



## **SRS Citizen's Advisory Board**

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### **Salt Processing Focus Group**

#### **Meeting Summary**

February 8, 2001

Aiken Chamber of Commerce

Aiken, SC

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The Salt Processing Focus Group (SPFG) met on Thursday, February 8, 2001, at 5:00 P.M. at the Aiken Chamber of Commerce in Aiken, SC. Attendance was as follows:

Mike French  
Ernie Chaput  
Lee Poe

Kelly Dean, WSRC  
Kim Hauer, WSRC  
Jerry Morin, WSRC  
Julie Petersen, DOE  
Joe Carter, WSRC  
Larry Ling, DOE  
Steve Piccolo, WSRC  
Brandon Haddock, Augusta Chronicle

#### **Tank Leakage**

Steve Piccolo, acting Manager, HLW, gave the FG an update on Tank Leakage. He began by telling the group that Tank 6 is stable and drying well. There is no increased risk to workers or the public. He emphasized the benefits of using Type I tanks. He stated that as long as the site can control water inventory in old style tanks, then their use will continue to be a prudent path forward.

He then gave the sequence of events for the discovery and current conditions of the leak. The SRS response to this leak includes drying the annulus, increasing surveillance, maintaining readiness for annulus to primary transfer, deploying a crawler to increase visual range, and evaluating additional environmental monitoring. He stated that the annulus is drying at predicted rate, a plan has been developed to move material to Tank 8 if necessary, and the motorized crawler allows a visual range of about 75%.

Mr. Chaput asked if the leak sites were at the welds. Mr. Piccolo responded that even though the weld sites are certainly prime suspects, they might not be the only place where leak sites occur.

Mr. Piccolo noted that of significance is the fact that the conductivity probe alarmed with less than 100 gallons in the annulus. He emphasized that there is a puddle in a portion of the annulus with a 1-inch ledge. The SRS team is currently evaporating about 4 gallons a day.

The timeline and schedule from now until end of calendar year is tight. Space gain, sludge batch preparation, wash water, and the recycle process are concerns. The preparation of sludge batch 2 will free up about 1M gallons worth of space. The fact that the 3H evaporator is up and running will alleviate

some of the problems. The SRS goal is to increase evaporator performance while recovering from this set back. The evaporator needs to run more than the 12-13 days a month it currently runs.

Mr. Piccolo gave a brief outline of the cooling coil leaks and the brown silica used to seal at the crack location. He mentioned that all 5 cooling coils in tank 30 have failed and briefly explained the situation.

Mr. Poe asked about cracks in other tanks and tank integrity management. Mr. Piccolo outlined the corrosion control programs, tank life management programs, and wall inspection programs in place. He outlined the camera views of Tank 6 under the risers. Mr. Piccolo anticipates no liquid carry through in the drying mechanism. He spoke briefly of the 12 tanks that have leaked. The tank levels have been lowered below passive leak sites in Tanks 1,10,14, and 15. There are tanks with waste levels managed above the leak sites. These conditions are safe and stable and are monitored under the established surveillance programs. The bottom line is that the site has developed a path forward with a number of options.

The group asked about Tritium in Tank 6. Mr. Piccolo said that tritium is present in Tank 6. He plans to avoid running the tritium through the evaporator. There are better and safer alternatives available. Mr. Chaput re-emphasized that this latest leak underscores once again the pressing need to remove waste from tanks at the earliest possible date. He also emphasized the urgency of the Salt Waste Processing Technology decision.

### **Salt Waste Technology Selection and EIS**

Larry Ling, DOE Tank Closure Manager, gave updates on the Salt Waste Processing situation to date. The final supplemental EIS is due in June 01 with the draft due mid March 01. The Salt Waste Processing SEIS is the number 1 priority with EH and General Counsel. There is urgency at HQ with all of the Salt Waste Processing Decisions. The expectation is that the final SEIS will name both a primary and a back up. Work is still being done on the draft RFP. The final RFP is due in June, which is the same time as the down select. The plan is for the selection to be made in January '02. The ROD will make the decision on technology.

Mr. Poe mentioned the low vitrification rate and the FG's concern with the low number of canisters. He mentioned the issue of tank space and the fear that if something isn't done expediently, then new tanks will have to be built.

Mr. Chaput raised the budget issue. He asked if there would be enough money available to pursue a primary and a back up in parallel, not in series but in parallel. Mr. Chaput and Mr. Poe re-emphasized that the tanks need to be emptied and closed. The Focus Group and the CAB have pushed these issues. It was noted that all of the CAB committees meet on February 27 to discuss the budget issues.

### **Salt Processing Project Technology Development and Selection**

Joe Carter, WSRC, spoke to the group on the salt waste processing facility requirements based on the activity. He outlined the key technology risks and key accomplishments for alpha/strontium removal and Caustic Side Solvent Extraction (CSSX). Pilot scale filtration data meets design assumptions thus far. Mr. Chaput clarified that SRS is looking at alternates to monosodium titanate (MST) with a goal of reducing the size of equipment. The larger the equipment, the more risks involved. CSSX proof of concept tests are complete. Significant progress has been made on the solvent's chemical and physical properties. There are no stability issues associated with elevated temperatures with the irradiation studies of the solvent. Real waste tests are scheduled for spring.

Mr. Carter outlined key technology risks and accomplishments for crystalline silicotitanate (CST). Of particular interest to the focus group was the work on the column and the fact that SRS understands the issues. Other areas of interest to the group were the cesium absorption studies and the hydrgard

sampler studies. There is some work left to be done, but CST is coming to closure. This technology had its real waste tests done a year ago and passed.

Of the small tank tetraphenylborate precipitation (STTP) risks that Mr. Carter outlined, the group was particularly interested in the foaming issues. Mr. Carter told the group that foaming could be controlled in STTP reactors and vessels. He added that the antifoam has been formulated, tested and found to be effective. Rhodium, Ruthenium, and Platinum are active when present as a reduced metal.

Currently, SRS is conducting batch tests of decomposition with samples from six high-level waste (HLW) tanks. Additional real waste continuous stirred tank reactor (CSTR) tests are planned for March 2001 with the system designed to eliminate equipment and foaming problems. All key technology risks are on track for a June 2001 downselect. SRS is on track for experimental work in April. The documents will be ready in May.

### **Salt Processing Project Pilot Plant**

Mr. Carter stated that the objectives of the pilot facility include collecting process data, providing training for engineers and operators, providing facility troubleshooting support, qualifying feed for integrated operation, and providing tours and public education.

Heavy weight was given to the use of Late Wash. There are three shielded cells of volume space in Late Wash, and SRS wants to use this facility. SRS has the infrastructure available to use Late Wash. Backfitting the equipment into this available space would save about 60 million dollars. SRS has consulted with experts and done literature searches on this topic.

Mr. Carter showed the flow sheet for the facility STTP-Plant scale and explained each section. Each section will be reproduced in the pilot scale in a 100 to 1 scale. Literature suggested that the maximum scale up for CSTRs be 100:1. Mr. Carter outlined the points for the STTP scale for CSTRs and precipitate Hydrolysis. The scale for precipitate hydrolysis would be 67:1 based on throughput. He then outlined the STTP sizing approach.

Mr. Carter said that for the small tank alternative, the total project costs (TPC) including contingencies would be around 80M. This cost is for one technology, one pilot plant. If SRS operates in parallel, then the schedule must be extended and a new infrastructure must be built.

Mr. Carter stated that if you wanted to run multiple pilots in series, you would cost and schedule better to run them in series as long as there were two options. Unless you went to a third option in series, parallel pilots doesn't make any sense from a schedule standpoint.

Mr. Carter continued. It would take two years to design and fabricate a ready-to-run pilot facility. After that, it will take six months of real waste operation. In parallel we have done preliminary design and a cost schedule baseline. We estimate it will take 3 months to decontaminate the equipment. Series testing adds another nine months. Design them and build them in parallel. Run them cold in parallel. One as a primary option will be run hot. If SRS goes to a back up technology, it would take nine more months to get to where we were with the primary technology. As long as we are only dealing with two, it is better to do them in series.

WSRC isn't making a recommendation in terms of multiple pilots. SRS is making a recommendation in terms of individual pilots and what it takes to pilot when a decision is made. SRS isn't recommending to the Department of Energy more than one pilot in parallel. There was no WSRC recommendation in that package. The TAT recommendation would be to build to the bench scale level on the back-up technology.

Mr. Carter added that another equally valid strategy the DOE could make would be running two hot pilots in series. Mr. Poe said that there is not a fatal flaw in any of the alternatives. Mr. Carter believes there is a rationale to making a decision, based on the information.

Mr. Carter moved on to Alpha Sorption. He outlined the process. He pointed out that the alpha sorption scale is large enough to support CSSX and CST pilot plant feeding and to allow the waste transfer line to drain. The filter feed tank is sized to allow MST sorption and analytical verification, and the alpha sorption tank is large enough for MST/Sludge re-suspension testing.

Mr. Carter moved on the CST-Plant and outlined the process for the group. The CST scale matches column superficial velocity. SRS chose a 6" diameter column, which gives a scaling base of 110:1. Heat transfer is good at the 6" column. He then outlined the sizing approach.

Mr. Carter next outlined the CSSX plant process. Five-centimeter contactors were selected to operate at 100:1 flow. The equipment size is large. Feed tank size is based on two-day continuous operation. These are 15 stage contactors. This will be identical to the CST flowsheets. The contactor is used as a washer for the salt. SRS's approach to testing is as follows: water runs-integrity tests, simulate runs, tracer tests, and then the pilot operation.

The decision is due in June, with RAD OPS 24 months later. This dovetails nicely with finishing the preliminary design.

Mr. Poe stated that the FG's role is to provide support to the WM Committee on the Salt Waste Processing supplemental EIS. In March, the FG must get the CAB in a position to comment on the SEIS. The draft won't name a preferred alternative. The FG must be in a position to understand the recommendation on those issues. The next step is to get the points across to the CAB. Budget issues also come into play.

The group discussed their strategy and options. The meeting was dismissed at 5:00.

*Copies of the handouts may be obtained by calling 1-800-249-8155.*