Revised Finding of No Significant Impact
for
Safeguards and Security Upgrades for Storage of Plutonium Materials
at the
Savannah River Site

Agency: U.S. Department of Energy

Action: Revised Finding of No Significant Impact

Summary: The Department of Energy (DOE) prepared an environmental assessment (EA) (DOE/EA-1538, Safeguards and Security EA) in 2005 to evaluate potential environmental impacts associated with the implementation of proposed and alternative actions to enhance the safe and secure storage of plutonium-bearing materials at the Savannah River Site (SRS) to meet the enhanced terrorist threat that has existed since the events of September 11, 2001. Based on the analysis in the EA, DOE determined that the proposed action was not a major federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA) of 1969 and issued a Finding of No Significant Impact (FONSI) on December 16, 2005.

In the Safeguards and Security EA, DOE presented the proposed action as consisting of five activities:

1. De-inventory of plutonium-bearing materials from an F-Area facility and the installation of modified storage capability in K-Area.

2. Material moved from F-Area was not packaged in a configuration approved for K-Area storage. Construction and operation of the Container Surveillance and Storage Capability project (CSSC) in K-Area would facilitate the stabilization, packaging, storage, and surveillance of plutonium-bearing materials in accordance with DOE Standard 3013 (DOE-STD-3013) surveillance requirements. CSSC would incorporate destructive and non-destructive surveillance technologies, possess container un-packaging and DOE-STD-3013 repackaging capabilities, and be able to safely stabilize and repackage non-compliant materials.

3. During CSSC construction, the DOE-STD-3013 surveillance requirements would be met by constructing and operating the K-Area Interim Surveillance (KIS) Project. The KIS Project would provide capabilities for unloading and reloading 3013 containers from 9975 shipping packages and conducting the necessary non-destructive and destructive examinations.

4. Installation of physical security upgrades in K-Area.

5. Modification and upgrade of the Advanced Tactical Training Area (ATTA) range.

Execution of most of the activities proposed began after issuance of the FONSI in December 2005. De-inventory of plutonium-bearing materials from a facility in F-Area is complete, as is the installation of modified storage capability in K-Area for the material moved from F-Area. The KIS Project has been constructed and is operational. Installation of physical security upgrades in K-Area is complete, as are ATTA modifications and upgrades. However, DOE cancelled the CSSC Project in 2007 as part of the process of evaluating the most efficient means of executing the Plutonium Disposition Program.

The new Stabilization and Packaging (S&P) Project currently proposed in K-Area will provide the capability to comply with DOE-STD-3013 requirements for stabilization and long-term storage of plutonium-bearing materials, and will replace the compliance function of CSSC. DOE proposes to install the S&P Project in the existing K-Area building, where DOE proposed to install CSSC. The type of equipment, processes, and technology proposed for use in the S&P Project are the same as, or similar to, those originally proposed for CSSC.

Based on analysis of the proposed S&P Project, DOE has determined that the proposed action is not a major federal action significantly affecting the quality of the human environment within the meaning of NEPA. Implementation of the proposed S&P Project capability would not add measurably to the cumulative environmental effect of other ongoing actions and operations within SRS and the surrounding area, and are less than or equal to those of CSSC as evaluated in DOE/EA-1538. Therefore, preparation of an EA or Environmental Impact Statement (EIS) is not required, and DOE is issuing this revised FONSI.

Public Availability: Copies of the existing EA and FONSI or further information on the DOE NEPA process are available from:

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Background: CSSC was proposed as a means of compliance with DOE-STD-3013 requirements regarding the surveillance, stabilization, packaging, and safe storage of plutonium-bearing materials for up to 50 years. CSSC was to incorporate destructive and non-destructive examination technologies, possess un-packaging and DOE-STD-3013 repackaging capabilities, and be able to safely oxidize/stabilize and repackage non-compliant materials.

In DOE/EA-1538 and the subsequent FONSI (December 2005), DOE concluded that construction and operation of CSSC was not a major federal action significantly affecting the quality of the human environment within the meaning of NEPA. As required by DOE Order 413.3A, CSSC was re-evaluated as DOE approached critical decisions regarding the plutonium disposition mission. As a result of this complex decision-making process, CSSC was cancelled in December 2007. CSSC is described in SRNS-RP-2010-01166, *Technical Summary of the Container Surveillance and Storage Capability.*

Purpose and Need for Agency Action: As described in DOE/EA-1538, DOE needs to ensure the safe storage of plutonium-bearing materials by providing the capability to comply with the material surveillance and stabilization requirements of DOE-STD-3013. The S&P Project would meet this need, replacing the capability originally proposed as CSSC. The proposed action is needed because SRS currently lacks capabilities needed for stabilization and packaging of plutonium-bearing materials in compliance with DOE-STD-3013. The S&P Project is consistent with DOE's current plutonium disposition mission, to include the potential product supply to the Mixed Oxide Fuel Fabrication Facility (MOX). The existing KIS facility provides some of the surveillance functions required by DOE-STD-3013, and will remain in operation after the S&P Project becomes operational and provides the remaining capabilities.

Proposed Action: DOE proposes to construct and operate the S&P Project as a replacement for CSSC. The S&P Project will provide the same capabilities for compliance with DOE-STD-3013 as those previously evaluated in DOE/EA-1538. The S&P Project will perform three functions to achieve DOE-STD-3013 compliance:

1) Plutonium oxidation, stabilization, and packaging to DOE-STD-3013 of plutonium metals and oxides;
2) Restabilization and repackaging per DOE-STD-3013 of KIS daughter cans; and
3) Repackaging of 3013 containers that fail to meet DOE-STD-3013 criteria

The oxidation, stabilization, packaging and repackaging functions of the S&P Project would occur in the same building using similar equipment, processes, and technology as those evaluated for the CSSC under DOE/EA-1538. The S&P Project will maintain the surveillance capability of KIS, whereas CSSC would have absorbed the surveillance function and terminated the KIS Project.

CSSC is described in DOE/EA-1538 as requiring the following eight physical modifications. The ensuing comparison of each modification between CSSC and the S&P Project further illustrates that the S&P Project serves to replace the function of CSSC in DOE-STD-3013 compliance.

1. Installation of a ventilation and filtration system:

   Minor differences in ventilation and filtration systems between CSSC and the S&P Project occur in equipment location (outside of K-Area Complex (KAC) in CSSC versus inside of KAC for the S&P Project) and glovebox layout changes. The functional design using high efficiency particulate air (HEPA) filtration and negative pressure in operations areas remains unchanged.

2. Installation of a diesel fuel powered electric generator for standby power supply:

   The S&P Project standby generator will serve the same purpose and will be similarly sized and operated as that proposed for CSSC.

3. Installation of equipment and systems necessary for performing non-destructive and destructive surveillance activities on 3013 containers:

   Under CSSC, KIS would have been terminated and CSSC would have absorbed the KIS surveillance function. Under the S&P Project, KIS will remain and provide the surveillance function to complement the S&P Project stabilization and packaging function, together providing DOE-STD-3013 compliance.

4. Installation of equipment and systems necessary to provide samples to the Savannah River National Laboratory (SRNL) for analysis:

   CSSC would have had all lab work conducted by SRNL. With the S&P Project, moisture analysis will be conducted either in the KAC or at the F/H Laboratory. The F/H Laboratory will conduct isotopic characterization, while SRNL will (and presently does) conduct plutonium oxide moisture analysis, impurity characterization, and 3013 container metallurgical analysis for KIS operations.

5. Installation of equipment and systems necessary to provide for the stabilization and packaging of material to meet DOE-STD-3013:

   Equipment, processes, and technologies are the same or similar for each project. Minor differences reflect glovebox layout changes.

6. Installation of storage racks for the 3013 containers:

   The S&P Project will use K-Area Materials Storage (KAMS) for storage, which is consistent with the current safety basis for storage of plutonium in the KAC.

7. General building modifications related to worker safety and habitability, such as fire protection, electrical distribution, and breathing air:

   The conceptual design between the two is similar. Minor differences reflect glovebox layout changes, as well as potential changes brought on by technological advances that may be used in the S&P Project that did not exist when CSSC was planned.

8. Installation of security equipment and monitoring capabilities:

   Any changes will be to enhance security capabilities of the S&P Project by taking advantage of technologies that have advanced since CSSC was planned.

The S&P Project is described in SRNS-RP-2010-01167, *Technical Summary of the Stabilization and Packaging Project.*

Alternative Actions: With the de-inventory of plutonium-bearing materials from F-Area, the relocation of DOE-STD-3013 surveillance activities and equipment from F-Area to K-Area, the

security upgrades in K-Area, and consolidation at KAMS of Hanford, Los Alamos National Laboratories, and the Lawrence Livermore National Laboratory Plutonium, the logical location for the S&P Project is K-Area. Any other site would require unnecessary and costly transportation of plutonium-bearing materials, as well as the construction of a new facility or substantial modification of an existing one. A duplication of security efforts at a separate location would create another substantial cost and was cited as one of the supporting reasons for consolidating plutonium management operations in K-Area in previous NEPA analyses.

No Action Alternative

This alternative would involve the continued storage of plutonium-bearing materials in KAMS and surveillance activities in KIS, without stabilization and repackaging capabilities. Plutonium containers found to be out of compliance with DOE-STD-3013, plutonium materials requiring oxidation/stabilization, and KIS daughter plutonium generated from surveillance activities would continue to accumulate and challenge the K-Area interim storage capacity. Stabilized plutonium materials that could be prepared for MOX disposition with the S&P Project would be discarded without the project. The 'no action alternative' would have negative long-term safety impacts versus stabilized DOE-STD-3013 compliant container storage in KAMS, an eventual disposition potential to MOX, and reduced reliance on H-Area for plutonium material disposition. Stabilization and packaging of plutonium materials with S&P is fully consistent with the safe storage requirements of DOE-STD-3013.

Environmental Impacts: Analysis of the impacts of CSSC construction and operation presented in DOE/EA-1538 demonstrated that no significant environmental impact was expected. The objective of CSSC and the S&P Project is essentially the same: compliance with DOE-STD-3013. Equipment, processes, and technology used to achieve the project objective, as well as the locations of proposed activities are similar, with a small number of minor differences that do not affect environmental impacts.

Construction-related activities for both the cancelled CSSC and the proposed S&P Project are similar. Both projects would occur within the existing industrial complex in K-Area, which avoids any impact to plants, animals, wetlands, streams, floodplains, storm water management, erosion control, forest and other natural resources, as well as archeological resources.

DOE/EA-1538 identified industrial wastes that may be generated by construction of CSSC. Expected quantities of the wastes were stated in the EA to be well within the treatment, storage, and disposal capabilities of SRS. Treatment, storage, and disposal of the S&P Project construction wastes would meet all applicable regulatory requirements, be handled according to Site guidance documents and, due to the similarities between the two projects, is likewise anticipated to be well within SRS disposal capabilities.

Operations-related activities for the cancelled CSSC and the proposed S&P Project are similar, with negligible adverse impact to the human environment. Design studies have shown that the S&P Project is within the bounds of the analyses conducted for the CSSC Project regarding air quality and radiological risk.

A National Emission Standards for Hazardous Air Pollutants (NESHAP) evaluation was conducted previously for K-Area operations, including CSSC. That evaluation demonstrated that estimated emissions of both radiological and non-radiological constituents are below the limits established by regulation for air permitting. The S&P Project was evaluated and determined to be within the bounds of the CSSC NESHAP evaluation.

DOE/EA-1538 provided estimates for radiological risk associated with CSSC, including a maximally exposed individual at the site boundary, worker exposure, and exposure to members of the public. The material at risk evaluated in the S&P Project is less than that which was evaluated under CSSC. Therefore, radiological risk for the S&P Project is bounded by the analysis conducted for CSSC.

Determination:

Based on previous information and analysis presented in DOE/EA-1538, as well as descriptions of the CSSC and S&P Projects referenced above, replacement of CSSC with the S&P Project in K-Area at SRS does not constitute a major federal action significantly affecting the quality of the human environment within the meaning of NEPA. Expected environmental impacts of construction and operation of the proposed S&P Project are less than or equal to those of CSSC, or are otherwise bounded by the CSSC NEPA analysis. Therefore, an EA or EIS is not required and DOE is issuing this revised FONSI.

Signed at Aiken, South Carolina this 30 day of July, 2010

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