DEPARTMENT OF ENERGY

Surplus Plutonium Disposition Program

AGENCY: Department of Energy, National Nuclear Security Administration.

ACTION: Amended Record of Decision.

SUMMARY: The U.S. Department of Energy's National Nuclear Security Administration (DOE/NNSA) is amending the Records of Decision (RODs) for the Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement (Storage and Disposition PEIS) and Surplus Plutonium Disposition Environmental Impact Statement (SPD EIS). Specifically, DOE/NNSA is announcing the following three revisions to the decisions contained in those RODs: (1) Cancellation of the immobilization portion of the disposition strategies announced in those RODs due to budgetary constraints, (2) selection of the alternative of immediate implementation of consolidated long-term storage at the Savannah River Site (SRS) of surplus non-pit plutonium now stored separately at the Rocky Flats Environmental Technology Site (RFETS) and SRS, and (3) adjustment in the manner in which surplus plutonium pits will be stored at the Pantex Plant (Pantex). Cancellation of the immobilization facility and selection of this storage alternative remove the basis for the contingency contained in previous RODs conditioning transport of non-pit surplus plutonium from RFETS to SRS for storage on the selection of SRS as the site for the immobilization facilities, and those RODs are so amended. DOE will notify the Congress and consult with the Governor of South Carolina before shipping plutonium to SRS, in accordance with The National Defense Authorization Act for Fiscal Year 2002. Under this amended ROD, DOE/NNSA will
continue to store surplus plutonium pits at Pantex in the facility where they are currently located rather than transfer the pits to a different facility at the same site, as announced in the Storage and Disposition PEIS ROD.

In response to a statutory directive, DOE/NNSA has submitted to Congress a report on a strategy for the disposal of surplus plutonium currently located at, or to be shipped to SRS. That strategy involves converting this plutonium to a mixed-oxide (MOX) fuel and irradiating it in commercial power reactors. DOE/NNSA is currently evaluating the changes to the MOX fuel portion of the surplus plutonium disposition program necessitated by this strategy, including the need for additional environmental reviews pursuant to the National Environmental Policy Act (NEPA). No final decisions regarding the MOX portion of the program will be made until these reviews are completed.

FOR FURTHER INFORMATION CONTACT: For further information concerning the disposition of surplus plutonium or this amended ROD, contact Hitesh Nigam, Deputy NEPA Compliance Officer, Office of Fissile Materials Disposition, National Nuclear Security Administration, 1000 Independence Avenue, SW, Washington DC, 20585, 800-820-5134. Additional information regarding the DOE/NNSA Fissile Materials Disposition Program is available on the Internet at http://www.doe-md.com (when accessible).

For further information concerning DOE's NEPA process, contact: Ms. Carol Borgstrom, Director, Office of NEPA Policy and Compliance (EH- 42), U.S. Department of Energy, 1000 Independence Avenue, SW, Washington, DC 20585. Telephone (202) 586-4600, or leave a message at 1-800-472-2756.

Additional information regarding the DOE NEPA process and activities is also available on the Internet through the NEPA home page at http://tis.eh.doe.gov/nepa.

SUPPLEMENTARY INFORMATION:

I. Background

A. Historical Context for the Decisions on the Plutonium Storage and Disposition Program Announced in This Amended ROD

The end of the Cold War created a legacy of surplus weapons-usable fissile materials in both the United States and Russia. The United States and Russia have been working together to reduce the threat of nuclear weapons proliferation worldwide by implementing programs for dispositioning surplus plutonium in a safe, secure, environmentally acceptable, and timely manner. Russia and the United States have issued numerous statements and agreements to this effect since the mid-1990's. The most recent is the Agreement between the Government of the United States of America and the Government of the Russian Federation Concerning the Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes and Related Cooperation signed in September, 2000. This agreement provides that the United States and Russia will each dispose of 34 t of "weapons-grade" plutonium, and allows for
disposition either by immobilization, or by MOX fuel fabrication and subsequent irradiation. One purpose of DOE/NNSA's Surplus Plutonium Disposition Program is to help implement this agreement.

However, in addition to achieving the ultimate goal of permanent disposition of surplus plutonium materials, DOE independently needs to improve the configuration of the storage system for these materials, pending disposition. These improvements will allow DOE to significantly reduce storage costs, expedite closure and cleanup of sites and facilities in its nuclear complex, and enhance the security of these materials.

DOE's Office of Fissile Materials Disposition (now part of NNSA) has prepared a number of NEPA documents regarding the United States' Surplus Plutonium Disposition Program. The Storage and Disposition PEIS (DOE/EIS-0229, December 1996) evaluated alternative strategies and locations both for long-term storage (up to 50 years) and for disposition of weapons-usable fissile materials. Among the alternatives analyzed in that PEIS was consolidated long-term storage at each of four candidate sites.

The SPD EIS (DOE/EIS-0283, November 1999), which tiered from the Storage and Disposition PEIS, evaluated site-specific alternatives for the construction and operation of three facilities for disposition of up to 50 t of surplus weapons-usable (weapons-grade and non-weapons-grade) plutonium. These three facilities would have performed, respectively, pit disassembly and conversion, plutonium immobilization, and MOX fuel fabrication. The SPD EIS also evaluated the use of six domestic commercial reactors for irradiation of MOX fuel.

B. Previous Decisions on the Surplus Plutonium Disposition Program

In the initial ROD for the Storage and Disposition PEIS (62 FR 3014, January 21, 1997), DOE made two sets of decisions, one addressed to disposition of surplus plutonium and one addressed to storage of this material. With regard to disposition, DOE determined, consistent with the Preferred Alternative analyzed in the Storage and Disposition PEIS, to pursue a hybrid approach that would have allowed for the immobilization of surplus plutonium for eventual disposal in a geologic repository pursuant to the Nuclear Waste Policy Act, and use of MOX fuel in existing, domestic, commercial reactors, with subsequent disposal of the spent fuel in a geologic repository. This hybrid approach was selected to provide insurance against technical or institutional uncertainties that could arise from a single-technology approach for disposition. DOE selected this approach for the increased flexibility it provided by ensuring that plutonium disposition could still be initiated promptly should one of the approaches ultimately fail or be delayed. In selecting the hybrid approach, DOE established a means for expeditious plutonium disposition that provided the basis for an international cooperative effort to achieve reciprocal, irreversible plutonium disposition actions by Russia.
In addition, with regard to storage, DOE decided in the January 21, 1997 ROD to reduce the number of locations where the various forms of surplus plutonium were stored. To accomplish this, DOE decided to move surplus plutonium from RFETS as soon as possible, transporting pits to Pantex beginning in 1997. Non-pit plutonium materials would be separated and stabilized, and then transported to SRS. The January 21, 1997 ROD made transport of non-pit surplus plutonium materials from the RFETS to SRS contingent on DOE selecting SRS as the site for the immobilization facility in a subsequent ROD. After transport, the non-pit materials would be stored at SRS in a new facility, the Actinide Packaging and Storage Facility (APSF), pending disposition. DOE further decided in the January 21, 1997 ROD to upgrade storage facilities in Zone 12 South at Pantex (to be completed by 2004) to store surplus pits already stored at Pantex and surplus pits from RFETS, pending disposition. Storage facilities in Zone 4 at Pantex would continue to be used for these pits prior to completion of the Zone 12 upgrade.

To support early closure of RFETS, DOE subsequently issued an amended ROD for the Storage and Disposition PEIS (63 FR 43386, August 13, 1998) that revised some of these decisions. The amended ROD announced DOE's decision to accelerate shipment of all non-pit surplus plutonium from RFETS to SRS beginning in 2000, provided, again, that SRS was selected as the immobilization site. To accommodate the early receipt and storage of RFETS surplus plutonium (i.e., before completion of the APSF), DOE decided to undertake modifications to Building 105-K in the K-Area at SRS (also known as the K-Area Materials Storage [KAMS] facility). Before issuing the amended ROD, DOE prepared a Supplement Analysis (SA) pursuant to DOE procedures implementing the National Environmental Policy Act (10 CFR 1021.314), Supplement Analysis for Storing Plutonium in the Actinide Packaging and Storage Facility and Building 105-K at the Savannah River Site, (DOE/EIS-0229-SA1). On the basis of that SA, DOE concluded that storage in KAMS would not result in a substantial change in environmental concerns compared to storage in APSF.

In the ROD for the SPD EIS (65 FR 1608, January 11, 2000), DOE decided to implement the hybrid approach for the disposition of up to 50 t of surplus plutonium (by fabricating up to 33 t into MOX fuel and immobilizing approximately 17 t), as described in the Preferred Alternative in the SPD EIS. SRS was selected as the location for all three disposition facilities: A pit disassembly and conversion facility (pit conversion facility), a plutonium immobilization facility, and a MOX facility.

In an Amended ROD (66 FR 7888, January 26, 2001) for the EIS on Interim Management of Nuclear Materials (October 1995, DOE/EIS-0220), DOE canceled construction of the APSF because of cost growth and resource limitations. It was decided to use existing facilities for storing surplus plutonium at SRS.

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II. Need To Change Surplus Plutonium Disposition Program

A. Immobilization

The initial Storage and Disposition PEIS ROD noted that `the timing and extent to which either or both of these disposition approaches (immobilization or MOX) are ultimately deployed will depend upon the results of future technology development and demonstrations, follow-on (tiered) site-specific environmental review, contract negotiations, and detailed cost reviews, as
well as nonproliferation considerations, and agreements with Russia and other nations.” In 2001, the schedule for design, construction and operation of the plutonium immobilization facility was delayed indefinitely due to budgetary constraints. DOE/NNSA is now canceling the immobilization program, including the immobilization facility.

DOE/NNSA has evaluated its ability to continue implementing two disposition approaches and has determined that in order to make progress with available funds, only one approach can be supported. Russia does not consider immobilization alone to be an acceptable approach because immobilization, unlike the irradiation of MOX fuel, fails to degrade the isotopic composition of the plutonium. Russia has contended that the United States could easily obtain plutonium by removing it from the immobilized waste form in the event of a desire to reuse the plutonium for nuclear weapons. Because selection of an immobilization-only approach would lead to loss of Russian interest in and commitment to surplus plutonium disposition, DOE is of the view that if only one disposition approach is to be pursued, the MOX approach rather than the immobilization approach is the preferable one. Accordingly, it is canceling the immobilization portion of the dual disposition strategies announced in previous RODs.

B. Consolidated Long-Term Storage of Plutonium at SRS

Canceling the U.S. immobilization program has caused DOE/NNSA to reevaluate the long-term storage needs of the DOE nuclear complex. Much of the non-pit surplus plutonium currently stored at various sites in the complex was originally destined for immobilization. DOE/NNSA is examining alternative disposition paths for this material, including use as MOX fuel (see II.D, below). In the meantime, however, DOE needs to move forward with consolidated storage of some of this material, which serves independent objectives. In particular, DOE must consolidate the plutonium in order to close and clean up facilities and sites in the complex. In the case of RFETS, the schedule for site closure and cleanup is governed by an agreement between DOE and state regulators. Shipments from RFETS must begin soon in order to maintain that schedule. While the material is being safely and securely stored at all locations, consolidated storage of this material as RFETS is moving toward closure would afford DOE the opportunity to further improve the security of the material and at the same time achieve cost savings.

Long-term storage of surplus plutonium and the ultimate disposition of that plutonium are separate actions, and these actions were addressed separately in the Storage and Disposition PEIS. Alternatives for accomplishing each action were analyzed. While previous RODs that were issued based on that PEIS combined these two actions, such combination was not required to implement either decision, and indeed served no significant programmatic objective. The Storage and Disposition PEIS analyzed long-term storage at each of four sites: The Hanford Reservation (Hanford), the Idaho National Engineering Laboratory (now the Idaho National Engineering and Environmental Laboratory [INEEL]), Pantex and SRS. In this amended ROD, DOE/NNSA is modifying the earlier RODs to select the option of long-term storage of non-pit plutonium at SRS on its own merits.

DOE has reviewed the Storage and Disposition PEIS and related Supplement Analyses and has determined that the analyses remain valid for the decisions announced herein.

This decision affects only the non-pit surplus plutonium located at RFETS. This amended ROD does not affect the decision made in the January 21, 1997 ROD for the Storage and Disposition PEIS to continue current storage of non-pit surplus plutonium at Hanford, INEEL
1. Shipment of RFETS Material

Shipments of surplus plutonium materials to SRS in support of the RFETS closure schedule are addressed in existing NEPA documents. In addition to the analysis contained in the Storage and Disposition PEIS, the accelerated shipments of surplus plutonium materials from RFETS to SRS were analyzed in the 1998 SA described above (DOE/EIS-0229-SA1) and were reflected in the transportation analyses presented in the SPD EIS. Both the January 17, 1997 initial ROD and the August 13, 1998 amended ROD for the Storage and Disposition PEIS conditioned shipment of plutonium from RFETS to SRS for storage on selection of SRS as the site for the immobilization facility. Cancellation of the immobilization facility and selection of the consolidated long-term storage alternative in this amended ROD removes the basis for that contingency. DOE will notify the Congress and consult with the Governor of South Carolina before shipping plutonium from RFETS to SRS, in accordance with The National Defense Authorization Act for Fiscal Year 2002.

2. Long-Term Storage of Surplus Plutonium in the KAMS Facility at SRS

DOE/NNSA decided (63 FR 43386, August 13, 1998) to store surplus plutonium from RFETS at the KAMS facility while the APSF was being constructed. However, the storage of surplus plutonium in the KAMS facility could extend beyond the 10-year period estimated in the 1998 Supplement Analysis discussed above (DOE/EIS-0229-SA1). Therefore, DOE prepared another SA, Supplement Analysis for Storage of Surplus Plutonium Materials in the K-Area Material Storage Facility at the Savannah River Site, February 2002 (DOE/EIS-0229-SA2), which evaluated the potential for storage beyond 10 years at the KAMS facility. That SA concluded that potential impacts from the continued storage of surplus plutonium in the KAMS facility at SRS for this additional period are not substantially different from those addressed in the original analysis of storage in APSF contained in the Storage and Disposition PEIS. Therefore, DOE/NNSA is deciding to use the KAMS facility to store the plutonium transferred from RFETS.

C. Storage of Surplus Plutonium at Pantex

DOE/NNSA now plans to continue storing surplus pits in Zone 4 at Pantex, as opposed to transferring the pits to an upgraded facility in Zone 12 by 2004 as announced in the Storage and Disposition PEIS ROD. Surplus pits would be maintained in storage in Zone 4 pending disposition at SRS. DOE had intended to relocate all pits in storage at Pantex to upgraded facilities in Zone 12 and eventually to discontinue use of Zone 4. However, further analysis of mission needs determined that Zone 4 would likely be needed well into the future for weapons dismantlement activities and to comply with possible treaty requirements. That being the case, cost savings initially postulated from the closure of Zone 4 would not be achieved. This realization, coupled with the availability of adequate storage space in Zone 4 to accommodate both surplus pits and weapons dismantlement activities, as well as concerns expressed by the Defense Nuclear Facilities Safety Board over storing both national security and surplus pits in Zone 12, led DOE to reexamine whether it would be more appropriate to continue storing surplus pits in Zone 4.

The storage of surplus pits in Zone 4 at Pantex is ongoing and consistent with the current
D. MOX Fuel Program

Section 3155(c) of The National Defense Authorization Act for Fiscal Year 2002 required the Department to submit to Congress by February 1, 2002, a plan for disposal of the surplus plutonium currently located at SRS or to be shipped to SRS in the future. Section 3155(d) also required the Department to submit a plan for a disposition path for plutonium that would otherwise have been disposed of at an immobilization facility or at a MOX facility, if the Department determines not to proceed with either facility. In response to this Congressional mandate, DOE/NNSA, on February 15, 2002 (and supplemented by letter on March 5, 2002) submitted a document entitled Report to Congress: Disposition of Surplus Defense Plutonium at Savannah River Site. That report states that DOE/NNSA's current disposition strategy involves a MOX-only approach, under which DOE/NNSA would dispose of up to 34 t of surplus plutonium by converting it to MOX fuel and irradiating it in commercial power reactors. Implementation of this strategy is key to the successful completion of the agreement between the U.S. and the Russian Federation discussed in Section I.A., above. DOE is currently analyzing the changes to the MOX fuel portion of the surplus plutonium disposition program needed to carry out that strategy, including analysis conducted pursuant to NEPA. No final decisions regarding the MOX portion of the surplus plutonium disposition program will be made until DOE/NNSA has completed this analysis.

Amended Decisions

DOE/NNSA is modifying its decisions on storage and disposition of surplus plutonium as follows:

- Cancel the immobilization portion of DOE/NNSA's disposition strategy.
- Select the alternative of consolidated long-term storage at SRS of non-pit surplus plutonium now stored separately at RFETS and at SRS.
- Utilize the KAMS facility for consolidated long-term storage of surplus plutonium.
- Continue storage of surplus pits in Zone 4 at Pantex in lieu of storage in Zone 12.

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John A. Gordon,
Administrator, National Nuclear Security Administration.

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