology, biochemistry and structural and computational biology to combine information available on a well