U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

Salt Waste Processing Facility Baseline Status

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Savannah River Site Citizens Advisory Board Meeting
March 24, 2014

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

Salt Waste Processing Facility

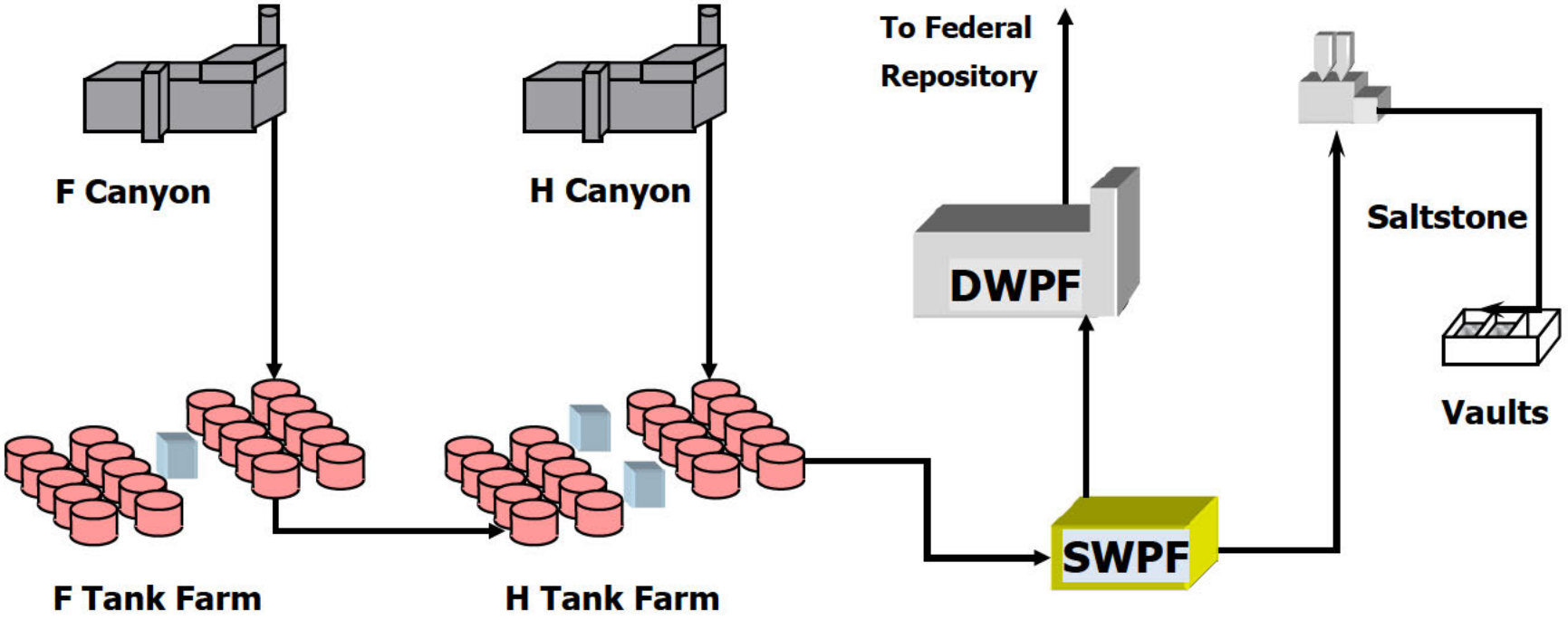
PARSONS

Parsons is the contractor for the SWPF project [design, construct, commission and operate for one year]

This critical facility will:

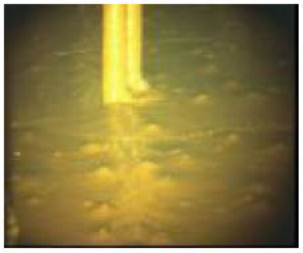
- Reduce radioactive waste volume by turning waste into glass (vitrification) at the Defense Waste Processing Facility (DWPF).
- Utilize the same radioactive waste removal processes as Interim Salt Processing Facilities (Actinide Removal Process/ Modular Caustic – Side Cesium Extraction Unit (ARP/MCU) – 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

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

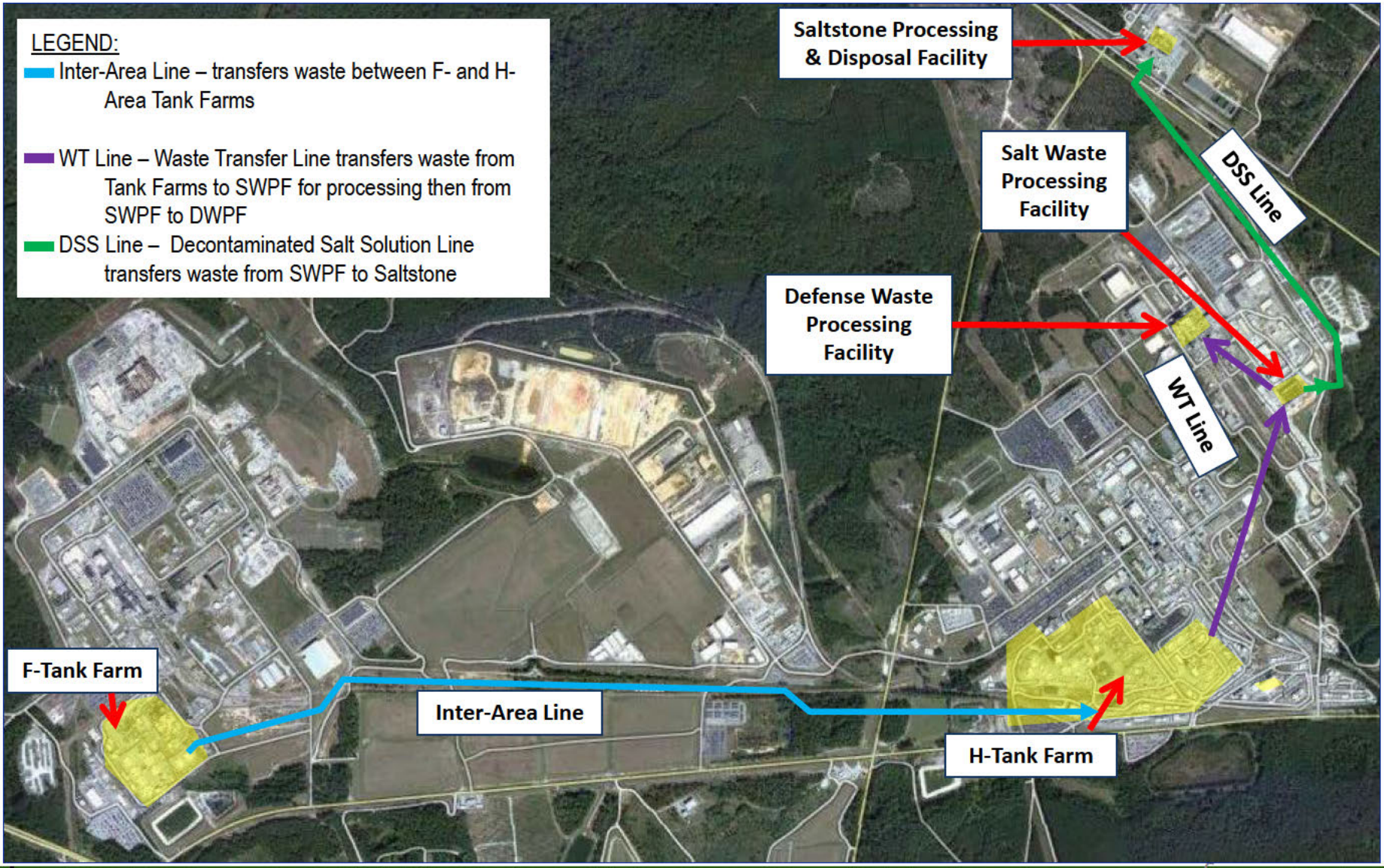
Sludge



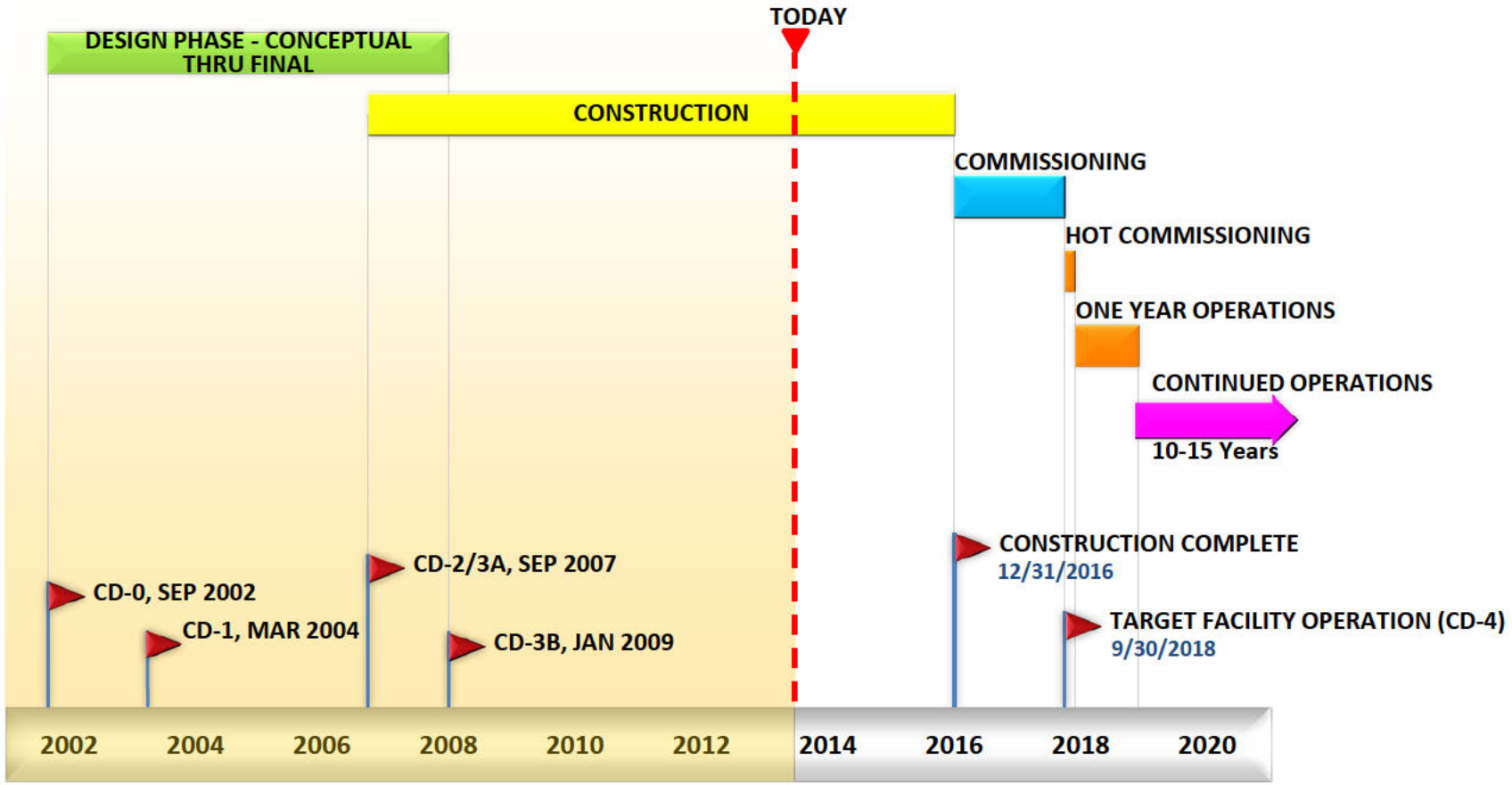
Salt

Supernate

Savannah River Site Liquid Waste System



SWPF Project Milestones



CD-0, Critical Decision 0, Approve Mission Need
CD -1, Critical Decision 1, Approve Alternative Selection and Cost Range
CD-2/3A, Critical Decision 2, Approve Performance Baseline and Critical Decision 3A, Approve Limited Construction/Long Lead Procurements
CD-3B, Approve Start of Construction
CD-4, Approve Start of Operations/Project Completion

SWPF Construction Progress

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

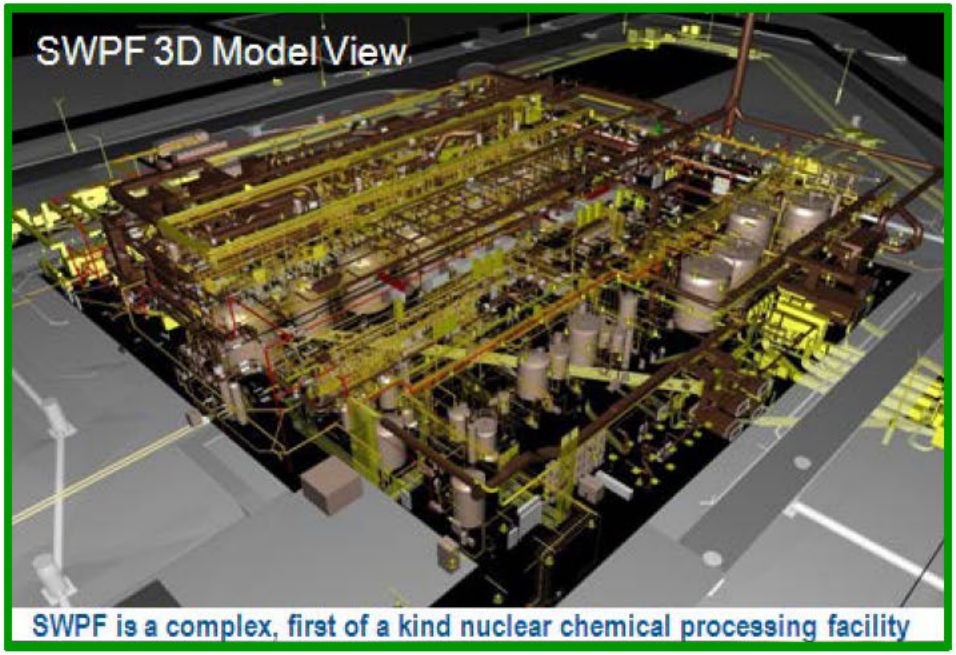
- Successful installation of 10 large ASME Vessels
- 150,000 gallons of tank volume in the Central Processing Area (CPA)
- Performance Category-1 support structures underway

TODAY

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

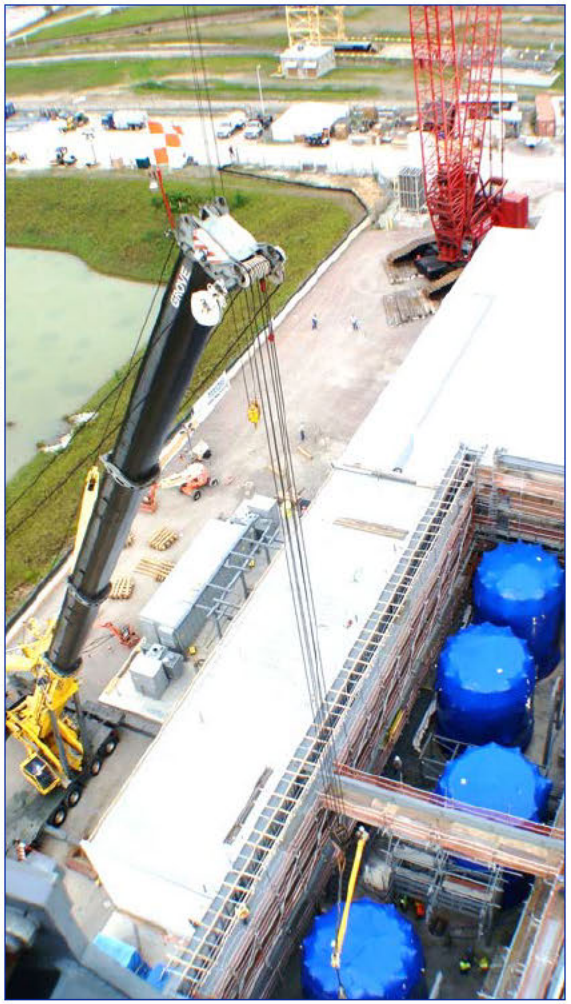


SWPF is a complex, first of a kind nuclear chemical processing facility

SWPF Stats			
Area	~140,000 sq.ft	Rebar	~4,600 tons
Basemat	8 ft. thick	Actuated Valves	~1,000
Concrete	~40,000 cubic yards	Manual Valves	~3,000
Pipe	~23 miles	Instruments	~1,500
Welds	~74,560	Tanks	85
Wire and Cable	~816,690 LF	Pumps	116

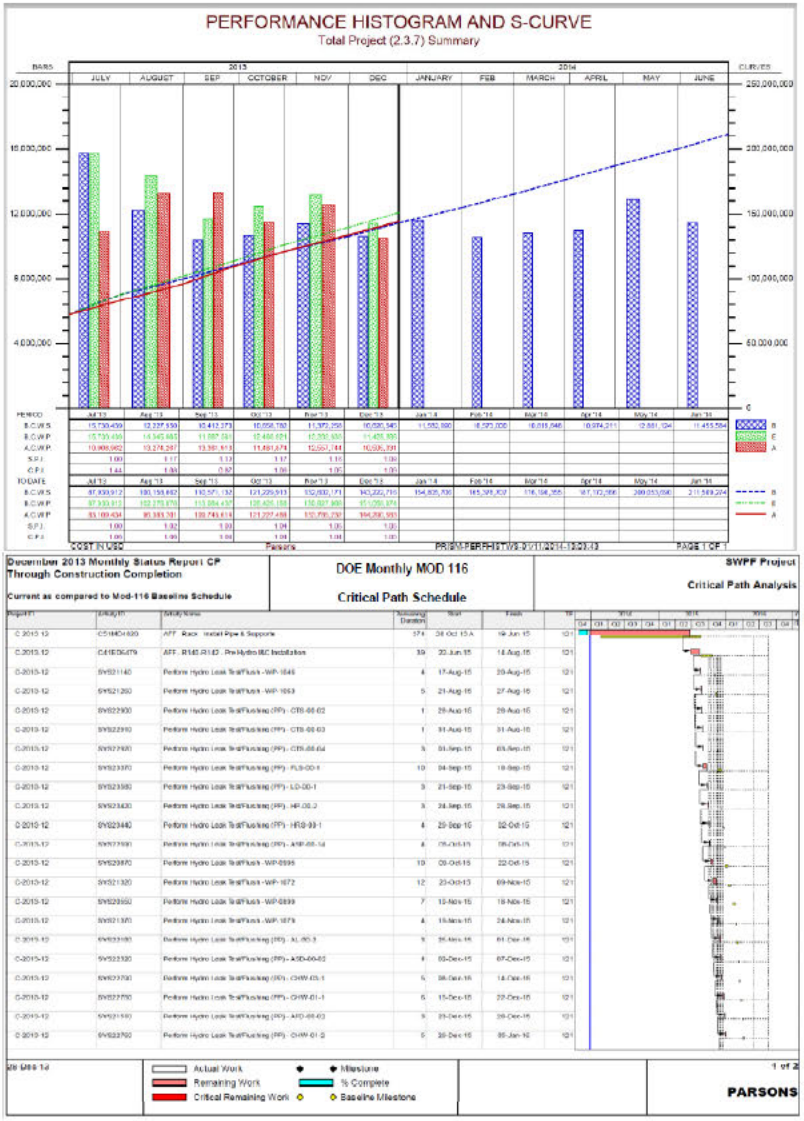
Large ASME Vessels – Delivered May/June 2012

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.



SWPF Technology Innovation

- 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

Summary - Looking to the Future

- 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