

Facts

from the **Savannah River Site**

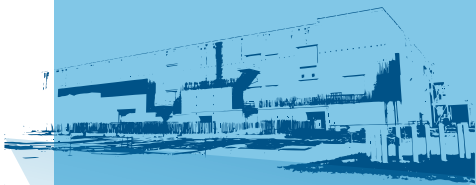
ENVIRONMENTAL STEWARDSHIP • NATIONAL SECURITY • SCIENCE AND ENERGY

NNSA Need:

*Plutonium Pit Production
for Nuclear Deterrent*

Solution:

Re-purpose existing structure



Qualified structure
Supporting facilities
Office

Fabrication space
Construction facilities



Fire
Protection



Security



Emergency
Response

Anticipated Operations:

>1,800 Highly-skilled personnel



Local 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 not less 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 and 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 re-purposing the unfinished Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF), Building 226-F, as the Savannah River Plutonium Processing Facility (SRPPF). Repurposing this facility will allow 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.

www.srs.gov



U.S. DEPARTMENT OF
ENERGY

The Savannah River Site is owned by the U.S. Department of Energy. Savannah River Nuclear Solutions is the management and operations contractor at the Savannah River Site. Savannah River Remediation is the current liquid waste contractor at the Savannah River Site.

SRS[™]
SAVANNAH RIVER SITE

Structure

Building 226-F was designed to high safety and security standards, with exterior walls and roofs designed and constructed to resist all credible manmade and natural phenomena hazards. Standing approximately 73 feet tall, the facility contains three floors and more than 400,000 square feet of available Hazard Category-2 space, which will meet the pit production requirements. Interior walls are reinforced concrete to provide personnel shielding and durability for the 50-year facility design life.

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.

SRPPF Project

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 (approximately 30% complete) and an initial range for the cost and schedule. Additionally, it authorizes SRS to proceed in maturing the design (approximately 90% complete) 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 improved and developed 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 including Contract, Nuclear Safety and Security.
- 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 Labs is designing the Perimeter Intrusion Detection and Assessment System (PIDAS).



U.S. DEPARTMENT OF
ENERGY

The Savannah River Site is owned by the U.S. Department of Energy. Savannah River Nuclear Solutions is the management and operations contractor at the Savannah River Site. Savannah River Remediation is the current liquid waste contractor at the Savannah River Site.



Plutonium Operations Program

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

Plutonium Pit Production Process

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 metal will then be formed into shells and machined to final dimensions. The shells 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 more than 1,800 personnel. This will include highly-skilled personnel to perform machining, welding, and testing of plutonium metal parts. As part of current operations, SRS is working with local colleges and technical schools to

expand training programs. The SRPPF design includes an on-site Training and Operations Center (TOC) to support the project and accelerate the workforce development pipeline. The TOC will provide workers with hands-on experience with non-radioactive materials while facility construction work continues.

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 war reserve 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.



U.S. DEPARTMENT OF
ENERGY

The Savannah River Site is owned by the U.S. Department of Energy. Savannah River Nuclear Solutions is the management and operations contractor at the Savannah River Site. Savannah River Remediation is the current liquid waste contractor at the Savannah River Site.

