



U.S. DEPARTMENT OF
ENERGY



SRS Site Overview For NAS Review

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Agenda

- Five Year Plan
- SRS-EM Key Major Prime Contracts Today
- SRS Workforce Structure
- SRS-EM Regulatory Framework
- SRS-EM FY 2020 Year in Review
- SRS-EM Infrastructure Issues/Challenges
- SRS-EM FY 2021 Priorities
- SRS-EM Vision for the Future
- Lessons Learned/Best Practices
- SRS-EM Program Management Protocol – Implementation Plan
- DOE-SR Program Management Approaches
- SRS EM PBS's & IPL Categories



Liquid Waste (LW) Program

SRS currently stores over 35 million gallons of liquid radioactive waste (primarily from legacy production and operations) in aging underground tanks. The LW mission is to safely store, process, treat and dispose of the treated waste. Facilities include: F-Area and H-Area Tank Farms (TF), Salt Waste Processing Facility (SWPF), Defense Waste Processing Facility (DWPF), Glass Waste Storage Buildings (GWSB), Saltstone Production Facility (SPF), Saltstone Disposal Facility (SDF) and Effluent Treatment Facility (ETF). Primary goals are listed below.

- Work with regulatory agencies and meet commitments
- Continue to maintain capability to receive up to 300,000 gallons of waste from H-Canyon operations
- Preparation of over a dozen tanks per year for waste removal to prepare necessary feed to support SWPF operations
- Perform waste concentration, removal & transfer operations
- Process salt waste through SWPF at a rate of up to 9 million gallons per year, by implementing NGS by 2023
- Process salt waste through Tank Closure Cesium Removal Unit to expedite closure of older-style tanks
- Vitrify salt and sludge high-level waste in DWPF at a rate to optimize SWPF production
- Optimize storage of DWPF canisters in the GWSBs through double stacking operations
- Treat the low-activity salt waste in the SPF at a rate to optimize SWPF production
- Steady construction of Saltstone Disposal Units (SDUs) at SDF to ensure availability to support SWPF operations

Environmental Cleanup and Facility Deactivation and Decommissioning

SRS is employing cost-effective remedial technologies to treat or immobilize the source of contamination, cap waste sites, monitor and operate efficient groundwater corrective actions, and close inactive seepage basins, rubble pits, rubble piles, and D&D excessed facilities. Primary goals are listed below.

- Cleanup contaminated soils and water in accordance with applicable state and federal regulatory requirements
- Continue to operate active/passive systems to remediate 14 Groundwater plumes
- Complete D&D activities at Process Heat Exchanger Repair Facility (690-N Ford Building)
- Continue D&D activities in support of Accelerated Closure of D-Area
- Conduct remedial investigation for D-Area Groundwater
- Begin remedial actions in Lower Three Runs Integrator Operable Unit
- Issue remedial decision for A-Area Ash Pile

Savannah River National Laboratory

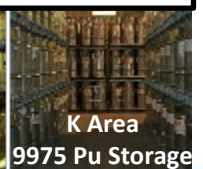
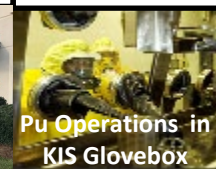
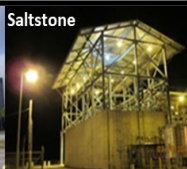
SRNL creates practical, cost-effective solutions for cleaning up nuclear waste, keeping our nation safe, and advancing our nation's energy and manufacturing objectives. Unique facilities include the nation's only radioactive crime investigation lab, labs for safe study and handling of radioactive materials and ultra-sensitive measurement/analysis of radioactive materials, and demonstration sites for testing environmental cleanup technologies.

- Utilize the new Advanced Manufacturing Collaborative facility at USC-Aiken to develop innovative advanced manufacturing solutions to accelerate EM cleanup, reduce costs and shorten schedules
- Expand the utilization of the Savannah River Site for testing, evaluation and training for US Government components
- Develop and apply innovative, next-generation processing technologies for disposition of excess nuclear materials
- Advance high-performance computing capabilities
- Develop Cyber solutions to protect the Nation's critical infrastructure

Nuclear Materials (NM) Program

Unique facilities enable transformation of NMs to forms acceptable for safe disposition or commercial use. NM missions include disposition of Highly Enriched Uranium and Plutonium, and processing of foreign and domestic Research Reactor Receipts. Facilities are located within F, H, K and L Areas. Primary goals are listed below.

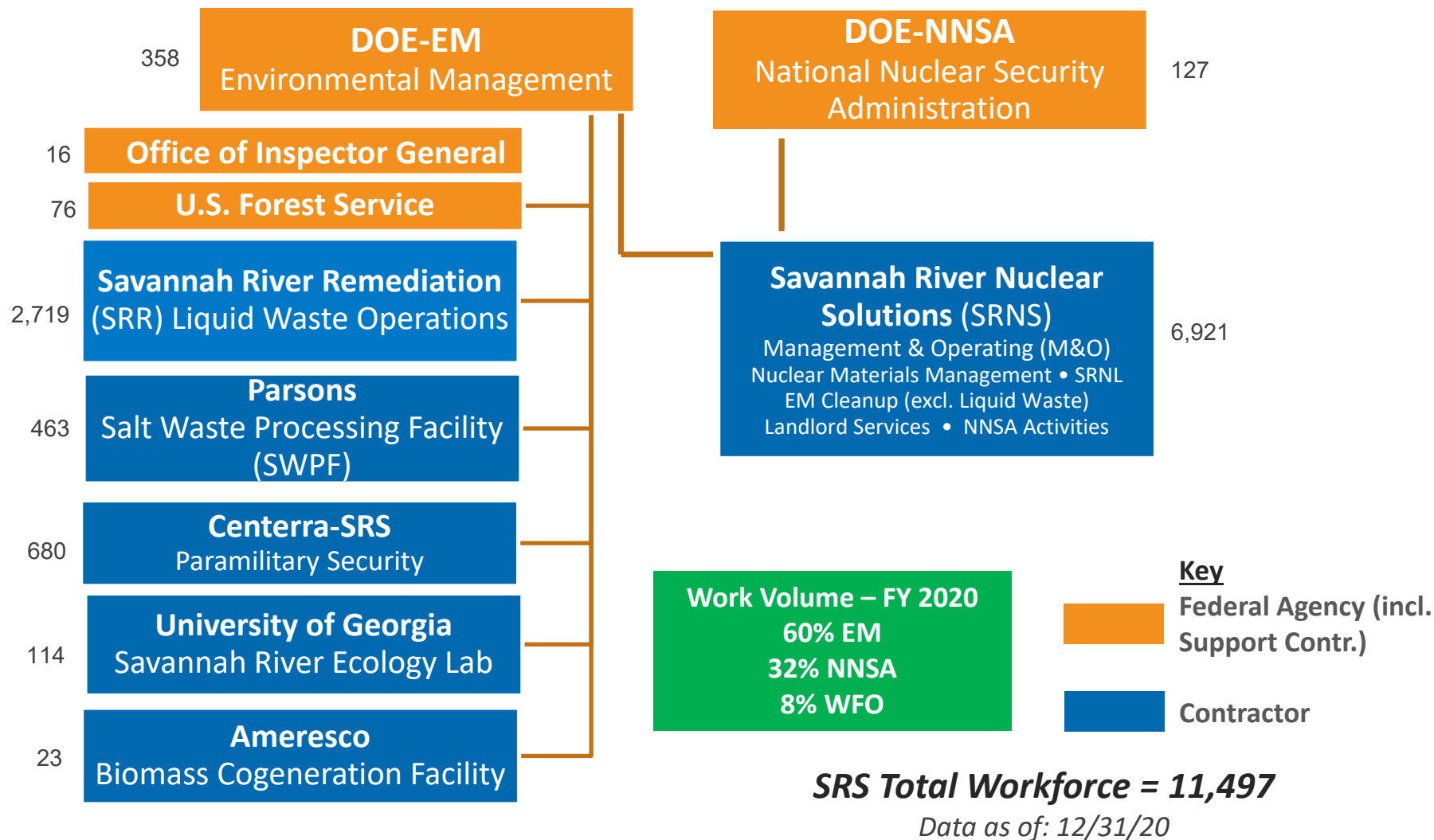
- Operate H Canyon safely
- Receive foreign and domestic NM to support US nonproliferation program.
- Maintain K-Area to safely and securely store special nuclear material and disposition surplus plutonium to support SC settlement agreement
- Safe storage for EM-owned spent nuclear fuel (SNF) in L-Area Basin
- Maintain excess NM facilities for turnover to be D&D
- Maintain safe storage of Heavy Water awaiting a disposition strategy



SRS-EM Key Major Prime Contracts Today

M & O			Liquid Waste Stabilization & Disposition	Protective Forces	Savannah River National Laboratory
Nuclear Materials	Solid Waste	Soil & Water Remediation & Facility D&D			
Landlord Services	Savannah River Remediation	Salt Waste Processing Facility	Centerra-SRS		
		Parsons Government Services			
Type: Cost Plus Award Fee Scope: Site Management & Operations Award Value: \$8.0 B (includes base + fee + option 1 & 2) Current Value: \$14.7 B (includes award value + non-appropriated + ARRA + contract extension 1 & 2) Performance Period: 8/1/08-9/30/21 (One-year option to extend.) Major Pending Changes: AIPT Team initiated for follow on contract. Fee-Bearing Milestones: Various (PEMP).	Type: Cost Plus Award Fee (Annualized Award Fee) Scope: Treatment & Disposal of Liquid Waste at SRS Award Value: \$3.3 B (includes base contract + fee + options 1 & 2) Current Value: \$7.4 B (includes award value + ARRA + Supplemental Salt Initiative + Contract Extensions 1, 2, 3, 4 & 5) Performance Period: 3/30/09-9/30/21; (plus (3) three, (4) four-month options) Major Pending Changes: - Integrated Mission Completion Contract – Proposals Received. - Extension 5 Mod Executed: 9/28/20. Fee-Bearing Milestones: Various (PEMP); subjective & objective milestones.	Type: Cost Plus Incentive Fee Scope: Salt Waste Processing Facility Award Value #: \$328,445,235 Current Value #: \$2.3 B Award Date: 9/17/02 Performance Period #: No fixed performance period. Hot commissioning & 1-year operations are estimated to commence mid-January 2021. Fee-Bearing Milestones: DCPT, Declaration of Readiness for DOE to commence ORR, Key Personnel Incentive, Construction Complete Fee (\$10M Fee holdover once CD-4 is accomplished).). Post CD-4 processing fee of \$10M @ 4.025 Mgal and \$25/gallon processed after 4.625Mgal.	Type: Cost Plus Award Fee Scope: Paramilitary & Security Services Award Value: \$989,012,019 Current Value: \$1,024,829,498 Performance Period: 10/8/09-10/7/21 Major Pending Changes: \$0, Contract award pending Fee-Bearing Milestone: N/A (100% Subjective Award Fee).	Type: Cost Plus Award Fee Scope: M&O for Laboratory Operations Award Value: TBD Current Value: TBD Performance Period: 5 yrs Base + 5 – 1 yr Options Major Pending Changes: Contract awarded Fee-Bearing Milestones: TBD	

SRS Workforce Structure (Primary Tenants)



SRS-EM Regulatory Framework

Issues/Challenges

- Meeting annual salt processing volume commitments
- Development of new waste tank closure commitments for the FFA by 9/20/2022
- Maintain cooperative/collaborative Regulator partnership due to future personnel transition
- Uncertain funding limits future field progress planning and Regulator support

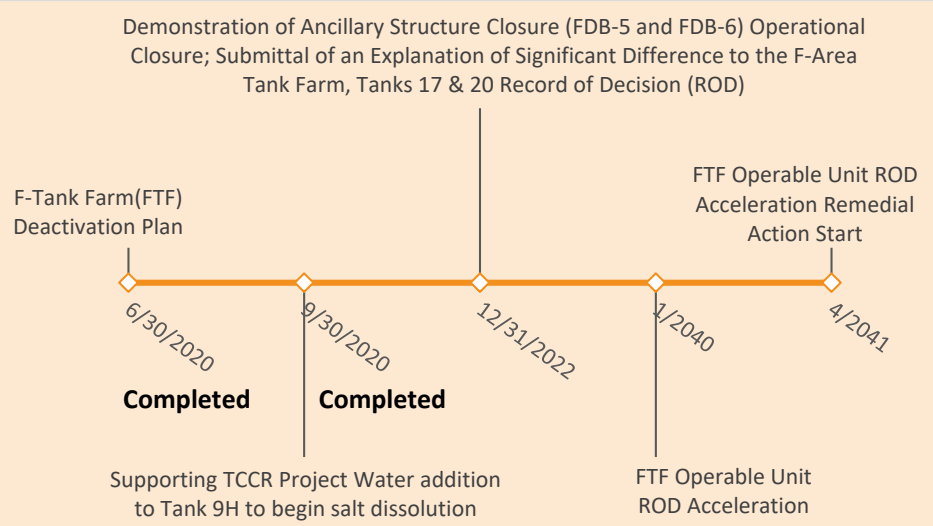
SRS-EM's cleanup work at SRS is driven by four key agreements:

- Federal Facility Agreement (FFA)
- Site Treatment Plan (STP)
- Dispute Resolution Agreement (DRA)
- SRS RCRA Permit

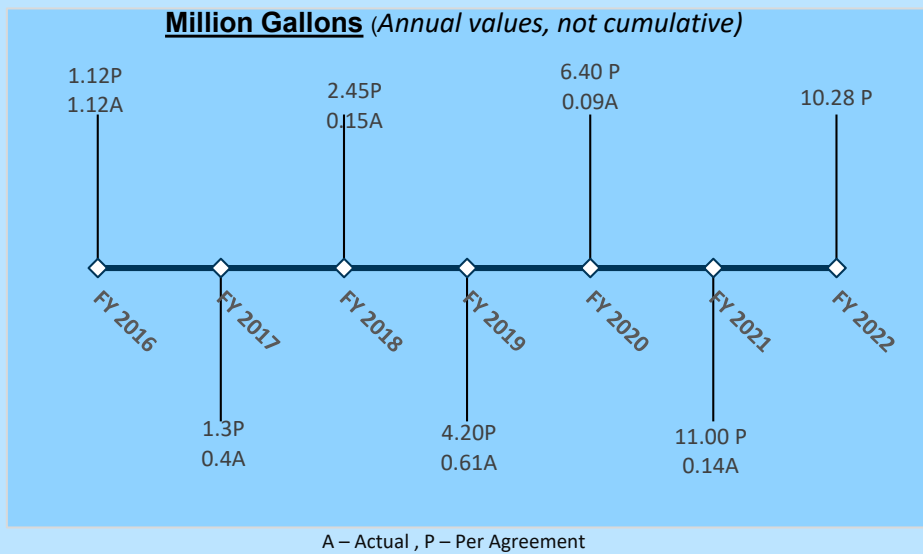
H-Canyon Operations are governed by Public Law

- 50 USC 2633

SRS Federal Facility Agreement 2019 Suspension Agreement



Dispute Resolution Agreement Process 36.75 million gallons of liquid waste between FY 2016 – FY 2022



SRS-EM FY 2020 Year in Review

Nuclear Materials

- ✓ Completed the Canadian Liquid HEU mission, accelerated transfers of Sodium Research Experiment (SRE) to HLW, and dissolved 6 SNF batches in H-Canyon
- ✓ HB-Line was placed in a lay-up state
- ✓ Completed the K-Interim Surveillance (KIS) glovebox optimization outage and downblended sixteen (16) 3013s (30 of 30 complete as of 11/30/20) – FY20 PBI Extended to 11/30 due to COVID-19
- ✓ L-Area received 19 DRR receipts and shipped 7 casks to H-Canyon
- ✓ Completed 235-F DNFSB Implementation Plan Actions

Liquid Waste

- ✓ DWPF poured 8 canisters and double stacked 358 canisters in GWSB #1
- ✓ Processed 89,430 gallons of salt solution through TCCR Unit #1
- ✓ Completed all physical tie-ins of the Liquid Waste System to SWPF by mid-November 2019 as scheduled
- ✓ Completed all activities necessary to initiate salt feed transfers to SWPF with two (2) one-million-gallon batches prepared and qualified, and to receive the three effluent streams from SWPF for treatment in DWPF or the Saltstone Production Facility
- ✓ Shipped ten 3-liter samples of DWPF recycle wastewater to WCS demonstrating the new HLW definition interpretation

SWPF & Saltstone Disposal Units (SDUs)

- ✓ Commenced Hot Commissioning of SWPF
- ✓ Prepared for SWPF S/U & Processed 711 Kgal of DSS in saltstone
- ✓ SDU 7 construction on schedule
- ✓ SDU 8 Construction activities in progress; SDU 9 site preparation activities complete



H-Canyon



Salt Waste Processing Facility



SDUs

SRS-EM FY 2020 Year in Review

Solid Waste

- ✓ Achieved 95% complete for legacy TRU waste removal, including first TRUPACT-III shipment in DOE Complex since 2014
- ✓ Completed installation of CCP Characterization Equipment on Pad 4
- ✓ Issued Closure Certification Report for the Solvent Storage Tanks



Solid Waste Management Facility

Soil & Water Remediation & Facility D&D

- ✓ Decommissioned 4 Gold Metric facilities and completed remediation of 1 waste unit.
- ✓ Met all 76 planned regulatory commitments in FFA & RCRA Permit



G-Area Oil Seepage Basin

Savannah River National Laboratory

- ✓ Continued technical support and leadership in achieving the EM site mission goals related to the disposition of Liquid High-Level Waste
- ✓ Served as the lead for the EM National Laboratory Network supporting the EM Technology Development Program



SRNL's Main Building

SRS-EM Infrastructure Issues/Challenges

SRS maintains a risk-based list of infrastructure projects for both prime contracts

SRNS & SRNL (\$82M planned for project in FY 2021 to FY 2024)

1. Replace 285-H Unit Substations (2.4kV and 480V) 221-H
2. Replace Return Basin (281-2H) Substation & Transformer
3. Security Infrastructure for Centerra Facilities
4. Replace Seven (7) Roof Systems in the SRNL Complex
5. Replace Seven (7) Roof Systems in the L-Area Complex
6. Replace Degrading Switchgear At 681-3G River Water Pumphouse
7. 294-H Sand Filter Roof Upgrades for Supplemental Filter Facility (294-1H)
8. Replace Underground Metallic Piping Systems in Areas A, F, H & G for all commodities
9. 221-H Building Roof Restoration (ABB: A003)
10. Replace Central Process Monitoring & Programmable Logic Control System including the Input Output Rack (PLC / IO Rack) 773-A

SRR (\$178M with \$12M planned for project 1 to 7 in FY 2021)

1. Mixing and transfer pumps for waste tanks
2. Spare pumps and agitators for DWPF vessels
3. H-Tank Farm East Hill utility services
4. Repair/replace waste tank ventilation systems
5. Replace obsolete fire panel systems throughout Liquid Waste
6. Construct new DWPF Failed Equipment Storage Vault
7. Liquid Waste buildings/trailers renovation/replacement
8. Tornado shelters for Liquid Waste personnel
9. Consolidation of Liquid Waste Control Rooms

SRS-EM FY 2021 Priorities

Nuclear Materials

- Dissolve 8.5 batches of SNF through H-Canyon (increase of 2.5 from FY 2020)
- Downblend a total of sixty-nine (69) 3013s (increase of 53 from FY20)
- Receive 19 DRR shipments
- Continue 235-F deactivation activities
- Complete 235-F end state negotiations with Regulators

Liquid Waste

- Complete SWPF Hot Commissioning; initiate “One-Year Operations” at 6 million gallons per year
- Produce 114 canisters through DWPF
- Treat 4.62 million gallons of decontaminated salt solution through Saltstone
- Implement Cement-Free Saltstone operations
- Achieve CD-4 on SDU 7 Line-Item Project
- Process Batch 1 from Tank 9 through TCCR Unit #1
- Initiate heel removal on Tank 15 -older style tank that is partially submerged in the water table
- Complete MCU de-inventory, flushing and solvent removal
- Issue Liquid Waste System Plan, Revision 22

Solid Waste

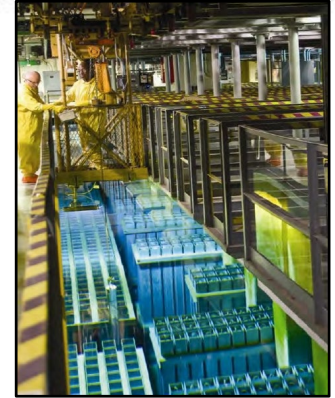
- Ship 10 shipments of TRU waste to WIPP
- Complete the E Area Performance Assessment Revision

Soil & Water Remediation & Facility D&D

- Execute 78 enforceable FFA/RCRA commitments
- Continue acceleration of D-Area Operable Unit D&D of ancillary structures if appropriations support

Savannah River National Laboratory

- Complete transition to new SRNL M&O Contractor
- Complete replacement of B-Block Shielded Cell Windows
- Complete lab modification and transfer F/H Laboratories to SRNL Main Lab
- Potential Fuel Fabrication Demonstration



Spent Nuclear Fuel Bundles



D-Area OU Closure D&D



Lab Modifications

SRS-EM Vision for the Future

Nuclear Materials

5 Year Vision

- Continue H-Canyon dissolutions of aluminum-based fuels
- Complete dissolution of Fast Critical Assembly (Japanese fuel) within the electrolytic dissolver
- KIS Glovebox operating at a 4-shift optimized rate (EM funds 1 shift & NNSA funds remaining 3 shifts)
- Initiate shipments to Waste Isolation Pilot Plant (WIPP) from the new K-Area Pad at a rate of one per month
- Excess non-operating nuclear facilities [235-F, F & H Analytical Laboratories, & Receiving Basin for Off-site Fuel (RBOF)] are deactivated & awaiting turnover for decommissioning

10 Year Vision

- Completion of the Amended Record of Decision SNF processing (e.g. 1000 bundles and up to 200 High Flux Isotope Reactor Cores)
- Decision on the Department's future nuclear material capabilities allows changes to 50 USC 2633



Fuel Receipt



Empty Fuel Cask in L-Basin

SRS-EM Vision for the Future

Liquid Waste

5 Year Vision

- Transition to Integrated Mission Completion Contract
- FY 2021 Hot Commissioning/Operations of SWPF
- FY 2021–25 SWPF process 37.3 Mgal of salt waste
- FY 2022 Conversion to Glycolic Acid Flowsheet in DWPF
- FY 2023 Implement Next Generation Solvent (NGS) in SWPF to increase the throughput to 9 Mgal/yr
- FY 2021–25 DWPF fill an additional 1,093 canisters
- FY 2023 Complete filling Saltstone Disposal Unit (SDU) 6 & Begin filling SDU 7
- FY 2025 Complete filling Saltstone Disposal Unit (SDU) 7 & Begin filling SDU 8
- Close Tank 15, 1F Evaporator System, Concentrate Transfer System and two 1-F Diversion Boxes

10 Year Vision

- Continue to receive H-Canyon receipts
- Nearing completion of salt waste processing through SWPF
- Operationally close eight tanks including all six tanks in the H-Tank Farm water table
- Construct and fill SDUs 7 through 11; construct SDU 12
- Complete waste removal in nearly all the F-Tank Farm tanks and focus on tank closure activities

Solid Waste – 5 to 10 Year Vision

- Maximize TRU waste inventory ready to ship to WIPP and make scheduled/opportunistic shipments
- Provide waste receipt, storage, disposal and programmatic oversight to SRS waste-generating facilities and select offsite NR facilities

SRS-EM Vision for the Future

Soil & Groundwater/D&D Regulatory Scope*

5 Year Vision

- D-Area Closure Actions
 - FY 2019 – FY 2021 Coal Storage Area Removal Action
 - FY 2020-FY 2024 Groundwater Treatability Study
 - FY 2020 – FY 2025 Operable Unit (D&D)
 - FY 2021 – FY 2023 Operable Unit (OU) 2nd Early Action (ROD & RA)
- FY 2020 – FY 2025 Central Shops Early Construction & Operational Disposal Sites (ECODS) (Field Start, ROD & RA Start)
- FY 2021-FY 2024 Lower Three Runs Integrator Operable Unit (IOU) (ROD & RA Start)
- FY 2025 F-Area Ash Landfill 288-F (Site Evaluation Report)
- Ash Alternatives Evaluation – for programmatic cost effectiveness; 10 remaining units

10 Year Vision

- FY 2022 – FY 2029 F-Area OU Early Action (Field Start, ROD & RA Start)
- FY 2022 – FY 2029 L-Area ECOD's & Ash Basin (Field Start, ROD & RA Start)
- FY 2024 – FY 2030 K-Ash Basin OU & 725-A (Field start, ROD & RA Start)
- FY 2024 – FY 2030 Buildings 716-A & 725-A (Field Start, ROD & RA Start)
- FY 2025 – FY 2027 A-Area Ash Pile & Coal Pile Runoff Basin (ROD & RA Start)
- FY 2020 – FY 2029 D-Area Groundwater (Field start, ROD & RA Start)

** Consistent with proposed
FY 2021 FFA Appendix E
submitted 11/15/20*

Lessons Learned/Best Practices

Nuclear Materials

- Coordination of SRNL support to operations to work through integration issues with new equipment or facility operations allowed mission objectives to remain on track

Solid Waste

- NNSA Peer Review of DOE and NNSA facilities concluded that SRS maintains an effective Radioactive Waste Management Program

Liquid Waste (LW) Program

- Use of simulated transfers to allow operators in both the Liquid Waste facilities and SWPF to exercise the procedures and practice communications prior to real waste transfers
- Quarterly meetings with South Carolina Department of Health and Environmental Control (SCDHEC) and EPA to maintain close working relationships and educate their staffs on Liquid Waste operations and associated challenges
- Successfully demonstrated the ability to double-stack canisters in Glass Waste Storage Building #2, eliminating the need for construction of additional glass waste storage.

SWPF & Saltstone Disposal Units (SDUs)

- Grouping of SDU Line Item projects for economies of scale and vendor experience

Soil & Water Remediation & Facility D&D

- Ash remediation – presumed boundaries and volumes of coal ash may not be well defined
- Core Team – Maintain key relationships at all levels to streamline decision making
- Maintain technical and managerial expertise – Establish strong mentor/protégé relationships

SRS-EM Program Management Protocol – Implementation Plan

Major Requirements	Current Practice	New Requirements	Implementation Actions
Program Planning			
Develop Site Program Plan - Focus on next 10 years work accomplishments - Consider EM Prioritization Schema 10-Yr Rolling Vision	Previous practice discontinued in FY 2016	√	Site Program Plan to be focused on the next 10 years planned accomplishments, anticipated impacts from funding constraints, and linkages between business/contracting strategy and planned prioritized work, lessons learned, and contractor performance evaluations and lifecycle estimate
Development and Maintenance of EM Life-Cycle Estimates			
Federal Site Life-Cycle Estimate (FSLE) - Includes a Federal Risk Management Plan (RMP), program scope, cost and schedule profiles for the work activities required to complete the SRS EM mission - Break out PBS 30 Soil & Groundwater and D&D ABBs	√ ILCE includes a Risk Management Plan	√ √	- Not currently using Primavera in ILCE. Need to incorporate updated Primavera (P6) schedule to validate cost profile and provide a visual of Lifecycle activities by PBS with milestones to complete the DOE-SR EM mission. - Need to break out separate ABB for Soil & Ground Water and D&D, currently, all in the same PBS 30 ABB to be in alignment with HQ ABBs
Federal Integrated Site Baseline (FISB) First 5 to 10-year period of the “to-go” portion of the lifecycle estimate into a master schedule CPB, with interdependencies schedule, and within the available annual funding	Reflects 5-year CPB Lifecycle (CPB and Outyear) are Not funding constrained	√ √	- HQ to select appropriate timeframe for SR FISB, between 5 to 10-year years based on new End State Contracting Strategy - Contractor to re-align integrated CPB upon HQ notification of approved funding profile, with aligned performance metrics and scheduled Key Program and PBI Milestones; outyear to reflect target funding levels which may increase the lifecycle estimate.

SRS-EM Program Management Protocol – Implementation Plan

Major Requirements	Current Practice	New Requirements	Implementation Actions
FSLE - Annual Update Timeframe: Initiate in January to reflect authorized funding	√		Falls in line with current practice
Independent Reviews (IR) and Program Evaluations			
Federal Site Life-Cycle Estimates Site Mgr. convenes IR team, consisting of HQ, other sites' personnel, EMCBC, etc.	DOE Management and KPMG	√	Identify when DOE-SR Mgr. would like to begin/convene an IR, for EM DOE-SR FY 2022 or when IMCC, Security and M&O contracts are transitioned. Commence and complete the IR team review before KPMG site visit begins.

DOE-SR Program Management Approaches

- **Contractor Performance Baselines**

- Developed yearly with 5 year look ahead
- Includes Scope, Cost, Schedule, and performance metrics
- Only First year is approved by DOE and baseline controlled using Baseline Change Proposals (BCPs) for any changes
- Typically, there are multiple changes in the year involving final Congressional Budget Funding, scope changes in specific projects, Policy change in direction, etc.

- **Project Execution Management Plan (PEMP)**

- Jointly developed by Contractor and DOE-SR on an annual basis
- Defines specific performance milestones to be executed based on DOE mission needs
- Scope value, expected schedule, acceptance criteria, and incentive value approved by DOE-SR and HQ
- Administered by the Contracting Officers
- Tracked in status meetings with the Contractors
- Contractor submits Performance Based Incentive (PBI) completion documentation
- DOE validates completion of the PBI and acceptance criteria and provides recommended fee payment
- DOE Fee Advisory Board reviews PBI validation for approval and payment

DOE-SR Program Management Approaches (continued)

- **Management Oversight Tools**

- Contractor utilizes an Earned Value Management System to track baseline progress
- Integrated Planning and Budget Systems (IPABS) – HQ Reporting Performance Reporting System
 - *Tracks costs, schedule, and performance milestones and metrics*
 - *Used for Budget formulation, lifecycle estimates, and Environmental Liability Reporting*
- Monthly Program Reviews with contractors – subjective feedback meetings
- Quarterly Program Reviews with HQs
- Annual Program Review with HQs for Site Activities
- Quarterly and Annual Budget Reviews with HQ
- Bi-monthly Project Management Executive Review of Line-Item (< \$100M) and other critical projects by Site Manager
- Baseline Change Control approved by the Change Control Board – Chaired by Site Manager
- Budget Formulation and site priority integration meetings with all Program Baseline Summary (PBS) Leads
- Annual rollup and subjective fee determination for contractors by the Fee Determination Official

SRS EM PBS's & IPL Categories

PBS 11C

Nuclear Materials Stabilization & Disposition

- Min Safe
- Operational Support
- Making Progress

PBS 13

Solid Waste Stabilization & Disposition

- Min Safe
- Operational Support
- Regulatory Commitments
- Making Progress

PBS 30

Soil & Water Remediation, Facilities D&D

- Min Safe
- Operational Support
- Regulatory Commitments
- Making Progress

PBS 41

Surveillance, Maintenance, and Deactivation

- Min Safe
- Operational Support
- Making Progress

PBS 42

Infrastructure and Land Management

- Operational Support

PBS 14C

Radioactive Liquid Tank Waste Stabilization & Disposition

- Min Safe
- Operational Support
- Regulatory Commitments

PBS 100

Community & Regulatory Support

- Operational Support

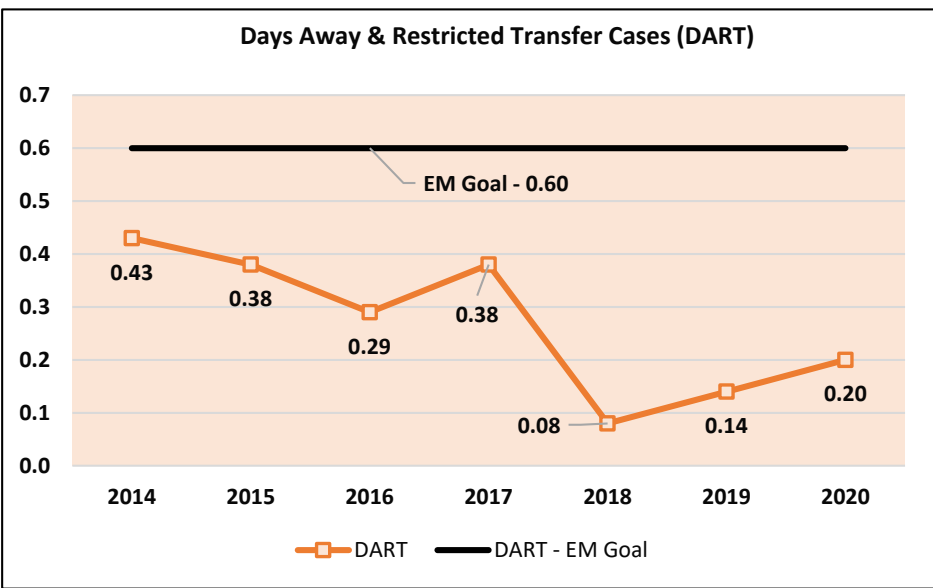
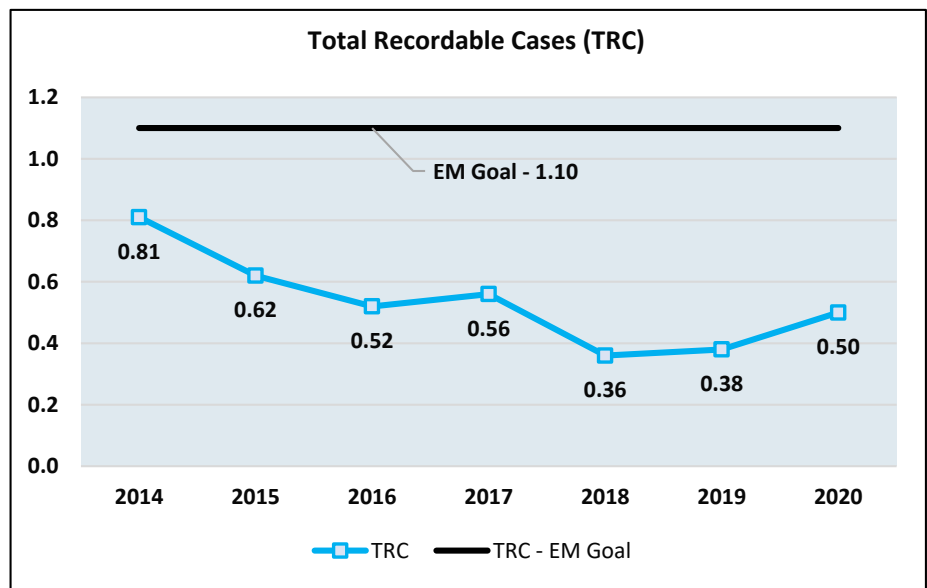
PBS 20

Safeguards & Security

- Min Safe
- Operational Support

Backup

SRS-EM FY 2020 Safety Performance



SRS Safety Case Rates

- Slight increase in SRS injury rates in FY 2020, when compared to FY 2019
- Below EM goals and industry averages
- Corrective actions are being implemented

FY 2020 Safety Performance is a composite of all SRS contractor

Data as of 09/30/20