



#### **Stuart MacVean**

President & CEO, Savannah River Nuclear Solutions

Governor's Nuclear Advisory Council April 11, 2022



## 5,500 Employees "Making the world safer."





# Savannah River Site Aiken, S.C.

310 square-mile site

11,500 employees

\$3 billion budget

\$2.6 billion annual regional economic impact

\$400 million annual local procurements

10000011



## **SRNS Budget**

# **MISSION AREAS**



#### **Environmental Stewardship**

for soil, water and facilities

#### **Supplying Tritium**

for nuclear weapons deterrent

#### Securing Nuclear Materials

to prevent unwanted proliferation

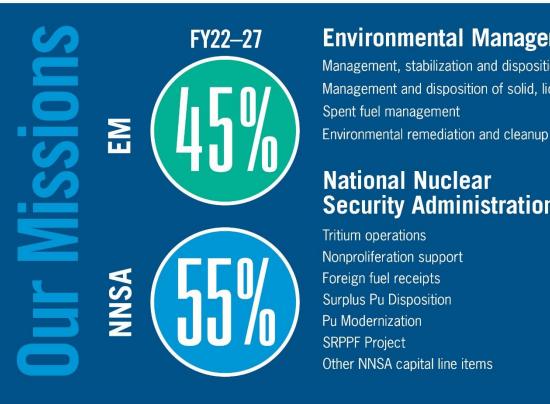


Transforming Nuclear Materials into assets and stable wasteforms



**M&O Support Services** 

### **SRNS Customers**



## **Environmental Management**

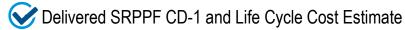
Management, stabilization and disposition of nuclear materials Management and disposition of solid, liquid and transuranic wastes Spent fuel management

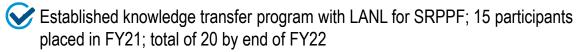
## **National Nuclear Security Administration**

Tritium operations Nonproliferation support Foreign fuel receipts Surplus Pu Disposition Pu Modernization **SRPPF** Project Other NNSA capital line items

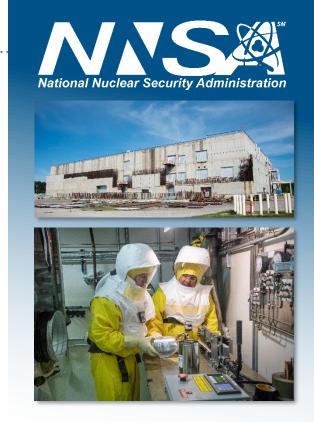
21CC00008

## **NNSA FY21/22 Accomplishments**





- Exceeded FY21 goal for Pu diluted to be removed from SC; constructed pad for material storage and characterization; developed designs and procured equipment for one new and one expanded entry control facility
- Completed a major upgrade to the existing K Area Interim Surveillance Glovebox and ramped up to four shift operations
- Completed government property disposition for MOX Termination Project early with 9.7M of 10.8M units reallocated for use
- Completed project to dramatically increase Tritium processing and achieved record number of extractions (7) in 12-month period
- Delivered B61-12 First Production Unit, kicking off the three-year Increased Production Period for the B61-12 campaign. (Of note, in January we loaded the most Tritium by gram in any month since August 2011.)



# **NNSA Capital Projects**

#### **Tritium Finishing Facility**

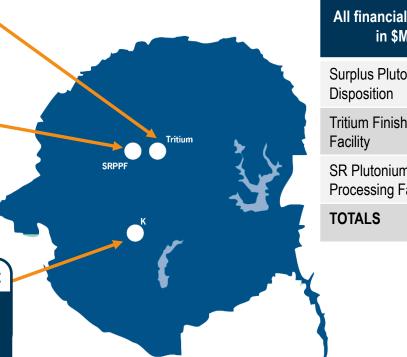
 Replaces Cold-War era H Area Old Manufacturing facility

# Proposed SR Plutonium Processing Facility

- Sister facility to UPF for plutonium
- Utilizes existing LANL (PF-4) flowsheet and equipment
- Optimized facility focused on one mission

#### **Surplus Pu Disposition Project**

- Expand capacity for plutonium downblending
- New 3-glovebox line in K Area



All financial values in \$M	Total Spend FY21	Projected Total Spend FY22	7
Surplus Plutonium Disposition	81	135	
Tritium Finishing Facility	28	30	
SR Plutonium Processing Facility	232	375-450	
TOTALS	341	540-615	

Dependent on appropriations funding and final number

# **Surplus Pu Disposition**

#### **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



#### **SPD Capital Project Timeline**

#### **FY20**

SPD CD-1 approved

CD-3A Phase 1 (early site preparation) approved

#### **FY21**

Acceleration study identifies opportunities

Long lead procurements

Area isolated with exterior access

Early Site Preparation (CD-3A Phase 1)

#### **FY22**

- 60 percent design complete
- Additional Site Preparation (CD-3A Phase 3), along with associated field work, approval forecast FY22

#### **FY23**

- Final Design complete
- Construction begins

#### **FY28**

- SPD project complete
- Dilute operations transition

# **Tritium Finishing Facility (TFF) Project**



Replaces 1950s vintage H-Area Old Manufacturing (HAOM) facility - oldest and largest Tritium process facility

- Assembly, final inspection, and packaging processes

- Received CD-1 approval in December 2019
  - Demolition of three warehouses
  - New construction for Bldg 1, Bldg
    2 and replacement warehouse
- Site prep subproject design complete
- Design at 30 percent for process buildings
- Expected to come on-line FY31

## **Major Mission Areas: Pit Production**

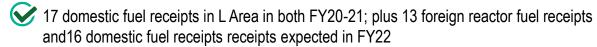
- Execute a line item project for the new SRPPF
- Repurposes unfinished facility
  - Dismantlement and removal of unneeded components
  - Internal facility modifications
  - Process equipment and infrastructure systems installation
- CD-2 scheduled for completion FY2024 (Design currently at 30 percent complete)
- Standing Up Enduring Production Organization (~100 today / 1,800 in 2028)
- Nationally, deliver 80 pits per year
  - 50 ppy produced at SRS (using SRPPF)
  - 30 ppy produced at LANL
- High-Fidelity Training & Operations Center to expedite preparation for production
- Subproject delivery dependent on timing and funding of FY 22/23 budgets

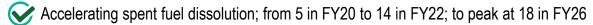


#### **SRPPF Advantages**

- Repurposing a seismically-qualified structure
  - 400,000 square feet of Hazard Category-2 space
    - · Interior walls of reinforced concrete for personnel shielding and durability for 50-year facility design life
- Supporting facilities, including office, assembly, and fabrication space
- Existing SRS services and infrastructure
- SRS world-class safety and security culture
- SRS experience, including
  - Plutonium processing
  - · Meeting Department of Defense schedules and requirements
  - 24/7 operations
- SRNS' experienced project and operations team and disciplined Conduct of Operations

## **Delivering on EM Commitments**





Completion of material storage characterization building in K Area allows direct plutonium removal from South Carolina

Continued preparation for the Fast Critical Assembly spent fuel dissolution campaign in H Canyon; electrolytic dissolver installation complete

235-F Deactivation

F/H Lab Layup/Deactivation; multi year program saving \$20M annually

Accelerated deactivation and decommissioning of D Area

Collect/analyze more than 10,000 environmental and groundwater samples per year

Deploying 10 innovative groundwater remediation technologies

Agreement reached with federal environmental regulators on final cleanup of 25-mile long stream; first ever Record of Decision outlining final closure for a large parcel of streams







### Workforce for the Future

#### Apprenticeship initiative for SRS and CSRA

13 Current SRNS Apprenticeships (134 participants)

Software Engineer, Process Software Engineer, Maintenance Mechanic, Systems Engineer, Facility/Production Operator, Records Management Clerk, Radiation Protection Inspector, Process Control Technologist, Fire Protection Engineer, Telecommunications Engineer, Supply Chain Mgmt, Network Operations Engineer, Cybersecurity Engineer

Future SRNS Apprenticeships in process

E&I Maintenance Mechanics; Computer Systems Support; QA Inspector; Environmental Compliance; Industrial Process Engineer

- 19 active MOU partners in education
  - Now including all eight SC Historically Black Colleges & Universities
- Robust internship program
- Targeting WORC grant recipients
  - Scholarships funded by DOE/NNSA
- Focused succession planning and mentoring programs





**Site Infrastructure Recapitalization** 

## Examples

• Road refurbishments (Rd C - 2 miles, Rd 4 - 2.91 miles, Rd E - 2.58 miles)

- Roof replacements
- Habitability upgrades [HVAC, Fire Alarm Systems, Interior/Exterior Improvements]
- Replace 681-3G River Water Switchgear
- Replacement of underground metallic piping systems
- S&S/ Emergency Services Items: PA System, NG911, K/L PIDAS
- IT: Continued Network Infrastructure Upgrades
- SRNL: IGPP, Roofs, DSA mods, Chillers, PLCs



spent on infrastructure improvements in FY16 – FY20

\$120M

spent on infrastructure improvements in FY21

\$200M

Needed annually for infrastructure improvements