System Plan Revision 20

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Purpose

- Fulfill Savannah River Site Citizens Advisory Board request for briefing on Revision 20 of the Liquid Waste System Plan
Agenda

- Liquid Waste System Overview/Status
- Rev 20 Inputs & Assumptions
- Rev 20 Results
- Summary
SRR Liquid Waste Program Operational Highlights

- **Nuclear Material Disposition/Legacy Liquid Waste**
  - 43 tanks
  - 36 Mgal
  - 252 MCi
  - 8 tanks grouted & closed
  - 4 tanks bulk waste removed

- **Salt waste**
  - ARP
  - MCU

- **TCCF** (under construction)

- **DWPF**
  - Sludge waste
  - <1% radionuclides remain in tanks

- **Glass Waste Storage**
  - Most radionuclides to glass
  - 4,039 cans poured of projected 8,170

- **Saltstone Production Facility**
  - 8.8 Mgal salt waste treated
  - <<1% radionuclides to Saltstone

- **Saltstone Disposal Units**
  - 19 Mgal grout dispositioned containing 463 kCi

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

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System Planning

- Changes to System Plans are driven by:
  - Advances in Technology
  - Change in Sequencing
  - Acceleration Opportunities
  - Funding Adjustments
System Planning

- Changes from Rev 19 to Rev 20:
  - Advances in Technology  Tank Closure Cesium Removal
  - Change in Sequencing  Prioritize F-Tank Farm Isolation
  - Acceleration Opportunities
  - Funding Adjustments  Improved funding profile
Significant Inputs

- SWPF Start Up December 2018
- H-Canyon operates thru 2025 with flushing in 2026
- Double-Stacking of GWSB #1 increase canister storage capacity by 2,270 storage locations
- TCCR will be demonstrated on Tank 10 salt waste
Tank Closure Cesium Removal (TCCR)

Utilities (by SRR) (i.e., electricity, water)

Spent treatment media

Interim Safe Storage

Tank Closure Cesium Removal (TCCR) Unit

Dissolved salt

Tank 10H

Tank 11H

Tank 50H

SDU
Background

Impacts of the lower Rev 19 funding levels were realized:
- SWPF is not supported at its rated capacity upon startup
- Sufficient salt batch blend tanks not available at SWPF startup
- ARP/MCU operations limited due to funding and SDU space
- Funding for DWPF enhancements not available until FY20 with completion in 2022
- ELAWD II enhancements and increased staffing at Saltstone not funded until FY24
- Inability to afford sludge waste removal at a pace sufficient to support desired canister and salt throughput
- Limited canister storage locations prior to completion of the GWSP (funding)
Funding Comparison

**Improved funding profile enables full SWPF support**

**Impacts of the lower Rev 19 funding levels were realized:**
- SWPF is not supported at its rated capacity upon startup
- Sufficient salt batch blend tanks not available at SWPF startup
- ARP/MCU operations limited due to funding and SDU space
- **Funding** for DWPF enhancements not available until FY20 with completion in 2022
- ELAWD II enhancements and increased staffing at Saltstone not **funded** until FY24
- Inability to **afford** high waste removal at a pace sufficient to support desired canister and salt throughput
- Limited canister storage locations prior to completion of the GWSP (**funding**)
Salt Processing Comparison (Cumulative)

15.3 Mgal

Mgal

FY16 FY17 FY18 FY19 FY20 FY21 FY22 FY23 FY24 FY25

Rev 19
Rev 20
Other dates of interest

- SDU 6 needed January 2018
- SDU 7 needed November 2020
- Additional canister storage required November 2029
- Next Generation Solvent Deployed at SWPF in FY2022
Alternative Cases

- **Case 2** – SWPF startup in January 2021 – Same funding profile as Case 1

- **Case 3** – SWPF startup in December 2018 with additional funding
  - Deploy 2nd TCCR
  - Accelerate FTF Isolation
  - Deploy NGS at SWPF in year earlier (FY21)
Tank Closure

![Diagram showing tank closure timeline with labels for Rev 20 (Case 1) and Rev 20 (Case 3) with specific years and categories like BWR Comp, F-Area Old Style, F-Area New Style, H-Area Old Style, and H-Area New Style with waste removal stages.](image-url)
Summary

- Improved funding profiles enables SWPF to operate at rated capacity

- Additional funding (above provided profile) could enable accelerated isolation of FTF and overall program acceleration
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<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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<tbody>
<tr>
<td>ARP</td>
<td>Actinide Removal Process</td>
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<td>BWRE</td>
<td>Bulk Waste Removal Efforts</td>
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<td>Department of Energy</td>
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<td>Department of Energy – Environmental Management</td>
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<td>DWPF</td>
<td>Defense Waste Processing Facility</td>
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<td>ELAWD</td>
<td>Enhanced Low Activity Waste Disposal</td>
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<td>FFA</td>
<td>Federal Facilities Agreement</td>
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<td>FY</td>
<td>Fiscal Year (October 1st – September 30th)</td>
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<tr>
<td>GWSB</td>
<td>Glass Waste Storage Building</td>
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<td>Liquid Waste System Plan</td>
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<td>MCi</td>
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<td>Modular Caustic-side Solvent Extraction Unit</td>
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