Overview of NNSA Missions at the Savannah River Site

South Carolina Governor’s Nuclear Advisory Council

Jason Armstrong, Savannah River Field Office Manager
### Staffing:

<table>
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<th></th>
<th>SRFO</th>
<th>APMO</th>
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**Increase 123% FY 19-22**

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**Employee Profile – Federal Employees**

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Program Overview

**Tritium Operations**
- 85% growth in three years
- Tritium extraction and processing capabilities increasing to meet demand
  - 6 extractions annually by 2023
  - 7 completed FY21
- Reservoir loading and testing complexity will increase; more complicated surveillance

**Surplus Pu Disposition**
- Transition from MOX Fuel approach to Dilute and Dispose approach
- Process optimization on existing glovebox complete; moved to round the clock operations in June 2021
- Completed construction of the Storage and Characterization pad and initiated operations to store downblended plutonium and start-up characterization equipment

**Plutonium Modernization**
- Part of two-site solution with Los Alamos National Laboratory
- Together, deliver 80 pits per year
  - 50 from SRS
  - 30 from LANL

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Tritium is a radioactive isotope of hydrogen that is a key element of modern nuclear weapons.

SRS is the nation’s only facility for extracting, recycling, purifying, and reloading tritium.
Tritium Finishing Facility (TFF) Project

- Received CD-1 approval in December 2019
- Involves
  - Demolition of three warehouses
  - New construction for Bldg 1, Bldg 2 and replacement warehouse
- Enercon completed on contract supporting site prep subproject design
- Affiliate agreement with Fluor Corp. as A/E Firm for process buildings
- Completed Environmental Assessment in accordance with NEPA
- Expected to come on-line FY31

Replaces 1950’s vintage H-Area Old Manufacturing (HAOM) facility - oldest and largest Tritium process facility
- Assembly, inspection, and packaging processes
The Plutonium Disposition mission for SRS is to dispose of and manage excess weapons-useable plutonium from both domestic stockpiles and plutonium returned from abroad.

NNSA is pursuing the “Dilute and Dispose” approach as the preferred, cost-effective alternative to disposition 34 metric tons of weapons-grade plutonium.

Dilute and Dispose entails mixing the plutonium with an adulterant material to ensure it is not recoverable without extensive processing, followed by geological repository disposal at the Waste Isolation Pilot Plant in New Mexico.

**Near Term Next Steps:**
- Complete Waste Characterization process certification
- Initiate shipments to WIPP from K Area Summer 2022
- Initiate preparation of metal items for downblend, includes exchanges of material with Los Alamos
- Continue dilution operations in existing glovebox
Surplus Pu Disposition Project

Expand SRS Downblending Capability:

- Three new gloveboxes
- Support systems including security and safety systems, electrical, piping, active confinement ventilation, fire protection systems, etc.
- HEPA/Electrical Building and ventilation stacks

Dilute and Dispose Operations

| Blend Pu oxide with adulterant | Store and characterize | Package and ship to WIPP in New Mexico for disposal |

Timeline

**FY20**
- SPD CD-1 and CD-3A Phase 1 approved

**FY21**
- Schedule acceleration study identifies opportunities
- CD-3A Phase 2 for long lead procurements approved (December 2020)

**FY22**
- CD-3A Phase 3 for additional site preparation activities (Forecast for approval Spring 2022)
- Final Design complete (Forecast Summer 2022)

**FY23**
- NNSA CD-2/3 approval to establish Congressional performance baseline (Forecast Fall 2023)
- SPD project baseline complete
- Construction begins

**FY28 (targeting FY26)**
- SPD project complete
- Dilute operations begin
Plutonium Pit Processing at the Savannah River Site

- Repurpose the unfinished Mixed Oxide Fuel Fabrication Facility as the Savannah River Plutonium Processing Facility
- Achieve NNSA two-site solution to deliver 80 pits per year
  - 50 from Savannah River Site
  - 30 from Los Alamos National Laboratory

- Received CD-1 approval June 28 for Design/Build Project
- Conceptual design completed
- Life Cycle Cost Estimate completed
- EIS completed and ROD issued
The Program requirement is to go from this concept...
Plutonium Pit Production

...to this reality, fully equipped and fully staffed for pit production
SRPPF Project Focus for next 2 years – Design Engineering

PLUTONIUM PIT PRODUCTION

NNSA
National Nuclear Security Administration

Overall responsibility

Savannah River
NUCLEAR SOLUTIONS™
Responsible for overall design integration and limited design scope

FLUOR®
Responsible for design of Balance of Plant and site infrastructure

MERRICK®
Responsible for design of the gloveboxes and integration of process equipment

Sendai National Laboratories
PHYSICAL SECURITY CENTER OF EXCELLENCE
NNSA subcontract, responsible for design of the PIDAS and some Safeguards & Security scope
Reliable delivery of no fewer than 80 pits per year

Lawrence Livermore National Laboratory is Weapons Design Agency.
Los Alamos National Laboratory (LANL) is the nation’s Plutonium Center of Excellence for R&D.

Two facilities provide DoD more confidence that production requirements can be met:
- Leverage NNSA investment in former MOX facility and resources
- Maximize transfer of LANL technical and process knowledge
- SRS brings production mindset. Current budget places SRPPF CD-4 timetable from FY32-FY35

The 2018 Nuclear Posture Review emphasizes the need for “an effective, responsive, and resilient nuclear weapons infrastructure” that can “adapt flexibly to shifting requirements.”
Two-line items (LAP4 and SRPPF) are being executed to implement pit production

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Workforce Recruitment and Training

**Objective:** Need to recruit, hire, train and qualify ~1,800 future O&M and security staff over next 10 years

**Status:**
- Currently at 45 program staff (plus >600 project staff)
- Working with SC and GA colleges/tech schools to prime pipeline with candidates
- Active knowledge transfer program from LANL to SRS
- Benchmarking other NSE sites
NNSA Grants: $15M to SC & GA since 2016

Workforce Opportunities in Regional Careers (WORC)
- WORC I (2016-2021) $5M EM/NNSA Grant ($1M per year)
- WORC II (2020-2025) $5M NNSA Grant ($1M per year)
- WORC I Renewal (2021-2026) $5M EM/NNSA Grant ($1M per year)

Purpose: Provides to local colleges and universities education and training opportunities that align with SRS and regional employer requisite skills, experience, certifications, and proficiency across multiple scientific, engineering, technical, craft, and business support disciplines.

Academic partners: Aiken Technical College, Augusta Technical College, Augusta University, University of South Carolina Aiken, University of South Carolina Salkehatchie and Claflin University.

Accomplishments: 1,575 total scholarships awarded in 36 fields of study. 225+ students in SRS internships. 179+ students now in full-time SRS positions.

Other Activities: STEM mentoring, Student recruitment activities, Student tutoring activities, Hiring of Student Success Coach
What this means for SRS and the local community

**Missions**

**Tritium Finishing Facility**
- Enhances ability to continue central mission decades into the future
- Replaces 1950s vintage process building with modern technology

**Surplus Plutonium Disposition Project**
- Ability to remove surplus plutonium from South Carolina

**SRPPF**
- Additional SRS contribution to the nation’s nuclear deterrent
- Ongoing mission for 50+ years
South Carolina Governor’s Nuclear Advisory Council

Questions?

Jason Armstrong, Savannah River Field Office Manager