

**Savannah River Site (SRS) Citizens Advisory Board
Strategic and Legacy Management; the Nuclear Materials (NM) and the Facilities Disposition & Site
Remediation Joint Committee Meeting
Aiken Municipal Conference Center, Aiken, SC
April 29, 2008**

The Savannah River Site (SRS) Citizens Advisory Board (CAB) Strategic and Legacy Management; the Nuclear Materials, and the Facilities Disposition & Site Remediation Committees held a joint committee meeting on Tuesday, April 29, 2008, 5:30-7:35 p.m., at the Aiken Municipal Conference Center in Aiken, SC

The purpose of the meeting was to discuss:

1. Status of the Certified Baseline
2. Depleted Uranium Disposition Efforts
3. Area Completion Project Update
4. Opportunity for public comment on CAB related items.

Attendees:

CAB Members

Manuel Bettencourt
Judy Greene-McLeod
Mary Drye
Leon Chavous
Alex Williams
Mercredi Giles
Kathe Golden
Joe Ortaldo
Don Bridges
Stan Howard
Ed Burke
Madeleine Marshall
K. Jayaraman

Stakeholders

Rick McLeod, CAB Technical
Advisor
Jim Barksdale, EPA
Heather Cartwright, SCDHEC
Russ Messick
Mike May, SCDHEC
Van Keisler, SCDHEC
John Adams, SRNL
Bob Adams, SCDHEC
Ted Millings, SCDHEC
Murray Riley
Clyde Seith
Liz Goodson
Daniel Evans, SRNS
J. D. Chiou, SRNS

DOE/Contractors

Sheron Smith, DOE-SR
Charlie Harris, DOE-SR
Dawn Gillas, DOE-SR
Paul Daughtery, DOE-SR
Helen Belencan, DOE-SR
Wade Whitaker, DOE-SR
Gerri Flemming, DOE-SR
Debbie Wisham, V3
Chris Woods, V3

Welcome, Introduction, and Committee Chair Update:

Manuel Bettencourt, NM Chair, called the meeting to order at 5:30pm. He began by stating that this is a joint committee meeting of the Strategic and Legacy Management; the Nuclear Materials; and the Facilities Disposition and Site Remediation Committees.

Mr. Bettencourt welcomed everyone and requested self introductions. He reviewed the meeting ground rules, and requested that all questions be held until the end of the presentations.

Ms. Mary Drye, Chair, FD&SR also welcomed everyone and stated that there would be another P Reactor Workshop held in Savannah, GA, on May 19th and encouraged CAB members to attend. She reviewed the one S&LM recommendation status.

Ms. Madeleine Marshall, Chair, S&LM, also welcomed everyone and reviewed the status of the six S&LM recommendations. She recommends that four of the six be updated from pending to open status.

Meeting Summary:

The Strategic & Legacy Management; the Nuclear Materials; and the Facilities Disposition and Site Remediation Committees conducted a joint meeting on April 29, 2008, 5:30-7:30 pm, at the Aiken Municipal Conference Center, in Aiken, SC. The purpose of the meeting was to provide CAB members and the public with current information about the status of the certified baseline; the Disposition of Depleted Uranium; and an update on the Area Completion Projects.

The Strategic and Legacy Management Committee agenda topic was the status of the certified baseline presented by Helen Belencan, Acting Assistant Manager for Closure Project. Ms. Belencan stated that there will be a full presentation on the baseline in May 2008. She reminded the CAB members that in May 2007, she briefed the CAB on the 2006 Project Execution Plan (PEP) which included an integrated schedule and work scope. At that time, the Salt Waste Processing schedule was the critical path. She stated that the baseline has been updated and tied to interrelationships and factored in progress. The certified baseline is a management tool and describes elements of work with cost estimates. The baseline has been certified by a group of experts from the Engineering and Construction Management Office who determined that we have work defined, have the abilities, schedule, and cost estimates to meet their standards for quality. Open discussions continued with the clarification that the baseline has been built on funding expectations and that adjustments will be made based on actual funding received. In closing, Ms. Belencan stated that the way projects are managed has not changed; through feedback mechanisms such as project quarterly reviews, the projects performance is monitored. No issues or recommendations were developed from the discussions.

The Nuclear Materials Committee agenda topic was the disposition of Depleted Uranium Oxide (DUO) presented by Dawn Gillas, a DOE-SR Nuclear Engineer. The purpose of the briefing was to provide the status of the DUO inventory, storage conditions, and disposition activities. DUO is a low radiological hazard and heavy metal oxide health hazard. There were two shipping campaigns containing 10,600 drums completed in FY03-06. Two shipping campaigns are planned of a total of 9,400 drums in FY08. All other DUO drums are being safely stored onsite. Open discussions included costs, the Waste Acceptance Criteria, and the Department of Transportation guidelines which must be met to ship the drums. Ms. Gillas stated that SRS has received 50 Industrial Package-1 qualified rail cars from Fernald with fiberglass lids for sending a loaded rail car unit train to the Clive, Utah facility. These cars are worth \$500,000 each. No issues or recommendations were developed from the discussions.

The Facility Disposition and Site Remediation agenda topic was an update on the Area Completion Projects presented by Wade Whitaker, Director, Area Closure Projects. Mr. Whitaker began by stating that the Area Closure Project performance has consistently met all 2025 Federal Facility Agreement milestones since 1993 and maintained a strong relationship with the regulators. The area closures are being successfully completed by developing and utilizing efficient, cost-effective technologies. Mr. Whitaker stated that the area completion strategy is a systematic approach to completing cleanup work integrating the deactivation and decommissioning and the soil and groundwater project scope. Mr. Whitaker provided photos of the F Canyon outside Facilities Disposition; the Allendale Barricade Disposition; the M Area Completion; the P Area Completion; and the R Area Completion. In closing, he reviewed some of the remediation technology utilizations and there successes. There was a lot of interest from the CAB members on the technologies being used for remediation. Open discussion included if any other operations offices are using these technologies; and reviewed monitoring techniques being used to ensure stability in streams and no increase of contaminations. Mr. Whitaker was invited to present at the full Board meeting in May. No issues or recommendations were developed from the discussions.

Public Comment(s): None.

Actions:

1. Requested Wade Whitaker to present the Area Completion Projects at the full board meeting.

Adjourn: The meeting was adjourned at 7:35pm.

PRESENTATIONS:

Depleted Uranium Disposition *presented by Dawn L. Gillas, Program Manager, DOE-SR*

Acronyms

- DOT Department of Transportation
- DU Depleted Uranium
- DUO Depleted Uranium Oxide
- FY Fiscal Year
- IP Industrial Package
- LSA Low Specific Activity
- MOX Mixed Oxide Facility
- NTS Nevada Test Site
- RCRA Resource Conservation and Recovery Act
- SRS Savannah River Site
- WAC Waste Acceptance Criteria

Objective

Provide status of DUO inventory, storage conditions, and disposition activities.

Background

- The nuclear weapons program left SRS with large inventories of DUO
- Originally ~35,000+ drums DUO Packaged in 55-gallon, carbon steel drums, including several thousand over packed in 85-gallon drums
- ~3,300 transported by rail to the Energy Solutions low level waste disposal facility in Clive, UT (previously Envirocare of UT) for disposal in FY03 using open-top gondola cars with tarps to cover and Super load Wrappers as the package
- ~7,300 over packed drums transported by rail to Clive, UT for disposal in FY04/05 using standard box cars
- ~25,000 55-gallon drums remain in 4 storage facilities at SRS
- Currently two campaigns are in planning to dispose of an additional ~9,400 drums

Storage Buildings

- Originally 7 buildings
- Now 4 buildings
- 3 areas within SRS
- Storage conditions appropriate for material

Two buildings in F-Area that continue to store drums

Two buildings in F-Area are empty and decommissioned to slab

DUO Characteristics

- DUO is low radiological hazard, DOT LSA 1
- Contains no RCRA constituents
- Heavy metal oxide health hazard
- Low level waste that meets WAC for both NTS and the Clive, UT facility

FY03 DUO Pilot Disposition

In FY03 3,270 55-gallon drums were shipped by rail to Envirocare for disposal as low level waste

Disposition Project for 85-Gallon Over packs

- 7,296 Over packs qualified as IP-2 containers due to weight of drums
- Weight in 1,600 to 1,800 pound range
- Shipped in boxcars since over packs were the DOT container
- Shipments began in August 2004 and completed in January 2006

Over packs are taken from storage and loaded into boxcars

New DUO Disposition Campaign in Planning

- F-Area building containing 5,408 55-gallon drums will be shipped by rail using SRS railcar fleet of gondola cars with hard tops
- Rail cars originally from the Fernald Closure Project, now owned by SRS, qualify as IP-1 containers
- NNSA paying for disposition to be able to use the building for MOX construction lay down

Another New DUO Disposition Campaign in Planning

- R-Area building containing 4,015 55-gallon drums will be shipped by truck to NTS for disposal
- Truck shipping used vs. rail because:
 - Rail cars being used for F-Area Campaign
 - No rail spur to R-Area any longer
- Shipping to NTS vs. Clive because no cost to SRS for disposal
- Reason for campaign is RCRA regulatory commitment to complete characterization of R-Reactor building in FY09 requires DUO to be removed in FY08

Summary

- Two campaigns containing ~10,600 drums complete FY03-06
- Two campaigns in planning to ship ~9,400 drums in FY08
- Remaining DUO is being stored safely until final disposition is accomplished

Area Completion Project Update *presented by Wade Whitaker, ACP Federal Project Director, DOE-SR*

Agenda

- Project Performance
- Project Status
- Remedial Technology Utilization
- FFA Appendix E

Acronyms

| | |
|---------|---|
| CMP | Chemicals, Metals, and Pesticides Pits |
| CY | Current Year |
| D&D | Deactivation and Decommissioning |
| DNAPL | Dense Non Aqueous Phase Liquids |
| DOE | Department of Energy |
| EPA | Environmental Protection Agency |
| ERH | Electrical Resistance Heating |
| FFA | Federal Facility Agreement |
| Ft2 | Square Feet |
| FY | Fiscal Year |
| M&O | Management and Operations |
| MWMF | Mixed Waste Management Facility |
| PCBs | Polychlorinated Biphenyls |
| RA | Remedial Action |
| RI/FS | Remedial Investigation / Feasibility Study |
| ROD | Record of Decision |
| SCDHEC | South Carolina Department of Health and Environmental Control |
| SGP | Soils and Groundwater Program |
| SRS | Savannah River Site |
| TCE/PCE | Trichloroethylene / Tetrachloroethylene |
| VOCs | Volatile Organic Compounds |

Project Performance

- Consistently met all 2025 FFA milestones since 1993
 - 59 in FY 08
- Maintaining a strong relationship with regulators
- Have completed 358 of 515 waste units (70%)
 - 20 in FY 08 with most recent R-Area Reactor Seepage Basins (6 milestones)
- Have dispositioned 246 of 985 Performance Metric facilities (25%)
 - 229 industrial, 10 nuclear, 7 radioactive
 - 1 industrial facility in FY 08
- Area Completion Strategy started FY 05 significantly reducing project cost and schedule
- 14 Groundwater Plumes -14 active remediation systems
- Developing and utilizing efficient, cost-effective technologies
 - Edible Oils for Microbes
 - Electrical Resistance Heating

- Phytoremediation
- Silver Injection
- Hydraulic Fracturing

Area Completion Strategy

- A systematic approach to completing cleanup work integrating D&D and SGP scope
- Historical process:
 - Did not focus on any single area
 - Evaluated each waste unit individually with much paperwork and higher costs
 - Did not address D&D facilities
- Today's process:
 - Addresses large groupings of waste units and facilities in a geographic area
 - Integrates D&D / SGP cleanup
 - Area End States can be determined
 - Economies of scale in sampling, remediation, and documentation

Project Status

F Canyon Outside Facilities Dispositioning

- Started 2004; Scheduled for 2008 completion
- Outside facilities: Chemical Storage Area; Water Handling Area; Acid Recovery Unit; Recycle Sump; General Purpose Evaporator; GP Tank Storage Area; 800-series Underground Tank Storage Cells; Segregated Solvent Area; 360 linear feet of Over Head Pipe Bridge with associated piping
- During deactivation the following was accomplished:
 - More than five miles of process piping removed
 - 50 large chemical and waste tanks removed / disposed
 - Hazardous, Low Level, Mixed, and Transuranic Wastes removed
 - Concrete caps being placed over rad contaminated tanks

Allendale Barricade Dispositioning

- Removal of safety concern on public Highway 125
- Started January 2007; Completed October 2007

M Area Completion

2nd Area Completion

- Started 2003; Scheduled for 2011 completion
- D&D completed in 2006
 - Removed 24 M-Area Performance Metric facilities
- Early cleanup actions implemented to remove radioactive and VOC contamination in soil and subsurface soils by 2008
- Proposed Plan will be available for public comment in May 2008

P Area Completion

3rd Area completion (1st Reactor to be Dispositioned)

- Started 2005; scheduled for 2014 completion
- 21 of 25 Performance Metric facilities decommissioned
- D&D activities to support Area Completion:
 - Installed temporary power, lighting and communications
 - Established Electrical and Mechanical Cold and Dark
 - Implemented Habitability Plan
 - Characterized reactor vessel and facility
 - Removed moderator from the process water system and prepared reactor decommissioning alternatives study
 - Performing deactivation activities (removal of asbestos, lead, PCBs, mold)
- End State Proposal / Early Actions
 - In situ decommissioning of P Reactor which means that a significant portion of the reactor building will remain in place
 - In May / June 2008, the Early Action Proposed Plan will be issued for a 45-day public review and comment
 - Issue Early Action ROD FY 09
- Public Involvement Activities in response to CAB recommendation #248:

- October 16th, 2007 - Aiken, SC
- February 28th, 2008 - Aiken, SC
- May 19th, 2008 - Savannah, GA

R Area Completion

4th Area completion (2nd Reactor to be Dispositioned)

- Started 2007; Scheduled for 2015 Completion
- 8 of 12 Performance Metric facilities decommissioned
- D&D activities to support Area Completion:
 - Removed water from disassembly basin
 - Installing Temporary Power, lighting, and communications
 - Establishing Mechanical Cold and Dark
 - Characterized Reactor Vessel and Reactor facility
- Work Plan being revised to include reactor building and reactor vessel

Remediation Technology Utilization

Edible Oils for Microbes

Background

- T Area has a small persistent TCE/PCE plume which is managed with Pump and Treat (airstripper) since 1996
 - Approximately \$1M/year M&O costs
 - At a point of diminishing returns

New Strategy

- Use Edible Oil injection techniques to sequester and biologically destroy the VOCs
 - Inject Neat Edible Oil to sequester VOCs (vadose zone source)
 - Inject Edible Oil emulsion (food source) to promote microbial activity and reducing conditions in groundwater (reductive dechlorination)
 - Anticipate results in less than six months
 - Discontinue use of airstripper

Chemicals, Metals, & Pesticides (CMP) Pits Electrical Resistance Heating

- ERH is a soil treatment technology used to remediate solvent contamination in subsurface soils
- CMP is second deployment of ERH technology at SRS
- Electrodes inserted into the subsurface heat the soil to transform liquid solvents into gas phase
- The contaminants are subsequently removed using soil vapor extraction
- Full-scale ERH operations began March 2008
 - Estimate removal to be approximately 5,000 pounds
 - Redeployed mobile equipment utilized in 2007 at C Reactor

MWMF Phytoremediation Upgrades

- MWMF Phytoremediation – captures tritium contaminated groundwater in 2.7 million gallon pond and irrigates on 22 acres of pine trees for transpiration
- 70% tritium reduction to Fourmile Branch
- SRS has expanded and upgraded system
 - Added 22 acres of pine trees (need 50 more acres)
 - Increased capacity of irrigation supply and distribution system by two times

Silver Injection

- F / H Seeplines
 - RCRA Permit
 - Iodine 129 concentration elevated
 - Bench scale testing using silver injection with positive results; pilot scale testing underway; well network being installed
 - Regulators approved 5-year milestone extension to 2012 to allow pilot scale testing
 - Could greatly reduce cost from \$85M (barrier wall and cap) to \$1M operating cost per year

Hydraulic Fracturing to Help DNAPL Treatment

- DNAPL in silts and clays provide long-term source of groundwater contamination
- Hydraulic fracturing opens up these tight soil to allow treatment
- At A-014 Outfall, high vacuum soil vapor extraction is removing 100 pounds per week of PCE and TCE from shallow subsurface

FFA Appendix E

- Provides a lifecycle list of waste unit outyear cleanup milestones
 - First two outyears are enforceable milestones (comprehensive list)
 - Rest of outyear milestones include Field Starts, RODs, RA Starts
- Updated annually in November and regulator approval required
- SCDHEC and EPA approved FY 08 Appendix E on February 21, 2008

Summary

- Continue to work with regulators to evolve processes and fieldwork
- Continue deployment of effective, cost-efficient technologies