

# **Exhibit 2**

## Gunter Declaration

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF SOUTH CAROLINA  
AIKEN DIVISION**

STATE OF SOUTH CAROLINA,  
Plaintiff,

v.

UNITED STATES;

UNITED STATES DEPARTMENT OF  
ENERGY;

DR. ERNEST MONIZ,  
in his official capacity as Secretary of  
Energy;

NATIONAL NUCLEAR SECURITY  
ADMINISTRATION; and

LT. GENERAL FRANK G. KLOTZ,  
in his official capacity as Administrator of  
the National Nuclear Security Administration  
and Undersecretary for Nuclear Security.

Defendants.

Case No. 1:16-cv-00391-JMC

**DECLARATION OF HENRY ALLEN GUNTER**

I, Henry Allen Gunter, make the following declaration pursuant to the provisions of 28 U.S.C. § 1746.

1. I am employed by the United States Department of Energy (DOE) at the Savannah River Site (SRS) in Aiken, South Carolina, as Plutonium Program Manager and Senior Technical Advisor to the Assistant Manager for Nuclear Materials Stabilization. I have served in these capacities from 1982 until the present.

2. As part of my responsibilities, I work within SRS and with other sites within the DOE's Weapons Complex concerning the production, storage, and disposition of plutonium materials. The information contained in this declaration is based upon my personal knowledge and information that I have obtained in my official capacity.

3. SRS is a large (310 square miles) site, about a third of the size of Rhode Island, and is located in Aiken, Barnwell and Allendale counties, South Carolina. SRS, which is owned by the United States, was constructed in the 1950's to produce plutonium and tritium for the Nation's nuclear weapons program. SRS is managed by DOE, the successor to the Atomic Energy Commission, and contains a number of complex and unique nuclear facilities. SRS has a continuing nuclear weapons mission and a nuclear non-proliferation mission for the National Nuclear Security Administration (NNSA), a semi-autonomous agency that is a part of DOE. SRS is also a clean-up site with a mission to manage the clean-up of Cold War era nuclear waste. The Assistant Secretary for Environmental Management (EM) manages the clean-up mission.

4. This declaration describes the steps DOE, including the NNSA, is taking to disposition surplus defense plutonium and defense plutonium materials (i.e., weapons-usable plutonium, hereinafter referred to as "defense plutonium") currently located at SRS. It also explains the challenges concerning alternate paths for removing defense plutonium from South Carolina.

**Consolidation of Certain Surplus, Weapons-Usable  
Defense Plutonium at the Savannah River Site**

5. To support early cleanup and closure of DOE's Rocky Flats Environmental Technology Site--a site which was previously used to produce nuclear weapons components-- DOE decided to transfer certain defense plutonium from Rocky Flats to SRS, for processing of

the plutonium for subsequent disposal elsewhere at a location outside of South Carolina. (Surplus Plutonium Disposition Program, 67 Fed. Reg. 19432 (Apr. 19, 2002))

6. Informed by additional and revised threat criteria<sup>1</sup> and for cost effectiveness, DOE decided to consolidate surplus, non-pit,<sup>2</sup> weapons-usable plutonium from other sites (Hanford Site, Lawrence Livermore National Laboratory, Los Alamos National Laboratory) across the DOE complex into one location, the Savannah River Site, and enhance the security of that location. (Amended Record of Decision: Storage of Surplus Plutonium Materials at the Savannah River Site, 72 Fed. Reg. 51807 (Sept. 11, 2007)) The plutonium was consolidated to SRS because SRS was DOE's planned site for preparing surplus, weapons-usable defense plutonium, through the MOX facility and other facilities, for permanent disposition outside of South Carolina.

7. The consolidation of such defense plutonium materials from across the Weapons Complex to SRS reduced the number of sites storing and protecting plutonium materials, thereby enhancing the security of these materials. Although the details are classified, the protection of plutonium material requires extensive resources ranging from hardened, reinforced concrete structures, significant security features, and security personnel to provide the required protection, which is very costly. These resources exist at SRS, and the material is safe and secure in its present location, pending disposition.

---

<sup>1</sup> DOE, through DOE Orders and associated Manuals and Technical Standards, provides detailed criteria for the protection of special nuclear materials, including the necessary measures to protect the material from potential adversary forces of various postulated sizes, capabilities, and terrorist tactics. DOE continually evaluates its criteria and protective measures based on new information about potential threats. (For example, DOE Orders 470.3B [classified] and 470.4B, admin. chg. 1 )

<sup>2</sup> A "pit" is the central core of a primary assembly in a nuclear weapon. Most of the plutonium suitable for fabrication into mixed plutonium-uranium oxide (MOX) fuel is from pits. "Non-pit" plutonium may exist in metal or oxide form, and may be combined with other materials that were used in the process of manufacturing plutonium for use in nuclear weapons or related research and development activities.

8. The storage of plutonium materials also requires the capability to perform inspection of the plutonium and the storage containers to ensure the safety of the workers, public, and environment during storage while awaiting disposition of the material.

9. Consolidation was encouraged by the U.S. Government Accountability Office (U.S. Gov. Accounting Office, *Securing U.S. Nuclear Material: DOE Needs to Take Action to Safely Consolidate Plutonium*, GAO-05-665, 2005) and the Defense Nuclear Facilities Safety Board (June 26, 2007 Report to Congress).

10. Consolidating the defense plutonium to SRS took approximately nine years. It began in 2002 and was completed in 2012.

#### **Past and Current Approaches for Disposition of the Plutonium Materials at SRS**

11. In March 2007, DOE issued a Notice of Intent to prepare a Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD SEIS), to analyze the environmental impacts of alternatives for the disposition of 13.1 metric tons of surplus plutonium that did not have a defined path to disposition under DOE's prior decisions. In July 2010 and January 2012, DOE amended the 2007 Notice of Intent to add new material, capabilities and possible alternatives for disposition, including an option to dispose of some surplus non-pit plutonium as transuranic waste at the Waste Isolation Pilot Plant (WIPP) in New Mexico.

12. While this NEPA analysis was taking place, between 2009 and 2011, DOE dispositioned certain other plutonium materials at SRS by dissolving solid plutonium materials in H Canyon<sup>3</sup> and transferring the plutonium solutions to the liquid high-level waste system, for

---

<sup>3</sup> H Canyon is a large-scale heavily-shielded chemical processing facility, made of reinforced concrete, that is remotely operated. It processes nuclear materials by dissolving solid material into a liquid form, separating and purifying the material to be retained, and transferring the liquid waste to the SRS liquid waste system for disposition.

combination of the plutonium with high-level radioactive waste and vitrification<sup>4</sup> into glass logs. DOE used this approach for less than 100 kgs of plutonium, because the disposition of plutonium through the high-level waste system is a costly method of disposition, and there is a limited quantity of high-level radioactive waste (for proliferation resistance) with which plutonium materials can be vitrified. In addition, the vitrified high-level radioactive waste must remain safely stored at SRS until a geologic repository for disposal of such high-level radioactive waste is sited, licensed, constructed, and in operation.

13. In 2011, the DOE Savannah River Operations Office (SR) issued Interim Action Determinations to allow the down-blending<sup>5</sup> of 585 kgs (one metric ton is equal to 1000 kilograms) of non-pit, weapons-usable defense plutonium at SRS for disposal at WIPP, for plutonium not suitable for fabrication into mixed plutonium-uranium oxide (MOX) fuel. (*Amended Interim Action Determination, Disposition of Plutonium Materials from the Department of Energy (DOE) Standard 3013 Surveillance Program at the Savannah River Site, Savannah River Operations Office, Aiken, South Carolina, March 30, 2011; Interim Action Determination, Disposition of Certain Plutonium Materials Stored at the Savannah River Site, Savannah River Operations Office, Aiken, South Carolina, October 17, 2011*).

---

<sup>4</sup> Vitrification is the process of converting a substance into glass.

<sup>5</sup> This process is referred to by several terms, including “down-blending,” “dilute,” “dilution,” or the “WIPP disposal option.” All refer to the methodology of mixing the plutonium with an inhibitor/adulterant to ensure that the plutonium is not readily recoverable without extensive processing.

14. In 2012, pursuant to the interim action determinations discussed above, SRS began down-blending weapons-usable plutonium material in HB-Line<sup>6</sup> with an adulterant, to allow disposal of the resultant material in the WIPP near Carlsbad, New Mexico.

15. Due to constrained budgets and the need to carry out other missions in the HB-Line facility—including processing plutonium materials and making suitable feed materials to support initial operations of the MOX program—down-blending operations were paused at the end of fiscal year (FY) 2012. Prior to the down-blending pause, SRS had down-blended some surplus plutonium and generated 670 pipe-overpack-containers (POCs) for disposal at WIPP by the end of FY 2012. SRS shipped 409 POCs to WIPP, prior to the temporary suspension of disposal activities at WIPP in February 2014,<sup>7</sup> which delayed further transfer of the material from SRS to WIPP. The remaining down-blended plutonium in 261 POCs is stored at SRS and is ready for shipment after waste-emplacement operations resume at WIPP. WIPP emplacement operations are currently planned to resume in late calendar year 2016. Shipment of this material will be placed in the appropriate place in the queue of waste to be transferred to WIPP.

16. Since 2002, SRS has also shipped additional plutonium to other sites outside of South Carolina for use in DOE programs.

17. In December 2015, DOE issued the Final SPD SEIS. In April 2016, DOE published a Record of Decision, which sets forth DOE's decision to down-blend (using facilities at SRS) and package 6 metric tons of defense plutonium at SRS for disposal at WIPP. Under the

---

<sup>6</sup> HB-Line is a reinforced concrete structure located on top of H Canyon which has gloveboxes (sealed enclosures which contain operating equipment) that allow the operator to use the equipment while protecting workers from the nuclear material.

<sup>7</sup> Waste emplacement operations at WIPP were suspended in February 2014, following a salt truck fire and unrelated radiological event underground. Waste emplacement operations are expected to resume in late 2016.

Record of Decision, this plutonium will be shipped to WIPP after the currently suspended waste-emplacement operations resume at WIPP later this year, and will be placed in the appropriate place in the queue of waste to be shipped to WIPP. SRS plans to resume the down-blending of plutonium materials in K Area<sup>8</sup> in September 2016, in order to continue down-blending the defense plutonium covered by the prior interim actions and the SEIS ROD. SRS has approved the K Area Documented Safety Analysis, a document that evaluates and determines the facility safety basis envelope<sup>9</sup> in which the facility is authorized to perform work. The next step is for Savannah River Nuclear Solutions, the SRS operating contractor, to develop and approve the required operating procedures and perform a Readiness Assessment (validation of equipment installation, operating procedures, and personnel training and qualifications), which it is expected to finish in August 2016.

18. Under the current capability at SRS, down-blending operations will be resumed in an existing glovebox in K Area at SRS. The operation requires a highly skilled operator with expertise in plutonium materials, as well as detailed health, safety, and security measures to protect workers, the public, and the environment. The facility is currently capable of down-blending at a limited rate, in light of current funding. At the current limited rate it could take up to approximately seven years to down blend the first metric ton. However, in order to expedite the rate of down-blending, NNSA has made a FY 2018 budget request for additional gloveboxes to increase the rate of down-blending. It is anticipated that additional gloveboxes would be operational in the mid-2020s, once DOE has completed the processes for acquisition of capital

---

<sup>8</sup> The K Area facility is one of five former SRS production reactors which was repurposed for use as a plutonium storage facility.

<sup>9</sup> The safety basis envelope is the approved basis by which the facility can operate and provides the limits and requirements for the safe operation of the facility. These include limits such as how much nuclear material is allowed in the facility; limits on chemical inventory in the facility; procedures to respond to abnormal conditions, etc.



assets (DOE Order 413.3B, Chg. 2). They will add enough additional capacity to down-blend at least one metric ton of plutonium per year.

**Actions Required if DOE Was Ordered to Transfer One MT  
of Plutonium to a Facility Other than WIPP**

19. No place exists today, other than SRS, with the required capacity, security, and safety basis envelope to receive and store any significant amount of plutonium in the form and packaging configuration as it exists today. The packaging configuration for the material is in two welded stainless steel containers which are inside two additional stainless steel, leak-tested vessels, and inside a 35-gallon outer drum. Facility modifications, and possibly new construction, would be required to allow the storage of the plutonium material. A new National Environmental Policy Act (NEPA) analysis and associated decisions would have to be completed to allow transfer and storage at another location, and SRS resources would need to be diverted from other activities, including the MOX project and down-blending, to support such transfer. Any such transfer of defense plutonium material also poses a safety and health risk to the workers directly in the vicinity of the material, the workers in the general area where the facility is located, and the public, as explained more fully below.

20. DOE would need to identify a facility, with the necessary capacity, security, and safety basis envelope, to receive and store one MT of plutonium in the form and packaging configuration as it exists today. It would take months to complete the analysis and determine whether facility safety upgrades would be required to receive and store this material at another location. Constructing facility modifications or building a brand new facility would cost tens of millions of dollars and take years to complete.

21. NEPA analysis would be required to support any decision to ship the plutonium to an alternate location. Additionally, all other DOE sites have facility-specific, technical safety

requirements that must be met and, depending on the results of various required analyses, further health, safety and security restrictions may be required (e.g., limits on storage capacity) for the receipt and storage of undiluted defense plutonium.

22. With respect to potential actions at SRS to transfer plutonium offsite, empty shipping containers would have to be located and the required annual inspection and certification of each container would have to be performed. Over 500 containers would be needed for 1 MT. The annual inspection/certification on each container takes about three to four hours to perform, and so it would take a total of 6-9 months to complete the recertification of all the containers (This requires visual inspection of the components of the container and pre-load leak checks performed on both of the containment vessels, which must be performed with the containment vessels empty.).

23. The contents of each container would have to be repackaged into recently recertified shipping containers, because the transportation certificate of compliance requires the containers to have their annual certification within one year of the shipping date. (Safety Analysis Report for Packaging, Model 9975, S-SARP-G-00003, Revision 4, dated December 17, 2015). All the containers currently stored in K Area have lost their transportation certification and would require recertification prior to shipping.

24. Most critically, all other operations in K Area at SRS, including down-blending and packaging of plutonium for disposal at WIPP, would have to be suspended to support the repackaging campaign. The H Area production of oxide for the MOX production feed would have to be suspended because K Area could not support the shipment of feed to H Area or have the ability to receive the product from H Area during the repackaging campaign.

25. Personnel in K Area would be exposed to significant levels of radiation while they perform the repackaging activities. DOE's regulations, at 10 C.F.R. Part 835, along with SRS administrative procedures, limit the amount of radiation exposure employees can receive in one year. The SRS administrative exposure limit is 0.500 rem per person per year. The DOE administrative exposure limit is 2 rem per person per year. Under DOE regulations, exposures must be managed and controlled to as low as reasonably achievable.

26. To spread the dose over a larger group of workers, SRS would have to hire additional operations and radiological control personnel (and it would take two to three years to hire, obtain security clearances, train, and qualify additional staff) or shut down the HB-Line (which is an H Area facility being used to prepare early feed for the MOX Fuel Fabrication Facility) and utilize its existing staff.

27. Even if additional workers were employed, individual operations and radiation control personnel would receive a dose equivalent to 100-200 chest X-Rays (a chest x-ray exposure is 1 mrem) every year for three years.

28. It would take approximately two years to prepare to repackage and three years to repackage 1 MT of the material for shipment offsite, if an offsite location were available with sufficient capacity, security, and authorization. Preparation of a drum for shipment includes the following tasks: removing the drum from storage; opening both containment vessels and removing the inner can; verifying can identification and measuring the amount of nuclear materials in each can; placing the inner can into a certified shipping container and performing post-loading test to verify leak-tightness; and placing the drum back into the storage array awaiting shipment. Once a shipping date was validated, the containers would be removed,

palletized for shipment, and loaded onto a truck. This activity would also expose the operations personnel to radiation exposure.

29. After the material was shipped to an alternate site, the alternate site would have to repackage and transport the plutonium to a disposition site in the future, which would require additional handling and worker dose from handling the same drums. The radiation dose received by the alternate site workers to ship the material to the disposition site would be similar to what the SRS workers received from the repackaging and shipment to the alternate site.

30. All shipments would require secure transport from NNSA's Office of Secure Transportation (OST). OST primarily supports military and defense shipments. Shipments of plutonium from SRS could not impact military and defense missions, and would have to be coordinated between those shipments; therefore, DOE may not be able to control the schedule for the timely transport of this plutonium. In addition, each shipment of undiluted plutonium represents an unnecessary risk to national security.

31. It would take approximately five years to prepare for repackaging, repackage, and ship one metric ton of plutonium to an alternate site for interim storage.

**Adverse Impacts from Removing One MT Plutonium from South Carolina to Another Interim Storage Site, if Such Site Were Available**

32. Even if another interim storage site were available, removal of the plutonium from SRS would necessitate that DOE:

- a. Suspend the down-blending operations at SRS during repackaging operations;
- b. Suspend HB-Line oxide production as early feed to MOX or other disposition paths, due to K Area's inability to ship or receive during the repackaging campaign;

- c. Suspend safety inspections and surveillance of plutonium storage containers in K Area during the repackaging campaign.

33. Personnel performing repackaging operations would receive a dose equivalent to 100-200 chest X-Rays each year for three years.<sup>10</sup>

34. Personnel would be exposed to additional industrial hazards, such as a drum falling, resulting in injury or death. Operations personnel would have to handle a significant number (over 500) of shipping containers weighing approximately 400 pounds each.

35. Removal of one MT of plutonium to another interim storage site would take approximately five years, and the plutonium would eventually require repackaging and reshipment for down-blending and packaging for disposal. In contrast, the WIPP option, DOE's current disposition approach, will handle the material once for ultimate disposition, in lieu of multiple handling operations with increased radiation exposure and other safety and environmental risks to workers and the public. Moreover, interim transfer to another DOE site—if one were available—would pose additional security risks.

36. Removing one MT of plutonium from SRS would bring practically no environmental benefit to the neighboring communities. In fact, it would have adverse environmental effects from transportation and additional radiation doses received by SRS employees.

37. WIPP is a permanent disposition option, whereas transfer for interim storage only would eventually require re-shipment for down-blending prior to disposition.

38. In light of the above, the temporary removal of surplus, weapons-usable, defense plutonium from South Carolina at this time would increase health, safety, and security risks for

---

<sup>10</sup> For more information on radiation doses, see [www.nrc.gov/about-nrc/radiation/around-us/doses-daily-lives.html](http://www.nrc.gov/about-nrc/radiation/around-us/doses-daily-lives.html).

the public and workers, and result in additional, unnecessary transport of the material through the State, which would need to be re-transferred for down-blending in the future. In contrast, the resources exist at the SRS for safe and secure storage and ongoing disposition.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 9th day of June, 2016.

  
Henry Allen Gunter