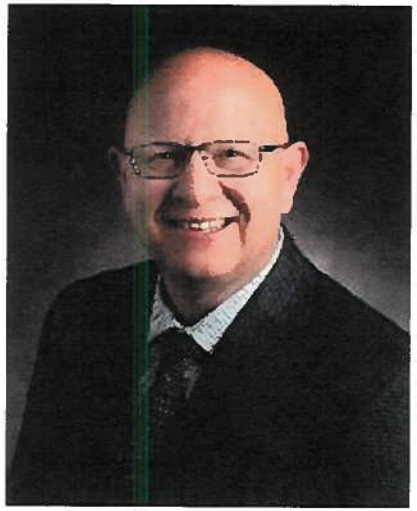
National Nuclear Security Administration

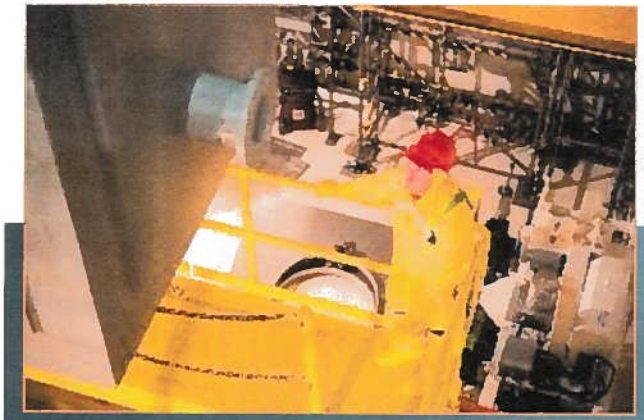
South Carolina Governor's Nuclear Advisory Council



Overview of NNSA Missions at the

Savannah River Site

Jason Armstrong, Savannah River Field Office Manager



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Program Overview

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

- Pursue the Dilute and Dispose Strategy
- Maintain round the clock dilution operations
- Maintain operations of the Storage and Characterization pad in preparation for initiating shipments to WIPP

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

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Plutonium Pit Production

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**

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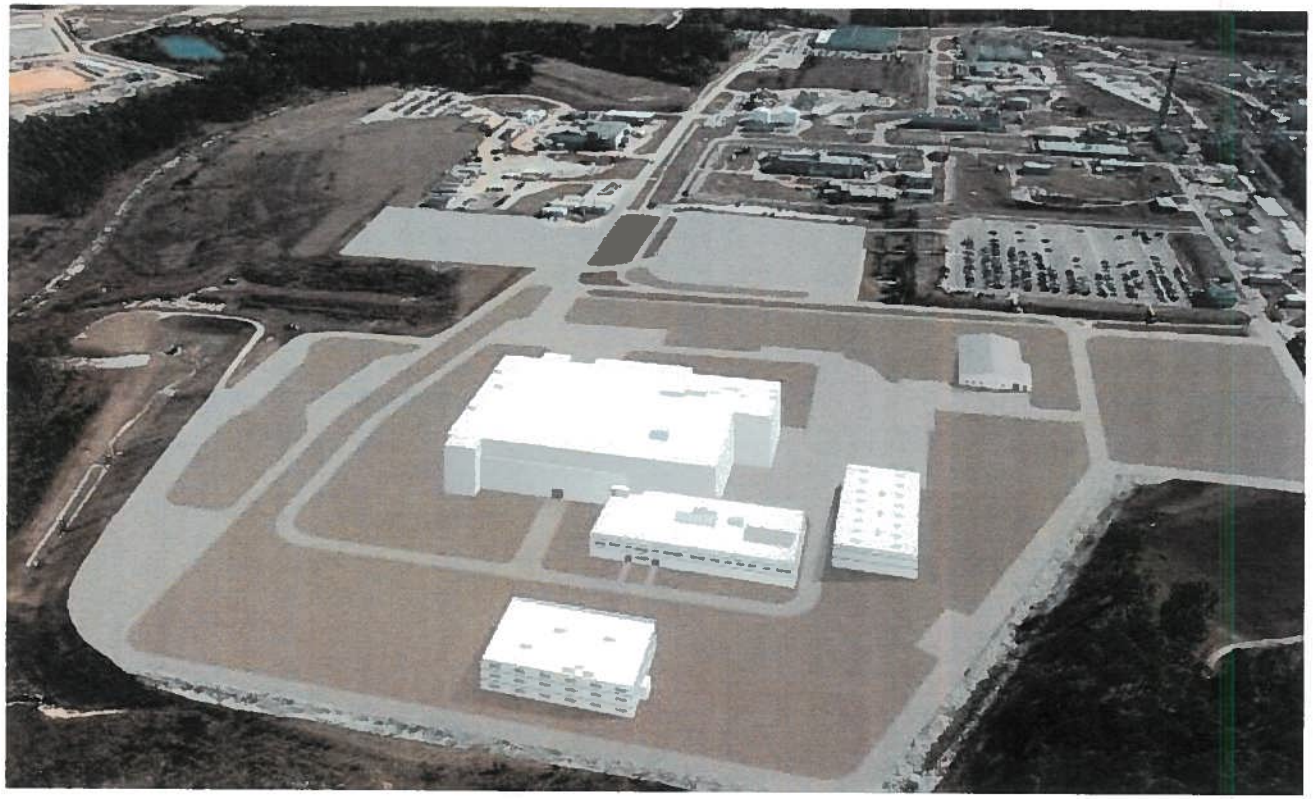
Plutonium Pit Production

The Program requirement is to go from this concept…



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Plutonium Pit Production

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

SRPPF Project Focus for next 2 years – Design Engineering

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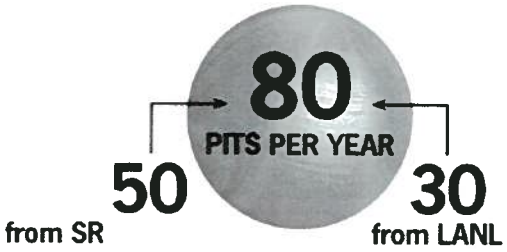
Plutonium Pit Production

Reliable delivery of no fewer than 80 pits per year



Lawrence Livermore National Laboratory

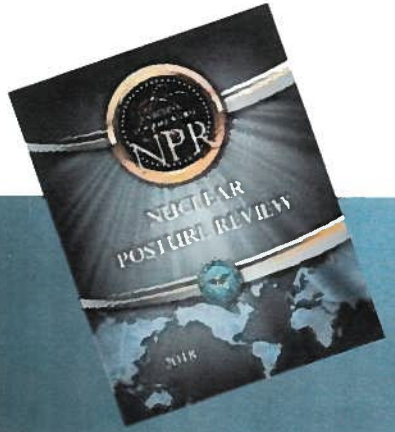
Lawrence Livermore National Laboratory is Weapons Design Agency

Los Alamos NATIONAL LABORATORY

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



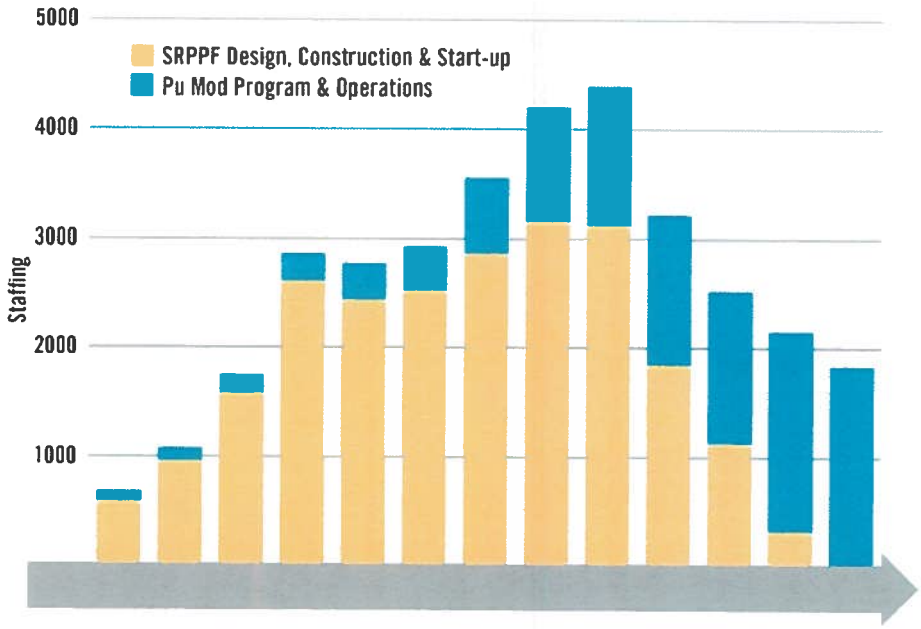
The 2018 Nuclear Posture Review emphasizes the need for "an effective, responsive, and resilient nuclear weapons infrastructure" that can "adapt flexibly to shifting requirements"

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



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Workforce Recruitment and Training

NNSA Grants: $15M to SC & GA since 2016

Workforce Opportunities in Regional Careers (WORC)

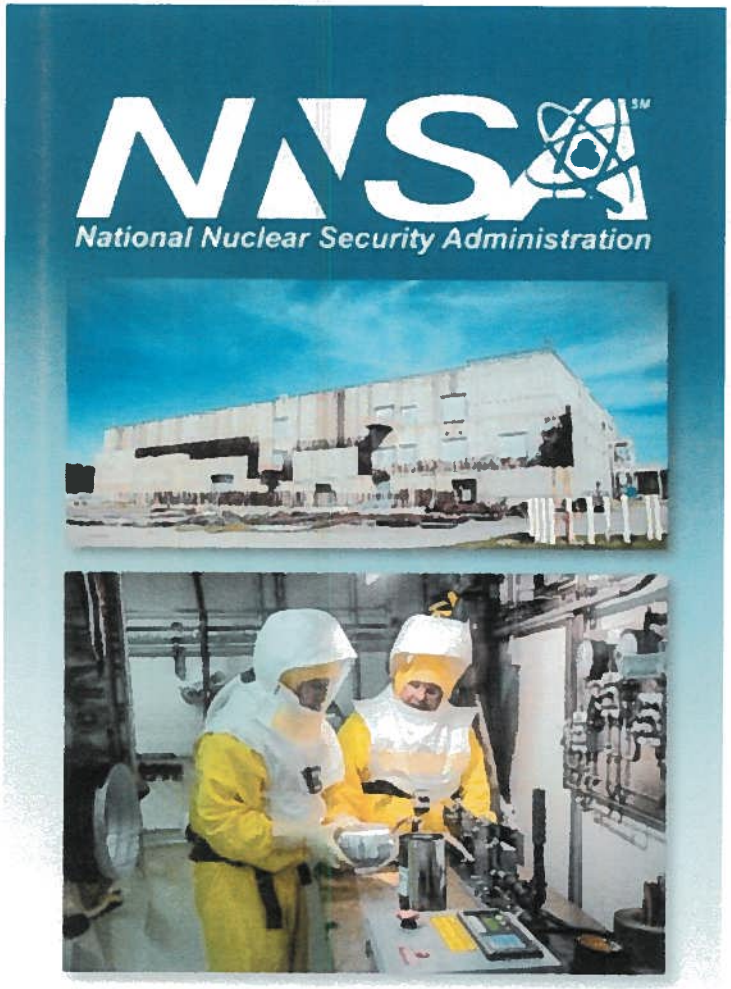
- WORC I (2016-2021) $5M EM/NNSA Grant ($1M per year)
- WORC II (2020-2025) $5M NNSA Grant ($1M per year)
- WORC I Renewal (2021-2026) $5M EM/NNSA Grant ($1M per year)

- **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



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Plutonium Disposition

The Plutonium Disposition mission for SRS is to manage and dispose of excess weapons-useable plutonium from domestic stockpiles and plutonium returned from abroad.

NNSA is pursuing the "Dilute and Dispose" approach as the preferred, cost-effective alternative to remove plutonium from South Carolina and 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:

- Awaiting Waste Characterization process certification approval
- Initiate shipments to WIPP from K Area in FY 2023
- Prepare metal items for downblend, to include exchanges of material with Los Alamos
- Operate existing glovebox for dilution
- Issue draft EIS for 34 MT program – Fall 2022

Plutonium downblend handling and training

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Plutonium Disposition

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 August 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

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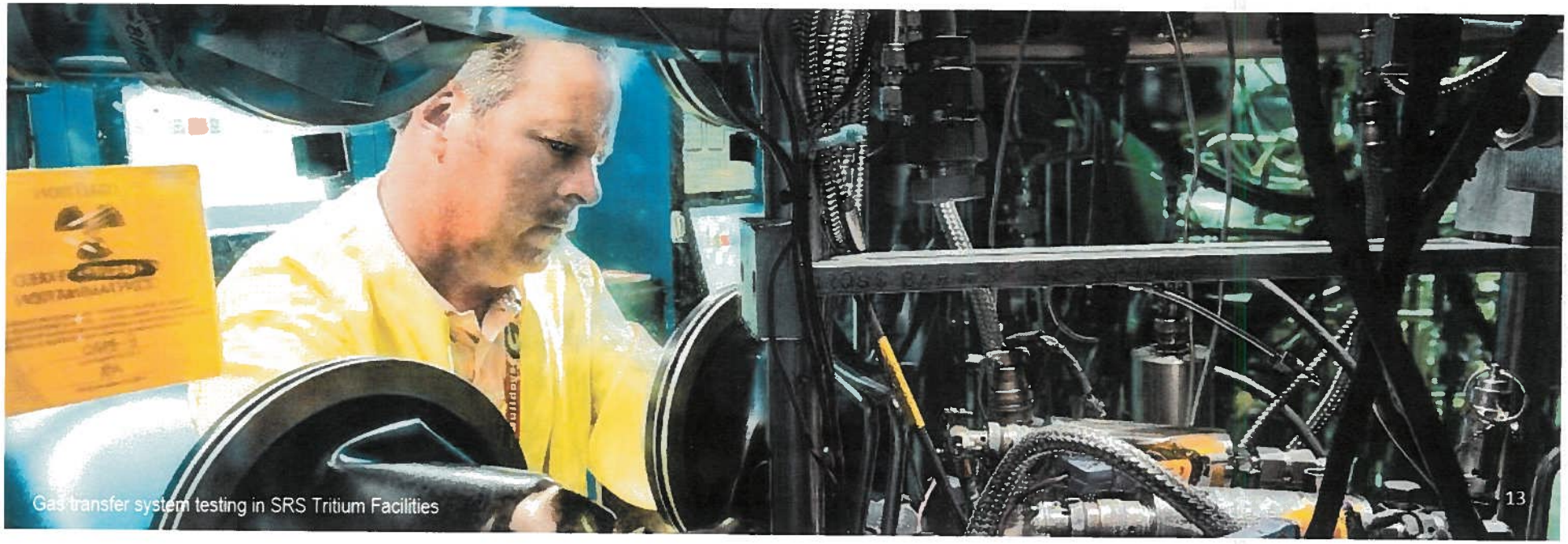
Tritium Mission

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

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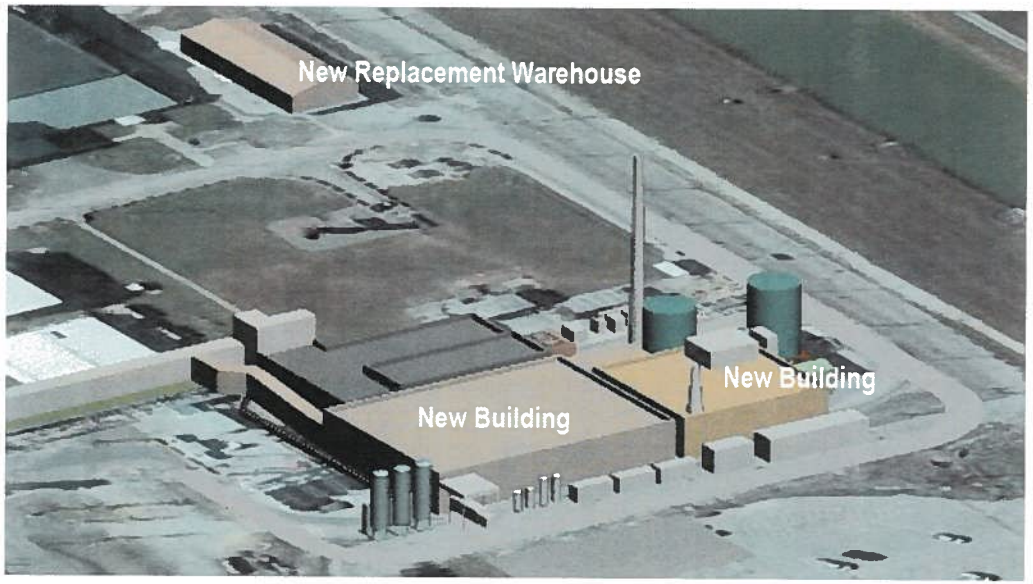
Tritium Mission

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

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Bottom Line

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 Program

- Ability to remove surplus plutonium from South Carolina
- First shipment planned for FY 2023

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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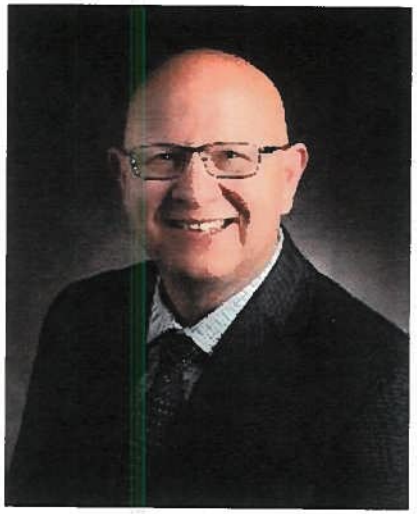
Questions?



Jason Armstrong, Savannah River Field Office Manager