SAVANNAH RIVER REMEDIATION

CONTRACT ACCOMPLISHMENTS

Tom Foster
SRR President and Project Manager
SRR started the contract on July 1, 2009

- 6-year base contract, plus 2-year option, for high-level waste cleanup at SRS ending June 30, 2017

- DOE extended the contract to December 31, 2017, and again to May 31, 2018
  - Current workforce of ~2,200 employees (including subcontractors)

- Focused on Liquid Waste Mission
  - High-hazard operations
    - Managing waste tank space
    - Treating and dispositioning waste
  - Complex Engineering, Procurement, & Construction
  - Closing waste tanks
Safety

- **Record-setting worker safety**
  - >6.5 million total project safe work hours - highest total since contract began
  - SRR Construction >29 million safe work hours (nearly 19 years)

- **Received the Voluntary Protection Program Star of Excellence for safety each year of contract**

- **Recognition**
  - Received multiple state and national awards each year for safety
  - Voluntary Protection Program Participants Association (VPPPA) Awards:
    - First contractor in DOE complex to have VPPPA National Safety and Health Achievement Award multiple winners in a single year
    - Four consecutive years SRR had a winner
  - DOE 2017 Sustainability Award:
    - Retention basin indicated elevated pH as a result of algae growth in summer months
    - Installed 12-sided “rhombos” that prevent sunlight contact with water inhibiting algae
    - Eliminates the need (and cost) to use well water to reduce the pH
  - Received the American Heart Association Workplace Health Solution Award in 2017
Contract Accomplishments

- Produced more than 1,500 canisters and poured 6 million pounds of radioactive glassified waste at the Defense Waste Processing Facility
- Designed and executed the DWPF Canister Double Stack Project
Contract Accomplishments

- Processed more than 6 million gallons of salt waste through interim salt processing facilities known as the Actinide Removal Process/Modular Caustic Side Solvent Extraction Unit
- Implemented Next Generation Solvent into interim waste processing

*Piloted and proved the technology for the Salt Waste Processing Facility*
Contract Accomplishments

- Stabilized and disposed of more than 10.9 million gallons of low-level liquid waste through the Saltstone Production Facility (SPF)

  *Readied SPF to handle huge SWPF throughput increase*
Contract Accomplishments

- Designed and built SRS’ first mega-volume (32 million gallons) Saltstone Disposal Unit (SDU) from the ground up

Completion of SDU 6 construction, which cost $120 million, came in 16 months ahead of the target schedule and more than $25 million under the target cost.
Excellence in Project Management: Saltstone Disposal Units

- **SDU 6**
  - DOE Environmental Management Project of the Year - Nov. 2017

- **SDU 7**
  - Completed Phase 1 by removing trailers, structures, and yard materials
  - Awarded storm water reroute subcontract to BK All American Company, LLC
  - Completed team review of General Site Prep Design

- **Projected SDU 7 Activities**
  - Mobilize storm water reroute subcontractor
  - Install storm water pipe under active SDU grout line, Jan. 2017
  - Submit CD 2/3 package to DOE, Dec. 2017
  - Issue site prep and cell design, Dec. 2017

- **SDUs 8&9**
  - CD-1 was approved Dec. 2017

- **SDUs 10-12**
  - Developing plan for executing Systems Engineering Evaluation to finalize locations of SDUs 10-12
Excellence in Project Management: Tank Closure

- **Operationally closed six high-level radioactive waste tanks**
  - Tanks 18 & 19 in 2012
  - Tanks 5 & 6 in 2013
  - Tank 16 in 2015
  - Tank 12 in 2016

- **Continuing broad range of efforts to close the old-style waste tanks per Federal Facility Agreement milestones**
Excellence in Project Management: Tank Closure

- 2017 Project Management Institute Award for Project Excellence - Tank 12 Closure
What the Work Entails
- Excavation to expose the transfer piping
- Piping modifications to connect SWPF with the liquid waste facilities
- Once the modifications are complete the excavated area will be backfilled

The Major Scopes of Work
- West Transfer Lines
- Tank 49 feed modifications
- DWPF modifications

Completing this work is imperative to SWPF startup
Excellence in Project Management: Salt Waste Processing Facility Tie-ins
Welding Map

Note: Core welds are identified in the windows. Jacket Welds are identified on the main illustration.
Excellence in Project Management: Melter 2

- Over its 14-year lifetime, Melter 2 poured more than 10.4 million pounds of glassified waste, totaling 2,678 canisters
Excellence in Project Management: Melter 2

- Melter 2 reached its end of life in February 2017 - about five times longer than its design life
Melter 2 is now encased in a 75-ton, one-inch-thick carbon steel storage box in an underground storage vault ~300 yards from DWPF.
Liquid Waste Outage Significant Scope: Work Only During a Melter Replacement

- **DWPF Melter Work**
  - Cell cover cleanup for Melter 2 exit route
  - Cranes & railroad refurbishment
  - Melter 2 removal
  - Melter 3 installation
  - Melter electrical systems

- **DWPF Canyons - Balance of Plant**
  - New Lab sample stations
  - Cooling Water System
  - Purge Air Compressors
  - Safety Grade Nitrogen System
  - Shielded Canister Transporter upgrades
Excellence in Project Management: 3H Evaporator

- 3H Evaporator operations shut down in February 2016 after a leak was detected in the cone-shaped evaporator vessel.
- The leaked material was contained in a radiological area inside the stainless steel-lined concrete evaporator cell.
Excellence in Project Management: 3H Evaporator
Excellence in Project Management: GrayQb Results

Welded Stiffening Band 37” Level
Excellence in Project Management: 3H Evaporator

- Cap designed, produced, and tested
Excellence in Project Management: Powder Laser Weld
The KUKA robotic arm holding the powder injection laser was controlled by robot operators outside of the cell to weld a cap to the bottom of the conical vessel.
Excellence in Project Management: 3H Evaporator
Excellence in Project Management: 3H Evaporator Weld Success

- The cap welded to the 3H Evaporator vessel successfully passed a weld quality inspection and a water test with no leaks detected
- Performed by SRR and subcontractor AREVA
- Operations restarted on December 13
Two new smaller leak sites above the cap were detected on the 3H Evaporator after restarting the vessel.
3H Evaporator New Leak Sites: Leak Site #1
3H Evaporator New Leak Sites:
Leak Site #2
3H Evaporator Path Forward

- Continue to investigate postulated mechanisms
  - Identify opportunities to improve confidence in replacement evaporator

- Expedite replacement evaporator procurement
  - Design and structural mechanics evaluation completed as risk mitigation
  - Reduce fabrication risk by expert review of welding and inspection
  - Initiate procurement of disposal box

- Kick-off Systems Engineering team to evaluate options
  - Use 3H “As Is” under Justification for Continued Operation
  - Repair new leak sites on 3H
  - Procure and install replacement evaporator
  - Replace 2F pot and return 2F to service
  - Use existing 2F spare pot in 3H cell
  - Set up a portable package evaporator
  - Store evaporator feed temporarily in old style tanks
  - Manage DWPF recycle differently
  - Reduce sludge wash water production
Ready for the Future

- First canister poured in December with new melter
- By March: All required safety basis documentation complete/full operations begin
- Readying the program for success
- Stage is set for successful new contract implementation

*These advancements have and will continue to accelerate the liquid waste mission*