Saltstone Disposal Unit (SDU) 6 and Saltstone Disposal Units (SDUs) 7 - 12

Jean Ridley, PE
Federal Project Director, SDU 6

Shayne Farrell
Federal Project Director, SDU 7 – 12

May 2017
Liquid Waste Mission

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

Operational Goals
- Radionuclides to glass
- Chemicals to Saltstone
- Tanks cleaned and operationally closed

Legacy Liquid Waste
- 43 tanks
- 35 Mgal
- 266 M Ci

Tanks Cleaned and Closed
- <1% radionuclides remain in tanks

Salt waste
- DWPF

Sludge waste

Radionuclides
- Most radionuclides to glass

Solid (not hazardous) waste
- <<1% radionuclides to saltstone

Salt Processing

SWPF

www.energy.gov/EM
SDU 6 Tank Construction Progress

August 2014

November 2014

March 2015

Jan 2017
Cell failed hydrostatic leak test due to cracks in the floor. (November 2015)

Attempted repair cracks using epoxy injection. (December 2015)

Partially filled cell with buffered water to promote Autogenous healing. Tank floor continued to leak. (January 2016)

Subject Matter Experts (SMEs) employed to determine path forward. (February 2016 – March 2016)

Engineering Study Report (ESR) recommended an elastomeric liner system (REMA 4CN) to provide leak tightness. (May 2016)

Liner successfully passed 1000 hour salt solution soak test. (June 2016)

Liner procured and installed. (August 2016 – December 2016)
SDU 6 leak tightness assured by:

- Selection of the best synthetic liner system
- Installation of the selected liner system in accordance with manufacturer approved procedures
- Appropriate application of Quality Requirements
- Installation oversight by the Manufacturer’s Service Representative
- Hydrostatic leak test performed with 41’ of water
SDU 6 Operations:

- Filling SDU 6 with radioactive grout for approximately 4 years [Ref. LWSP]
- Anticipate grout pump rate of ~150 gpm (216,000 gals in 24 hours)
  - SDU 6 is approximately 43 feet high (at walls) with avg. ID of 375 feet which equates to ~68,850 gals / inch high (~3.13 inches/day 24 hour ops.)
- Liquid grout has the consistency of “chocolate milk”

Grout Distribution System

- 9 Grout Pour Locations with automated valve control
SDU 6 Cost and Schedule

- Critical Decision-2 (Establish Baseline) Cost $143.2M
- CD-4 (Commence Operations) Estimate at Completion $121.8M

- CD-2 Schedule Completion November 2018
- CD-4 Schedule Completion May 31, 2017
SDU 6 Status

- Liner installation complete December 15, 2016
- Successfully passed 41’ hydrostatic leak tightness test December 28, 2016
- Successfully passed first clean cap grout run March 22, 2017
- Completed DOE readiness assessment April 2017
- Approval to Commence Operations (CD-4) package submitted to DOE headquarters May 2017
Remaining SDUs
SDUs 7 - 12
• SWPF Project Office (SWPFPO) assumed project management ownership for future SDUs
  
  – Shayne Farrell (SWPF - DFPD) named Federal Project Director for remaining SDUs
  
  – Utilizing experience and resources from successful construction of SWPF

• Remaining SDUs will be designed and constructed incorporating lessons learned from successful completion of SDU 6, including use of the liner
SDU Mission Need Timeline

Need Dates From Liquid Waste System Plan Rev 20

<table>
<thead>
<tr>
<th>SDU</th>
<th>Construction</th>
<th>Operations</th>
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</thead>
<tbody>
<tr>
<td>SDU 6</td>
<td>Jul 2013</td>
<td>Feb 2017</td>
</tr>
<tr>
<td>SDU 7</td>
<td>Jun 2017</td>
<td>Sep 2020</td>
</tr>
<tr>
<td>SDU 8</td>
<td>Mar 2019</td>
<td>Jun 2022</td>
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<tr>
<td>SDU 9</td>
<td>Aug 2020</td>
<td>Nov 2023</td>
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<td>SDU 10</td>
<td>Jun 2022</td>
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<td>SDU 11</td>
<td>Nov 2023</td>
<td>Feb 2027</td>
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<tr>
<td>SDU 12</td>
<td>Apr 2025</td>
<td>Jul 2028</td>
</tr>
</tbody>
</table>

Start | End   | Start   | End   |
------|-------|---------|-------|
Nov 2020 | Sep 2022 | Nov 2020 | Sep 2022 |
Oct 2022 | Feb 2024 | Oct 2022 | Feb 2024 |
Mar 2024 | Dec 2025 | Mar 2024 | Dec 2025 |
Jan 2026 | May 2027 | Jan 2026 | May 2027 |
Jun 2027 | Oct 2028 | Jun 2027 | Oct 2028 |
Nov 2028 | Jun 2030 | Nov 2028 | Jun 2030 |
SDU 7 Status

SDU 7 Project recently obtained Approve Alternative Selection & Cost Range (CD-1)

- **Cost**
  - Cost Range: $110 million to $170 million

- **Schedule**
  - Approve Long Lead Procurement (CD-3A) – September 2017
  - Approve Performance Baseline/Approve Start of Construction (CD-2/3) – November 2017
  - Approve Start of Operations (CD-4) – October 2022

Note: This date includes CD-1 estimated schedule contingency of 23 months however, the project is focused on the target date of November 2020 to meet LWSP Rev. 20 need date.
SDU 7 Proposed Siting
SDU 8 – 12 Status

- Mission Need for SDUs 8 and 9 SDUs approved in March 2017
- SDU 8/9 Design planned to begin in Fall 2017
- Approval for Mission Need for SDUs 10-12 planned for Fall 2017

Site Plan Concept
QUESTIONS