Annual SCDHEC Technology Briefing

Savannah River Remediation

We do the right thing.




April 23, 2014

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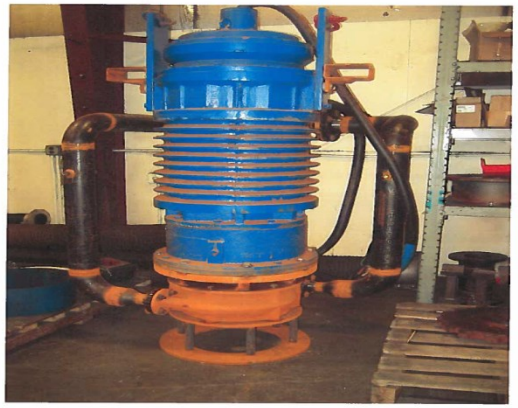
Tank Closure

SRR-LWE-2014-00055

Introduction

- Annual briefing on technology investigated and lessons learned for Waste Removal and Tank Closure

- Covering new information since April 2013

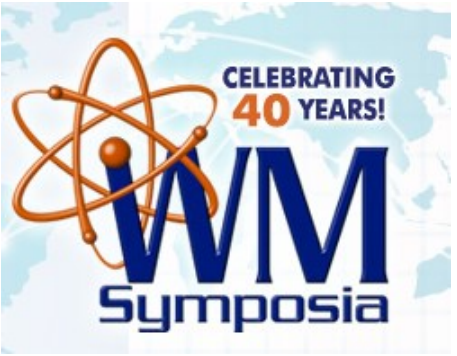


Topics

- Waste Management Symposia
- Conference and Complex interactions
- DOE Site Exchanges
- Commercial Technology Sources
- Lessons Learned
- Process Improvements
- Future Technology Focus Areas

Waste Management Symposia 2014

- WMSym is an annual meeting of suppliers, vendors, DOE contractors, DOE and Regulators

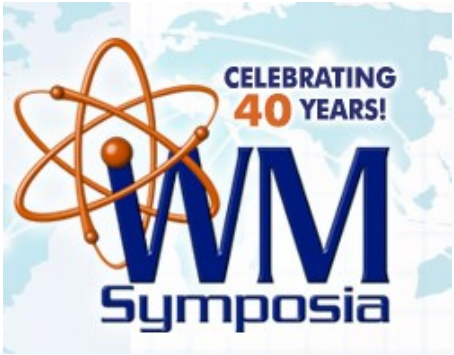


- Several hundred presentations are made on the state of the art in the management of HLW

- SRR sent representatives in 2014
  - Presented poster on waste tank residual heel mapping
  - Presented papers on Tank 5 & 6 grouting w/Cooling Coils, and on Bulk Oxalic Acid cleaning of Tank 12

Waste Management Symposia 2014 Con't

- Attended or reviewed presentations related to waste removal / tank closure
  - Areas of interest included
    - Mixing experience
    - Transport/transfer of slurry mixtures
    - Mobile Tank Ventilation Units
    - Use of Robotics
      - Sampling
      - Accumulation Volume Determination
      - Decontamination Techniques



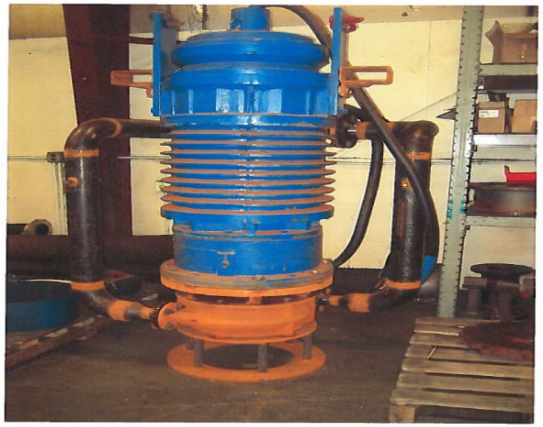
DOE Site Interfaces

- Continued to monitor and review Hanford mixing and retrieval techniques
  - Sluicing
  - Proposed Curtiss-Wright Electro Mechanical Division (EMD) Mixing Pump
- SRS provides feedback to Hanford on mixing technology
  - Commercial Submersible Mixer Pump (CSMP)

Technology Sharing-Commercial

- Commercial laser scanner planned for demonstration on SRS waste tanks
  - Initial evaluation complete
  - Utilize on tank top riser dimensional determination – as a demonstration
  - Utilize on tank with completed heel volume determination
  - Perform comparison of results with those obtained using current mapping techniques

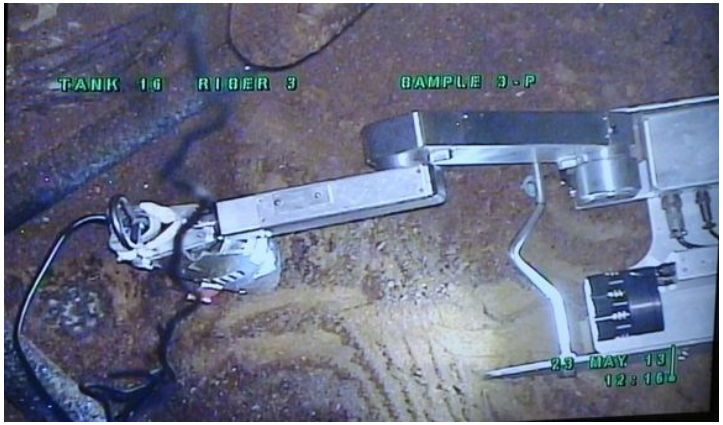
Technology Sharing-Commercial



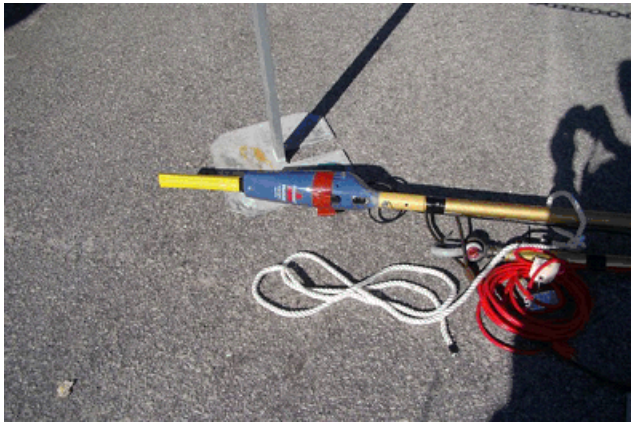
- New CSMP (Commercial Submersible Mixer Pump)
  - Lower cost vs. SMP (Submersible Mixing Pump)
  - ECR (Effective Cleaning Radius) equivalent to or better than Standard Slurry Pump (Lawrence Pump)
  - No external cooling required – Product Cooled
  - Shorter life cycle than SMP (suitable for closure mission)
  - Requires 4 (like LSPs) installed in tank

Technology Sharing-Commercial

- Commercially available technology used in sampling
  - Hand held vacuum
  - Used to collect samples from Tank 16
    - Primary attached to crawler
    - Annulus attached to pole
  - Modified for future use based on lessons learned

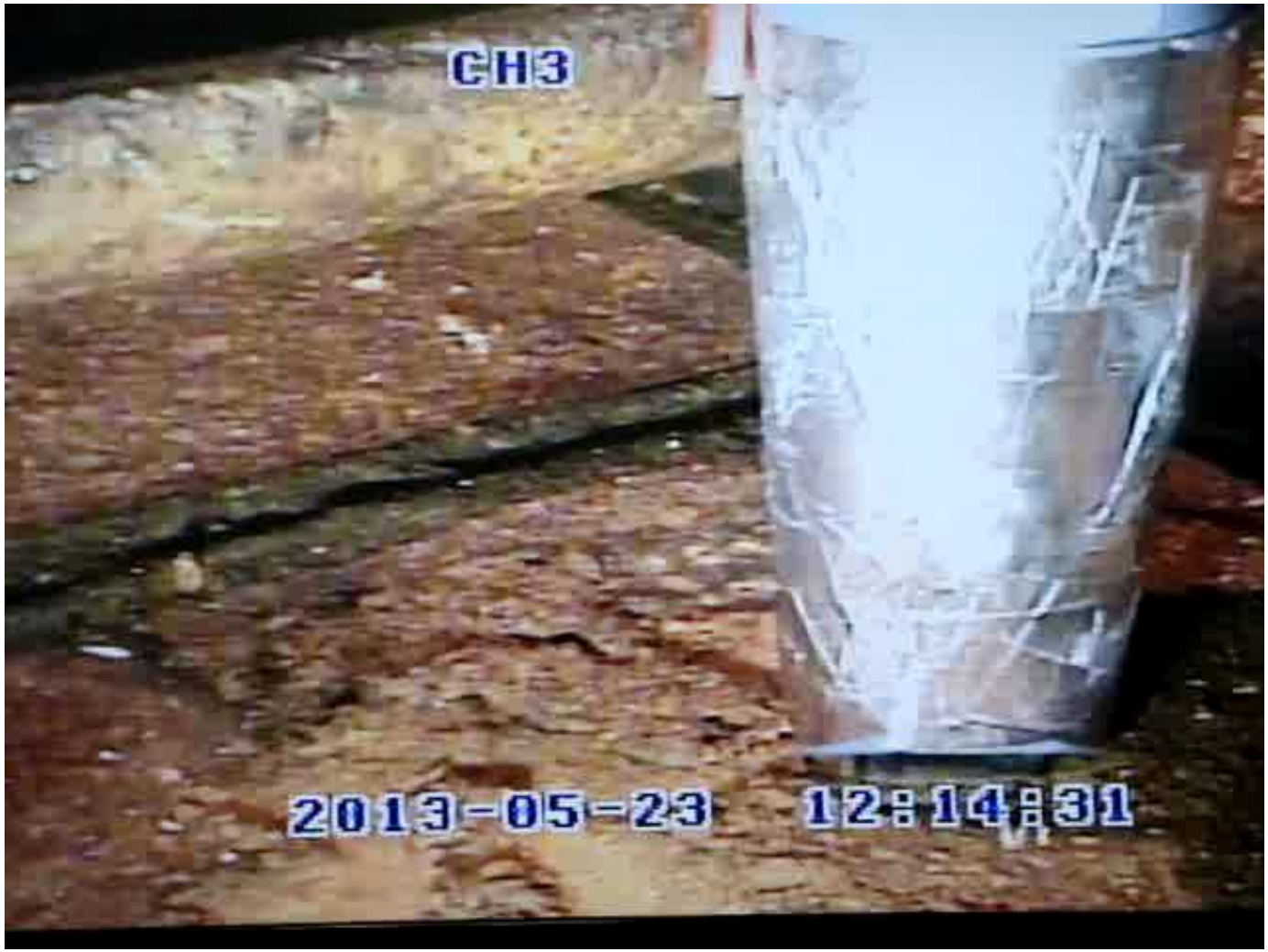


Vacuum sampling of Tank 16 primary



Sampling devise used in sampling of Tank 16 annulus

Tank 16 Vacuum Sample

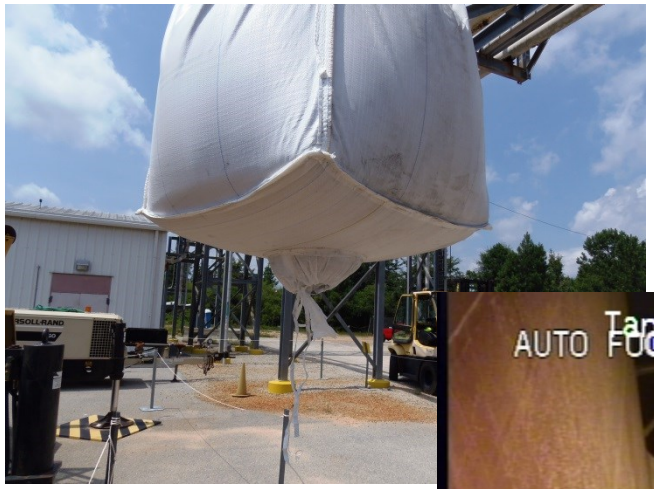


Current Technology Improvements

- Continued testing on SMPs
  - Low flow / plugged screen testing
    - Data collected to evaluate potential causes of premature failure that occurred on Tank 13
  - Implemented improved operational controls
    - New interlock protecting pump bearings
  - 5 new pumps procured

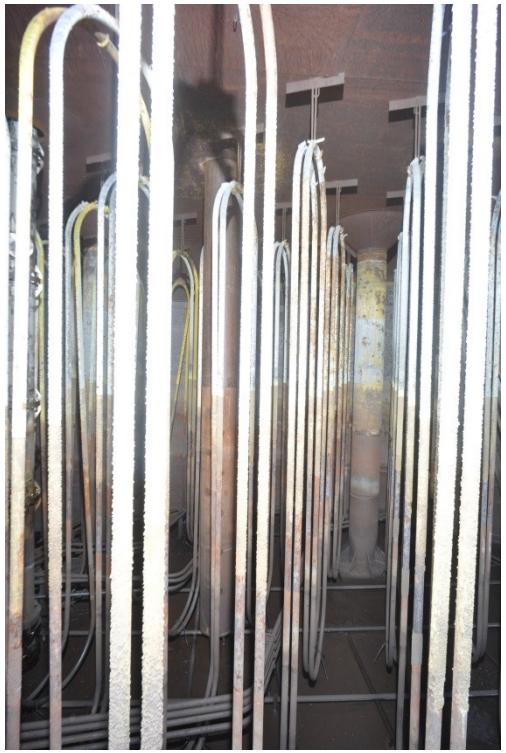
Lessons Learned

- Lessons Learned from the grouting of Tanks 5 & 6 will be incorporated into strategy for Tank 16 and Tank 12
  - Annulus
  - Cooling Coils
  - Bulk / Equipment



Lessons Learned

- Lessons Learned documented for Tank 12 BOA
  - Lessons learned implemented from Tank 5 & 6 project very positive
    - Same pH adjustment procedure will be recommended if BOA is used in future
  - Field measurement of pH will need to be refined



Current Process Improvements

- Continued process improvement initiatives
  - Value Stream Analysis
  - Evaluated all phases of Closure process
  - Involved representatives from all aspects of Tank Closure

Current Process Improvements

"Starbursts" Areas to Improve

Current State Process Mapping

Cycle Time and Touch Time

Future State "Art of the Possible"

Future Technology Focus Areas

- Continue to develop alternative mixers - CSMP
  - Desire is to have one mixer pump for all phases of waste removal and tank closure
  - More economic pump without sacrificing performance
- Use of laser scanner
  - Heel volume determination trials
  - Initial evaluations completed
  - Tank 8 riser checks / Tank 12 heel determination
- Sampling devices/crawlers
  - Continue to develop sampling crawlers and techniques for sampling residuals and coils
- Use of in-tank sonar (DOE EM funded project)
  - Potential heel volume determination
  - Sludge mapping during waste removal phase

Questions