Salt Waste Processing Facility Baseline Status

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Savannah River Site Citizens Advisory Board Meeting
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Purpose

- To brief the Citizens Advisory Board on the status of the Salt Waste Processing Facility (SWPF) Project baseline.

- Fulfill a 2014 Waste Management Committee Work Plan topic.
Acronyms

- ARP – Actinide Removal Process
- ASME – American Society of Mechanical Engineers
- CAB – Citizens Advisory Board
- CD-1 – Critical Decision 1, Approve Mission Need
- CD-2 – Critical Decision 2, Approve Performance Baseline
- CD-3 – Critical Decision 3, Approve Start of Construction
- CD-4 – Critical Decision 4, Approve Start of Operations or Project Completion
- CPA – Central Processing Area
- DWPF – Defense Waste Processing Facility
- DSS Line – Decontaminated Salt Solution
- HVAC – Heating, Ventilation and Air Conditioning
- LF – Linear Feet
- LW – Liquid Waste
- MCU – Modular Caustic –Side Cesium Extraction Unit
- NQA-1 – Nuclear Quality Assurance 1
- PC – Performance Category
- SWPF – Salt Waste Processing Facility
- WT Line – Waste Transfer Line
This critical facility will:

- Reduce radioactive waste volume by turning waste into glass (vitrification) at the Defense Waste Processing Facility (DWPF).
- Utilize the same radioactive waste removal processes as Interim Salt Processing Facilities (Actinide Removal Process/Modular Caustic – Side Cesium Extraction Unit (ARP/MCU) – Pilot Facility)
- Process over 90% of Tank Farm liquid radioactive waste
  - 97 million gallons after adding liquid to waste (dissolution) to facilitate processing
- Have a nominal capacity of 6 – 8 million gallons per year

Parsons is the contractor for the SWPF project [design, construct, commission and operate for one year]
The SWPF Role in SRS Liquid Waste System:

- Designed to process more than six (6) million gallons per year
- Designed to achieve a decontamination factor of 40,000
- Technology is very mature
SWPF Project Milestones

- **Construction**: 2002-2012
- **Commissioning**
  - Hot Commissioning
  - One Year Operations
  - Continued Operations 10-15 Years
- **Construction Complete**: 12/31/2016
- **Target Facility Operation (CD-4)**: 9/30/2018

**Timeline Notes**
- CD-0, Critical Decision 0, Approve Mission Need
- CD-1, Critical Decision 1, Approve Alternative Selection and Cost Range
- CD-3B, Approve Start of Construction
- CD-4, Approve Start of Operations/Project Completion
June 2008
- Basemat Installed
  - Performance Category 3 (PC-3)
  - 8 feet thick
  - 32,943 square feet
  - 10,032 cubic yards

December 2010
- First Story Under Construction
  - Walls to 100 ft. elevation completed
  - Begin installation of process piping
  - Wall placement to the 139 ft. elevation in progress
  - Successful installation of the Contactor Modules
  - Dark Cells fabricated

July 2012
- Vessel Placement
  - Successful installation of 10 large ASME Vessels
  - 150,000 gallons of tank volume in the Central Processing Area (CPA)
  - Performance Category-1 support structures underway

TODAY – 72% Physical Completion
- Completed installation of Roof – Facility closed in
- Heating, Ventilation and Air Conditioning (HVAC) 84% complete
- Ventilation Stack complete
- Fire coating in progress
- Transformers and Switchgear in place
- All major process equipment in place

- Waste transfer line installation in progress
- 72,000 linear feet (LF) of piping installed (60% complete)
- 59,770 welds made (80% complete)
- 79,950 LF of conduit installed (72% complete)
- 105,550 LF of wire and cable installed (27% complete)
SWPF Completed Facility

**SWPF 3D Model View**

SWPF is a complex, first of a kind nuclear chemical processing facility

**SWPF Stats**

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<tbody>
<tr>
<td>Area</td>
<td>~140,000 sq.ft</td>
<td>Rebar</td>
<td>~4,600 tons</td>
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<tr>
<td>Basemat</td>
<td>8 ft. thick</td>
<td>Actuated Valves</td>
<td>~1,000</td>
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<tr>
<td>Concrete</td>
<td>~40,000 cubic yards</td>
<td>Manual Valves</td>
<td>~3,000</td>
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<td>Pipe</td>
<td>~23 miles</td>
<td>Instruments</td>
<td>~1,500</td>
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<td>Welds</td>
<td>~74,560</td>
<td>Tanks</td>
<td>85</td>
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<tr>
<td>Wire and Cable</td>
<td>~816,690 LF</td>
<td>Pumps</td>
<td>116</td>
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December 2016
Large ASME Vessels – Delivered
May/June 2012

There are 10 Large American Society of Mechanical Engineers (ASME) Vessels in SWPF
Project Status

- June 2013 - DOE and Parsons modified the contract for remaining construction workscope:
  - Value of $530M with a cost cap
  - Construction completion date of December 2016
  - Cost and schedule performance incentivized

- Construction status as of December 2013:
  - Project is currently forecasting $31.8M underrun through construction complete
  - Project is currently forecasting 5 months schedule acceleration for construction complete to July 2016

- Negotiations underway for remaining contract workscope for start-up, commissioning, one year of operations, and six month support.
Testing Program provides high degree of confidence in new technologies’ ability to meet and exceed performance requirements.

Next Generation Solvent, blended and qualified by the Savannah River National Laboratory, improves Cesium extraction and facilitates higher waste throughput (up to 150% increase) to shorten lifecycle time for tank waste removal and system closure.

Successful High Sodium Testing (in progress) – further increase to throughput.
Focus on Operational Start-up

High degree of technical confidence

Integrate technical improvements to enhance facility throughput

Optimize facility operability

Maintain integration with Liquid Waste (LW) Program

Minimize LW lifecycle costs

Testing on full-scale equipment at Parsons Technology Center in Aiken