6450-01-P

DEPARTMENT OF ENERGY

National Nuclear Security Administration

Surplus Plutonium Disposition

AGENCY: National Nuclear Security Administration, Department of Energy.

ACTION: Amended record of decision.

SUMMARY: The Department of Energy's National Nuclear Security Administration (DOE/NNSA) is announcing this amendment to the April 2003 Amended Record of Decision (AROD) for the *Final Surplus Plutonium Disposition Environmental Impact Statement* (Final SPD EIS) (DOE/EIS-0283). In this AROD, DOE/NNSA is announcing its decision to use the dilute and dispose method to disposition up to 7.1 MT of non-pit plutonium as contact handled transuranic (CH-TRU) waste at the Waste Isolation Pilot Plant (WIPP). This AROD changes the disposition pathway for a portion of the 34 MT of surplus plutonium DOE/NNSA previously announced and decided in 2003 to fabricate into mixed oxide (MOX) fuel. DOE/NNSA prepared a *Supplement Analysis (SA) for Disposition of Additional Non-Pit Surplus Plutonium* (DOE/EIS-0283-SA-4, August 2020) to inform this decision.

FOR FURTHER INFORMATION CONTACT: For information on NEPA for the Surplus Plutonium Disposition Program, please contact Mrs. Paloma E. Richard, Office of Material Disposition NEPA Document Manager, National Nuclear Security Administration, telephone (202) 586-2777, or by email to *Paloma.Richard@nnsa.doe.gov*.

For information on DOE/NNSA's NEPA process, please contact Ms. Amy Miller, NEPA Compliance Officer, National Nuclear Security Administration, Office of General Counsel, Telephone (505) 845-5090, or by email to *amy.miller@nnsa.doe.gov*. This Amended ROD, the

SA for Disposition of Additional Non-Pit Plutonium, and related documents are available on the internet at *http://energy.gov/nepa*.

SUPPLEMENTARY INFORMATION:

Background

On April 19, 2002, DOE/NNSA issued a **Federal Register** notice that announced an AROD (67 FR 19432) for the SPD EIS (DOE/EIS-0283, November 1999). DOE/NNSA decided, among other things, to cancel the immobilization portion of the plutonium disposition strategy. A subsequent AROD (68 FR 20134) issued in April 2003 concluded that DOE/NNSA would dispose of 34 MT using only the MOX Fuel Alternative.

In April 2015, DOE/NNSA issued the *Surplus Plutonium Disposition Supplemental Environmental Impact Statement* (SPD SEIS, DOE/EIS-0283-S2). In the SPD SEIS, DOE/NNSA evaluated the environmental impacts of alternatives to disposition 13.1 metric tons (MT) of surplus plutonium, comprised of 7.1 MT of pit plutonium and 6 MT of non-pit plutonium. None of this material had a designated disposition pathway. DOE/NNSA analyzed the potential environmental impacts for the No Action Alternative and four action alternatives: 1) immobilization at Savannah River Site (SRS) (Immobilization to Defense Waste Processing Facility [DWPF] Alternative); 2) fabrication into MOX fuel at SRS with subsequent irradiation in one or more domestic commercial nuclear power reactors (MOX Fuel Alternative); 3) vitrification with high-level radioactive waste (HLW) at SRS (H-Canyon/HB-Line and DWPF Alternative); and, 4) disposal as CH-TRU waste at WIPP, a geologic repository for disposal of TRU waste generated by atomic energy defense activities (WIPP Disposal Alternative). These alternatives are composed of a combination of pit disassembly and conversion options and plutonium disposition alternatives.

On December 24, 2015 (80 FR 80348), DOE/NNSA announced that its preferred alternative for disposition of the 6 MT of non-pit plutonium was preparation at SRS near Aiken, South Carolina, for disposal at WIPP near Carlsbad, New Mexico, using the WIPP Disposal Alternative (also known as the dilute and dispose method or plutonium downblending). DOE/NNSA did not state a preferred alternative for dispositioning the 7.1 MT of pit plutonium or the options for pit disassembly and conversion. In its April 5, 2016, ROD (81 FR 19588), DOE/NNSA announced its decision to implement the preferred alternative: to use existing SRS facilities to prepare 6 MT of non-pit plutonium as CH-TRU waste for disposal at WIPP. In the 2016 ROD, DOE/NNSA stated that it would install and operate new gloveboxes in K-Area or HB-Line to prepare surplus plutonium for disposition. DOE/NNSA resumed the process of preparing this plutonium for disposition on September 30, 2016 in K-Area. At that time, DOE/NNSA did not change its previous decisions to disposition 34 MT of surplus plutonium.

Supplement Analysis

In accordance with DOE Regulations implementing the *National Environmental Policy Act* (NEPA) at 10 CFR 1021.314, DOE/NNSA prepared an SA to consider if the proposal to prepare and dispose of additional non-pit plutonium[1] (rather than the pit plutonium described in the 2015 SPD SEIS) using the WIPP Disposal Alternative represented new information relevant to environmental concerns. In the SA, DOE/NNSA reviewed the analysis found in the 2015 SPD SEIS for preparing 13.1 MT of surplus plutonium for disposition using the WIPP alternative. Included in the SPD SEIS analysis were 6 MT of non-pit plutonium and 7.1 MT of pit plutonium. For both sets of material, plutonium must be in an oxide form so it can be

[1] The 7.1 MT of non-pit plutonium that is the subject of this decision is currently in non-pit form and does not require pit disassembly. However, some of this material may have been in the form of pits prior to this decision being announced, and disassembly for those pits was covered under prior NEPA analysis (*see* 63 FR 44851; 73 FR 55833).

downblended with adulterant to inhibit plutonium recovery and meet the WIPP waste acceptance criteria for CH-TRU waste. After characterization and certification activities of the downblended plutonium, waste containers would be staged, loaded into approved shipping containers, and transported for disposal at the WIPP facility. Aside from the initial step of disassembling pits, the remaining steps leading to disposal of this material at the WIPP facility are the same for both pit and non-pit plutonium. The analysis in the SPD SEIS was based on using either Los Alamos National Laboratory (LANL) (PF-4 facility) or SRS (K-Area facilities) for pit disassembly and oxide conversion activities, and K-Area facilities at SRS for downblending and characterization, to achieve the analyzed production rate. Given that the process steps and facilities would be the same as (or fewer than) those assessed for processing 7.1 MT of pit plutonium, DOE/NNSA concluded that the impacts of the proposed preparation of an additional 7.1 MT of non-pit plutonium for disposal as CH-TRU waste at WIPP had been addressed in the 2015 SPD SEIS, and that no additional NEPA review was required.

Amended Decision

DOE/NNSA is amending its previous decision (68 FR 20134). DOE/NNSA has decided to dispose of an additional 7.1 MT of non-pit plutonium CH-TRU waste at WIPP using the WIPP Disposal Alternative, rather than using this non-pit plutonium to manufacture MOX fuel. The process will be the same as described for the 6 MT of non-pit plutonium DOE/NNSA previously decided (81 FR 19588) to dispose of at WIPP using the WIPP Disposal Alternative. Conversion to oxide may be performed at either LANL or at SRS. Using facilities in K-Area at SRS, DOE/NNSA will prepare up to an additional 7.1 MT of non-pit plutonium, totaling up to 13.1 MT of non-pit plutonium, for disposal at WIPP.

The plutonium oxide containers will be opened in K-Area gloveboxes. Plutonium oxide will be repackaged into suitable containers, mixed/blended with adulterant, and loaded into a criticality control overpack (CCO).[2] The adulterant will inhibit plutonium recovery. To increase processing capacity for downblending, DOE/NNSA will rely on the existing single glovebox and the installation and operation of additional gloveboxes, which DOE/NNSA analyzed for processing 6 MT in the SPD SEIS. This will allow DOE/NNSA to prepare more plutonium in a shorter time for disposition, thereby accelerating removal of plutonium from the state of South Carolina. Loaded CCOs will be characterized and staged for WIPP disposal in E-Area or K-Area at SRS using non-destructive assay, digital radiography, and headspace gas sampling. Waste packages containing surplus plutonium CH-TRU waste that have been characterized and confirmed to meet the WIPP waste acceptance criteria will be placed in the queue of waste to be shipped to WIPP. The packages will be shipped to WIPP in approved shipping containers.

Basis for Decision

Implementing this decision will allow DOE/NNSA to continue dispositioning surplus weapons-usable plutonium in furtherance of the policies of the United States to ensure that such surplus plutonium is no longer in a form suitable for use in a nuclear weapon, and to accelerate removal of defense plutonium from the State of South Carolina.

In making this decision, DOE/NNSA considered potential environmental impacts of construction and operations, current and future mission needs, availability of capabilities and resources, technical and security considerations, and the need to comply with legislation regarding removal of defense plutonium from South Carolina. Using the WIPP Disposal Alternative to disposition

[2] DOE/NNSA plans to move towards the use of the CCO containers in lieu of the POC to maximize the amount of plutonium that can be packaged in each container, thereby reducing the number of shipments and the number of disposal containers emplaced at WIPP.

up to 7.1 MT of non-pit plutonium allows DOE/NNSA to take advantage of existing facilities, infrastructure, and expertise at LANL, SRS, and WIPP. The decision builds on the existing capabilities, infrastructure, and skilled workforce trained in safe operation of nuclear facilities. Downblending for disposal at WIPP is a proven process that is ongoing for the 6 MT of surplus non-pit plutonium DOE/NNSA decided to process through SRS and dispose of using this method (81 FR 19588).

In addition, final disposition of this 7.1 MT of surplus plutonium will avoid long-term impacts, risks, and costs associated with continued secure storage.

Signing Authority

This document of the Department of Energy was signed on August 21, 2020, by Lisa E. Gordon-Hagerty, Under Secretary for Nuclear Security and Administrator, NNSA, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.

Signed in Washington, DC, on August 25, 2020.

Treena V. Garrett,
Federal Register Liaison Officer,
U.S. Department of Energy.

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