



SRS Citizens Advisory Board

Salt Processing Focus Group

Meeting Summary

July 18, 2000
Tetra Tech/NUS Building
Aiken, SC

The Salt Processing Focus Group met on Tuesday, July 18, 2000, at 5:30 p.m., at the Tetra Tech/NUS Building in Aiken, SC. Attendance was as follows:

Ernie Chaput	Wade Waters, CAB
Bill McDonell	Mark Mahoney, WSRC
Lee Poe	Mike French
Joe Carter	Charles Murphy
Kelly Way, WSRC	John Reynolds
H.H. Elder	Bob Stenner, PNNL
Dennis Strenge, PNNL	Ken Rueter

Wade Waters welcomed everyone and started the meeting.

The Focus Group (FG) discussed the following areas:

High Level Waste System (HLW) Plan, Revision 11

Mark Mahoney, HLW System Integration Manager, presented an overview of the HLW System Plan, Revision 11. He started with a quick synopsis of the overall HLW system—the H- and F- area tanks, waste removal, pretreatment, and then final processing. Mr. Mahoney detailed the process flow chart and emphasized that in a given year, 14-20 million gallons of material are moved around the site to the limited tank space.

Mr. Mahoney emphasized that the HLW system is an integrated one, and the facilities are inter-related. This integration optimizes the best solution for the system and allows "just-in-time" financing. The System Plan defines priorities, scope and schedule; specifies the operating plan; and identifies programmatic, technical, and financial uncertainties. This annual document is a joint WSRC and DOE effort.

The following drives the HLW System schedule:

- Reducing risks by supporting the 94-1/200-1 mission
- Removing wastes from high-risk tanks
- Immobilizing HLW
- Supporting other nuclear materials stabilization missions.

Mr. Mahoney defined the high-risk tanks as those that have leaked. He told the group that tanks 1-24 are old style tanks, and 9 of these have leak sites.

When asked if the Plan considers future site missions, such as the mixed oxide (MOX) mission, Mr. Mahoney emphasized that any new waste stream being considered is discussed with each of the appropriate program managers, and in fact, Rev. 11 has a section called "Potential Future Missions". Also, there are weekly meetings with Nuclear Material Stabilization and Storage Division (NMSS) which includes the highly enriched uranium (HEU) and other potential missions. There are also quarterly HLW/NMSS meetings at the Vice President (VP) level. The MOX waste stream is on the agenda for an upcoming quarterly meeting, and the appropriate people are included so that everyone understands the issues.

Mr. Mahoney stated that a recently completed DOE complex Integrated Repository effort reduced the forecast annual SRS shipment of canisters to Yucca Mountain from 500 to 205 per year. The integration effort optimized the use of shipping casks and Yucca Mountain receipt and storage capabilities for all DOE sites with HLW. He mentioned that the latest System Plan schedule shows SRS shipping to Yucca starting in FY10 versus FY15 assumed in earlier System Plans. Also, the Integrated Repository Team has assumed Yucca Mountain to handle all of the SRS HLW canisters. Mr. Reynolds added that since SRS is putting more waste in cans, our projections are below 6,000 total cans for the repository.

Mr. Mahoney continued with a tank closure discussion. SRS regulatory drivers are the Federal Facility Agreement (FFA), which requires SRS to have all the old style tanks closed by 2022; and the Site Treatment Plan (STP), which requires SRS to process all present and future waste by 2028. These numbers add up to 4500 –5000 more total cans to be made after FY00, which translates to 200 cans/year if everything is processed by 2028.

Mr. Mahoney outlined the following as major issues:

- Funding
- HLW facility age
- Tank farm space
- Salt processing disposition
- Processing parameter uncertainties
- DCS control system obsolescence.

When questioned about blending, Mr. Elder stated that the group examines the sludge properties, (apart and blended), the DWPF model, source term, durable glass, and crystallization. There are three or four tanks that can not be processed unless they are blended. Some of the tanks require aluminum dissolution and blending. Blending waste from two tanks is not a problem for tank farm processing. Mr. Rueter stated that blending is done for two reasons--to empty tanks and to get a chemical constituent blend. Blending results from HLW generating adequate feed stock for salt and sludge processing.

Mr. Carter clarified the salt blending process with the group. Salt waste comes from crystallizing supernate. The waste had very similar composition with no lines of demarcation. In the early days, SRS used the average of salt composition. Mercury was a concern because it had a land disposal restriction limit. In the early flowsheets, Mercury removal resin was included on the decontaminated supernate to meet the 250 parts per million LDR loan. A year later, when the blending profile was examined, the HLW team could determine the tanks that would make up the 6,000,000 gallons per year that would go to salt and could determine the mercury concentration. Some blend scenarios raise the bounding of alpha removal requirements by about a factor of five. That peak clearly drives the design restraint. There are opportunities to mitigate that peak, and therefore mitigate the operability window for design in the salt facility with blending.

SRS has examined different blending scenarios for the purpose of bringing materials together to a common point. SRS now has the data to support the fact that Neptunium is held up in the Saltstone matrix. Previously neptunium was treated just like the nitrates and the nitrites between very large solubles

that seep quickly to the water table. The limit is based on the current Performance Assessment (PA). With the current data, some relief could be sought if the PA were redone.

Mr. Reynolds added that blending is the quickest way to determine viability of the process without doing a formal PA. A new PA will have to be written eventually for the process selected. The fact is that blending is a reality of the tank farms. It isn't specific to Neptunium or aluminum; it's part of the process of preparing the feedstock.

Mr. Carter added that on an annual basis, the site moves less than 500 thousand gallons/year of sludge and 6 million gallons a year of supernate. With everything considered, the site moves 18-20 million gallons of material around annually. So the transfers required for blending are not significant to the overall transfer volumes.

Mr. Mahoney continued with his presentation. There are several models and databases the site uses to predict the HLW System Performance. They are as follows:

- Waste Characterization System-tracks composition of waste in tanks
- SpaceMan-tracks available tank space
- GlassMaker-tracks if acceptable glass blends can be made for sludge batches
- ProdMod-tracks material balance through end of program

The models allow SRS to plan for "just in time" scope delivery to feed into the financial model. Rev. 11 analyzed and compared two cases. The first was a "Requirements case" which fully support 94-1/200-1 Nuclear Materials Stabilization missions and averaged 250 cans/year, with salt processing scheduled to start in FY10. The second case was called the "Target case", which supported 94-1/2000-1 Nuclear Materials Stabilization missions and averaged 200 cans/year with salt processing scheduled to start in FY10. Mr. Mahoney added that it will cost an additional 19 million in FY01 to produce 250 cans called for in the "Requirements Case" versus the 200 cans forecast in the "Target Case". The end dates are the same but the "Requirements case" takes SRS out of high-risk tanks earlier. The sludge has been moved from the high-risk tanks. SRS closes the sludge tanks later under the "Target case" than under the "Requirements case".

Mr. Mahoney continued with Tank Space Management Strategies. He stated that tank space availability is highly dependent upon the rate at which HLW is removed from "high risk tanks" and immobilized in DWPF. The tank space strategy target case includes evaporating the backlog supernate as evaporator systems come on line; reusing tank 49 and tank 50; reducing DWPF recycle to Tank Farm; reducing reserve tank space; and providing additional salt capacity for 3H evaporator system. If required, modifications would be made to use Tank 35 as a Salt Receipt Tank.

Mr. Mahoney emphasized that this strategy is continually reviewed and updated based on emerging process and forecast information. The site is required to maintain 1.3 million gallons of emergency space on the Safety Basis. Right now the site has 1.3 million gallons in each tank farm. Modifications and infrastructure upgrades are required, and numerous transfers will have to be made. Obviously, the site isn't there yet. There are infrastructure upgrades required.

Mr. Mahoney explained the Tank Farm Usable Space Target Case chart. There is minimum working space until salt processing starts. The chart clearly demonstrates that salt processing needs to begin.

DOE Decision Tree

Mr. Reynolds spoke to the group and presented the decision tree asked for by the FG entitled "Alternatives to 2010 Startup".

Mr. Reynolds stated that DOE could better forecast at the end of conceptual design. The bid is a fixed price on construction and the current plan does not include privatization.

Mr. Reynolds pointed out the checkpoints on the chart and stated that DOE will do an analysis at each of them. These checkpoints give approximate time lines when DOE will have various stages completed. According to the schedule, the technology selection will be completed by FY01; the conceptual design by FY02; the preliminary design/project baseline by FY03/04; the design by FY04; and the start of construction by FY 04//05.

Mr. Reynolds continued. Headquarters is involved in the technology decision down select. If new tanks have to be built, then the process to permit, design, and construct will require approximately five years under a RCRA permit strategy or four years under a waste water permit strategy. Another option, though not very desirable, would be to shut down operations that send waste to the tank farms (i.e. DWPF, canyon Operations, etc).

Mr. Reynolds informed the group that budget plans sent to HQ and congress include the funds needed for this line item project. Both HQ and Congress are fully aware of the high priority needed for this project. DOE is confident they will have a down select by June 2001 and will make the 2010 date.

The next meeting was scheduled for Tuesday, August 8, 5:00 p.m. Place to be determined.

The agenda will include a discussion of the following:

- Tanks
- Condition
- Integrity
- Corrosion monitoring program
- Infrastructure
- Space
- Waste removal
- Tank Cleaning
- Annulus
- Tank Closure Plans

The September meeting will include the following

- Head Quarters Report
- Down select Criteria

Mr. Waters asked for questions or comment. There being none, he adjourned the meeting at 8:45.

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