Cost Savings Initiatives (CSI) Process

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Project Integration and Planning
Savannah River Remediation

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Purpose

• To fulfill Savannah River Site Citizens Advisory Board 2012 Waste Management Committee Work Plan topic
Liquid Waste System

- DOE Complex Legacy Materials
  - Savannah River & other Spent Fuel
    - H Tank Farm
      - H Canyon
      - Saltstone
    - F Tank Farm
      - Empty Tanks -> Closure
      - Salt Processing
      - Salt Disposition Units (SDUs)
      - Aluminum Dissolution
      - Sludge Washing
    - Salt Disposal Units (SDUs)
  - DWPF - Defense Waste Processing Facility
    - At-Tank Treatment
      - SCIX - Small Column Ion Exchange
    - Cs, Sr & Actinides
    - Decontaminated Salt Solution (DSS)
  - GWSBs - Glass Waste Storage Buildings
    - canisters
    - Disposal

- ARP - Actinide Removal Process
- MCU - Modular Caustic Side Solvent Extraction Unit
- SWPF - Salt Waste Processing Facility

Legend:
- DSS - Decontaminated Salt Solution
- SCIX - Small Column Ion Exchange
- SDUs - Salt Disposition Units
- NGS - Next-generation Solvent

Abbreviations:
- DWPF: Defense Waste Processing Facility
- GWSB: Glass Waste Storage Building
- ARP: Actinide Removal Process
- MCU: Modular Caustic Side Solvent Extraction Unit
- SWPF: Salt Waste Processing Facility
- DSS: Decontaminated Salt Solution
- SCIX: Small Column Ion Exchange
- SDUs: Salt Disposition Units
- NGS: Next-generation Solvent

Keywords:
- Aluminum Dissolution
- Sludge Washing
- ARP/MCU
- SWPF
- Salt Processing
- Cs, Sr & Actinides
- DSS
Regulatory Drivers

• Federal Facilities Agreement (FFA)
  – Requires the 22 remaining old-style tanks to be operationally closed by the end of FY2022

• Site Treatment Plan (STP)
  – Requires “removal of the backlogged and currently generated waste inventory by 2028”
SRR Funding Profile

Note that GWSB# 3 not included in the funding profile.
• All Liquid Waste activities are placed on an Integrated Priority List
• In the past, the funding line would be moved up or down the list to match the funding allocation
  – everything below the line was cut
• This would have eliminated all project work
  – waste removal to provide feed to Defense Waste Processing Facility
  – tank closures
  – preparations for Salt Waste Processing Facility (SWPF) startup
• A new approach was needed
  – that can be executed with high confidence
  – without reliance on new technologies or regulatory relief
4 Step Plan
1. Scope and Price the Just in Time (JIT) Compliant Case
   - eliminate everything that is not needed to support regulatory commitments, employee development and safety
   - schedule what remains on a Just in Time basis
2. Add new scope and pricing not in the current contract
3. Compare JIT Compliant Case cost to expected funding
4. Priority Add Backs (PABs)
   - Use unallocated funding to “buy back” program acceleration or to reduce programmatic risk

JIT Compliant Case + PABs = Recommended Case
• New technologies will be pursued, but treated as opportunities
Scope to meet regulatory requirements JIT

1. Surveillance and Maintenance
2. Immobilize sludge to meet the STP & FFA JIT
   - adjust canister production to finish Sep 2028 which is an average of 275 cans/year with melter outages
   - adjust Glass Waste Storage Building (GWSB) #3 schedule to match canister production
3. Immobilize salt to meet the STP & FFA JIT
   - Rely on SWPF (Small Column Ion Exchange not needed for JIT)
4. Close tanks to meet the FFA JIT
   - defer tank closures so that the FFA is met JIT in FY2022
5. Receive waste from other site missions
Priority Add Back Guide

• Mega SDUs and Control Room Consolidation
  (Return On Investment < 3-4 years)
• Mature Tank 48 alternative treatment technology
• Accelerate closure of old-style sludge tanks (unrestrained by SWPF)
• Deploy Small Column Ion Exchange to reduce SWPF risk (late start, low throughput)
• Accelerate DWPF to finish Dec 2026 (275 > 320 cans/yr)
• Additional acceleration of tank closures as increased salt processing allows
• Start Tank 48 chemical destruction field modifications
• Life Cycle acceleration per LWSP rev. 16
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This Plan

FFA
Replace current Salt Disposal Units (SDUs) design with a Mega-SDU design

Each Mega-SDU will provide disposal capacity equivalent to approximately 10 previously planned SDU cells.

Benefit
- Reduces project costs associated with construction installation materials and schedules

Cost savings
- ~$97M from FY12-FY17
- ~$487M lifecycle
Control Room Consolidation

• Combines 4 separate control rooms into one Consolidated Control Room

• Benefits
  – Improved safety environment
  – Enhanced conduct of operations and command/control
  – Simplified communications
  – Consolidate and standardize operator interface
  – Integrated computer system

• Cost savings
  – ~$21M for FY12-FY17
  – ~$54M lifecycle
Projected Life Cycle Savings at Expected Funding

Previous SRS Baseline

System Plan Revision 16 (Max Life Cycle Acceleration)

System Plan Revision 17 (Current Expected Funding)

- Federal Facilities Agreement commitment for closure of old style tanks
- STP commitment for completion of waste removal

Salt Waste Processing Facility Startup
Old-Style Tank Closures Complete
All Waste Removal Complete
All Tank Closures Complete
The Recommended Strategy supports:

- FFA compliance
- STP compliance
  - All salt and sludge processed by 2026
- Major portion of Life Cycle Cost savings preserved
  - 4 years at $2B
- Maintains the option for further Life Cycle acceleration with additional investment