



SRS Citizen's Advisory Board

SRS Citizens Advisory Board Waste Management Committee Meeting Aiken Municipal Conference Center, Aiken, SC April 11, 2006

The Savannah River Site (SRS) Citizens Advisory Board (CAB) Waste Management Committee (WMC) met on Tuesday, April 11, 2006, 5:00 PM, at the Aiken Municipal Conference Center, Aiken, SC. The purpose of this meeting was to discuss the hazard analysis, Salt Waste Processing Facility (SWPF) Engineering Development and Demonstration Testing and to hear public comment. Attendance was as follows:

CAB Members

- Bob Meisenheimer
- Joe Ortaldo
- Karen Patterson
- Manuel Bettencourt
- Bill Lawless
- Mary Drye
- Wendell Lyon
- Jerry Devitt

Stakeholders

- Bill McDonell
- Jack Roberts
- Russ Messick
- Perry Holcomb
- Donald Orth
- Lee Poe

- John Contardi, DNFSB

- *Rick McLeod

Regulators

- Ted Millings, SCDHEC

DOE/Contractors

- Terry Spears, DOE
- Jim McCullough, DOE
- Michael Mikolanis, DOE
- Greg Johnson, DOE
- Ron Campbell, WSRC
- Steve Thomas, WSRC
- Chuck Terhune, Parsons
- Jack Kasper, Parsons
- Rick Wilkinson, Parsons
- Charlie Hansen, Parsons
- Elmer Wilhite, WSRC
- Michael Norton, Parsons
- Junaid Razvi, General
Atomics
- Jim Moore, WSRC

- WM committee members

* CAB technical advisor

Welcome and Introduction:

Bob Meisenheimer, Chair, thanked everyone for being at the meeting and asked them to introduce themselves. Before getting into the agenda items, Mr. Meisenheimer asked Terry Spears, DOE, to give an update on two events that occurred within the recent weeks.

Mr. Spears mentioned that a milestone in tank closure occurred with the issuance of the *Request for Additional Information on the Draft Section 3116 Determination for Closure of Tank 19 and Tank 18 at the Savannah River Site* by the Nuclear Regulatory Commission's (NRC). SRS submitted the Tank Closure Waste Determination September last year that is the basis document for the safe permanent closure of two waste tanks. The Request for Additional Information (RAI) addresses significant questions based on the review. This gives the Site the opportunity to further clarify the basis for closure. The RAI's were not trivial and covered a gamut of information from the performance assessment to the long term closure. DOE has 60 days to respond to the RAI. The path forward is to evaluate the questions and get back with the NRC for resolution of the pathway in order to better answer the questions the first time.

The second event was the issuance of the *Tank Waste Retrieval, Processing, and On-site Disposal at Three Department of Energy Sites: Final Report*. SRS is one of the three sites. This final report basically confirms the information presented in the interim report. DOE agrees with the thrust of the recommendations, particularly the Deliquification, Dissolution and Adjustment (DDA). The final report says to minimize waste through DDA and that is what DOE is planning. There will be less than 3 to 5 million curies at the end of the Saltstone lifetime.

In response to some questions, Mr. Spears stated that the site is looking hard at approaches to reduce the 26 months extension for SWPF. In relation to the meeting in Atlanta on potential technology for tank cleanup, the meeting was very informative with good dialog which stimulated thinking. All the DOE sites participated. This gave the vendors a lot to think about and should be helpful in the long run.

Hazard and Accident Analysis Process:

Michael Mikolanis, DOE, explained that several meetings ago and at the last meeting, there were questions about the hazard analysis process used at SRS. This presentation is an overview of the safety related design process and thus a basic understanding of how a hazard analysis is completed on a particular facility.

For the specific facility, the process begins with an unmitigated hazard analysis. This constitutes a potential consequence without measures to prevent or reduce the hazard. Then controls are selected to prevent or mitigate the hazards. The controls are classified according to safety functions and the design requirements are based on the safety functions.

The process uses a graded approach. Less sophisticated analysis techniques are applied to relatively simple facilities whereas more detailed thorough analysis is applied to more complex, hazardous facilities. This applies an efficient use of resources with maximum benefit. The factors considered are the magnitude of the hazards being assessed, the complexity of the facility operations, the complexity of the facility safety systems and the remaining facility service life.

Each section of the hazards analysis and control selection process - Conceptual Design, Hazard Analysis, Accident Analysis and Control Selection - has a set of DOE directives and standards.

The facility hazard category established is based on the potential hazard based on facility inventory, radiological and chemical hazards considered and the consequence to the public, worker and the environment. Hazard category 1 has significant off-site potential. Hazard category 2 has significant on-site potential. Hazard category 3 has significant localized potential.

The next step in the process is to identify and assess the facility hazards. The material form, inventories and locations are identified along with the mechanisms or events that could cause release of hazardous materials. The estimate of frequency and consequences of the event are considered. For each event, the preventive and mitigate controls are identified. The subset of events is identified to further analyze as design basis accidents. Then the unmitigated consequences are determined for the maximally exposed offsite individual and compared to the offsite evaluation guideline of 25 rem. If the guideline is challenged, then controls are identified to prevent or mitigate the offsite consequences. For worker safety issues, the DOE standards recommend a qualitative analysis. A quantitative estimate of worker dose is used to reduce subjectivity. The onsite evaluation guideline is established at 100 rem at 100 meters. The in-facility worker hazards are generally evaluated qualitatively.

In summary, the hazard analysis begins with identification of the potential hazards. The hazard significance is analyzed through quantitative and qualitative techniques. The events leading to the release are identified. The event likelihood and consequence of the event is estimated and then the controls are tailored to the hazards.

During discussions, the issue of the risk assessment for the total systems was brought up in the context of project management. Several of the public emphasized the need for a DOE process or standard in which decisions concerning a project scope/design change consider hazard impacts to the accelerated cleanup mission. The WMC is interested in being appraised of the development of such a process.

Salt Waste Process Facility Engineering Development and Testing:

Chuck Terhune, Parsons SWPF Project Manager, introduced Rick Wilkinson, Parsons Construction and Procurement Manager.

Mr. Wilkinson explained the history of the design technology activities, relevant test results and the status of development testing to date on the SWPF.

The SWPF testing program has clear objectives. They include demonstrating and validating the design, reducing technical risk for the project and to reduce the time required for facility commissioning and startup. The tests are conducted at the sites best suited to the specific test. Over 140 alternative technologies were identified and evaluated. From the various alternatives, DOE selected monosodium titanate (MST) and Caustic-Side Solvent Extraction (CSSX) based on technical maturity and risk. Both technologies were validated by an American Society of Mechanical Engineers (ASME) peer review in conceptual design.

The Engineering Development and Demonstration (ED&D) activities follow a seven-step process. The first three steps have been completed. They are: due-diligence review of existing design data, analyze design data needs, and prepare ED&D plan. The remaining four steps are ongoing. They are: perform ED&D tests, integrate test results into analytical modeling, verify process scale-up models and finalize key design decisions.

Mr. Wilkinson reviewed the Phase I testing. This included the purpose and status of replacing MST with sodium permanganate, performance of high-shear rotary filters, performance of engineering-scale multi-stage contactors, performance of engineering-scale single-stage contactor and pilot-scale CSSX test. Two tests are completed in Phase II. They are the Air Pulse Agitator and Solvent Characterization and Carryover Recovery Test. Two ongoing tests are the CSSX full scale test and the Cross Flow Filter full scale test. Mr. Wilkinson reviewed the objectives, results and status of the Phase II tests along with several photos of the test equipment.

Five main areas for potential future testing to date are: CSSX Solvent Flammability Data, Extended CSSX Operation, Erosion testing, Cross Flow Filter material handling demonstration and MST absorption criticality.

During discussion, Mr. Wilkinson emphasized that the test material being used is as close to actual as possible but there is always concern until the actual material is evaluated. Chuck Terhune explained that SWPF remained on schedule.

Public Comment:

Jack Roberts stated that he thought the presentations were excellent and it was a good meeting.

Bill Lawless stated that he would like to hear about the Global Nuclear Energy Partnership. He was interested in how the Defense Waste Processing Facility fits in.

Adjourn:

Mr. Meisenheimer adjourned the meeting.

Follow-Up Actions:

The following are the actions items:

- What is the date for the closure of the NRC Tank Closure Waste Determination? – Terry Spears/Jim Moore
- Joe Ortaldo stated that the WMC would like to hear from DOE about the better system that DOE plans on developing to include total systems in risk analysis when considering building a facility within that system. – Terry Spears/Jim Moore
- It was suggested during the meeting that the Waste Management Committee might like to hear a briefing on the Modular Caustic Side Solvent Extraction Unit (MCU) project status and testing. – Terry Spears/Jim Moore
- It was suggested that a briefing and tour of the SWPF Caustic Side Solvent Extraction (CSSX) full scale pilot testing be conducted in the September timeframe. – Terry Spears/Steve Thomas/Jim Moore