Salt Waste Processing Facility
Project Status and Path Forward

Pam Marks, Federal Project Director
Salt Waste Processing Facility
July 25, 2017
SWPF Project Overview
This critical facility will:

- reduce radioactive waste volume requiring vitrification,
- utilize the same actinide and cesium removal unit processes as Interim Salt Processing Facilities (Actinide Removal Project/Modular Caustic Side Solvent Extraction Unit)
- process over 90% of Tank Farm liquid radioactive waste (~100 Mgal after dissolution), and
- have a nominal capacity of 6 – 8 Mgal/year (or better!).
Liquid Waste System

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

SWPF
- Designed to Process more than 6 millions gallons per year
- Cs Decontamination factor > 40,000
- Technology is very mature
- No open Defense Nuclear Facilities
- Safety Board issues

H-Canyon Receipts

Salt Waste

Tanks Cleaned and Closed

Recycle

Sludge Waste

DWPF

Radionuclides

Glass Waste Storage

Saltstone Disposal Facility

Decontaminated Waste Stream

SWPF (construction complete)
SWPF Process Overview

F and H Area
Tank Farms

Alpha
Strike
Process

Cesium
Removal
Process

Alpha
Finishing
Process

Saltstone
Facility

Concentrated
Sr-90/Actinides
Sludge

Cs Enriched
Strip Effluent

Decontaminated
Waste Stream

Concentrated
Sr-90/Actinides
Sludge
### SWPF Stats

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>Area</td>
<td>~140,000 sq.ft</td>
</tr>
<tr>
<td>Basemat</td>
<td>8 ft. thick</td>
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<tr>
<td>Concrete</td>
<td>~40,000 cubic yards</td>
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<tr>
<td>Pipe</td>
<td>~23 miles</td>
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<tr>
<td>Welds</td>
<td>~74,560</td>
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<tr>
<td>Wire and Cable</td>
<td>~816,690 LF</td>
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<tr>
<td>Rebar</td>
<td>~4,600 tons</td>
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<td>Actuated Valves</td>
<td>~1,000</td>
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<tr>
<td>Manual Valves</td>
<td>~3,000</td>
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<tr>
<td>Instruments</td>
<td>~1,500</td>
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<tr>
<td>Tanks</td>
<td>85</td>
</tr>
<tr>
<td>Pumps</td>
<td>116</td>
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</table>
SWPF Project Milestones

DESIGN PHASE - CONCEPTUAL THRU FINAL

CONSTRUCTION

TESTING & COMMISSIONING

TODAY – July 2017

HOT COMMISSIONING

ONE YEAR OPERATIONS

CONTINUED OPERATIONS

10-15 Years

TARGET FACILITY OPERATION (CD-4)

12/2018

CONSTRUCTION COMPLETE 4/22/2016

CD-0, SEP 2002 9/2/2002
CD-1, MAR 2004 3/31/2004
CD-2/3A 9/24/2007
CD-3B 1/2/2009


2018 2020
Construction was completed on April 22, 2016

- 8 months ahead of the Target Schedule of December 31, 2016
- $60M+ under the Target Cost of $530M
- No contract change orders or Requests for Equitable Adjustments
Parsons is the contractor for the SWPF project [*design, construction, testing & commissioning, and operations for one year*].

Current workforce of ~405

- Engineering
- Testing
- Ops/Maintenance
- Craft
- Project Support
SWPF Testing & Commissioning Status
# Testing & Commissioning Program: Safety Management Programs

## MSA*-1
- **System Testing (Water)**
  - Conduct of Testing
  - Conduct of Operations/Procedures
  - Cognizant System Engr. Program
  - Configuration Management
  - Quality Assurance
  - Maintenance
  - Work Planning and Control
  - Industrial Safety, Environmental Protection

## MSA*-2
- **Cold Commissioning (Chemical)**
  - Chemical Safety/Industrial Hygiene
  - Fire Protection
  - Training and Qualification
  - Waste Management
  - Performance Testing (with simulants)

## MSA*-3
- **Contractor ORR / DOE ORR***
  - Emergency Management
  - Nuclear Safety (DSA/TSR/SER)**
  - Radiation Protection

## CD-4
- **Hot Commissioning**
  - Performance Testing
  - Radioactive Shielding
  - Removal Efficiency
  - Waste Acceptance Criteria
  - Environmental Testing

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*MSA – Management Self Assessment

**Documented Safety Analysis/Technical Safety Requirements/Safety Evaluation Report

***MSA-3 and ORR include integration with LW contractor
SWPF Testing Activities

System Turnover

Calibration, Grooming and Alignment
- Component level verification, setup, and tuning to support SOTs.

System Operational Testing
- Confirmation of testable system attributes.

Integrated System Operational Tests
- Confirmation of Integrated System Performance requirements.

Integrated Water Runs
- Confirmation of plant performance requirements using water. Operations proficiency.

Cold Commissioning with Chemical Simulant
- Chemical processing confirmation using chemical simulants for waste removal efficiency including design capacity performance testing.

Contractor and DOE ORRs

Hot Commissioning
Confirmation of processing using radioactive waste.

CG&A

SOTs

ISOTs

IWRs

CC

ORRs

HC

CD-4
System Turnover

CG&A
- 99% of CGA scope complete

SOTs
- Plant utilities are operational (electrical, plant air, domestic water, and ventilation)
- 50%+ of SOT scope is complete (37 of 60 SOTs)
- 58% of Maintenance Trials complete (10 of 17 MTs)
- SWPF full plant control system and simulator operational to support testing & commissioning

Plan to start first ISOT in July 2017

ISOTs

IWRs

CC
- Temporary simulant tank farm (125,000 gal capacity) design complete and construction underway; chemical loading on schedule for September 2017

ORRs
- Documented Safety Analysis/Technical Safety Requirement submitted to DOE on May 2017; DOE SER approval anticipated by November 2017
  - Good integration support from SRR LWO contractor
- Significant early progress on readiness scope (e.g. Plan of Action, evidence database development)
Parsons has successfully conducted full scale Caustic Side Solvent Extraction system testing with Next Generation Solvent (NGS).

MCU hot pilot plant is currently successfully implementing NGS.

NGS testing indicates that significant SWPF plant throughput improvement is possible (150%).

NGS throughput enhancements could significantly accelerate critical path salt waste processing thereby facilitating large life cycle cost savings.

Conceptual Design Reports and Proposals have been completed and submitted for NGS deployment at SWPF and are under review by DOE.

DOE will be making a decision on final design and construction of the NGS annex during the summer of 2017.
The SWPF Project is poised for continued success

- Continued commitment to protection of the public, the worker, and the environment
- No significant technical or regulatory issues
- Consistent and strong management team – both DOE, Parsons, and SRR
- DOE, Parsons, SRR, SRNS, and SRNL working very well together for the integrated solution
- Focused on achieving startup on or before December 2018
- Savannah River Site uniquely positioned for a complete LW clean-up solution – once SWPF is operational all pieces will be in place
**Acronyms List**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ARP</td>
<td>Actinide Removal Process</td>
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<tr>
<td>CC</td>
<td>Cold Commissioning</td>
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<tr>
<td>CD</td>
<td>Conceptual design</td>
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<tr>
<td>CG&amp;A</td>
<td>Calibration, Grooming, and Alignment</td>
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<td>DOE</td>
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<td>DSA</td>
<td>Documented Safety Analysis</td>
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<td>DWPF</td>
<td>Defense Waste Processing Facility</td>
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<tr>
<td>HC</td>
<td>Hot Commissioning</td>
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<tr>
<td>ISOTs</td>
<td>Integrated System Operational Tests</td>
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<td>IWRs</td>
<td>Integrated Water Runs</td>
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<td>MCU</td>
<td>Modular Caustic Side Solvent Extraction Unit</td>
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