



Liquid Waste Program
Prime Contractor

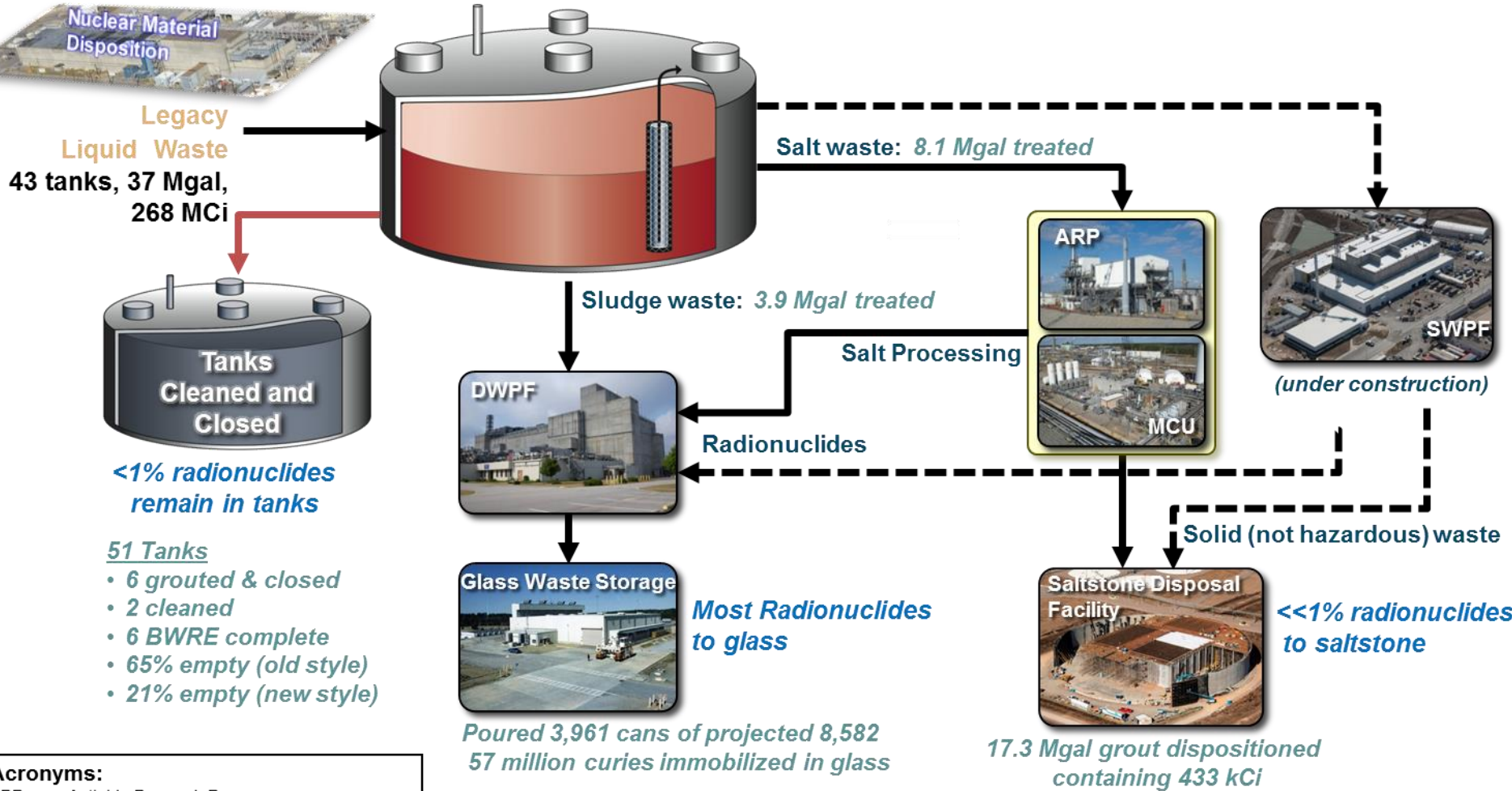


AECOM | BECHTEL | CH2M HILL | B&W | AREVA

Integrated Salt Waste Processing at the Savannah River Site

Presented to:
South Carolina Governor's Nuclear Advisory Council
April 9, 2015

SRR Liquid Waste Program (with current status)



Acronyms:

ARP	Actinide Removal Process
BWRE	Bulk Waste Removal Efforts
DWPF	Defense Waste Processing Facility
MCU	Modular Caustic Side Solvent Extraction Unit
SCIX	Small Column Ion Exchange
SWPF	Salt Waste Processing Facility

2015-04-01

SWPF Integration To-Go Scope

- DWPF Modifications
- Alternate Reductant
- Lab Waste Handling
- Strip Effluent Mix Tank – Slurry Mix Evaporator
- Dry Frit



Blend Tanks (Tanks 21 & 49)



- Salt Solution Receipt Tanks
- Enhance Low Activity Waste Disposition

SWPF



Complete Effluent Treatment Hold Tank



West Transfer Line Modifications



SWPF Integration Work Completed-to-date

- Designed and built a ~114K liter (30K gal.) waste concentrate hold tank and cell for the Effluent Treatment Facility (ETF)
- Fabricated and installed two ~227K liter (60K gal.) salt solution receipt tanks at Saltstone Production Facility (SPF)
- Designed transfer lines to/from SWPF
- Designed and procured engineered equipment for blend and feed tanks and DWPF modifications
- Issued conceptual design to allow ARP/MCU to operate post transfer tie-in scope
- Identified opportunity to reduce tie in outage 4-5 months

ETF Scope is complete and facility is operating



SWPF - Inflows and Effluents

- **Tank 49 Blend and Feed**

- Provide raw salt solution (RSS) feed for SWPF
- Equip one existing tank (Tank 21) with blending capability
- Equip one existing tank (Tank 49) as the SWPF Feed Tank
- Provides transfer piping for RSS transfers to SWPF
- *Scheduled completion September 2015*



- **Salt Solution Receipt Tanks (SSRTs)**

- Dual ~227K liter (60K gal.) receipt tanks to allow salt processing to continue during short Saltstone Processing Facility (SPF) outages
- Supports increased DSS throughput from SWPF
- Improves operational flexibility
- *In Progress*



- **East and West Transfer Lines**

- Tie-ins of new underground SWPF piping to existing Liquid Waste piping
- East Transfer Line Tie-in to provide path from SWPF to Tank 50H
- West Transfer Line tie-ins provide path between SWPF, HTF, and DWPF
- Significant outage to execute scope



- **DWPF Modifications**

- Allow receipt of high activity effluent streams from SWPF
- Expanding glass composition to support MST Strikes at SWPF
- Complete Consolidated Hazards and Documented Safety Analyses
- Temperature interlock and automated shut off of key equipment within 511-S



SWPF - Influent and Effluents

• DWPF Alternate Reductant Flowsheet

- Scope: Nitric-Glycolic Research, Safety Basis Documents, and supporting plant infrastructure modifications
- Eliminate hazards with formic acid, (i.e., Emergency Preparedness; reduces functional classification of Safety Significant equipment)
- Improves DWPF operational flexibility for increased influents

• DWPF Dry Frit Modification

- Modifies facility to deliver dry process Frit
- Reduces amount of recycle water going from DWPF to tank farm
- Feasibility studies completed
- Designs have been developed
- Through wall pilot penetrations complete
- Scheduled to resume scope in FY16

• Laboratory Waste Handling

- Improve method to remove higher curie waste and equipment from DWPF shielded cells
- Approved design input documents and issued Preliminary Material Handling Diagram for lab modifications to reduce dose rates
- Performed waste characterization calculation for future waste
- Scheduled to complete in FY16

• Strip Effluent Feed Tank to Slurry Mixer Evaporator

- Allows Strip Effluent to be dispositioned in both the Sludge Receipt & Adjustment Tank and Slurry Mixer Evaporator
- Finalize bench scale testing
- Complete Consolidated Hazards and Documented Safety Analyses (DSA)
- Perform facility modifications by end of FY16



Supporting Scope



Dry Feed Weather Protection



Screw Feeder

• Enhanced Low Activity Waste Disposition

- Dry Feed Modifications
 - Pre-Mix Mods
 - Silo Mods
 - Spares
- Balance of Plant Modifications
 - Lighting
 - Lightening Upgrades
 - Air Compressors



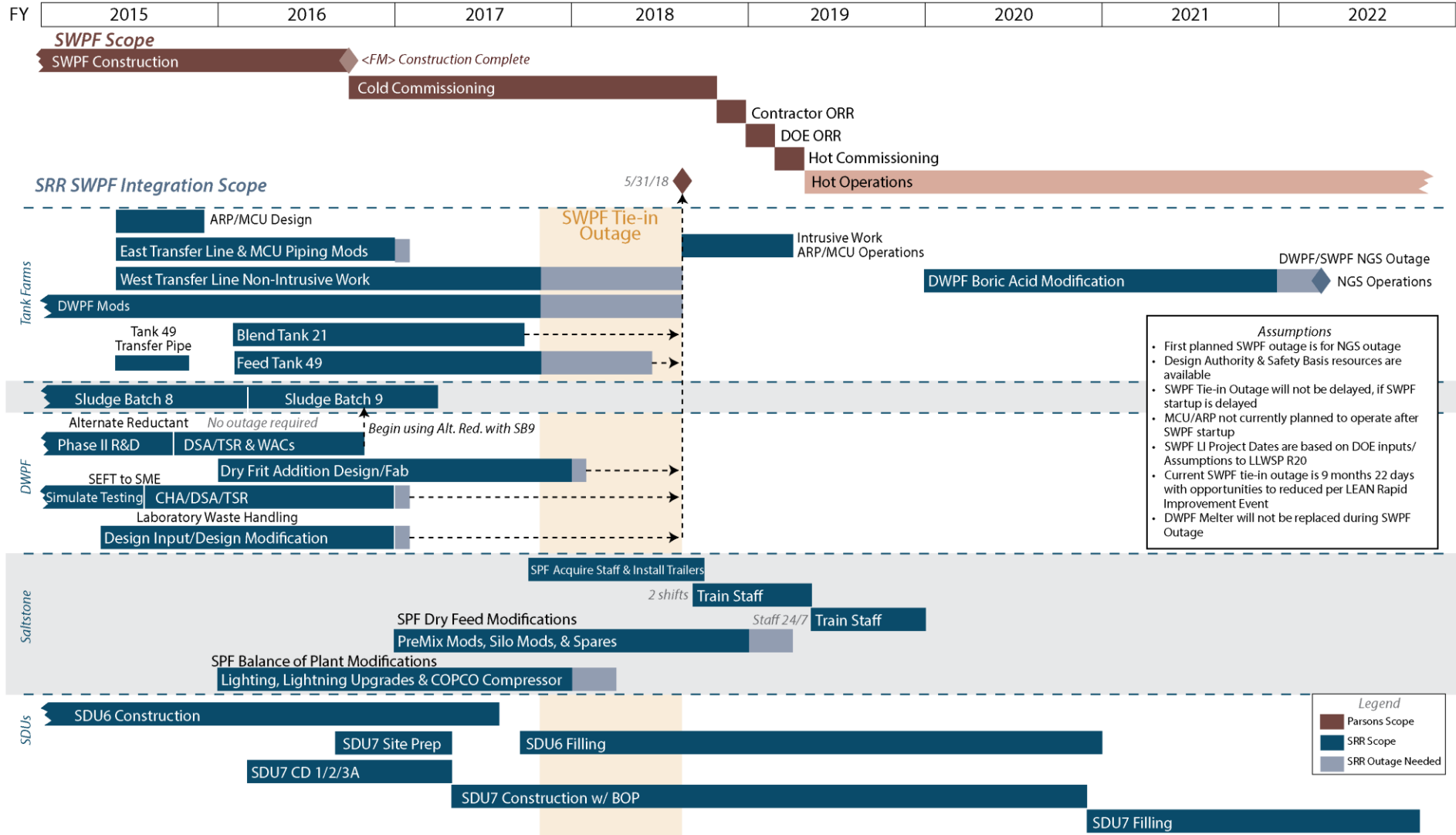
Saltstone Air Compressors

• MCU Continued Operations

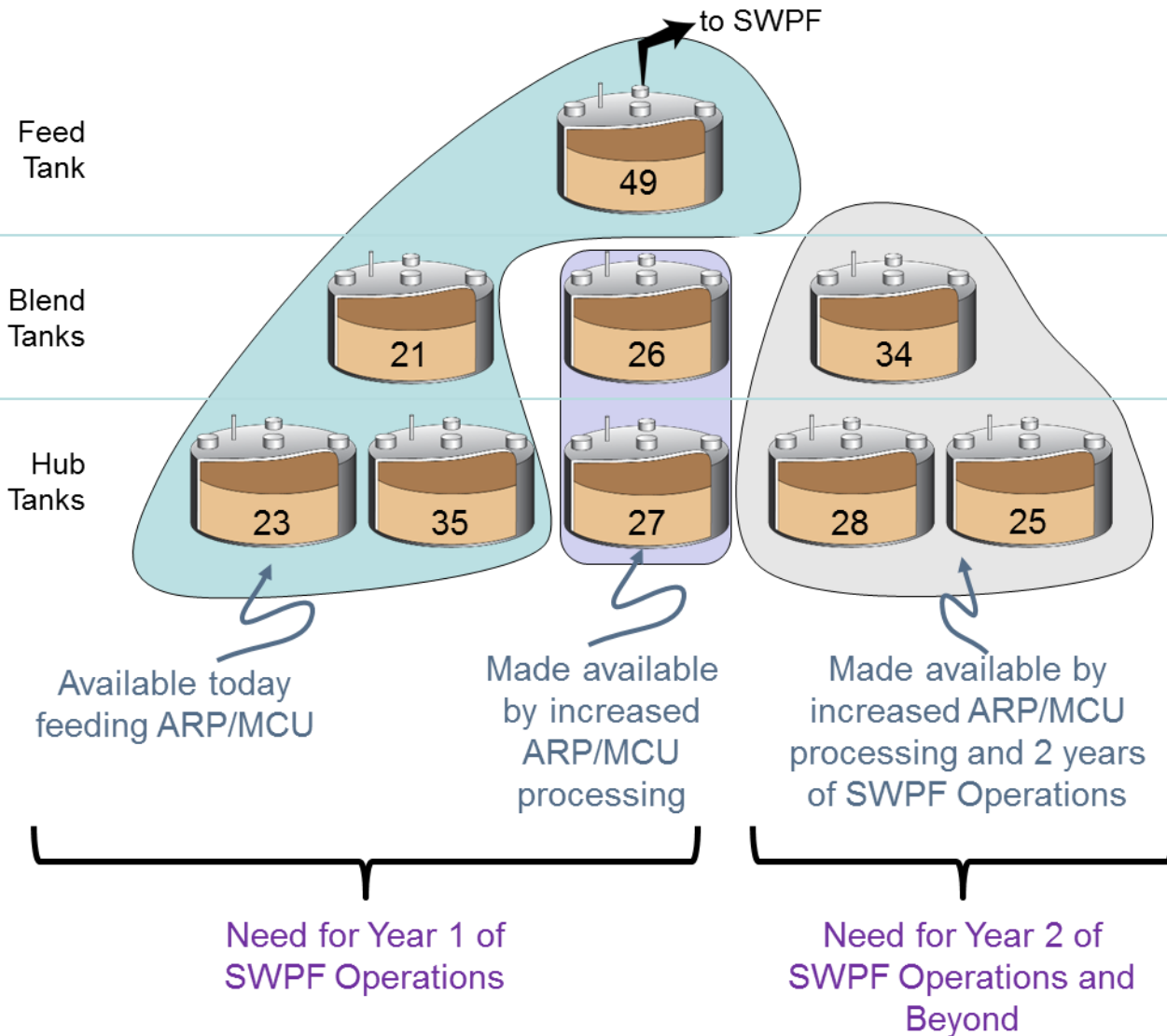
- Conceptual Design inputs complete
 - *Allowing MCU to operate until SWPF Hot Commissioning*
- DOE-SR, DOE-HQ and SCDHEC have been briefed and acknowledge increased salt production and reduced outage time
- Dependent on “No MST Strikes” or “Large Tank Strike”
- Design to commence in Q3FY15, with plan to execute scope in Q1FY17



SRR SWPF Integration Support Overview Schedule



Tank Space Needs to Support SWPF



Required Processing to Support SWPF at Capacity	
FY15	1.4 Mgal
FY16	1.5 Mgal
FY17	1.8 Mgal
FY18	1.5 Mgal
FY19	4.4 Mgal
FY20	5.8 Mgal

1-year gap

Integration Summary

- **The Salt Disposition Integration scope enhances the existing Liquid Waste systems at SRS to seamlessly integrate with SWPF operations, while maintaining Salt Processing capability via ARP/MCU**
- **Significant work will continue into FY 2018 in preparation for SWPF startup**
- **The SDI scopes support:**
 - SWPF project design, construction startup, and radioactive operations
 - Increased throughput related to SWPF processes

