SAVANNAH RIVER REMEDIATION UPDATE

South Carolina Nuclear Advisory Council Meeting

Stuart MacVean
President and Project Manager
Safety

- Record-setting worker safety
  - 9.8 million total project safe work hours
  - 27.8 million construction safe work hours

- Industry Recognition
  - 2015 VPPPA Star of Excellence
  - 2015 VPPPA Safety and Health Achievement Award—Sharon Kidd, SRR E&I Mechanic
  - National Safety Council’s Industry Leader Award

- Excellent Nuclear Safety Culture

Focused on Safety Excellence

VPPPA=Voluntary Protection Program Participant’s Association
High-Hazard Operations Update

- **Defense Waste Processing Facility (DWPF)**
  - SRR tripled curie stabilization through DWPF
    - >4,000 high-level waste canisters—12-month record—337 canisters poured—from June 2011 to July 2012
  - 93 canisters of vitrified high-level waste filled in FY15
  - 30 canisters filled in 1st Quarter FY16 - including 4,000th canister poured 12/31/15; Operations began 1996
  - 57 of 150 Glass Waste Storage Building locations crossbars removed for canister double stack implementation

- **Salt Processing**
  - 4x salt waste processing in terms of curies taken from the waste tanks by SRR
    - ARP/MCU: Nearly 5 million gallons of salt waste processed
      - Record weekly production (83,538) gallons hit in March 2013
      - 3 Mgal/year rate achieved
    - Saltstone: >8.7 million gallons of salt waste processed by SRR

*ARP/MCU = Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit*
High-Hazard Operations Update

- **Evaporators**
  - 2.6 million gallons of tank space created in FY15, the greatest amount of space gain since 2010
  - 2-year reliability program achieving significant results
  - 5-year feed backlog processed in 2 years

- **32-million gallon Saltstone Disposal Unit 6**
  - Scheduled completion date—October 2016
    - Total project 78% complete
    - Primary construction complete
  - Water tightness testing continues
  - Scheduled ready to receive waste—November 2016
  - Expected to be used in 2017

- **21,334 yd³ of concrete**
- **289 miles of cable**
- **375’ diameter**
- **43’ high**
Tank Closure Progress

- Tank Closures continue at a pace unheard of six years ago
  - Five tank closures completed during the past 6 years

**Tank 16...**

- 5 failed coils
- 39 intact cooling coils
- 24 pieces of equipment
- 18 risers
- 12 inspection ports
- 786 trucks
- 6,163 yd³ grout

9/22/15
Grouting Complete
Tank Closure Schedule Comparison

Tank 18/19
- Sampling Prep.  ~6 Months
- Sampling ~5 Months
- Sample Analysis ~7 Months
- Closure Documentation ~19 Months
- Grouting ~5.5 Months

Tank 5
- Sampling Prep. ~10 Months
- Sampling ~3 Months
- Sample Analysis ~10.5 Months
- Closure Documentation ~16 Months
- Grouting ~6.5 Months

Tank 6
- Sampling Prep. ~8.5 Months
- Sampling ~4 Months
- Sample Analysis ~10 Months
- Closure Documentation ~11 Months
- Grouting ~6.5 Months

Tank 16
- Sampling Prep. ~3.5 Months
- Sampling ~6.5 Months
- Sample Analysis ~9.5 Months
- Closure Documentation ~9 Months
- Grouting ~3 Months

Tank 12
- Sampling Prep. ~12 Months
- Sample Analysis ~10.5 Months
- Closure Documentation ~6.5 Months on CP
- Grouting ~3 Months

Tank 15 Proposed
- Sampling Prep. ~3 Months
- Sample Analysis ~10.5 Months
- Closure Documentation ~6.5 Months on CP
- Grouting ~3 Months

Time (Months)
- All liquid waste scope required to support SWPF startup and operation has been identified and is being worked.
- Schedule logics for full scope integration are complete.
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**

<table>
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<tr>
<th>Task</th>
<th>Description</th>
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<tr>
<td>Mercury Scoping</td>
<td>Slurry Mix Evaporator Condensate Tank (SMECT)</td>
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<td>Mill Scoping</td>
<td>Install new independent SHT sampler to reduce organic cross-contamination</td>
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<td>Coils Inspect/Clean</td>
<td>Purge system modifications (SC)</td>
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<tr>
<td>Sludge Receipt and Adjustment Tank (SRAT)/SMED</td>
<td>Delta V controls system redesign</td>
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<td>Blowdown Auto</td>
<td>Saltstone Mixer refurbishment</td>
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<td>Melter Off-gas restoration</td>
<td>Salt feed tank downcomer</td>
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<tr>
<td>Lab Motor Control Center separation</td>
<td>PVW Mercury Transfer Header flush</td>
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<td>New Laboratory trailer</td>
<td>SPTJumper cleanout</td>
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<tr>
<td>New Instrument air dryers</td>
<td>SMC 56 - Uninterruptible Power Supply</td>
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<tr>
<td>New cooling tower pumps</td>
<td>CPC purg system filter sight glasses</td>
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<tr>
<td>Obsolete acid pumps replacement</td>
<td>Process line cleanout capability</td>
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<tr>
<td>Smear Test Station Exit Pedestalal Refurbishment</td>
<td>MFT filter feed pump VFD</td>
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<tr>
<td>Vault 4 cap &amp; roof coating</td>
<td>PVW Blower VFD</td>
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<td>Basin expansion</td>
<td>SDU fill height increase</td>
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<td>Saltstone Disposal Unit (SDU) construction</td>
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<td>Salt Solution Recept Tank construction</td>
<td>Melter bopper replacements</td>
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<td>Weigh hopper protection</td>
<td>Purge system modifications (SC)</td>
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<td>Wireless Infrastructure installation at Saltstone</td>
<td>Delta V controls system redesign</td>
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<td>Saltstone Mixer refurbishment</td>
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<td>Replaced 4 obsolete fire system monitoring panels</td>
<td>Tank salt feed tank downcomer</td>
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<tr>
<td>Lab flooring</td>
<td>PVW Mercury Transfer Header flush</td>
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<tr>
<td>FOS 7 and FOS 18 HVAC units</td>
<td>PVW Jumper cleanouts</td>
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<td>Replace obsolete Moore Controls</td>
<td>SPT Uninterruptible Power Supply</td>
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<td>Breathing Air manifolds</td>
<td>CPC purge system filter sight glasses</td>
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<td>Grout line replacement</td>
<td>Process line cleanout capability</td>
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<td>Elimination of cement from Saltstone recipe</td>
<td>MFT filter feed pump VFD</td>
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<td>Saltstone Disposal Unit (SDU) construction</td>
<td>PVW Blower VFD</td>
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<td>Lab flush 3-way valve</td>
<td>SMC pH probe</td>
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<td>Lab cell winch &amp; hoist</td>
<td>Process Steam Generator Level</td>
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<td>Diesel Generator 100 Loss of Power Surveillance</td>
<td>Indicating Transmitter</td>
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<td>Melter off-gas Surveillance</td>
<td>Cold Feed Vent</td>
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<td>SRAT/SME Interlock Surveillance</td>
<td>SRAT scraper valve</td>
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<td>BB 5 Year Preventive Maintenance (PM)</td>
<td>SME Agitator jumber</td>
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<td>Lab window cleaning</td>
<td>AA2 Agitator</td>
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<td>Field Operating Station Pms</td>
<td>SME Scrubber</td>
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<td>Grount process lines</td>
<td>Melter Transformer</td>
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<td>Chute inspections</td>
<td>SME transfer pump</td>
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<td>Pig valve refurbishment</td>
<td>Frit Slurry Makeup Tank sparger</td>
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<td>Vault 4 weather enclosures</td>
<td>Fire System Valve</td>
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<td>Improve spare parts availability</td>
<td>Outfall Soil Remover</td>
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<td>Load center preventive maintenance</td>
<td>Tank 48 Water Pump</td>
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<td>Steam system repairs</td>
<td>Tank 48 Purge Ventilation systems</td>
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<tr>
<td>Film cooler and quencher cleaning</td>
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<tr>
<td>Manipulator arm spare parts</td>
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<td>Reduced corrective maintenance backlog for 55/SC items</td>
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<tr>
<td>SC-1 pump return to service (Spare)</td>
<td>Tank 48 Purge Ventilation systems</td>
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<tr>
<td>TB-6 pump return to service (Spare)</td>
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**Infrastructure Improvement Activities**

- Installed 15 ARGOS Monitors
- Completed in FY15
- Completed in FY14
- Continued in FY15
- Continues in FY16
- We do the right thing.
**Interim Canister Storage: Double Stack**

- **Double capacity of Glass Waste Storage Building 1**
  - Defers $130 million expense for construction of GWSB3
  - Provides adequate storage capacity through FY26

- **Application 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
  - Work completed on 57 of 150 slots so far
## Objective
- Pursue ion exchange (IX) technology to enhance tank closure capabilities
- Leverage commercial IX supplier expertise and Fukushima experience
- Improve flexibility by exploring alternatives for spent resin disposal
- Simple, modular, affordable

## Status
- Expressions of Interest (EOI) / DRAFT Request for Proposals (RFP) issued - 6/1/15
- Supplier Industry Day conference - 6/17/15
- Supplier EOI responses received - 6/19/15
- RFP / Statement of Work issued - 8/13/15
- Supplier proposals received - 9/21/15
- DOE Progress Report to SCDHEC - 10/15/2015
- Notifications to suppliers who responded to the RFP - 11/2/15
- Final Proposals received and to be evaluated by the end of February 2016
- SRR Emergency Preparedness (EP) Program averages about 60 drills/exercises a year

- SRR conducted a comprehensive assessment to identify the way drills are planned, scheduled, and performed in order to meet all requirements and expectations

- Issued EP Corrective Action Plan
  - Total of 67 Corrective Actions were generated and 63% of Corrective Actions have been completed with a scheduled completion date of 6/1/2017 (vast majority due by 1QCY16)
    - Focus Areas
      - Programmatic Improvements
      - Improve Drill Performance
      - Compliance with Drill Schedule Requirements
      - Improve scenario variability/complexity
- **Mercury**
  - SRS liquid waste contains mercury/Higher than expected levels of mercury detected/
    - No disposal permit limits exceeded
    - Samples showed unexpected trace levels of monomethyl mercury
  - Based on analysis, Liquid Waste operations are not impacted by monomethyl mercury
    - Conducting additional evaluations to mitigate potential future impacts

- **Antifoam**
  - Routinely added during the processing of waste at the Defense Waste Processing Facility (DWPF)
    - Used to minimize foaming in the feed prep processing vessels
  - Antifoam degradation by-products can be flammable
  - DWPF can operate safely because engineers proposed operational restrictions and additional compensatory controls
  - Department of Energy (DOE) has approved these restrictions/controls and DWPF resumed operations in September
FY16 Production Goals

- 150 HLW Canisters
- >1.0 million gallons through ARP/MCU
- 1.5 million gallons through Saltstone
- Close Tank 12
- Complete Bulk Waste Remove on Tank 15
- Complete Saltstone Disposal Unit 6
- Continue infrastructure work for Salt Waste Processing Facility
- Modify 150 canister positions at DWPF/Start double-stacking canisters
Summary

- **Our primary focus is on safe work**
  - Protect workers, public, environment

- **Continue to be good stewards of taxpayers’ money**
  - Always trying to find ways to accelerate the cleanup, saves money long-term
  - Technology is transferred to other sites, bringing more cost-savings for the federal government

- **Want you to be informed, knowledgeable**

- **Thank you for your continued support**