



*We do the right thing.*

# Savannah River Site (SRS)

## Liquid Waste Program

### ISMS Champions



## **American Recovery and Reinvestment Act (ARRA) – Working Safely**

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**Mark Schmitz**

Savannah River Remediation ARRA Program Manager

## Mark Schmitz

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- Mark Schmitz is currently the ARRA Program Manager for Savannah River Remediation, the Liquid Waste program contractor at the Savannah River Site (SRS).
- Mark has over 29 years of experience in DOE nuclear operations at SRS and Los Alamos National Laboratory. He has managed complex nuclear facilities including tritium, uranium, plutonium and spent fuel facilities. His experience includes operations management, project management, ES&H, radiological controls, and engineering.



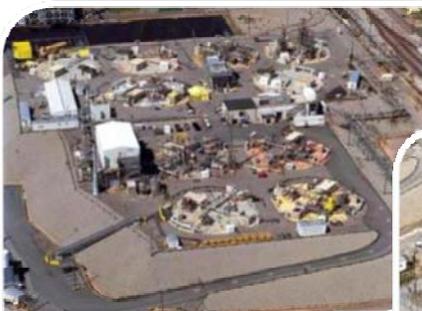
## Savannah River Remediation (SRR)

- Who We Are
  - DOE-SR's Liquid Waste contractor since July 1, 2009
  - Approximately 2,000 full-time employees
- What We Do
  - Operate five high-hazard processing facilities:
    - F Tank Farm
    - H Tank Farm
    - Defense Waste Processing Facility (DWPF)
    - Saltstone Processing Facility (SPF)
    - Effluent Treatment Facility (ETF)
- Our Commitment
  - Close 22 waste tanks in 8 years



## Liquid Waste Program Recovery Act

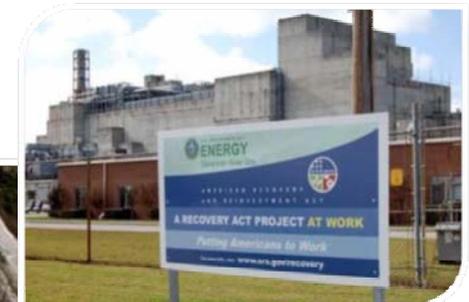
- The Liquid Waste Program for Savannah River Site (SRS) received \$200M in Recovery Act funding in September 2009
- Recovery Act scope includes upgrades to infrastructure and facility improvements
- Provides overall risk reduction for Liquid Waste Program by investing in equipment to support tank closure and waste disposition



Tank Farm



Effluent Treatment Facility



Defense Waste  
Processing Facility

## Liquid Waste Program Recovery Act Scopes of Work



Removing Slurry Mix  
Pump from Tank 5

- **Tank Closure Infrastructure**—Equipment installation and infrastructure modifications to support tank closure activities. (10 projects)
- **Waste Treatment**—Design and install components to enhance Defense Waste Processing Facility (DWPF) and Saltstone operations. (10 projects)
- **Salt Disposition Integration**—Install salt processing infrastructure to support Salt Waste Processing Facility (SWPF). (9 projects)
- **Facility Operations**—Design and install modifications to support enhanced salt and sludge waste removal. (4 projects)



Concrete Pour at Effluent  
Treatment Facility



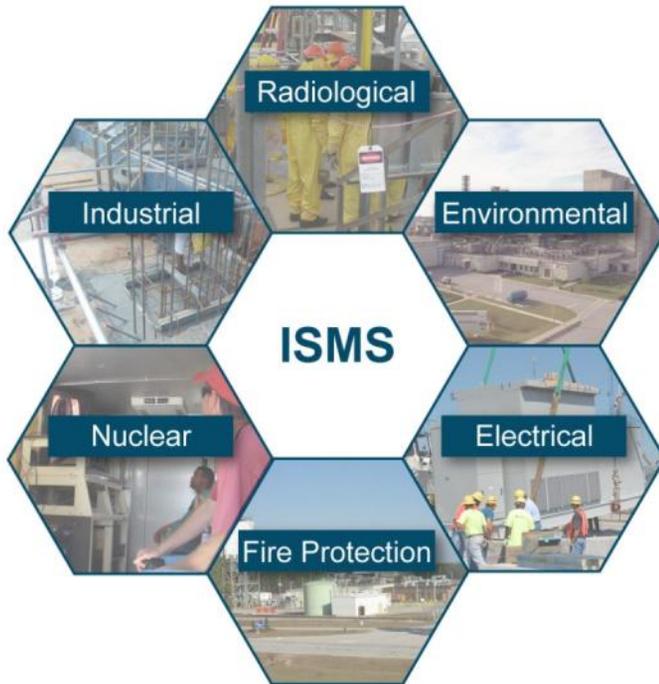
Argon Tank Replacement at  
Defense Waste Processing Facility



Tank 28 Infrastructure Modifications



# Liquid Waste Program Recovery Act and ISMS



- **Equipment Infrastructure**
  - Investing in equipment for overall operational risk reduction
- **Chemical Addition**
  - Design/build 10,000-gallon vessel and unloading station
- **Tank 5 Upgrades**
  - Transfer submersible mixing pump and refurbish ventilation
- **DWPF Melter Bubblers**
  - Design, build, and install four argon “bubblers” in the DWPF Melter
- **Lessons Learned**

## Liquid Waste Recovery Act – Equipment Infrastructure

- Reducing operational risk by purchasing needed equipment
- Tank Closure and Tank Farm
  - 6 new submersible mixer pumps (SMPs)
  - 5 new submersible transfer pumps (STPs)
  - 4 new submersible blender pumps (SBPs)
- Defense Waste Processing Facility
  - Melter components
  - 1 replacement DWPF electro-mechanical manipulator (EMM)
  - 1 new remote cell transfer pump
  - 1 DWPF agitator shaft
- Infrastructure
  - New electrical switchgear/substations
  - 4 new chemical storage tanks
  - 2 new tank agitators

DWPF EMM



SMP Testing



Tank 13 Switchgear



Melter 4

# Working Safely – Chemical Addition Project

- Scope of Work

- Remove abandoned nitrogen tanks and protective shielding
- Design/build 10,000-gallon vessel and unloading station to support large volume sodium hydroxide (NaOH) additions to SWPF Blend & Feed Tanks located in H Tank Farm



Dismantling and removing the nitrogen tanks

- Benefits

- Chemical addition site has less traffic congestion than typical tank top unloading area
- Site provides ability to receive NaOH via truck or rail car
- Mod provides permanent piping for unloading NaOH versus chemical hose
- Provides NaOH addition capability for future projects
- Reduces the number of manual valve manipulations on chemical process piping



Current chemical unloading process – the new unloading station will reduce worker exposure and decrease the potential for spills

## Working Safely – Tank 5 Upgrades (Complete)

- Scope of Work
  - Transferred a submersible mixer pump from Tank 6 and installed it in Tank 5. Installed mechanical and electrical connections and refurbished ventilation for Tank 5. (First completed SRR RA project.)
- Results/Lessons Learned
  - Successful pump movement
  - Used sleeviers/de-sleeviers
  - Managed dose with remote telemetric Electronic Personal Dosimeters (EPDs)
  - Integrated command and control between Construction, Rigging, Radiological Controls, and Operations
  - Authorization Basis compliant ventilation for sludge bulk waste removal



Moving pump  
from Tank 5 to  
Tank 6

## Working Safely – DWPF Melter Bubblers

Preliminary fit up of the jumper for Melter 2 Bubblers



Top view of melter in canyon

- Scope of Work
  - Design, build, and install four argon “bubblers” in the Defense Waste Processing Facility Melter
- Partnerships with the following:
  - Vitreous State Laboratory (VSL) to develop the flowsheet and design.
  - EnergySolutions (ES) to design the bubblers and coordinate between the fabricator and SRR.
  - Savannah River National Laboratory (SRNL) to design the feed tube, conduct the melter off-gas flammability testing, and develop the flowsheet.
  - Savannah River Nuclear Solutions (SRNS) to fabricate the jumpers and feed tube; mock up the bubblers, jumpers, and feed tube; and conduct dimensional verification.

# Working Safely – DWPF Melter Bubblers (continued)

- ISMS

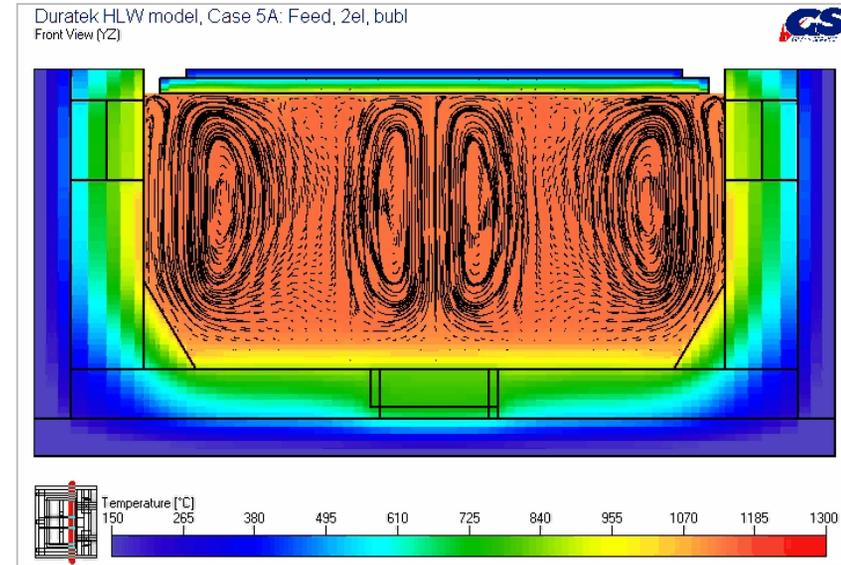
- Rigorous testing ensures the safety of the bubbler modifications (for authorization bases flammability controls)
- Equipment mock-up ensures proper form, fit, and function before radiological work



Bubbler diagram

- Benefits

- Potential for up to 50% increase in canister production



DWPF melter simulation model



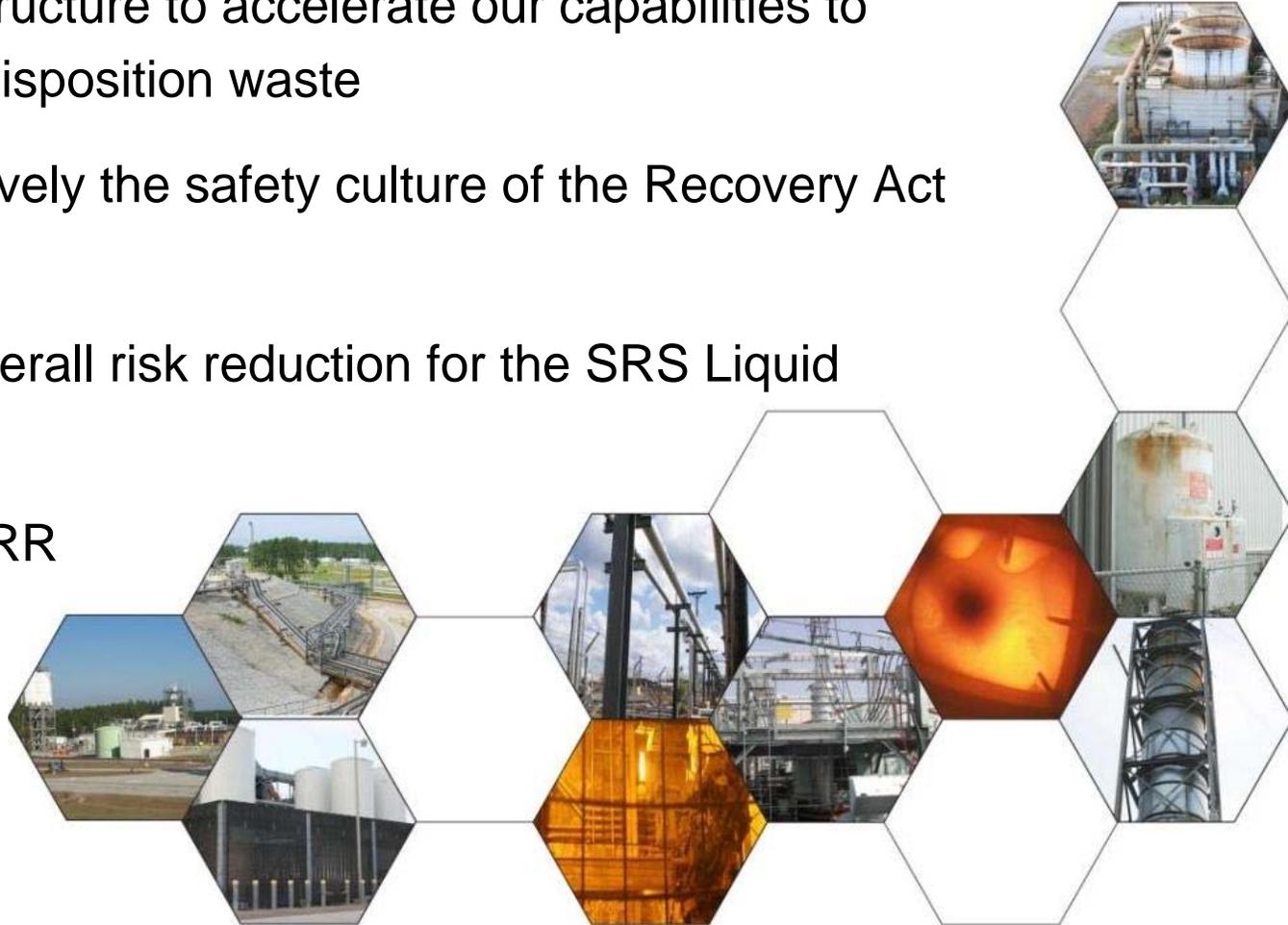
## Lessons Learned



- Train all workers in the principles of ISMS
- Work performed to the same controls as “Base” program
- New workers distributed throughout the organization
- Experienced personnel used for the high hazard activities
- Mentor those with less experience
- Construction forces with strong DOE or nuclear plant background

## Recovery Act – Working Safely

- Upgrading infrastructure to accelerate our capabilities to close tanks and disposition waste
- Managing proactively the safety culture of the Recovery Act work force
- Enhancing the overall risk reduction for the SRS Liquid Waste Program
- Supporting the SRR commitment to close 22 waste tanks in 8 years



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## Questions and Contact Info

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