SRS Citizen's Advisory Board

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Waste Management Committee Meeting

Aiken Municipal Conference Center, Aiken, SC
December 13, 2005

The Savannah River Site (SRS) Citizens Advisory Board (CAB) Waste Management Committee (WMC) met on Tuesday, December 13, 2005, 5:00 PM, at the Aiken Municipal Conference Center, Aiken, SC. The purpose of this meeting was to discuss the Status of Recommendation 212, Nuclear Regulatory Commission Technical Evaluation Report, Alpha Waste Status, WMC Topics for 2006 and to hear public comment. Attendance was as follows:

CAB Members	**Stakeholders**	**DOE/Contractors**
- Bob Meisenheimer	Lisa Burt Cook	Bill Spader, DOE
- Manuel Bettencourt	Randy Clarke	Terry Spears, DOE
- Joe Ortaldo	Lee Poe	Doug Hintze, DOE
- Bill Willoughby	Ms. M. Giles	Jim McCullough, DOE
Perry Holcomb	Chris Timmers	Greg Johnson, DOE
Jerry Devitt	Murray Riley	Julie Petersen, DOE
Wendell Lyon	Jack Roberts	Nick Delaplane, DOE
Bill Lawless	Cynthia Gilliard	Michael Mikolanis, DOE
Jean Sulc		Leo Sain, WSRC
Jimmy Mackey		Ginger Dickert, WSRC
Art Domby		Steve Thomas, WSRC
	John Contardi, DNFSB	Joe Yanek, WSRC
	Roy Kasdorf, DNFSB	Mark Phifer, WSRC
		Mark Schmitz, WSRC
		Bob Hinds, WSRC
	*Rick McLeod	Ron Campbell, WSRC
		David Little, WSRC
		Joe Carter, WSRC
	Regulators	Jim Cook, WSRC
	Dawn Taylor, EPA	Ed McNamee, BSRI
	Rob Pope, EPA	Teresa Haas, WSRC
	Jim Barksdale, EPA	Sonny Goldston, WSRC
	Shelly Sherritt, SCDHEC	Charlie Hansen, Parsons
	David Wilson, SCDHEC	Chuck Terhune, Parsons
		Jack Kasper, Parsons
		Jim Moore, WSRC

- WM committee members ** CAB technical advisor*

Note: Cassandra Henry is a CAB member of the WMC, but was unable to attend this session.

Welcome and Introduction:

Bob Meisenheimer, Chair, welcomed everyone to the meeting. He explained that Mike Schoener would facilitate the meeting to make sure we got through all the presentations and everyone had an opportunity to ask questions. He asked that questions be held until the end of the presentations but that questions were important. He asked everyone to introduce themselves. Two documents were available for those that wanted a copy. They were CBU-PIT-2005-00154, Impacts of Potential Shutdown/Slowdown of Defense Waste Processing Facility (DWPF), Rev. 0, June 23, 2005 and CBU-PIT-2005-00150, Cost and Benefit Evaluation for Three Salt Waste Treatment Cases at SRS, July 7, 2005.

Mike Schoener reviewed the agenda for the meeting and requested that questions be held until all the presentations were completed.

Recommendation 212 Status:

Terry Spears, DOE, explained that the Salt Waste Processing Facility (SWPF) was the central component in disposing of 33 million gallons of salt waste at six million gallons per year. In dissolving the salt, a larger volume of 84 million gallons will be created. In January 2004, Parsons was selected to complete the design, construction and commissioning of the SWPF and to operate the plant for one year. The preliminary design was initiated in June 2004 following legal delays. DOE approved the cost and schedule for the project in August 2004. The preliminary design was completed in May 2005.

In accordance with DOE Orders and standards, the preliminary design hazards analysis for the SWPF called for design of the confinement features of the facility to natural phenomena hazard (NPH) Performance Category (PC) – 2 standards. In August 2004, the Defense Nuclear Facilities Safety Board (DNFSB) requested DOE to (a) establish consistent and adequate NPH design guidance where systems, structures and components were relied on to confine radioactive materials and (b) assign a NPH designation of PC-3 where safety analysis for the SWPF determined that confinement of radioactive materials was necessary for worker safety.

The Department considered several options for assuring reliable confinement but in cooperation of the DNFSB, DOE determined that the most prudent course of action for the SWPF is to adopt a local, safety-related PC-3 confinement barrier (i.e., piping and tanks) housed within a PC-3 building. This approach meets DNFSB expectations, is consistent with confinement concepts being used by other new facilities (e.g., HEUMF at Oak Ridge), reduces technical uncertainty and avoids future delays due to potential changes in DOE policy regarding confinement.

On November 21, 2005, the Deputy Secretary of Energy approved the path forward for resolution of DNFSB confinement issues. Parsons was directed to proceed with the Enhanced Preliminary Design (EPD) on November 23, 2005 (anticipated duration of the EPD is ten months). Upon completion of the EPD, Parsons will submit a proposal for completion of the Enhanced Preliminary Design project work in the fall of 2006 and the request for Project cost and schedule baseline approval is forecast to be in the fall of 2006 also.

The decision to proceed with a PC-3 confinement concept resolves DNFSB issues and allows the SWPF project to move forward confidently with completion of design, construction, startup and ultimately operations. Unfortunately, the enhanced robustness of the confinement system will require significant design work and extends the startup date for the SWPF by up to 26 months (based on a worst-case rough order of magnitude estimate from Parsons). The SWPF project team is committed to doing everything possible going forward to minimize the impact of delays and to accelerate the completion and startup of this critical project. DOE plans to keep the CAB informed as they work to mitigate the potential impacts to the salt processing strategy.

Roy Kasdorf, head of the DNFSB Nuclear Facility Design and Infrastructure group, explained that the difference between a PC-2 and a PC-3 is that a PC-3 building is designed to withstand the forces after an earthquake. A PC-2 building is less robust.

Mr. Kasdorf explained that the DNFSB was formed by Congress in the late 80's in response to the Chernobyl incident. Congress wanted oversite for DOE to preclude another Chernobyl. The DNFSB was chartered by Congress to review standards for best practices and oversee construction. Five recognized experts were appointed to Chair the Board. They do not regulate but encourage DOE by letters. DOE is required to respond to the letters or the DNFSB can take it up with Congress.

Mr. Kasdorf reviewed the timeline of the decision of PC-3 by DNFSB on the SWPF. Some dates in the timeline were:

June 2001	DOE approved Mission Need (Critical Decision (CD)-0) and proceeded with the completion for the conceptual design.
December 2003	DOE awarded contract to Parsons
June 2004	Parsons completed an enhanced Conceptual Design
June 2004	Board staff reviewed the conceptual design and preliminary hazard analysis
June 2004	Preliminary Design started (at risk, prior to CD-1 approval)
August 2004	DOE approved CD-1
August 2004	Board sent DOE a letter regarding concerns with the performance categorization of the conceptual design.
October 2004	DOE responded to Board letter: proposed a briefing within 60 days and promised to revise DOE directives related to performance categorization
December 2004	DOE responded again to Board letter: proposed deferring briefing until February 28, 2005
May 2005	DOE briefed the Board on the project, and informed the Board about the Independent Review Team activities
June 2005	Preliminary Design complete (CD-2 package not submitted)
June 2005	Independent Review Team issued its final report
November 2005	DOE communicates intent to design SWPF to PC-3 criteria

In June, the dose calculated to the co-located worker was 900 rem which was conservative. DOE continued the design with PC-2 but determined that the same accident scenarios were illogical. The Department then calculated the worse case dose analysis to 20 rem.

The Independent Review Team agreed that PC-2 was not consistent with the rest of the facilities. Ultimately, the Department made the decision to go to PC-3.

DOE requires that all nuclear facilities, and thus the SWPF, require a safety-significant confinement barrier to protect workers from release of radioactive materials. The SWPF conceptual structural design used PC-2 criteria which is equivalent to a hospital or fire station.

The SWPF is expected to process 31 million gallons of high-level waste. This is greater than 4,000 curies of plutonium and about 2 million curies of Cesium. The loss of confinement could result in worker doses of 15 to 350 rem depending on assumptions. PC-2 criteria maintains functionality but does not ensure confinement. The Board felt the 15 to 25 rem considered by DOE was understated.

The Board believed that, because of shielding requirements, the facility would likely meet PC-3 criteria with only minor design changes. They thought the building would meet PC-3 requirements.

The Independent Review Team conclusions were:

- Agreed with functional classification of the confinement barrier
- Concluded that the specified design requirements and analysis (i.e., PC-2) did not adequately ensure the needed functional capability of the confinement barrier.
- Concluded that the safety-significant confinement barrier should meet PC-3 criteria.

DOE completed a simple analysis that indicated the structure, with currently planned modifications, would meet PC-3 criteria.

Jack Kasper, Parsons, reacquainted everyone with SWPF and the Interim Salt Process. SWPF takes the waste from the tank farms, about 80 million gallons. A few million gallons will go though the Interim Salt Process. The bulk of the waste will go to Saltstone and some to DWPF.

The SWPF Central Process Area was designed to PC-2 criteria and the balance of the plant to PC-1 criteria. Based on the total inventory, the SWPF was classified as a Hazard Category 2 facility in accordance with DOE Standards. Because of the fact that the SWPF was classified as a Hazard Category 2 facility, a detailed safety analysis was required. The accident analyses which were performed used worst case assumptions with regard to the material at risk, the waste dispersability, and release and exposure durations. The safety analysis predicted unmitigated dose consequences of .05 rem to the public and 35 rem to a co-located worker due to a seismic event.

The DNFSB letter of August 2004 recommended the Hazard Category 2 facilities should have a safety-related active ventilation system which would function during and after the NPH event. The passive confinement systems should not be relied upon.

Designing the process piping and vessels to meet the PC-3 criteria assures confinement for a seismic event. Piping and vessels would remain intact during a seismic event and the Central Process Area structure or ventilation systems are not required to confine spilled waste. Parsons

provided DOE cost/schedule Rough Order of Magnitude estimates for confinement upgrade options in August 2005. The two options were: 1. PC-2 structure and PC-3 primary confinement and 2. PC-3 structure and PC-3 primary confinement. DOE directed Parsons to proceed with options 2 in November 2005.

The decision to go to PC-3 will require 10 months additional time for design and will slip the schedule by 26 months. The impact of the upgrades are:

- Higher seismic demand and more conservative analysis of process piping and vessels require more space within the Central Process Area to accommodate flexure during a seismic event. (a) The facility footprint of the Central Process Area structure must increase. (b) The layout of process vessels, filters, piping, and pumps must be revised to eliminate small radius bends.
- In order to assure that the Central Process Area structure would withstand the higher PC-3 demands, the structural layout will be revised to eliminate high stress areas and to provide additional lateral support at the higher elevations. These modifications include: (a.) Extending concrete walls into areas occupied by Cold Chemical Area to "square off" the Central Process Area. (b.) Relocating Analytical Laboratory to 132 feet elevation to support south side of Process Cell walls, (c.) Increasing Central Process Area wall and basemat thickness and rebar density.
- Larger Process Cells and Pump and Valve Galleries require higher capacity support systems for pumping over longer distances, drainage, ventilation (bigger fans) and more electric power.

Chuck Terhune stated that Parsons is reviewing the schedule to try to pull in the 26 month extension.

Ginger Dickert, WSRC, gave a quick review of the tank space management background, the current plan and its basis, factors impacting the plan, and the impacts and path forward.

The 37 million gallons of high activity waste are made up of 34 million gallons of salt supernate and saltcake solution, commonly called salt waste, and 3 million gallons of sludge waste. The 34 million gallons of salt waste represents 92 percent of the overall volume and contains about 53 percent of the radioactive materials. The 3 million gallons of sludge waste represents 7 percent of the overall volume and contains 47 percent of the radioactive materials. The radioactive materials present in the sludge waste are primarily the radionuclides with the longest half-lives for decay and are, therefore, those which present the greatest risk to human health and the environment. Therefore, the sludge waste was targeted first for disposal through DWPF. Within the compliant tanks, there is only 1.6 million gallons of workable space out of 25 million-gallon capacity, or approximately 6 percent.

One of the objectives of the tank management is to send as much of the radioactive materials as possible to the Federal Repository and then to send the resulting low activity waste to Saltstone. Preparing the sludge waste for treatment at the DWPF requires some of the inert chemicals to be washed out. Through the washing of the 3 million gallons of sludge waste, 41 million gallons of solution are produced. Processing 1.0 gallon of settled sludge increases compliant tank inventory by 1.3 gallons. The site is reducing risk from the old style tanks but, through that process, is increasing the waste inventory in compliant tanks.

Insufficient space exists within the compliant tanks to continue this process for all sludge waste unless additional tank space is made available through the processing of some of the salt waste. The first step in processing salt waste is the dissolution of the saltcake. The impact of saltcake dissolution is that every 1.2 million gallons of saltcake creates 4.2 million gallons of salt solution once dissolved. The impact of processing supernate is 1 million gallons of supernate to 1.5 million gallons of salt solution. Therefore, the initiation of salt processing is time critical since sufficient space must exist within the tanks just to begin salt processing.

A consensus of the goals and values for tank management are the following:

- Reduce risk by removing waste from tanks and closing the tanks
- Give priority to removal of actinides
- Maximize radioactivity to the Federal Repository
- Remove as much Cesium as possible
- Keep salt processing schedule in alignment with sludge
- Limit on-site disposal to ALARA
- Ensure public involvement

In order to support DWPF and the waste disposition strategy it takes all or part of seven waste tanks; two tanks to sustain sludge disposition and five tanks for salt disposition. For the tank waste disposition paths, 99 percent of the curies are planned for disposal at the Federal Repository.

Two major activities are currently affecting the disposition strategy. The Waste Determination process has taken longer than originally envisioned and the start-up of the high-capacity SWPF has been delayed. The initiation of interim salt processing has been moved from October 2005 to June 2006, at best, due to the Waste Determination delay. In order to support this delay and the delayed start-up of the SWPF, additional tank space is needed to provide program continuity. Eight old-style tanks must be prepared for closure to support the Federal Facility Agreement commitments, two additional sludge batches must be prepared for DWPF and additional waste receipts must be accommodated. This all results in the need for additional tank storage space equal to that of seven additional tanks.

The site is working hard to implement process improvements and facility modifications as well as expediting SWPF design and the construction schedule to try to close the gap. The use of structurally sound noncompliant tanks is also being considered. The 2F Evaporator will continue operating with an alternative concentrate receipt tank. Low level above grade tanks will need to be built to store lower activity waste. The site is also considering initiating SWPF operations with higher curie-per-gallon feed and increase the curie-per-gallon feed limit for SWPF. By the end of January, the modifications should be identified.

Shelly Sherritt, SCDHEC, gave the State perspective of the SWPF delay. SCDHEC had not been involved in the decision making. They consider the aging high-level waste tanks to be the largest risk in South Carolina. It is imperative that the high-level waste be treated and the tanks closed in a timely manner.

At the beginning of 2005, SCDHEC felt they were sitting pretty and had a good strategy. The SWPF was to start up in 2009. SCDHEC was involved in the decisions and thus supported the effort. This process left minimal residuals in South Carolina. Today, now that DOE has made the decision to go to PC-3, we consider the schedule delay is not consistent with the former strategy. SCDHEC hasn't seen the numbers or analysis that compares the risk of the incremental benefit of protecting the worker against a potential earthquake versus the risk of the high-level waste sitting in the tanks for a longer period of time. The tanks are aging and degrading but the decision has been made. There will be a delay in the high-level waste treatment by two to three years. There will be a longer term risk to the workers and the public and the cost will go up. From a government accountability standpoint, they are falling behind in the schedule and driving up the cost which means the strategy is off kilter. SCDHEC doesn't support the strategy. SCDHEC would have liked to have been involved in the PC-3 decision but it's pointless to argue and we need to move forward. We need to have a revised strategy based on the goals, assumptions and principles that SCDHEC can support. SCDHEC would like to be a part of the revised strategy. SCDHEC would like to see the over all comprehensive strategy or the whole picture before SCDHEC can move forward with the pieces.

Several members of the WMC spoke up in support of the SCDHEC position.

There was time for a few questions. They are summarized as follows:
Question: Was there a risk and cost benefit analysis completed and do you have it ready now against a PC-2 versus a PC-3?
Answer: There was not a risk decision analysis for PC-3. This was a standards issue, a proficiency of design for the safety of the worker. This was more a policy and standards issue than a risk analysis issue. The original commitment of closing the high-level waste tanks by 2028 is still the site plan. The site is still ahead of the 2028 schedule. The site plans on accelerating the treatment of waste as soon as possible but making it safe for the workers. In addition, by making these changes, over the construction of the facility, there will be no additional changes causing more delay and added cost.

Question: The DNFSB in effect seems to have pushed PC-3 very strongly. Did the DNFSB consider Shelly Sherritt's question asking the risk of the facility for the limited years opposed to keeping the high-level waste in the tanks longer?
Answer: The Boards position was that this facility was to be built for confinement. The strategy of PC-2 is not sufficient for confinement. To consider confinement, the Board recommended PC-3.

Question: Did the Board include the high-level waste tanks in their analysis?
Answer: No. If the decision today was PC-2, SWPF would still not be able to be started up much sooner.

Question: I'm disappointed with both the DOE and DNFSB presentations. I've heard the number 35 rem. What was the error bar?
Answer: 35 rem to 350 rem.

Question: In the event of an earthquake, how many people are killed by blunt force trauma versus radiation?
Answer: In both cases, none.

Question: In the strategies to close the gap and shore up the feed system, do you have the budget?
Answer: We can't answer that until the revised strategy and time line are laid out. We hope to have this in the January time frame. The ideas will have to be supported by the budget.

Question: For the DNFSB on the design path, the PC-2 design standard was compliant with the standard?
Answer: Yes, you can say that.

Question: What assurance is there that there will be no changes on the PC-3 Standard?
Answer: Don't believe a change would be mandated. If PC-3 doesn't provide confinement, then the Department could revisit it.

Terry Spears related from a DOE perspective, the move to PC-3 had several positives. This gives a margin of safety in the DOE standards. From a policy level, it strengthens the requirements.

A discussion between WMC members ensued. Several members felt that the decision had been made to go to PC-3 and there is no way to change that decision. Most did not agree with the decision. Karen Patterson felt that the decision was wrong, but more importantly, the process used was flawed. She felt that the WMC should pursue determining what was wrong with the process and give DOE a recommendation on how to improve it.

Because of the time constraint, Terry Spears suggested that the WMC submit any additional questions and another WMC meeting would be set up to address the questions. It was suggested the questions be submitted by December 20.

Nuclear Regulatory Commission Technical Evaluation Report:
Terry Spears reported that the NRC report expected to be issues November 18 had not been issued yet.

Alpha Waste Status:
Manuel Bettencourt commented that the draft recommendation on Alpha Waste was tabled at the November full CAB meeting because the letter from the Site Specific Advisory Board (SSAB) had not been issued to DOE-HQ at that time. The letter was since signed and mailed out on December 7. The SSABs proposed a national policy on pre-1970 waste for proper disposal. The WMC doesn't want the TRU waste buried at the Old Radioactive Waste Burial Ground dug up. At Idaho, there was a fire when digging up their TRU waste and a drum exploded.

The bottom line is that the draft recommendation will be modified for the January full CAB meeting. The first two items will be moved to the background. In the cover letter, we will reinforce that the buried waste shouldn't be disturbed based on the explosion at Idaho.

Waste Management Committee Topics for 2006:
Bob Meisenheimer asked that anyone with topics they would like the WMC to consider for 2006 should send them in to Jim Moore or himself and we would add the items to the list for consideration.

Public Comment:
Mercredi Giles, Savannah, Cynthia Gilliard, Aiken, and Judeth Green-McLeod, members of the public that are applicants for the CAB, introduced themselves.

Bill Lawless stated there was not enough time during the meeting to address all the questions. He said he felt the WMC should consider a focus group. Bob Meisenheimer said that the WMC was going to address the issue with an increase in meetings. He felt that two meetings a month would be good and they would work it.

Adjourn:
Bob Meisenheimer adjourned the meeting.

Follow-Up Actions:
The following are the action items from the meeting:

- The public and Waste Management Committee members should send in questions related to the presentations to Jim Moore by the end of next week. These questions would be addressed at the next Waste Management Committee meeting. - All/Jim Moore
- The next Waste Management Committee meeting should be scheduled for the first week of January to address questions sent in. - Terry Spears/Jim Moore
- Draft recommendation on Alpha Waste will be revised to move the local ORWBG issues to the background of the recommendation and the recommendation will focus on any national strategy using the site-specific approach. - Rick McLeod/Manuel Bettencourt/Jim Moore