

Summary Notes
SRS-CAB Facilities Disposition & Site Remediation Committee Meeting
Aiken Federal Building, Aiken, SC
June 26, 2007

The Savannah River Site (SRS) Citizens Advisory Board (CAB) Facilities Disposition & Site Remediation (FD&SR) Committee held a meeting on Tuesday, June 26, 2007, 5.–7p.m., at the Aiken Federal Building, Aiken, SC. The purpose of the meeting was to present and discuss 1) the Status of the M-Area Operable Unit – *Karen Adams, DOE-SR*; 2) the P Reactor End State Concept – *Ray Hannah, DOE-SR*; 3) Treatment of Tritium in Groundwater at SRS – *Phil Prater, DOE-SR*, and 4) have an opportunity for public comment.

Attendance was as follows:

CAB Members

*Mary Drye, Chair, FD&SR
*Donna Antonucci
Franklin Boulineau
*Leon Chavous
Manuel Bettencourt
Robert Meisenheimer
Judy Greene-McLeod
Stan Howard
Joe Ortaldo
*Cynthia Gillard-Hill

Stakeholders

Russ Messick
Lee Poe
Nancy Bobbitt

**Rick McLeod
Regulators
H. Reed Corly, SCDHEC
Gregg O'Quinn, SCDHEC

DOE/Contractors

Sheron Smith, DOE-SR
Ray Hannah, DOE-SR
Al Siddell, BSRI
Joan Cardow-Neto, BSRI
Sheila McFalls, WSRC
Phil Prater, DOE-SR
Gerald Blount, WSRC
Wade Whitaker, DOE-SR
Ed McNamee, BSRI
Paul Sauerborn, WSRC
Karen Adams, DOE-SR

**FD&SR Committee members*

*** CAB technical advisor*

Welcome and Introduction:

Ms. Mary Drye, Chair, FD&SR welcomed all those in attendance. Ms. Drye asked all attendees to introduce themselves and then referred to the meeting ground rules requesting that everyone abide by them.

Status of M-Area Operable Unit– *Presented by Karen Adams, DOE-SR*

Karen Adams, DOE-SR, began her presentation by stating the purpose of this briefing is to provide to the SRS CAB the M-Area Operable Unit Status and Early Action Progress. Early Actions help to shorten the overall cleanup time and can serve to prevent further migration of contamination.

M-Area Operable Unit: Background

- Produced and tested uranium fuel and target assemblies from 1952 to 1988
- Three major production buildings and one support building:
 - 313M Slug Production Facility
 - 320M Alloy Building
 - 321M Fuel Fabrication Facility
 - 322M Metallurgical Laboratory

M-Area Operable Unit Progress to Date

- Deactivation and decommissioning complete.
 - 23 buildings
- Characterization of concrete pads, sumps, process sewers, soil and vadose zone complete.
- Early actions were identified as a result of the characterization work. Two EE/CAs have been issued for the early actions in the Production Area and the Salvage Yard, respectively.
- A combined document containing the Remedial Investigation Results, Risk Assessment, and Feasibility Study was submitted to the Regulators on September 13, 2006.

M Area Operable Unit: Early Actions

- Early actions at Building 313M, 320M, 321M, 322M
- Actions generally consist of:
 - Removal of sumps used for radiological and VOC processes,
 - Removal of surface radiological contamination on concrete pads where significant radiological operations took place,
 - Removal of sewer lines with radiological sludge at 322M (Metallurgical Laboratory), and
 - Removal of contaminated soils associated with the sumps and sewer lines.
- Early Actions at the 741-A Salvage Yard consist of:
 - Removal of surficial soils contaminated with metals (pipes, wires, tire weights, etc), PAHs (asphalt present) and PCB (old transformers were disposed here)
 - Haul and stockpile the excavated soils for use as fill for the soil cover at the A-Area Ash Pile.

M Area Operable Unit: Early Action Schedule

- Schedule
 - Radioactive/mixed contamination removal: February 22 – July 26, 2007
 - Hazardous contamination removal: May 31 – November 29, 2007
 - PAHs, PCB and metals removal: July 30 – September 28, 2007
- Early Action cost: \$7M
- Waste volume forecast and disposal path
 - Radioactive: 624 cubic yards; Nevada Test Site, Nevada
 - Hazardous: 3,475 cubic yards; Clean Harbors, Alabama
 - Mixed: 33 cubic yards; Nevada Test Site and Energy Solutions, Utah
 - PAHs, PCB and metals: 6,000 cubic yards; SRS A-Area Ash Pile

Building 313M (Slug Production Facility)

- Removal of the two sumps and trench at the Core Recovery Room with radioactivity contamination was completed on May 30, 2007.

Building 321M (Fuel Fabrication Facility)

- Removal of the portion of the pad with radioactivity contamination was completed March 22, 2007.

Building 322M (Metallurgical Laboratory)

- Early Action Status - Removal of the sumps and process drain line network with radioactivity contamination was completed April 2007.
- Early Action Status - Removal of vitrified clay pipe process sewer to Manhole 6-A with radioactivity contaminated sludge was completed May 10, 2007.

M-Area Operable Unit: Path Forward

- Combined document, Rev.1 submittal: July 23, 2007
- SB/PP, Rev.0 submittal: September 26, 2007
- Complete early actions: December, 2007
- Record of Decision, Rev.0 submittal: May 8, 2008
- Final Remedial Action Start: August 6, 2009

Discussions continued with Manuel Bettencourt asked if enough money has been allocated to complete the M-Area Operable Unit work and Ms. Adams replied yes. Lee Poe, Member of the Public, asked how long to complete the work and Ms. Adams replied 8 -12 months. Open discussions continued with how much waste is expected to be disposed; where will the waste be dispositioned; and risk evaluation. Ms. Adams and Mr. Rob Pope, EPA, provided information on early action waste disposition vs. the final comprehensive waste disposition plans. Most contaminated waste was removed during the early 1990's.

P Reactor End State Concept – Presented by Ray Hannah, DOE-SR

Mr. Hannah began by stating the purpose of the presentation is to respond to Recommendation #233 and provide a P Reactor overview of the current status; end state options; and ensure public involvement in the process. He continued with the following background information:

P Reactor Background

- One of five reactors at the site and second to go operational.
- Operations suspended in 1988.

- Placed in cold shutdown in 1991.
- Reactor is a large hardened structure
 - Approximately half a million square feet
 - Floors and walls several-feet-thick reinforced with steel

P Reactor **Current Status**

- 25 buildings and structures have been decommissioned.
- Remaining structures are located near the Reactor building.
- Currently undergoing hazard removal and habitability activities
 - Utility isolations
 - Mold and asbestos abatement
 - Draining residual liquids in piping and tanks
- Sub unit of the FFA P-Area Operable Unit (PAOU)

End State Options

- No Action
- In-Situ Decommissioning
- Complete Removal

Status of End State Options

- Preliminary evaluations developed
- Evaluations have been presented to regulators and they have provided comment.
- Parties are generally amenable to some sort of in-situ decommissioning option with some limited PAOU waste disposition potential.

In-Situ Concept

- Some portion of facility would remain
 - Must prevent human and ecological exposure to unacceptable risk
 - Must prevent/reduce migration of radiological and chemical contamination from remaining structure to the groundwater

Public Involvement

- The Department, SCDHEC, and EPA-Region 4 are committed to obtaining public input into P Reactor End State planning.
- Early stakeholder input is critical to PAOU decision-making process.
- Early Action Statement of Basis/Proposed Plan is in development and is scheduled to be available in late 2007 for public comment.

Looking Forward

- FY-08: Issue Early P Reactor ROD
- FY-08/09: Begin Early Remedial Action
- October 2009: Issue PAOU ROD
- January 2010: Implement Final Remedial Action

In conclusion, Mr. Hannah stated that as plans are more evolved, DOE-SR would like to continue briefing the CAB on this topic. The CAB is highly interested in the ultimate end state of P Reactor and would like the DOE-SR to conduct public workshops to allow early input to the process and decisions. This decision will set the example for other hardened facilities at the Savannah River Site (SRS). For stakeholder input to truly be part of the decision-making processes public involvement needs to be ongoing and stakeholders need to be kept abreast of all alternatives being considered. As a result, the SRS CAB developed and is planning to present a draft motion to recommend a series of public workshops on the P Reactor End State process and presentations on the performance assessment modeling strategy prior to the Record of Decision.

Treatment of Tritium in Groundwater at SRS – *Presented by Phil Prater, DOE-SR*

Phil Prater provided the following information on the treatment of tritium in the groundwater at SRS.

What Is Tritiated Water?

- Slightly heavier than normal water
- Slightly lower vapor pressure
- Slightly slower diffusion constant
- Same chemical properties

- Radioactive (beta emission)

Tritium Environmental Behavior

- “Tritiated water” is water
 - Moves like water in the environment
 - Groundwater - no retardation
 - Plants and animals - no bioaccumulation
 - Leaves no residual
 - Relatively short half-life
 - Weak beta emitter

Major Tritiated Groundwater Plumes at SRS

Tritiated Groundwater Remediation

- Only radioactive decay can destroy tritium
 - 12 year half life

Tritium Challenge! It is not practicable to remove tritium from groundwater

Management of Tritium Until It Decays

- Three Management Examples:
 1. Phytoremediation at the Southwest Plume of the MWMF manages 12 million gallons of tritiated water per year (RCRA permit)
 - Irrigation of forest with tritiated water collected in a pond
 - Stored in atmosphere until decay
 - 70% reduction in concentration in Fourmile Branch
 2. Barrier systems at the F&H Seepage Basins (RCRA permit)
 - Barriers installed to control flux of tritiated water to Fourmile Branch
 - Slows down movement and release to creek until decay
 - 70% reduction at F Seepage Basin; 60% reduction at H Seepage Basin
 3. L-Area Southern Groundwater
 - Natural attenuation
 - dispersion and decay
 - No significant impact on the environment

MWMF Southwest Plume Phytoremediation

Pond and Irrigation Plots

Reduction in Tritiated Water Releases to Fourmile Branch

Barrier Installation at F Seepage Basins

F Seepage Basin Barrier System

(Funnel and Gate)

- Hinders movement of most contaminated groundwater
- Allows least contaminated groundwater to pass through gates (acid treated by base)

Reduction in Tritiated Water Releases to Fourmile Branch

- Tritium Flux
 - ~60% reduction in tritium in Fourmile Branch below H Seepage Basin
 - ~70% reduction in tritium in Fourmile Branch below F Seepage Basin

L Area Southern Groundwater

- One tritium and two mixed VOC / tritium plumes (~200 acres)
- Plumes end at L-Lake
 - Overall tritium in L-Lake are below maximum contaminant levels (MCLs)

Monitored Natural Attenuation preferred remedy at L Area Southern Groundwater

- MNA with Institutional Controls selected because:
 - No continuing sources
 - Natural attenuation processes (dispersion, dilution, and radioactive decay) reduce tritium levels to MCLs in about the same time (about 50 years) at significantly lower cost (~\$20M less) than other management technologies
 - Groundwater discharge to surface water is not impacting human health or ecological receptors

Conclusions

- Tritium is destroyed only by radioactive decay
- Removal from groundwater is not practical
 - Environmental concentrations are too low to make separation practical
- Management of tritium releases until decay is practical and is being performed on SRS
 - Examples: MWMF Southwest Plume, F&H Seepage Basins, and L Southern Groundwater

Open discussions on the specifics of the groundwater tritium treatment and management to include monitoring processes, regulatory needs, and maintaining efficiency over time. The Record of Decision was issued on June 9th for monitoring strategy.

Ms. Drye concluded the meeting by reminding all attends of the upcoming full board meeting scheduled on July 23 & 24, at Newberry Hall, in Aiken, SC.

Public Comment:

Donna Antonucci, CAB Member, provided an observation from recent meetings that the general public is not very well informed on the effects and risks of being exposed to Tritium. Donna continued by requesting that a briefing be provided to the general public on *What is Tritium* to validate the low risks of tritium contamination to the public and the environment.

Lee Poe, Member of the Public, encourage a new Recommendation from the SRS CAB to involve public participation on the P Reactor End State Vision process and decisions.

Liz Goodson, Member of the Public, state that the Savannah River Ecology Lab elimination is of significant concern to her and should be to the community.

Meeting Adjourned:

The meeting was adjourned at 7:15 p.m. by Ms. Mary Drye, Chair, FD&SR Committee.

Note: The Administrative Committee conducted a meeting following the FD&SR meeting. The Administrative Committee Summary Notes will be prepared and posted by Gerri Flemming, DOE-SR