Summary Notes, February 26, 2008
SRS Citizens Advisory Board
Waste Management Committee Meeting

The Savannah River Site (SRS) Citizens Advisory Board (CAB) Waste Management Committee (WMC) met on Tuesday, February 26, 2008, 6-8 p.m., at the Aiken Municipal Conference Center, in Aiken SC.

The purpose of this meeting was to discuss the following:

1) Update on the PUREX Waste Treatment Program;
2) Saltstone Operations Update;
3) Optimizing Performance of the Defense Waste Processing Facility; and
4) Opportunity for public comments on CAB related documents.

ATTENDEES:

CAB Members	**Stakeholders**	**DOE/Contractors/Others**
- Joe Ortaldo, Chair	Jack Roberts, Public	Sheron Smith, DOE-SR
- Art Domby, Vice Chair	Lee Poe, Public	Terry Spears, DOE-SR
- Manuel Bettencourt	Jim French, WGI	Jean Ridley, DOE-SR
- Alex Williams, Vice Chair	Karen Patterson, Public	Chun Pang, DOE-SR
- Leon Chavous	Murray Riley, Public	Larry Ling, DOE-SR
- Stan Howard		Mike Simmons, DOE-SR
Wendell Lyon	Ted Millings, SCDHEC	Pat McGuire, DOE-SR
Mary Drye	Carolyn Haugabook, EPA	
Kathe Golden		
Ranowul Jzar	Roy Schepens, Parsons	Kim Hauer, WSRC
	Charlie Hansen, Parsons	Pete Hill, WSRC
	Dave Amerine, Parsons	Paul Sauerborn, WSRC
	Tom Burns, Parsons	Elmer Wilhite, SRNL
	Rick McLeod, Advisor	

- *Waste Management Committee Members*

Welcome and Introduction:

Joe Ortaldo, WMC Chair, welcomed and thanked everyone for attending the meeting.

Mr. Ortaldo, WMC Chair, referenced the meeting ground rules and encouraged participation of all attendees. Then, the attendees introduced themselves.

Committee Update:

Mr. Ortaldo, WMC Chair, provided an update and status of the WMC open and pending recommendations. He continued by stating that the 2008 Work Plan topics for this committee have been developed and the Plan will be issued soon. Mr. Ortaldo encouraged those CAB members interested in serving on the Waste Management Committee this year to sign up at the March full-board meeting. He welcomes their interest and appreciates everyone's efforts and willingness to serve on this committee. Mr. Ortaldo, WMC Chair, reviewed the agenda topics and the upcoming CAB committee meeting schedule. He stated that due to the volume of material to be presented, he suggests that all questions be held until the end of the presentations.

Meeting Summary:

The Waste Management Committee held a meeting on Tuesday, February 26, 2008, 6:00-8:00 p.m., at the Aiken Municipal Conference Center, in Aiken, SC. The agenda topics included 1) an update on the PUREX Waste Treatment Program; 2) Saltstone Operations Update; and 3) Optimizing Performance of the Defense Waste Processing Facility. The meeting discussions began with an update on the PUREX solvent treatment and potential impacts resulting from not being able to ship to the Nevada Test Site (NTS) because of the Nevada's Attorney General letter dated December 20, 2007. Mike Simmons, DOE-SR, provided a presentation that included the PUREX Treatment history, types, and alternate treatments to disposition the PUREX waste. The Legacy organic PUREX solvent is the only remaining waste left to be treated. Solidification/macroencapsulation is the preferred treatment path. The focus for SRS is to continue moving forward with treatment and meeting the Site Treatment Plan commitment to ship by December 31, 2008. The Department of Energy – Headquarters is aggressively addressing the global NTS issue. An agreement may be necessary on interim storage at the Savannah River Site (SRS), as a contingency plan, if the waste can not be shipped to the NTS. The CAB member's questions included: were other waste streams and shipments from SRS affected by the Attorney General's issue with Nevada; if SRS can not ship to NTS, does SRS plan to store the waste and if the waste is stored at SRS how much storage would be required, and what are the hazards of handling this material and storing at SRS? Mr. Simmons stated that there is no other waste streams affected by this issue; if not shipped to NTS, the waste would be returned to SRS for safe storage and it would require about 120 boxes, which are sealed, so there would be no hazardous risk to the public or the environment. During the final discussions, Mr. Simmons stated that we are early in the process and recommended that we allow the Department to continue to work with the State of Nevada to reach resolution. Mr. Ortaldo, WM Chair, asked that an update be provided prior to any additional funding required or missing milestones agreed to with the South Carolina Department of Health and Environmental Control and/or the Environmental Protection Agency. Mr. Simmons agreed to keep the CAB informed of the issue and progress.

The next topic discussions were the Saltstone Operations. The Saltstone processing status indicates that over 50,000 gallons have been processed as of February 12, 2008. The total Deliquification, Dissolution, and Adjustment (DDA) salt solution processed to date is 848,000 gallons. Larry Ling, DOE-SR, provided informal remarks with respect to the Saltstone Vault 4 operations including a general overview, dimensions, and improvements made to support operations. Vault 4 was constructed in 1988, and SRS has been aware of the wet spots on the walls, which are created by bleed water from the grout. SCDHEC and SRS have monitored the wet spot for years, and will continue to monitor. The dampness is not new, and does not create a risk to safe operations.

Kim Hauer, WSRC, provided informal remarks to inform the CAB and public of while emptying sludge waste from non-compliant Tank 5, a small film of moisture was found on the exterior surface. Although the small moist are found posed no threat to workers or the environment, the SRS Management made the decision to halt operations to ensure a safe review, correct actions, and restart. Alex Williams, CAB member, questioned the cost of the halted operations. Mr. Hauer stated the cost was basically three days of labor costs and lost time. Joe Ortaldo, Chair, commended the Department and Washington Savannah River Company on their openness, checks and balances, and communicating that there are sometimes setbacks with opportunities to make changes. He encouraged the Site to be conservative, fix problems, and operate safely.

The final presentation, optimizing performance of the Defense Waste Processing Facility (DWPF) was very well received. Ms. Jean Ridley, DOE-SR, provided the DWPF vitrification history, process, and improvements resulting in efficiencies and improved production. These improvements increase radioactive waste loading of glass. Other process improvements includes melter siphon detector; melter feed pump software logic changes; steam atomized scrubber operations vs. recycle water; and frit adjustments which ensures melt rate throughput is optimized with constituents of sludge. Open discussions on the lifecycle processing of the DWPF are of concern to the CAB members and the public. They do not want to slow operations and processing at DWPF or fill cans with salt. They feel this would not be efficient or the best use of the facility or storage. SRS has a waste characterization plan and it shows a high confident level of composition that this will not occur. The current plans are to operate the Salt Waste Processing Facility and DWPF to optimize operations. The briefing was very well received and asked to be provided to the full board at the March meeting.

Public Comment:

Lee Poe recommended that the CAB members respond to all public comments.

Adjourn:

Mr. Ortaldo adjourned the meeting at 7:55 p.m.

Follow-Up Actions:

1. Keep the CAB informed of the PUREX Treatment issue and progress.
2. Provide the Optimizing Performance of the Defense Waste Processing Facility to the full Board in March 2008.

****

PRESENTATIONS:

PUREX Waste Treatment *(presented by Mike Simmons, DOE-SR)*

Purpose

Update the CAB on PUREX solvent treatment and potential impacts resulting from Nevada's Attorney General letter dated December 20, 2007.

PUREX Treatment History

- Disposition path for PUREX waste was thermal treatment at the Consolidated Incineration facility (CIF).
- CIF suspended operation in 2000; alternative treatment needed for PUREX waste.
- CIF Focus Group and Savannah River Site pursued optional alternatives.
- Systems engineering evaluation identified alternative treatments to CIF for both aqueous and organic PUREX.

PUREX Waste Types

Legacy PUREX Waste

- Aqueous PUREX Waste
    - Non-organic liquid from canyon washing operations and old solvent tank closure in E-Area
    - Volume: ~12,500 gallons
    - Classification: Low-level Waste
- Organic PUREX Waste
    - Actual solvent liquid: Tributyl phosphate/n-paraffin
    - Volume: ~ 25,000 gallons
    - Classification: Mixed Waste

F-Canyon PUREX Waste

- Additional solvent waste generated from F-Canyon deactivation in 2004
    - Volume: ~60,000 gallons
    - Classification: Low-level Waste

PUREX Alternative Treatments

- Legacy Aqueous PUREX
    - Effluent Treatment Facility (ETF)
    - **Completed March 2004**
- F-Canyon PUREX Waste
    - Commercial solidification
    - **Completed April 2007**
- Legacy Organic PUREX
    - Commercial solidification/macroencapsulation
    - Ongoing
    - Site Treatment Plan Commitment: Ship by December 31, 2008

Legacy Organic PUREX Treatment Issues

- Analytical issues in quantifying Underlying Hazardous Constituents (UHC's) such as n-butyl alcohol have been encountered.
- EPA Region IV has been requested to approve a treatability variance (TV), for macroencapsulation following stabilization to address UHC's.
- The public comment period for the TV resulted in letter from Nevada's Attorney General protesting PUREX disposal at the Nevada Test Site (NTS); however, they did not comment on the variance.
- Treatment vendor cannot proceed with treatment until assured that treated material can be shipped out of their facility.
- If the issue with Nevada can't be resolved in the near term, an interim storage location for treated PUREX is needed.
- Other SRS waste streams destined for the NTS are currently unaffected.

Current Status

- The vendor has an NTS approved profile for this waste stream. Note: The profile approval process involves Nevada regulatory agency participation.
- The treatability variance approval is eminent (per EPA-IV discussions).
- EPA and DOE is formally addressing the Nevada Attorney General letter.
- On January 18, 2008, an initial meeting occurred between DOE Headquarters and Nevada representatives. Discussions are on-going.
- SRS is working with the South Carolina Department of Health and Environmental Control in event temporary/interim storage at SRS is necessary.

Conclusion

- Legacy organic PUREX solvent is the only remaining waste left to treat.
- Solidification/macroencapsulation is the preferred treatment path.
- Agreement is needed on interim storage at SRS as a contingency plan.
- The focus for SRS is to continue moving forward with treatment and meeting the Site Treatment Plan commitment (Ship by December 31, 2008).
- DOE Headquarters is aggressively addressing the global NTS issue.

Saltstone Operations Update *(presented by Chun Pang, Larry Ling, and Kim Hauer)*

Saltstone Processing Status

- Deliquification, Dissolution, and Adjustment (DDA) Batch 3
  - Processing initiated 2/10/08
  - Over 50K gallons processed as of 2/12/08
- Total DDA Batch 3 volume to be processed 400k gallons
  - ➢ Composed of Tank 49 & Tank 23 waste
- Total DDA salt solution processed to date 848k gallons

Optimizing Performance of the Defense Waste Processing Facility *(presented by Jean Ridley, DOE-SR)*

Purpose

Discuss the process improvements to the Defense Waste Processing Facility (DWPF) resulting in improved efficiencies and production.

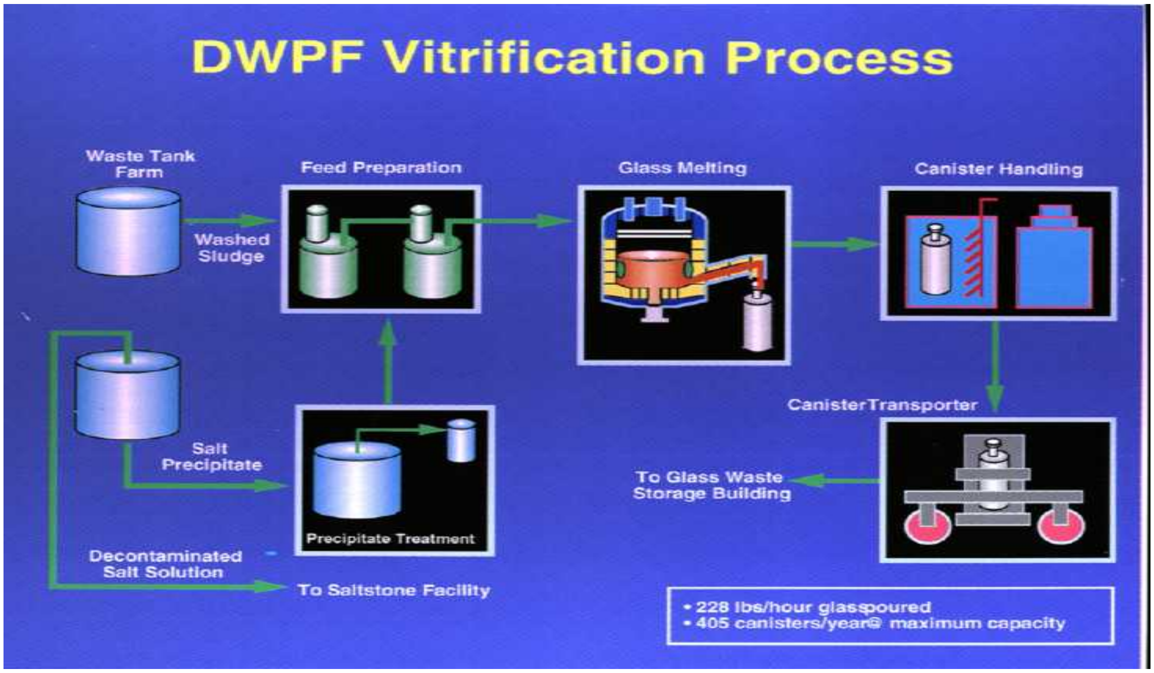
DWPF Vitrification History

Objective: Process (vitrify) high level waste from tank farms into a stable waste form ready for disposal in the Federal Repository

- Design started in 1977
- Construction began 1983
- Radioactive operations began **March 1996**
- Poured 2468 Canisters as of 2/21/08 – 9.5 million lbs of glass
- Currently processing Sludge Batch 4
- 2 melters to-date
  - 1st – 1333 cans- replaced in 2004
  - 2nd – 1128 cans to date
  - 3rd - ready
  - 4th - under construction

Sludge Stored in a Waste Tank

- Insoluble solids contained in the waste
- Settles to the bottom of a tank
- 9 % of volume (3 million gallons)
- 51 % of radioactivity (200 million curies [Ci]**)**
- Hydrogen (generated from radiolysis) bubbles up through the sludge


DWPF Vitrification Process

- 228 lbs/hour glasspoured
- 405 canisters/year@ maximum capacity

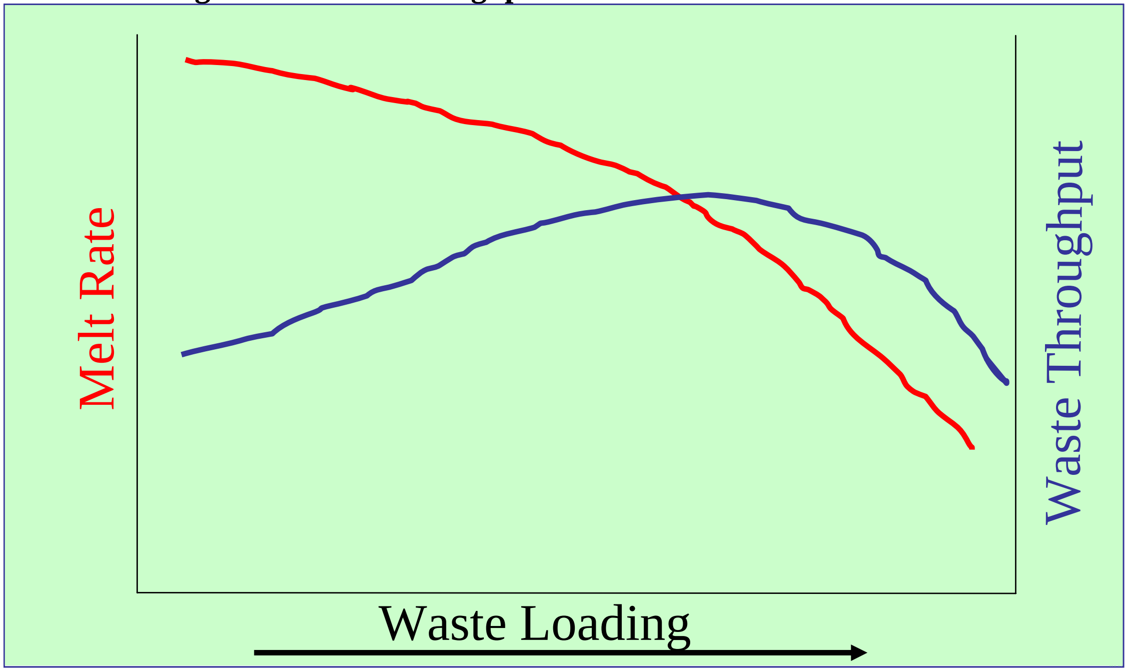
Vitrification Process

- Sludge mixed with glass formers (frit)
- Sludge/frit slurry fed to melter
- Slurry resides in melter at 1150°C for about 65 hours to permit thorough melting and mixing
- Melter heats melt pool by passing an electric current through it, i.e., “Joule” heating
- Molten glass is drawn from the melter through the melter pour spout to fill a canister
- Pour spout directs the molten pour stream into a canister while a connecting bellows provides a leak-tight seal
- Empty canisters are placed on a pour turn-table and rotated beneath the melter pour spout for filling

Processing Improvements

- Heated Bellows Liner – 5% increase
- Melter Siphon Detector- 2% increase
- Melter Feed Pump Software Logic Changes – 2% increase
- Increased HLW Loading of Glass and Optimization of Throughput - 6% increase
- Steam Atomized Scrubber (SAS) Operation vs. Recycle Water- 3% increase
- Optimized Frit

Waste Loading- Melt Rate- Throughput



Heated Bellows Liner

- reduced downtime for cleanouts
- Increase attainment 5%

Other Process Improvements

- Melter Siphon Detector- 2% increase
- Melter Feed Pump Software Logic Changes – 2% increase
- Steam Atomized Scrubber (SAS) Operation vs. Recycle Water- 3% increase
- Frit Adjustments - ensures melt rate/ throughput is optimized with constituents of sludge

Potential Improvements

- Gas Chromatographs (GC) – installation 3/08
  - less downtime due to GC problems
- Sludge Adjustment and Receipt Tank (SRAT) Optimization
- Technology Improvements
- Continued Monitoring of Existing Parameters

Challenges

- Equipment Maintenance
- Spare Parts
    - Pumps
        - Precipitate Reactor Feed Tank (PRFT) Transfer Pump
        - Strip Effluent Feed Tank (SEFT) Transfer Pump
        - 512-S Transfer Pump
    - Agitators – Sludge Receipt and Adjustment Tank (SRAT), Slurry Mix Evaporator (SME)
    - Coils - SME Coil
    - Tanks
        - SME Tank
        - Melter Feed Tank (MFT)
        - SRAT