

## South Carolina Governor's Nuclear Advisory Council

Overview of NNSA Missions at the

# Savannah River Site

Jason Armstrong, Savannah River Field Office Manager



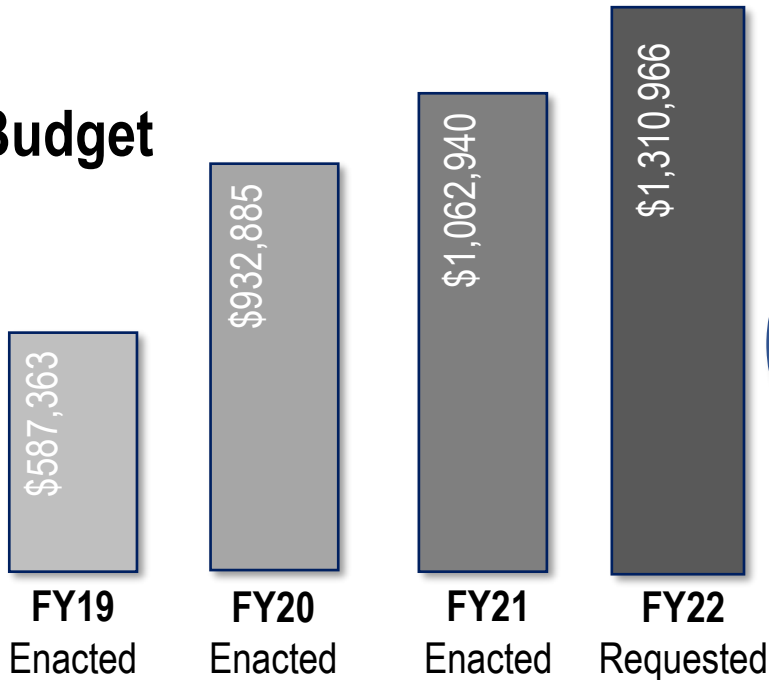
## Staffing:

SRFO    APMO    DNN

Authorized FTEs	<b>50</b>	<b>24</b>	<b>10</b>
Support service contractors	<b>20</b>	<b>32</b>	<b>10</b>



## Budget



## *\*New mission\**

### Plutonium Modernization

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



### 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



### 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





## 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...

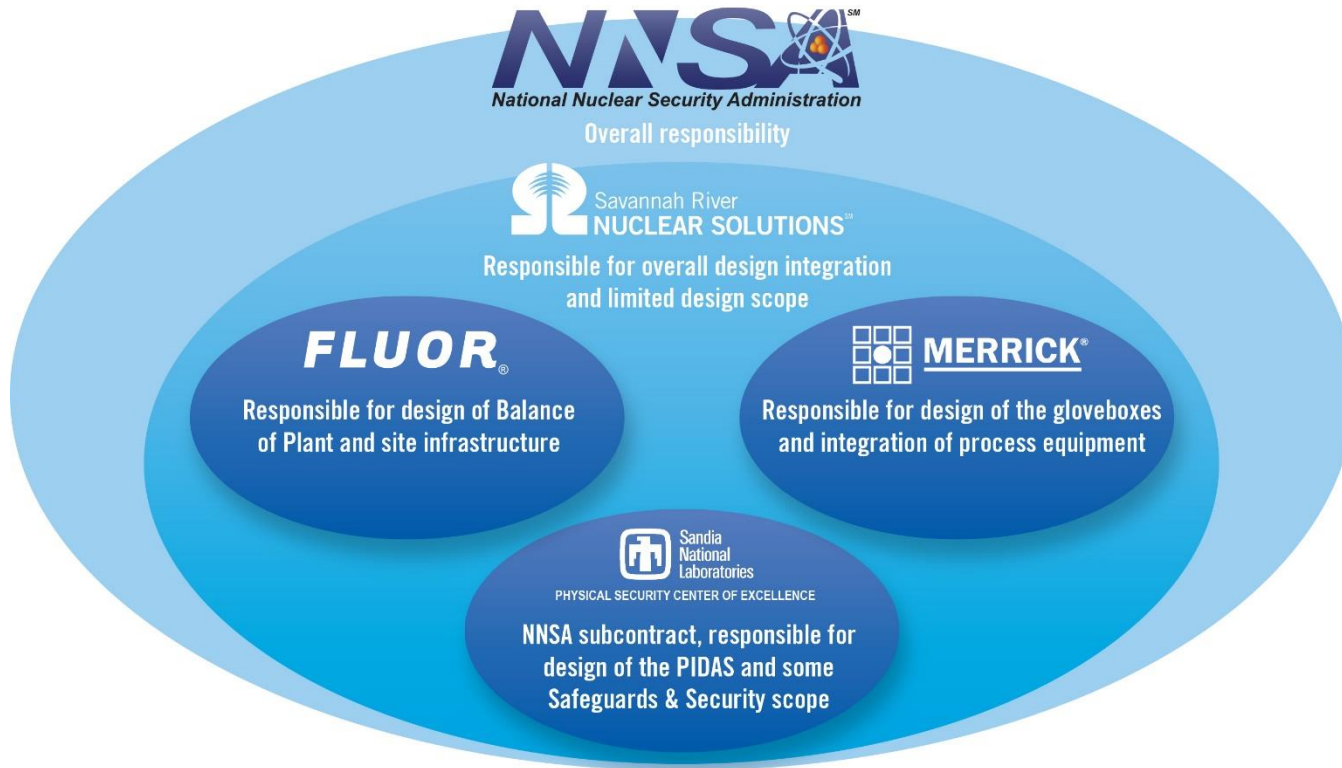


...to this reality, fully equipped and fully staffed for pit production

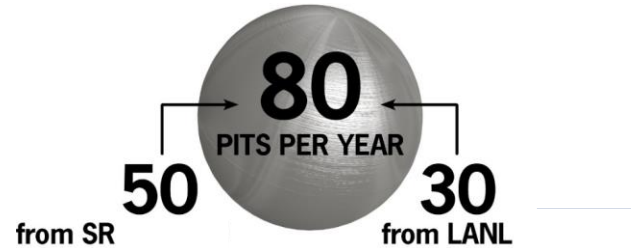




## SRPPF Project Focus for next 2 years – Design Engineering



## Reliable delivery of no fewer than 80 pits per year



Lawrence Livermore National Laboratory is  
**Weapons** Design Agency

Los Alamos National Laboratory

Los Alamos (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”

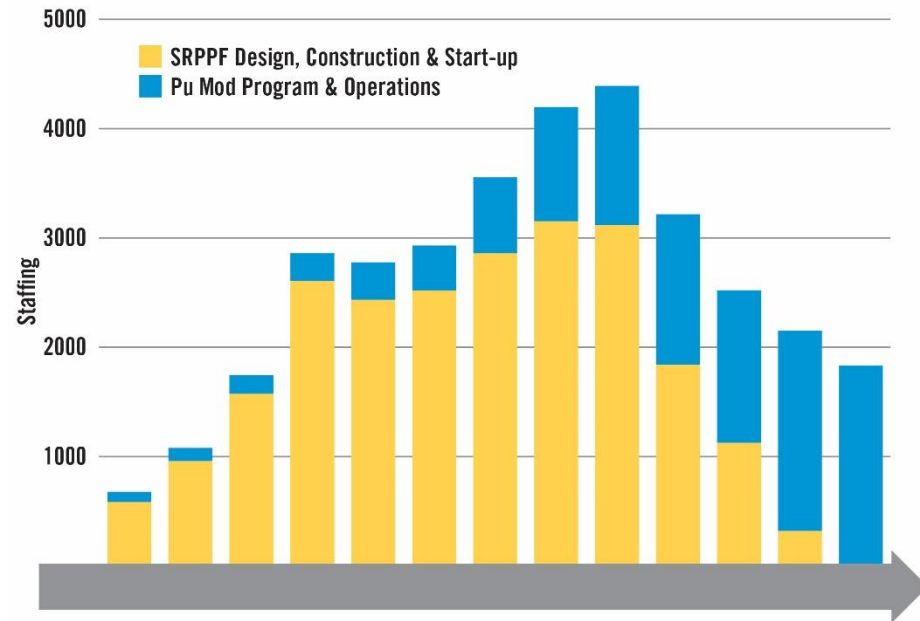


## Workforce Recruitment and Training

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

**Status:**

- Currently at approximately 50 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:** 1,500+ 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



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



Plutonium downblend handling and training



## 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 2 Long Lead procurements released for fabrication
- CD-3A Phase 3, Additional Site Prep (Forecast for Fall 2022)

#### FY23

- Final Design complete (Forecast 2023)
- SPD project baseline complete

#### FY24

- NNSA CD-2/3 Approval, Begin Construction

#### FY28

- SPD project complete
- Dilute operations begin

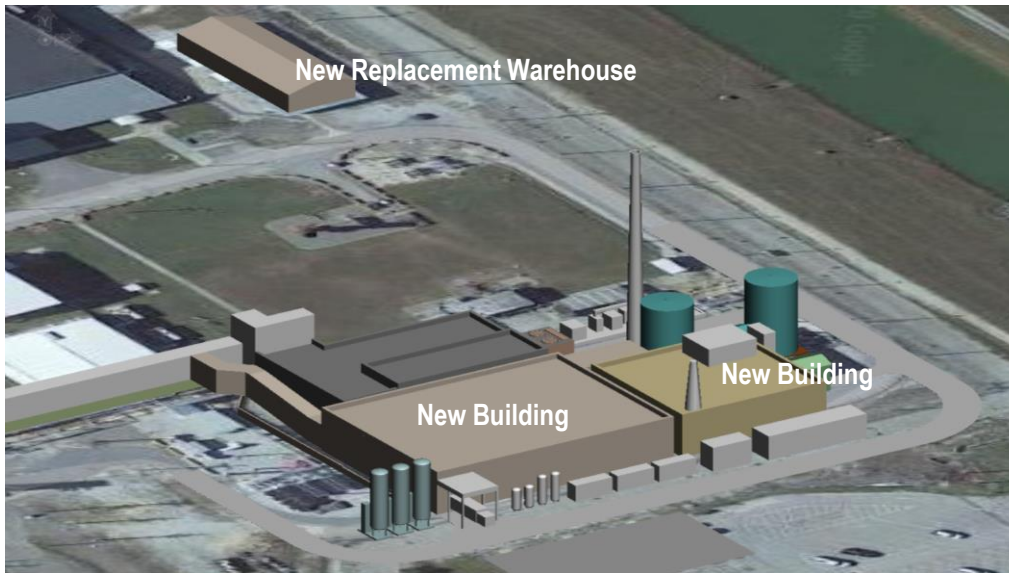
Tritium is a radioactive isotope of hydrogen that is a key element of modern nuclear weapons.

SRS is the nation's only facility for extracting, recycling, purifying, and reloading tritium.



Gas transfer system testing in SRS Tritium Facilities

## 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
- **Affiliate agreement with Fluor Corp. as A/E Firm for process buildings**
- **Completed Environmental Assessment in accordance with NEPA**
- **Design Performance Baseline (90% design) approved by NA-19**
- **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



## What this means for SRS and the local community

### Missions

#### SRPPF

- Additional SRS contribution to the nation's nuclear deterrent
- Ongoing mission for 50+ years

#### Surplus Plutonium Disposition Project

- Ability to remove surplus plutonium from South Carolina
- First shipment on target

#### Tritium Finishing Facility

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

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# Questions?

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