EXHIBIT 1

Declaration of Henry Allen Gunter

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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; RICK PERRY, 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 describes the steps and schedule for removing 1 metric ton (MT) (1,000,000 grams) of defense plutonium from SRS and also explains the challenges concerning alternate paths for removing defense plutonium from South Carolina. Plutonium down blending is currently funded at a rate that would remove one metric ton from South Carolina by the end of fiscal year (FY) 2025. At present, SRS has one glovebox[1] approved for plutonium down blending operations which currently meets all of the applicable safety and security requirements. Additional gloveboxes

[1] A radiological glovebox is an engineered enclosure that provides containment of plutonium, and other nuclear materials, whereby the work is performed through sealed, attached gloves integral to the box, for the protection of the worker, environment, and public.

may become available in 2026-2028, assuming Congressional authorization and appropriation for additional gloveboxes is approved, and given the lead time required for design, construction, installation, and start-up, that could expedite down blending in the future. Finally, for the reasons described in this declaration, South Carolina's proposal, in its July 31, 2017 filing, that one metric ton of defense plutonium be removed within two years, or any date sooner than DOE's projected date of FY 2025, is not feasible or safe.

5. In my previous declaration of June 9, 2016, I stated that the first metric ton of defense plutonium could be down blended in approximately seven years. There have been several changes and delays that have resulted in a two year change in the projected date for removal of the 1 MT as described further in this declaration.

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

6. 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 storage. (Surplus Plutonium Disposition Program, 67 Fed. Reg. 19432 (Apr. 19, 2002))

7. Informed by additional and revised threat criteria[2] and for cost effectiveness, DOE decided to consolidate surplus, non-pit,[3] weapons-usable plutonium from other sites (Hanford Site, Lawrence Livermore National Laboratory, and Los Alamos National Laboratory) across the DOE complex into one location, the Savanah River Site, and enhance the security of SRS rather than multiple DOE sites (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 ultimate disposition elsewhere.

8. The physical protection of plutonium materials require extensive resources ranging from hardened, reinforced concrete structures, significant security features, and highly trained security personnel, all of which is very costly. 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. These resources exist at SRS, and the material is safe and secure in its present location at SRS, pending disposition.

9. Consolidation was encouraged by the U.S. Government Accountability Office (U.S. Gov. Accountability Office, *Securing U.S. Nuclear Material: DOE Needs to Take Action*

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[2] 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 470.3C, Design Basis Threat (DBT) Order [classified], and 470.4B chg. 2 (MinChg), Safeguards and Security Program.)

[3] 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 a activities.

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 potential 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), a geologic repository in New Mexico.

12. While this NEPA analysis was being prepared, between 2009 and 2011, DOE dispositioned certain other solid plutonium materials at SRS by dissolving them in H Canyon[4] and transferring the resulting plutonium solutions to the liquid high-level waste system, in order to combine the plutonium with high-level radioactive waste for vitrification[5] into glass logs. DOE used this approach for less than 100 kilograms (kgs) of plutonium, because the disposition of plutonium through the high-level waste system is costly, and there is a limited quantity of high-level radioactive waste (for proliferation resistance) with which plutonium materials can be

[4] 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.

[5] Vitrification is the process of converting a substance into glass.

vitrified. In addition, the vitrified high-level radioactive waste must remain safely stored at SRS until it can be disposed of in a geologic repository.

13. In 2011, the DOE Savannah River Operations Office (SR) issued Interim Action Determinations to allow the down blending[6] 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).

14. In 2012, pursuant to the interim action determinations discussed above, SRS began down blending weapons-usable plutonium material in HB-Line[7] with an adulterant, to allow disposal of the resultant material in 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 FY 2012. Prior to the down blending pause, SRS had down-blended approximately 61 kilograms of surplus plutonium and generated 670 pipe-overpack-containers (POCs) for disposal

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[6] 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.

[7] 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.

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,[8] which delayed further transfer of the material from SRS to WIPP. SRS resumed shipments in 2017 following the reopening of WIPP and has since shipped 260 of the remaining 261 POC's generated in HB-Line.

16. Since 2002, SRS has also shipped additional defense plutonium (approximately 10 kgs) to other sites outside of South Carolina for use in DOE programs, thereby removing such plutonium from South Carolina.

17. Eight years after issuing the Notice of Intent for the SPD SEIS, DOE issued the Final SPD SEIS in December 2015. 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 Record of Decision, this plutonium after down blending is placed in the queue of waste to be shipped to WIPP. DOE selected the down blending approach for the removal of plutonium from South Carolina because it allows the disposal of the plutonium versus transferring the material to another site where the material will be subject to additional handling before eventual disposal. The down blending eliminates the repetitive handling of the material, eliminates unneeded radiation exposure to workers, and eliminates security and nonproliferation issues inherent with the plutonium materials. In October 2016, following approval of the K Area Documented Safety Analysis, a document that evaluates and determines the facility safety basis envelope, SRS resumed the down blending of plutonium materials in K Area,[9] in order to continue down blending the defense plutonium covered by the

[8] Waste emplacement operations at WIPP were suspended in February 2014, following a salt truck fire and unrelated underground radiological event. Waste emplacement operations resumed in January 2017.

[9] The K Area facility is one of five former SRS production reactors which was repurposed for use as a plutonium storage facility.

prior interim actions and the SEIS ROD.[10]

18. Under the current capability in K Area at SRS, down blending operations continue in an existing glovebox, originally built and currently being used to perform destructive examinations of containers in storage, in K Area at SRS, to validate long term, safe storage of the plutonium under the plutonium surveillance program. The operation requires highly skilled, qualified operators with expertise in plutonium materials, as well as detailed knowledge and compliance with extensive health, safety, and security measures to protect workers, the public, and the environment. The facility is currently capable of down blending at a rate that would remove one metric ton of defense plutonium from South Carolina by the end of FY 2025, assuming adequate and timely funding (equivalent to the funding requested in the FY 2018 Presidential Budget Request and out-year increases to offset yearly escalation and yearly increases in SRS Legacy Pension and Post Retirement Benefits). By the end of FY 2025, DOE estimates that at least one MT of defense plutonium will have been shipped out of South Carolina, which includes 61 kgs (or 0.061 MT) of defense plutonium down-blended under the above-referenced interim actions, approximately 10 kgs (or 0.010 MT) of defense plutonium shipped to other sites for program use, and defense plutonium to be down-blended and shipped under the 2016 Record of Decision. To expedite the future rate of down blending, NNSA has requested in their FY 2018 Presidential Budget Request a project to design and construct additional gloveboxes in K Area. It is anticipated that these additional gloveboxes would be operational around 2026 - 2028 (assuming Congressional authorization and appropriation), once DOE completes the process for acquisition of capital assets (DOE Order 413.3B, Chg. 2). The

[10] The safety basis envelope is the approved basis pursuant to 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.

additional gloveboxes would add sufficient capacity to down-blend at least one metric ton of plutonium per year.

Down Blending Protocols and Schedule for Removal of 1 Metric Ton of Plutonium

19. SRS is currently funded to perform plutonium down blending operations on a single shift, four days per week. Based on the single shift operations, it will take until FY 2025 to down blend and remove 1 MT of defense plutonium from SRS. There are critical factors that make achieving the removal of 1 MT of defense plutonium from SRS by FY 2025 difficult. These include: (1) limitations on crews, training, and qualifications; (2) limitations on equipment, safety conditions and operations; and (3) limitations on timely funding. Considering these critical factors, the completion of 1 MT by the end of FY 2025 is challenging, but viewed as achievable at this time. Furthermore, it takes approximately two to three years after receiving additional funding to hire, train, obtain security clearances, and qualify new operations personnel for the down blending process. Adding personnel and shifts using the single glovebox, even assuming additional Congressional authorization and appropriation, would not result in any significant acceleration, let alone meet a two year deadline for removal. For these reasons, DOE cannot remove the 1 MT in two years, as requested by the South Carolina. (Attachment 1 – Down Blend Projection on 1 Shift 4 Days per Week Operations)

20. Three months of each year, the glovebox in K Area is dedicated to performing destructive examinations (DEs) of plutonium storage containers under the plutonium surveillance program. The surveillance program serves a critical safety function to assure continued safe storage of the plutonium. Plutonium-bearing materials are packaged in robust, welded stainless steel containers that comply with the Department of Energy's standard for stabilization, packaging, and long term storage of plutonium-bearing materials (DOE-STD-3013). The DOE-

STD-3013 packaging configuration (henceforth referred to as "3013 containers") for the material is required to be in two welded stainless steel containers. The 3013 containers are placed inside two nested stainless steel, leak-tested containment vessels, and placed inside a 35-gallon outer drum for storage. The Standard requires storage sites to implement a surveillance program to monitor the performance of the containers. Surveillance is particularly important since the material in many of the 3013 containers have significant amounts of impurities, the most problematic being chloride salts. There were two mechanisms identified that could possibly challenge the integrity of the containers, pressurization from gas generation and the corrosion of the container. Surveillance to date indicates that significant pressurization is unlikely during storage. Corrosion, however, has been seen in some containers during DE. The corrosion observed so far has been minor, but it is important to continue performing DEs to assure that the corrosion does not increase over time. DEs are performed on six 3013 containers per year. The DEs take approximately two weeks per container. The 3013 containers are measured, examined, and photographed prior to opening. The 3013 containers are then placed inside a glovebox, punctured with a drill press, and the gas in the container is measured for pressure and sampled. The welded containers are cut open and the innermost container is removed. The innermost container is opened and fitted with an instrumented lid to measure the humidity and temperature of the oxide in the container. The container must sit for six hours to allow for an accurate measurement of the humidity and temperature. The instrumented lid is removed, the plutonium material is poured into a tray, and a representative sample of the material is taken. The inner and outer container lids, the gas samples, and the material samples are removed from the glovebox, packaged, measured for plutonium content, and then placed into a shipping container and shipped to the Savannah River National Laboratory for analysis. After this point the plutonium

materials can be down blended using the process described in the next paragraph. No place exists today, other than SRS, with the required capacity, security, safety analysis, and surveillance program to receive and store any significant amount of this plutonium in the form and packaging configuration as it exists today.

21. The down blending of plutonium in a single 3013 container takes approximately two days to complete[11]. The work is performed in a very safe and deliberate manner and must be performed step-by-step in accordance with a written procedure. The down blending operation is performed by a team of at least four personnel, a minimum of 3 operators and 1 radiological control person. Two of the operators and the radiological personnel work in the room where the down blending occurs in a glovebox and are dressed in 2 layers of protective clothing, consisting of 2 pair of coveralls, 2 pair of gloves, and 2 pair of shoe covers. Each piece of protective clothing is carefully sealed with tape at the joints to protect the personnel from radiological contamination. Personnel working in the glovebox also must wear an air supplied hood, i.e. breathing apparatus. One operator remains outside the room and reads the procedure, step by step, to the operators inside the room performing the down blending work within the glovebox. The operators must acknowledge the step by repeating back, verbatim, each step prior to performing the step. The operator outside the room then records each completed step of the operations in the procedure. The operators inside the room must perform the work inside a glovebox through thick synthetic rubber gloves, integral to the glovebox, that significantly limit the operator's dexterity. Each time the operators remove their hands from the glovebox gloves, they must be surveyed by the radiological personnel to ensure that there is no contamination present. The operators must exercise extreme caution because the down blending operations

[11] Although DOE-STD-3013 allows up to 4.4 kgs of plutonium in each can, many of the containers at SRS have significantly less (less than half of the allowable limit) packaged in each can.

generate metal fines and sharp edges which could cut or puncture a glove and lead to contamination of the personnel or the room, which would shut down operations. When the operators are ready to leave the room, they are surveyed for radiological contamination and must remove each layer of clothing in a specific sequence to reduce the potential for the spread of contamination. As they exit the room, they are then surveyed again, and the second layer of clothing is removed. Prior to exiting the radiological area they are again surveyed to verify no personnel contamination. (Attachment 2 – Down Blending Process and Certification Description)

Changed Circumstances Since the Previous Declaration

22. In FY 2017 there has been a limited quantity of plutonium down blended due to unexpected equipment problems and actions to de-energize measurement equipment no longer required in the facility that could pose an increased risk during a hypothetical fire event. In late Fall of 2016, the can cutter failed. This device is used to cut open the 3013 containers and is used to support both the destructive examinations and the down blending operations. Early in FY 2017, the can cutter again failed, and it took approximately 1 month to obtain and install the replacement parts. Additionally, the facility personnel are in the process of updating the Safety Analysis Report (or Documented Safety Analysis) for the facility housing the glovebox using new methodology and models to estimate the consequence of potential accidents. Using the new methodology the analysis showed an increase in risk that could result from a hypothetical fire event involving two large measurement instruments, not used for down blending operations but in the vicinity of the room where down blending occurs. SRS suspended the down blending operations in the second half of FY 2017 to allow the measurement instruments to be de-energized and cooling oil removed, thereby removing the fire source and the potential for the

increased risk during the hypothetical fire event analyzed in the safety basis. It is anticipated that destructive examination and down blending operations will resume in October 2017.

23. Separately, but also a change since the previous declaration, there are new security requirements which impact SRS flexibility for storage, characterization, and shipment of down blended plutonium materials. SRS anticipates establishing a storage, characterization, and shipping capability at K Area which is expected to be operational by the end of 2020. However, the new security requirements will limit SRS's rate of down blending of defense plutonium and delay the shipment of down blended plutonium until 2021. I am not able to go into detail about the precise nature of these requirements because they are classified for national security reasons.

24. Also, SRS is currently experiencing a considerable amount of attrition and loss of personnel, including qualified operators and engineering staff performing the down blend operations. Filling vacancies for certified operators and engineering staff in K Area takes approximately 2 - 3 years. (Attachment 3 – Operator Hiring and Qualification Timeline)

Reasons Why DOE's Decision to Continue Down Blending for Disposal at WIPP is a Better Option than Seeking to Transfer One MT of Plutonium to a Facility Other than WIPP

25. In order to transfer 1 MT to a facility other than WIPP, DOE would need to identify a facility, with the necessary capacity, security, and safety basis envelope, to receive and store one MT of defense plutonium. 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.

26. If DOE could identify alternate facilities, National Environmental Policy Act (NEPA) analysis would be required to support any decision to ship the plutonium to an alternate

location which could take 2 to 3 years to complete. The NEPA process would likely require scoping meetings at potential sites, developing the analysis and drafting the document, providing the draft document for public comment, addressing the comments, revising the document, and publishing the final document and issuing the decision. The NEPA process could result in DOE making a decision not to choose the alternative facility. If an alternative facility were selected it could require the construction of facility modifications or new facilities. The NEPA analysis could also be subject to legal challenges.

27. 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. It would take 6 to 18 months, depending on the complexity of the analysis, to complete the safety analysis to support the transfer of the 1 MT.

28. 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. This requires visual inspection of the components of each container and pre-load leak checks performed on both of the containment vessels, which must be performed with the containment vessels empty. Over 500 containers would be needed for the removal of 1 MT of plutonium. The annual inspection/certification on each container takes about three to four hours to perform; therefore, it would take a total of 6-9 months to complete the recertification of all the containers.

29. The contents of each container would have to be repackaged into 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). Since the container certification is valid for one year only, SRS could not pre-certify the containers in advance while the NEPA and facility modifications are being performed. The transportation certification of all containers currently stored in K Area has expired because they have been in storage greater than 1 year.

30. 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.

31. Most critically, personnel in K Area would be exposed to significant levels of radiation while they perform the repackaging activities to remove material from South Carolina to an alternate interim storage facility, while additional unnecessary exposure would be required of personnel at the alternate storage facility to handle and ultimately dispose of this plutonium. 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.

32. To spread the dose over a larger group of workers, SRS would have to hire additional operations and radiological control personnel. 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 millirem (mrem)) every year for three years.

33. It would take approximately five years to ship 1 MT of defense plutonium offsite (two years to prepare and three years to repackage) 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 needlessly expose the operations personnel to radiation.

34. 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.

35. 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.

36. Several of the above steps could be performed in parallel but others are required to be performed sequentially and just in time. 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. The five years is in addition to the time needed to identify an alternative location, comply with the NEPA process, and fund and construct facility modifications or new facilities. It is not possible to forecast any date certain for the completion of these prerequisites for shipping to an alternative location but the combined timeline would most likely result in a date later than the FY 2025 date projected in this declaration for the completion of the down blending process and shipping campaign to WIPP already underway.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this date, August 9, 2017.

Henry Allen Gunter

ATTACHMENT 1

Plutonium Down Blend Projection on One Shift / Four Days Per Week Operations

Attachment 1
Plutonium Down Blend Projection on
One Shift / Four Days Per Week Operations

Fiscal Year	Prior Years[1]	2018	2019	2020	2021	2022	2023	2024	2025
Pu Down Blended (kgs) Annually	77	30	25	75	150	150	150	175	175
Pu down Blended (kgs) Cumulative	77	107	132	207	357	507	657	832	1007
Pu down Blended Shipped	61	0	0	0	200	200	200	200	200
Pu Down Blended Shipped Cumulative (kgs)	61	61	61	61	261	461	661	861	1061

[1] Since 2002, SRS has also shipped additional defense plutonium (approximately 10 kgs) to other sites outside of South Carolina for use in DOE programs.

ATTACHMENT 2

Down Blend Process and Certification Description

Attachment 2
Down Blend Process and Certification Description

The down blending of weapons-usable plutonium materials at Savannah River Site (SRS) is performed in a very safe and deliberate approach, to both ensure security, and to protect human health and safety of workers in the immediate vicinity, other SRS personnel, the public and the environment. The work must be performed in accordance with a written procedure following a detailed step-by-step process. The down blending operation is performed by a team of at least four highly trained and qualified personnel that include a minimum of three operators and one radiological control person. Two of the operators and the radiological control person work in the room where the down blending occurs in a glovebox dressed in two layers of protective clothing, which consists of two pairs of coveralls, two pairs of gloves, and two pairs of shoe covers. Each piece of protective clothing is carefully sealed with tape at the joints to protect the personnel from radiological contamination. Personnel working in the glovebox also must wear an air supplied hood, (i.e., a breathing apparatus). One operator remains outside the room and reads the procedure step-by-step to the operators inside the room performing the work within the down blending glovebox. The operators performing the down blend process are required to acknowledge each procedural step by repeating back, verbatim the step prior to performing the step. The operator outside the room then records each completed step of the operation as defined in the procedure.

Working inside a glovebox is very cumbersome and must be performed through thick rubber glovebox gloves, in addition to the protective clothing and air supplied hood, significantly limiting the dexterity of the operators. Each time the operators remove their hands from the thick rubber glovebox gloves, their hands must be surveyed by the radiological personnel to ensure no contamination has occurred. The operators must exercise extreme caution while working because the down blending operations, as with many glovebox operations, generate metal fines and sharp edges which could cut or puncture a glove and potentially lead to personnel or room contamination. SRS takes every precaution to mitigate such occurrences through a rigorous training and qualification program, performing a detailed hazards analysis, and where possible taping and securing sharp edges and using tools that would reduce the amount of fines generated, as well as performing very detailed pre-job briefings to discuss the potential hazards associated with each job.

When the operators are ready to leave the room, they are once again surveyed for contamination, then remove one layer of protective clothing at a time, in a specific and procedurally defined sequence to reduce the potential for the spread of contamination when exiting the glovebox room. The operators are then surveyed again while still in a radiological buffer area, the second layer of protective clothing is removed, and the operators are surveyed a third time to verify no personnel contamination has occurred. It should be noted that no eating or drinking is allowed in radiological areas, and all restrooms are located in a separate building outside the material storage and processing area.

Down Blend Process Description – Typical Timeline

Day 1

1. The operations personnel arrive for work and must obtain and verify the most recent approved version of the operating procedure.
2. All personnel associated with the activities meet for a pre-job briefing where they review the procedure to ensure it can be performed as written; obtain the latest status of the facility and the condition of the room where they will be working; and assign job duties.
3. Personnel leave the pre-job briefing area, and sign a radiological work permit which defines the protective clothing to be worn, the required dosimetry, and validates the radiological qualification of the personnel. Dosimetry or a dosimeter is a device used to measure the amount radiation exposure to personnel.
4. Personnel obtain all required dosimetry and the protective clothing, process through building security, carefully don each layer of protective clothing, and then enter the process room.
5. Personnel place a single DOE Standard 3013 can (henceforth referred to as a "3013 can") containing the plutonium, which was pre-staged the night before, inside the glovebox through a specially designed opening to allow the can to enter while preventing the spread of contamination. The 3013 can configuration consists of an outer welded can, an inner welded can and within this can, an inner screw lid convenience can containing the plutonium.
6. Separately, a specified number of cans are preloaded with the down blending material (henceforth referred to as blend cans), and introduced into the glovebox, and set aside until needed.
7. The 3013 cans are slowly punctured with a drill press to relieve any internal pressure and purged to remove any flammable gases, then the tops of the two welded containers are cut off with a pipe cutter and the inner can is retrieved.
8. The inner can is unscrewed, and the plutonium is emptied into a pan, which is then sifted through a screen to remove any large pieces which must be crushed to allow it to pass through the screen.
9. A specific amount of plutonium material is removed from the pan and added to each blend can containing the down blending material. A single 3013 can of plutonium may generate between 10 and 30 blend cans depending on the amount of plutonium.
10. Each blend can is then placed in a manual tumbler, where the plutonium and down blend material is mixed.
11. When the personnel are ready to leave the room they secure the work area, are surveyed for contamination, then remove one layer of protective clothing in a specific sequence to reduce the potential for the spread of contamination as they exit the glovebox room.
12. The personnel are then surveyed again while still in a radiological buffer area, the second layer of protective clothing is removed, and they are surveyed a third time to verify no personnel contamination.

13. Personnel then leave the secure facility, walk to another building, eat lunch and perform administrative work.
14. When resuming operations, the operators enter back into the secure facility, and once more don into the protective clothing identical to the ones initially worn, and then enter the process room.
15. The operators bag each of the blend cans out of the glovebox. The bags are surveyed to verify there is no contamination outside of the bag. The bagged can is placed inside another can which is taped shut.
16. The taped cans are surveyed again to verify there is no contamination outside of the can, the can is measured to verify the precise amount of plutonium in each blend can, and each can is then placed in a shielded storage cabinet. A single 3013 can may generate 10-30 blend cans depending on the amount of plutonium in the 3013 can.
17. When the operations are complete, personnel secure the work station, then exit the room as previously described in Day 1 steps 11 and 12, removing their protective clothing and repeating the multiple monitoring steps to verify no contamination has occurred.
18. The personnel then walk to the shift room to perform administrative work such as filling out time cards, emails, etc.

Day 2

1. *The operations personnel arrive for work and must obtain and verify the latest version of* the operating procedure.
2. All personnel associated with the activities meet for a pre-job briefing where they review the procedure to ensure it can be performed as written; obtain the latest status of the facility and the condition of the room where they will be working; and assign job duties.
3. Personnel leave the pre-job briefing and sign in on the radiological work permit which defines the protective clothing to be worn, required dosimetry, and validates the radiological qualification of the personnel.
4. Personnel obtain all required dosimetry and the protective clothing, process through building security, carefully don each layer of protective clothing, and then enter the process room.
5. Personnel remove all the radioactive waste from the glovebox which was generated from the previous day's operations. The radioactive waste is bagged and removed from the glovebox, and then surveyed for contamination outside of the bag. The radioactive waste is then measured to account for any plutonium in the waste.
6. Separately, outside the glovebox room, but within the radiological area, two blend cans are then removed from the shielded storage cabinet and placed in a shipping container referred to as a criticality container over-pack (CCO). The CCO has an inner confinement container that has 8 bolts which are precisely secured. The CCO shipping container lid is then secured. This step is repeated for the number of blend cans that were generated the day before. To perform work in this room, personnel must sign the radiological work permit which defines the protective clothing to be worn, required dosimetry, and validates

the radiological qualification of the personnel. Dosimetry is required to be worn by personnel performing work in this room, but typically protective clothing is not required, unless otherwise specified by the radiological work permit.

7. The shipping containers are then staged.
8. When the personnel are ready to leave the room they secure the work area, are surveyed for contamination, then remove their protective clothing and surveyed as previously described in Day 1 steps 11 and 12.
9. Personnel then leave the secure facility, walk to the shift room to perform administrative work such as filling out time cards, emails, etc.

Certification Process

The plutonium material must be analyzed to ensure it is compatible with the Waste Isolation Pilot Plant (WIPP) Performance Assessment and meets the WIPP waste acceptance criteria. This analysis is performed on large groups of materials, and takes approximately 4 months to complete. The plan is to have the characterization paperwork review completed before the down blending process takes place. Once the plutonium is down blended and placed into the shipping containers, WIPP personnel must perform final waste certification activities on each CCO drum.

1. Each CCO container is removed from storage and an x-ray performed to ensure no prohibited items are inside the container (ex., liquids, aerosol cans, etc.)
2. Each container is measured on a WIPP certified device to verify that the drum contains less than the maximum amount of fissile material allowed in the Nuclear Regulatory Commission's container certification requirements.
3. The containers are placed back into storage while the information from the x-ray, measurement and gas sample is analyzed and verified, and the containers are certified to be shipped to WIPP. This process takes approximately 3 months.
4. Once certified to be shipped to WIPP, the containers are then palletized (7 shipping containers per pallet) and the pallet is then wrapped in plastic.
5. Two pallets are placed into a single TRUPACT II container and 3 TRUPACT II containers are secured per trailer.
6. The TRUPACK II containers are sealed and placarded.
7. The transport truck then arrives, connects to the trailer, paper work verified, and containers shipped to WIPP.
8. The trip to WIPP takes 2 days.

Table 1: Down Blend Timeline Key Steps and Duration of Each Step

	Day 1 Night Shift		Approximate Duration (minutes)
	Retrieve and Unpack Plutonium Oxide (3013 Can) from Shipping Container		100
	Day 1 Day Shift – Down Blending Operations		
6:00	Job Preparation Work	Prepare Processing Procedures	10
		Conduct Shift Turnover	10
		Meet with Shift Crew and Assign Job Duties	20
7:00		Prepare for Pre-Job Briefing	30
		Conduct Pre-Job Briefing	30
8:00		Walk to Facility	15
		Process through Security, Dress into Protective Clothing, and Proceed to Process Room; Conduct radiological surveys prior to initial entry	30
		Move 3013 Can into Glovebox	25
9:00	Vault / Glovebox Work	Puncture / Purge and Cut Open 3013 Can	90
10:00		Move Blend Cans with Adulterant into Glovebox	20
11:00		Measure and Mix Plutonium Oxide with Adulterant in Blend Cans (One 3013 Can Produces 10 – 30 Blend Cans)	105
12:00	Lunch / Administrative Work	Remove Protective Clothing, Exit facility, and Walk to Lunch Room	20
		Lunch	30
1:00		Perform Administrative Work (Email, etc.) and Walk to Facility	20
		Process through Security, Dress into Protective Clothing, and Proceed to Process Room	20
2:00	Vault / Glovebox Work	Remove Blend Cans from Glovebox;	50
3:00		Assay Blend Cans	70
4:00	End of Shift Work	Perform Radiological Surveys	10
		Remove Protective Clothing, Exist Facility and Walk to Shift Office	40
		Perform Administrative Work	20

5:00			
	Day 2 Night Shift		Approximate Duration (minutes)
	Complete Assaying of Blend Cans		As Needed
	Day 2 Day Shift – Down Blending Operations		
6:00	Job Preparation Work	Prepare Processing Procedures	10
		Conduct Shift Turnover	10
		Meet with Shift Crew and Assign Job Duties.	20
7:00		Prepare for Pre-Job Briefing	30
		Conduct Pre-Job Briefing	30
8:00		Walk to Facility	15
		Process through Security, Dress into Protective Clothing, and Proceed to Process Room; Conduct radiological surveys prior to initial entry	30
9:00		Remove Transuranic (TRU) Waste from Glovebox and Perform Radiological Measurements	90
10:00	Vault / Glovebox Work		
11:00		Package Blend Cans into Criticality Control Overpacks	90
12:00	Lunch / Administrative Work	Remove Protective Clothing, Exit facility, and Walk to Lunch Room	20
		Lunch	30
1:00		Perform Administrative Work (Email, etc.)	20
2:00	Vault / Glovebox Work	Process through Security, Dress into Protective Clothing if required, and Proceed to Process Room	20
		Complete Packaging of Blend Cans into Criticality Control Overpacks	As Needed
3:00		Package TRU Waste	20
		Transfer Criticality Control Overpacks to Storage	30
4:00	End of Shift Work	Perform Radiological Surveys	10
		Remove Protective Clothing if donned, Exist Facility and Walk to Shift Office	40
5:00		Perform Administrative Work	20

ATTACHMENT 3

Operator Hiring and Qualification Time Line

Attachment 3

Operator Hiring and Qualification Time Line

# Weeks	Task
2	Management Approval to Hire.
2	Develop Requisition and Route for Approval.
2	Department Management Approval, Hiring Manager, Facility Manager, Business Manager, Financial Manager and Senior Vice President.
3	Executive Committee Approval.
1	Posting Uploaded to website on Tues and Thurs only.
2	Posting is Live on various sites for potential hires.
2	Recruiter scans resumes for minimum qualifications. Typically 700 resumes or more are submitted.
2	Hiring manager receives all resumes that meet minimum qualifications. Typically 300 or more. Chooses who to interview.
1	Manager Completes a Candidate Selection Form of those chosen for an interview.
3	Human Resources and Equal Employment Opportunity Office reviews applicants and candidates selected for interviews.
2	Interviews are scheduled usually over a 2 week period as there are usually 100 operators interviewed. Managers, HR, and Independent 3 people teams must be identified and scheduled.
2	Conduct interviews over the 2 week period.
1	Management and Hiring manager approves those to hire.
1	Compensation generates individual offers based on experience, etc.
2	Human Resources Office calls each selected operator to make the offer.
1	Operator has 1 week to decide to take the offer. Must sign form declaring use of drugs etc. within the last year period.
2	Two weeks are provided for operator to give notice to current employer.
1	Operator gets badged, GET, Medical, Drug screen, and benefits.
27	Operator takes fundamentals and regulatory required training at Site Training (2 pages of detail).
14	Facility Training for entry and general orientation (1.4 years to obtain clearance and training to begin facility specific qualification).
16	Obtain first level qualification as a "building" support operator. This qualification DOES NOT allow the operator to handle nuclear materials including plutonium. (4 months).
24	Obtain second level qualification as a Plutonium Material Handler - requires extensive procedure reviews, on hands experience, and an oral board. (6 months).

Weeks: 113
Months: 28.3
#Years: 2.4