SRS Citizen's Advisory Board

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Consolidated Incineration Facility Focus Group

Meeting Summary

October 30, 2000
Aiken Federal Building
Aiken, SC

The Consolidated Incineration Facility (CIF) Focus Group met on Monday, October 30 at 5:00 p.m., Aiken Federal Building, Aiken, SC. The purpose of the meeting was to hear a presentation on PUREX waste; research and development associated with alternatives selection, lifecycle cost of operational strategies and alternatives including closure costs for all alternatives; and hear public comment. Attendance was as follows:

FG Members	Stakeholders	DOE/Contractors
Wade Waters, CAB	Rick McLeod, CAB Tech. Advisor	Ray Hannah, DOE
Murray Riley, CAB	John Meyers	Ed Stevens, SRTC
Karen Patterson, CAB	Tim Vincent	Marshall Looper, WSRC
Perry Holcomb, CAB		Sonny Goldston, WSRC
Jean Sulc, CAB	**Regulators**	Larry McCollum, WSRC
Lee Poe	None	Helen Villasor, WSRC
Bill Lawless		

Wade Waters, Consolidated Incineration Facility (CIF) Focus Group Administrative Lead, welcomed those in attendance and asked for public comments. There were none.

Mr. Waters announced that because the Edward Teller dinner-lecture was scheduled for November 28, 2000, the same date as the CIF Focus Group meeting, the next CIF Focus Group meeting would be changed to November 30, 2000.

Helen Villasor shared an e-mail from Helen Belencan, DOE-HQ where it was noted that the letter the Savannah River Site's (SRS) Citizens Advisory Board (CAB) sent to Secretary Richardson requesting SRS CAB participation on the Blue Ribbon Panel appointed to address DOE incineration issues had been tracked. Ms. Belencan said that a response to the letter was expected to have been sent the week of November 6, 2000. Ms. Belencan is also waiting for the formal transmission of CAB Recommendation 129 by DOE-SR so that DOE-HQ can respond. Ms. Villasor said that she had been informed that Tom Treger, DOE-SR is tracking the recommendation.

Ms. Villasor said that an action item from the CIF Focus Group's last meeting, was to send a letter from the Waste Management Committee (WMC) to the South Carolina Department of Health and Environmental Control (SCDHEC) requesting an extension of the public comment period so that the CAB would have an opportunity to provide comments. Without the request, the 45-day public comment period would expire on November 12, 2000, two days before the CAB's November 14, 2000 meeting, where a

recommendation will be presented to the Board. Wade Waters said that he had received notice from SCDHEC that the request had been approved.

Ms. Villasor noted that no communications had been received from the Natural Resources Defense Council regarding the Focus Group's invitation to participate at the next meeting on November 30, 2000.

PUREX Waste

Perry Holcomb, the Focus Group's technical lead for PUREX began his presentation on the description and quantification of PUREX waste at SRS by showing photographs of CIF, the underground storage tanks in relation to CIF, and the waste storage tanks at the E-Area storage facilities. Explaining that the word PUREX is derived from Plutonium-Uranium Recovery Extraction, Dr. Holcomb said the PUREX process was developed at the Knolls Atomic Power Laboratory in Schenectady, New York and tested at Oak Ridge, Tennessee. PUREX was adopted for use at SRS in 1954, and replaced REDOX at the Hanford site in 1956. The PUREX process uses tributyl phosphate in a paraffinic hydrocarbon diluent (n-dodecane). For clarification, Dr. Holcomb said that basically, the diluent is a form of kerosene.

Pointing out that there are four underground storage tanks (Tanks, 33, 34, 35 and 36), Dr. Holcomb said that only Tanks 33 and 35 contain PUREX waste. Tank 34 is used as a feed tank for CIF and Tank 36 is clean and unused. In summarizing Tank 33, Dr. Holcomb said that the total volume is 900 gallons of aqueous and 14,000 gallons of organic PUREX waste. A breakdown of the primary radioactive constituents in Tank 33 includes plutonium 238, 239, 240 and 241; americium 241 and 243; and the following fission products: cesium 137; technetium 99; strontium 90; and europium 154. Tank 35 holds a total volume of 12,000 gallons of aqueous and 10,800 gallons of organic PUREX waste and has the same radioactive constituents as Tank 33. Dr. Holcomb noted that plutonium 238 is the most abundant activity in both tanks.

In comparing the PUREX plutonium 238 content versus the Environmental Protection Agency's (EPA) Drinking Water Standards (DWS), Dr. Holcomb said that the total plutonium 238 in Tanks 33 and 35 equals 2.1 curies, and the EPA DWS for total alpha equals 15 Pico-curies per liter or 57 Pico-curies per gallon. In essence, Dr. Holcomb said that the tanks hold enough plutonium 238 to contaminate 36 billion gallons of water to above DWS. This volume is equivalent to approximately 3,600,00 large tanker trucks, which hold 10,000 gallons each.

Dr. Holcomb proceeded with his presentation by identifying the metals content in the tanks. In Tanks 33 and 35, the metals include arsenic, selenium, mercury, chromium, nickel and zinc; however, Dr. Holcomb said it was important to note that thallium is reported to be present in Tank 35, but its actual presence is quite doubtful. This may be due to an analytical error. The volatiles and semi-volatiles for both tanks were also identified and while Dr. Holcomb said there is some solubility in the aqueous, the materials are old and are only getting older.

In discussing the anion content of the aqueous phases, Dr. Holcomb noted that the formate content may not be a lot as contained in the total of 900 gallons in Tank 33, but the results do raise some questions concerning the actual quantities of anions present.

The final portion of Dr. Holcomb's presentation addressed the contaminated and clean PUREX solvent that is still in the processes in both F and H Areas. The original plan was to ship all the process solvent to CIF eventually; however, now an alternate treatment process must be developed or the CIF restarted. Contaminated solvent already in the processes in F- and H- Canyons totals approximately 113,000 gallons. Also, some 40,600 gallons of clean solvent remains as cold feed at both areas. Karen Patterson raised the question that if the canyons are shut down, will the product be allowed to remain in place. Marshall Looper responded that current plans show the F Canyon is not planning to ship most of the remaining volume of PUREX waste until 2008; however, SRS continues to look at new missions for the canyons to extend their operations.

Questions were raised as to why the clean solvent should be disposed at CIF and could it possibly be sold for reuse. It was suggested that because so much clean solvent exists, a representative from the canyons should be invited to speak to the Focus Group about the plans for its use in the future.

In closing, Dr. Holcomb offered the following recommendations:

- SRS should answer the questions raised by the analytical data, i.e., why is there so much oxalate in Tanks 33 and 35 and formate in Tank 33, and why is there more radioactivity/unit volume in the Tank 33 aqueous than in the organic.
- Using membrane filtration, run tests at the Savannah River Technical Center to determine if analyses could have been pertubated by solids/colloids in the aqueous phase.

Alternatives Research and Development (R&D)

In his presentation on the alternatives R&D program, Marshall Looper said that some of the ideas he was going to discuss came from the SRS Creativity Committee, which is comprised of ad hoc members from across the site. The members, who are experts in their individual disciplines, met earlier in the year to discuss the suspension of CIF operations and brainstorm ideas for alternative technologies to incineration. Some of the technologies under consideration include waste stabilization for both the aqueous and organic phase, and PUREX waste pretreatment to remove radionuclides. However, Mr. Looper noted that additional R&D may be needed to identify new alternatives, or SRS will need to conduct further evaluation of the current alternatives.

In discussing the waste stabilization concept, Mr. Looper said one of the objectives of this technology includes stabilizing PUREX waste for compliance with RCRA regulations for characteristic waste (making the waste non leachable). Other objectives include meeting site disposal acceptance criteria (based on site Performance Assessment requirements) or meeting requirements for other disposal options such as the Nevada Test Site (NTS).

The Alternatives R&D Program is currently identifying stabilization agents for both the aqueous and organic phases of PUREX. One technology that has been demonstrated at SRTC is NOCHAR, which is a polymer material that sets up completely. This technology is similar to that used in baby diapers where liquid turns into a gelatinous material. The NOCHAR technology has been used for waste oil treatment at Mound and is a wasteform accepted for disposal by NTS. In the waste formulation tests, beaker tests (bench-scale stabilization) of both the aqueous and organics were successfully stabilized. In the radiation stability tests, simulant wasteforms were irradiated for four hours (a 5,000 - 10,000 year accumulated dose), with only a slight change in wasteform grain boundaries and color. Another positive initial result of the NOCHAR technology is that the wasteform passes the RCRA treatment standard, the toxicity characteristic leaching procedure (TCLP).

SRTC is completing literature evaluations of other potential stabilization technologies and is poised to pursue wasteform testing of other technologies if needed. However, there is a plan is to continue development of NOCHAR technology, which will include process optimization such as formulation, mixing, etc.

In closing, Mr. Looper noted that in PUREX pretreatment, the objective is the removal of radionuclides in order to comply with a treatment requirement, reduce treatment and disposal costs, and lower transportation costs, i.e., the need for special shipping containers. Some of the alternatives that will potentially require pretreatment are commercial treatment facilities and waste stabilization/disposal. In the pretreatment R&D program

1. the primary focus is the organic phase;
2. the need to identify specific problem radionuclides and target concentration;

3. identify/evaluate potential technologies such as new ion exchange resins, strong complexants, solid absorbents, and DOE/International removal technologies;
4. test promising technologies at SRTC using actual legacy waste samples; and
5. select best removal technologies based on evaluations of cost, performance, and process complexity.

In response to Bill Lawless' question on how many responses were received from the Request for Information (RFI) that appeared in Commerce Business Daily, Mr. Looper said SRS had received about 20 responses, including some technologies that were not applicable to SRS's needs since some might require building new facilities. Lee Poe mentioned that it appears no work is in progress to improve CIF as it stands now. In response, Mr. Looper said that subject matter experts are being reassigned to address CIF treatment optimization for PUREX waste. Mr. Looper added that the composition of the old legacy PUREX is much different than the current solvent being used in the canyons. Mr. Poe recommended that more representative samples should be taken to find a true representative composition of the material in the tanks.

CIF Lifecycle Costs for Two Assumed Cases

Ray Hannah opened his presentation by identifying two assumed cases used to analyze CIF lifecycle costs. In Case A, it was assumed that CIF suspends operations, then resumes operations in Fiscal Year 2008 through Fiscal Year 2012. CIF treats all legacy and newly generated PUREX. Non-PUREX is treated via the Broad Spectrum Contract. Under Case A, the CIF costs total $265.5M

In Case B, it was assumed that CIF suspends operations and alternative treatment study is successful. No CIF restart is necessary. Alternative treatment dispositions legacy and newly generated PUREX at $25k/m3. Under the Case B scenario, alternatives costs total $138.6M.

Based on the studies the SRS Alternatives Study Team has performed to date, Mr. Hannah said the analysis shows that if the alternative treatment study is successful, then alternative treatment activities should be pursued.

The two scenarios evoked many questions from the Focus Group. For example, in Case B, Bill Lawless asked why the cost for disposition of the legacy and non-PUREX waste had risen from $10k, to the current cost of $25k, which is an increase of 250 percent in just two months. The question of whether the regulators would allow six years for SRS to hold on to the permit if the facility was not operating was asked. The group also expressed their concerns regarding funding and speculated that there would not be enough money for both the alternatives and restart of the facility. From a permit perspective, it was agreed that DOE should consider not dismantling the facility.

In closing, the group discussed the importance of compiling their major concerns into a recommendation for inclusion in the comments being provided to SCDHEC during the current public review period. It is still the overall opinion of the Focus Group that DOE not close down CIF unless it has another technology available now to replace incineration.

The following future agenda items were discussed:

- Draft November Topics
- Clean Solvent in the Canyons
- Budgeting Process
- Potential NRDC Presentation

Public Comment

Mr. Waters asked if there was any other public comment. With there being none, Mr. Waters adjourned the meeting after announcing that the next meeting will be held 5:00 p.m., November 30, 2000, at the Aiken Federal Building, Aiken, SC.

Meeting handouts may be obtained by calling 1-800-249-8155.