

Facts

from the Savannah River Site

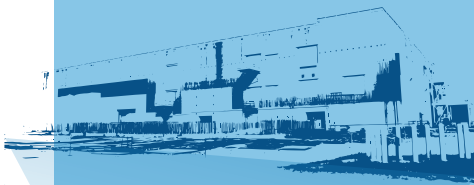
ENVIRONMENTAL STEWARDSHIP • NUCLEAR SECURITY • SCIENCE AND ENERGY

NNSA Need:

Plutonium Pit Production for Nuclear Deterrent

Solution:

Re-purpose existing structure



- Qualified structure
- Fabrication space
- Supporting facilities
- Construction facilities



Fire Protection



Security



Emergency Response

Anticipated Operations:

2,000 Highly-skilled personnel



Local and regional college and tech school collaborations to expand training programs



Plutonium Pit Production at SRS

A plutonium pit is a critical component of every nuclear weapon, but the United States' current capability to produce plutonium pits is limited. The National Nuclear Security Administration (NNSA), under Federal law and to meet national security requirements, must implement a strategy to provide the enduring capability and capacity to produce no fewer than 80 war reserve (WR) plutonium pits per year (ppy).

In 2018, the Nuclear Weapons Council endorsed NNSA's approach for supplying plutonium pits to meet stockpile requirements: a two-site strategy with Savannah River Site (SRS) producing no fewer than 50 WR ppy and Los Alamos National Laboratory (LANL) producing no fewer than 30 WR ppy. This approach will provide an effective, responsive and resilient nuclear weapons infrastructure with the flexibility to adapt to shifting requirements and counter future threats.

Two-Site Strategy

Studies of NNSA's approach show that having two geographically separated plutonium pit production facilities supports resiliency and redundancy from external threats and hazards. This provides NNSA with the flexibility and resilience to mitigate shutdowns, incidents or other impacts to operations at a given site.

Savannah River Plutonium Processing Facility (SRPPF)

SRS will achieve its part of this objective by constructing the Savannah River Plutonium Processing Facility (SRPPF) through repurposing the unfinished Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF), Building 226-F. Repurposing this facility in F Area allows NNSA to make use of an existing seismically-qualified structure, with numerous supporting facilities, including office, assembly and fabrication space; construction facilities; and existing SRS services and infrastructure, such as security, fire protection and emergency response.

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Plutonium Modernization Program

The NNSA is also establishing the Savannah River Plutonium Modernization Program to develop and train the workforce prior to SRPPF project completion and startup. The Plutonium Modernization Program will operate SRPPF for a minimum of 50 years once facility operations are authorized.

Plutonium Pit Production and Operations

The resulting SRPPF process will make use of SRS' core competencies in operations, safety and security. The process to produce pits at SRPPF will begin with the receipt of specific plutonium reserves held by the NNSA. The plutonium will be prepared by removing impurities that have accumulated through radioactive decay. The plutonium will then be formed into machinable components. The components will be assembled into the final pit, inspected and accepted by NNSA.

Upon reaching steady-state operations, it is expected that the SRPPF will require approximately 2,000 employees. This will include highly-skilled employees to perform machining, welding and testing of plutonium parts. SRS is working with local and regional

The Plutonium Modernization Program will operate SRPPF for a minimum of **50 years** once facility operations are authorized.

technical schools and universities, including Historically Black Colleges and Universities (HBCUs), to expand training programs and apprenticeship opportunities.

The SRPPF design includes an on-site High Fidelity Training and Operations Center (HFTOC) to support the project and accelerate the workforce pipeline as construction continues. The HFTOC will be used to train personnel, develop operator proficiency and provide hands-on experience with non-radioactive materials.

Additional training programs include a Knowledge Transfer Program and Mutual Support Program, which were developed in partnership with LANL, and being expanded to include Lawrence Livermore National Laboratory to share knowledge and lessons learned between the three sites, as they work to accelerate their shared mission.

SRPPF Main Process Building (MPB)

Building 226-F, now known as the SRPPF Main Process Building (MPB), was designed to meet high safety and security standards, with exterior walls and roofs engineered and constructed to resist all credible manmade and natural phenomena hazards. The facility has more than 400,000 square feet of available Hazard Category-2 space, which will meet the pit production requirements.

Repurposing Building 226-F requires modifications and installation of manufacturing and support equipment directly associated with the pit production mission. Preparations at SRS will also include removing some existing facilities, along with adding new support facilities and modifying some existing ones.



400,000 sq. ft. of available Hazard Category-2 space



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SRPPF Project – Design and Construction

With the 2018 announcement, engineers at SRS began working on a conceptual design for the SRPPF. In June 2021, NNSA announced that SRPPF had received Critical Decision 1 approval. This decision marks the completion of the project definition phase and approves the conceptual design. Additionally, it authorizes SRS to proceed in maturing the design and refining cost and schedule ranges to establish a project performance baseline.

To develop the design for this complex facility, Savannah River Nuclear Solutions (SRNS), the management and operating contractor for SRS, has assembled a project team that includes staff from multiple national laboratories and two external engineering firms. Working closely with LANL, this team is developing a design built on plutonium pit production technologies that have been developed and improved over the past three decades.

The team members' roles in the design of the SRPPF include:

- NNSA Project, Contract and Technical authorities provide administration, direction and oversight.
- SRNS is responsible for the overall project management, design integration, design authority, nuclear safety and criticality safety.
- Fluor Corporation is designing the balance-of-plant systems for the production process, such as electrical, plumbing and ventilation.
- Merrick and Company, an external firm that has assisted LANL with the design of their plutonium confinement systems (gloveboxes), is providing the same service for the SRPPF.
- The Physical Security Center of Excellence (PSCOE) at Sandia National Laboratories is designing the Perimeter Intrusion Detection and Assessment System (PIDAS).

In October 2022, SRNS entered into a Project Labor Agreement (PLA) with the Augusta Building and Construction Trades Council, which is comprised of 19 local unions. The agreement is in support of the construction of the SRPPF as there are approximately 3,000 construction and trade union jobs to fill for the entire project.

In January 2023, the SRPPF project achieved a new milestone as the dismantlement and removal (D&R) phase



Aerial view of Building 226-F and supporting facilities in F Area

began, marking the first “hands on” work taking place using construction and craft employees hired through local trade unions. During this phase, crews are actively working to safely dismantle and remove commodities from the structure without damaging the configuration of items projected for reuse.

Record of Decision

The SRPPF is subject to the National Environmental Policy Act (NEPA), which requires that potential environmental impacts be considered before a government agency decides to undertake an action. That evaluation was completed for the proposed SRPPF in November 2020, with the publication of the Record of Decision announcing NNSA's decision to implement the Proposed Action to repurpose Building 226-F to produce WR pits. The evaluation process included a public comment period in 2019 to guide the drafting of a detailed Environmental Impact Statement (EIS), followed by another public comment period after the Draft EIS was published in April 2020. Following consideration of the comments received and the resulting changes to the Draft EIS, the Final EIS was published in October 2020 and formed the basis for the Record of Decision.



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