SAVANNAH RIVER REMEDIATION UPDATE

South Carolina Nuclear Advisory Council Meeting

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Acting President and Project Manager
Our Focus: Safety

Safety: Perspective/Awards

- Construction forces (legacy and current) accumulated over 28 million safe hours
- SRR operations accumulated over 1 million safe hours since the last injury requiring a day away from work
  - Reached contract-high 9.8 million safe hours in 2015
- Recipient of National and State Awards in recognition of safety performance
  (National Safety Council Industry Leader, S.C. Chamber of Commerce and S.C. Department of Labor, Licensing and Regulation Awards)
High-Hazard Operations

1. REDUCING SOUTH CAROLINA'S SINGLE GREATEST ENVIRONMENTAL RISK
   - SRR completed FIVE closures in FIVE years and reduced tank closure schedules by nearly half

2. TANK CLOSURE
   - 9,800,000 safe hours from 2013-2015, best in SRR contract history

3. 5 in 5 YEARS
   - 5 million gallons/yr rate achieved
   - Decontamination factor increased from 100,000 to 36,000

4. $1 BILLION
   - Identified in lifecycle savings through Mission Excellence

5. LARGEST
   - Space gain since 2010 in FY15
   - 3 million gallons/yr rate achieved
   - 3X increase in Saltsite production rate

6. 150
   - Interim canister storage positions are being modified, scheduled to start double stacking in June

7. 4,000th canister poured 12/31/15

8. 60%
   - Reduction in decontaminated salt solution disposal costs

9. 2.6 million gallons of tank space gain (36 million gallon inventory) in FY15

10. 99.9975%
    - Radionuclide removal with Next Generation Solvent

11. ARP/MCU = Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit

SAVANNAH RIVER SITE • AIKEN, SC • www.SRRemediation.com • We do the right thing.
Tank Closures
- Five tank closures completed during the past 6 years; One in progress now

Tank 12 so far...
Overall grouting 97% complete
Items remaining: tanks risers, equipment and cooling coils

908,580 gallons of grout used so far

Grouting complete by late April;
FFA Deadline: May 31, 2016
SRR Technical Issue: 3H Evaporator

- **3H Evaporator Mission:** Evaporating liquids generated during:
  - Sludge batch washing
  - Receipts from H Canyon
  - Tank waste removal and cleaning

- Leak discovered on Feb 17, 2016, contained in stainless steel lined cell

- System Plan revision supports continued H Canyon, DWPF, and MCU operations for up to 3 years without 3H Evaporator operating

- **Strategy**
  - Currently feeding Sludge Batch 8 to DWPF
  - Sludge Batch 9 has already been washed
  - Sludge Batch 10 washing was to have begun in March 2017, will be deferred
  - Insertion of a Sludge Batch 9B (Tank 22 does not require washing)
  - Decrease canister loading from 36 wt% to 32 wt% (ensures no “salt only” processing at end of campaign)

- Estimate for evaporator replacement is 3 years and ~$18M

- Recovery Teams evaluating repair vs. replacement
**SRR Technical Issue: SDU 6**

- **Leak Repairs**
  - 30 million gallon construction
  - Unable to pass water-tightness test with dye
  - Install a liner
  - Retest tank
  - Under budget
  - On track to meet system plan need date
A lot accomplished to lengthen the life and increase reliability of SRS Liquid Waste facilities...more to do

**Focus on:**
- Infrastructure condition improvements
- Work Around removal Maintenance of Safety System/Safety Class items and transfer capability
- Reliability improvements

**Infrastructure Improvements**

- Mercury Scoping
- Slurry Mix Evaporator (SME) Bubbler improvement
- Coils Inspect/Clean
- Sludge Receipt and Adjustment Tank (SRAT)/SME Blowdown Auto
- Slurry Mix Off-gas restoration
- Lab Motor Control Center separation
- New Laboratory trailer
- New Instrument air dryers
- New cooling tower pumps
- Obsolete acid pumps replacement
- Smear Test Station Exit Pedestal Refurbishment
- Vault 4 cap & roof coating
- Basin expansion
- SDU fill height increase
- Saltstone Disposal Unit (SDU) 6 construction
- Salt Solution Receipt Tanks construction
- Weigh hopper weather protection
- Wireless Infrastructure installation at Saltstone
- Delta V control system upgrade
- Replace 4 obsolete fire system monitoring panels
- Lab flooring
- FOS 7 and FOS 18 HVAC units
- Replace obsolete Moore Controllers
- Breathing Air manifolds
- Grout line replacement
- Elimination of cement from Saltstone recipe
- Saltstone Disposal Unit (SDU) 6 construction

**Lab Works**

- Lab flush 3-way valve
- Lab cell winch & hoist
- Diesel Generator 100 Loss of Power Surveillancen
- Slurry Mix Off-gas Surveillance
- SRAT/SME Interlock Surveillance
- BB 5 Year Preventive Maintenance (PM)
- Lab window cleaning
- Field Operating Station Pumps
- Grout process lines
- Chute inspections
- Pig valve refurbishment
- Vault 4 weather enclosures
- 512-5 valve repair
- Improve spare parts availability
- Load center preventive maintenance
- Steam system repairs
- Flush water to grout line valve repair
- Film cooler and quencher cleaning
- Manipulator arm spare parts
- Reduced Corrective Maintenance Backlog for SS/SC items
- SC-1 pump return to service (Spares)
- TR-6 pump return to service (Spares)

**Tank Farms**

- 3 Tank Vent Reheater Replacements
- 4 Ducts Replacements
- 2 Stacks Extensions
- New HEPA House
- New EG-8 Crane Wire Rope
- New Feed Pumping Line Jacket
- New Tank 38-43 Transfer Line Jacket
- Routine Inspection of MCU cell coating
- Gas Chromatographs NCR
- Saltstone Disposal Unit (SDU) 6 construction
- Replace Tanks 1, 2, 3, 9, 10 and 23 purge
- Interim Canister Closure Station heater
- Melter Transformer
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- 43 Transfer Pump and Install valve
- Replace 3H Building Vent Fan and VFD
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- Saltstone Control room alarm reduction
- Repair 8H trailer
driveline
- Installed 15 ARGOS Monitors
- JH Deliqueuing
- PT-1 Pump Repair
- Replace DB-8 DG
- Install MCU rain cover
- Install new independent SHT sampler to reduce
- Water contamination

**Other Works**

- Infrastructure Reliability
- Building Replacement Type III and IIIA TTJs
- Replace Tank 41 Transfer Pump
- Replace Tank 4 Transfer Pump and Install valve
- Install MCU rain cover
- Saltstone Disposal Unit (SDU) 6 construction
- 15 ARGOS Monitors
- JH Deliqueuing
- PT-1 Pump Repair
- Replace DB-8 DG
- Install MCU rain cover
- New Cooling Tower Pumps
- Replace MCU PVW HEPA filters
- Perform annual PMs/CMs for electrical, instruments
- and HVAC systems
- Replace Tank 49 Transfer Pump
- Repair Underground Domestic and Well Water
- Leaks
- Repair Chromate Water Pumps
- Replace 3H Building Vent Fan and VFD
- Replace Tank 43 Feed Pump
- Salt Dissolution in Tank 37
- Modified Tank 39 Transfer Jet
- Reduced the Corrective Maintenance
- Backlog for SS/SC items
- Replace 15 conductivity probe junction
- Repair jacket for the Tank 38 gravity drain line
- Reestablished stream to the Tank 43 Transfer Jet
- MCU duct replacement with flush capability
- Tank 32 Feed Pump diamond bearings
- Tank 37 Transfer Jet
- MCU PVW shielding
- Installed new independent SHT sampler to reduce
- Water contamination
- Water contamination

**Completed in FY14**
- Continued /Completed in FY15
- Completed in FY15
- Continues in FY16
Canister Double Stack Project

- Work includes:
  - Modify existing locations to store two canisters each (from 2,254 to 4,508)
  - Remove existing crossbar canister support; lower canister supported on vault floor
  - Upper canister placed on top of lower canister
  - Upper canister Shield plug redesigned for equivalent radiological protection
  - Scheduled to begin double stacking in June
Two Projects: No MST Demonstration / Salt Solution Receipt Tanks

- **No MST Demonstration**
  - SRR team continues to refine the system used to process salt waste
  - Eliminating the addition of monosodium titanate (MST) from the salt waste processing system improves ARP filtration rate
  - Successfully processed approximately 200,000 gallons of the salt waste to date
  - Demonstration will continue for several more months

- **Preparing for Salt Waste Processing Facility**
  - In May, one of the two newly constructed Salt Solution Receipt Tanks (SSRT) will begin a Readiness Review
    - There are two 60,000-gallon SSRTs
    - Provides 4 days of space for salt operation
  - Liquid waste-wide outage June-September 2017
    - Install underground transfer lines for SWPF tie-ins
**Objective**
- Pursue ion exchange technology to enhance tank closure capabilities
- Leverage commercial ion exchange supplier expertise and Fukushima experience
- Improve flexibility by exploring alternatives for spent resin disposal
- Simple, modular, affordable

**Status**
- Best & Final Offer Request for Proposal sent to Suppliers
- Final Proposals received
- SRR Proposal evaluation complete - 2/18/16
- TCCR Subcontract Award
▪ **Focus continues on**
  - Safe work to protect workers, public, environment
  - Close Tank 12 by May 31, 2016
  - Continue salt waste processing with ARP/MCU > 1M gallons per year
  - Prepare for Salt Waste Processing Facility startup

▪ **Innovative SRR Team continues to provide unique solutions to the liquid waste work**
  - No MST demonstration
  - Canister double stack
  - Tank Closure Cesium Removal
  - Many others

▪ **Questions?**