SRS Citizen's Advisory Board

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Waste Management Committee

Aiken Federal Building, Aiken, SC
November 6, 2003

The SRS Citizens Advisory Board (CAB) Waste Management Committee (WMC) met on November 6, 2003, 5:00, at the Federal Building, Aiken, SC. The purposes of the meeting were to discuss the Tank Inspection Program, the Salt Liquid Waste Treatment, Release criteria, and to receive public comment.

Attendance was as follows:

CAB Members	**Stakeholders**	**DOE/Contractors**
-Bill Willoughby	Bill McDonell	Alice Doswell, DOE
-Bill Lawless	Todd Crawford	Mike Johnson, WSRC
Gerald Devitt	Lee Poe	David Little, WSRC
-Murray Riley	Ken Crase	Ron Campbell, WSRC
-Harold Rahn	David Adcock	Julie Petersen, DOE-OEA
William Lawrence	Mike French	Sonny Goldston, BNFL-SW
Leon Chavous		Joe Carter, WSRC
		Gail Whitney, DOE
		John Knox, DOE
	Rick McLeod*	Jim Moore, WSRC
		Kelly Way, WSRC
		Don Blake, DOE
Regulators		Marc Loibl, WSRC
		Elmer Wilhite, WSRC
		Fran Williams, WSRC
*CAB Technical Advisor		Tom Treger, DOE
-WM committee members		Ken Crase, WSRC
+Facilitator		Ginger Dickert, WSRC
^Press		Steve Thomas, WSRC
		George Mishra, DOE

Bill Willoughby called the meeting to order at 5:00. He welcomed those in attendance and asked for introductions. He then introduced the first speaker.

HLW Tank Inspection Program-David Little
Mr. Little explained the purpose of his presentation was to discuss the goals, capabilities and results of the HLW tank Inservice Inspection (ISI) Program. The Program Goals include providing evidence that structures, systems and components (SSCs) are capable of performing their functions safely. He showed pictures of tanks and explained the structures. He explained the

components of the structural integrity program and told the committee that the emphasis tonight would be on visual and ultrasonic inspection.

Mr. Little talked about the structural integrity four point program. These are testing/modeling; inspections, material properties; and evaluations/calculations. The testing and modeling program includes lab testing, degradation modeling, and chemistry control. The goal is to try to preclude degradations from occurring. The program also studies the effects of environment, service conditions, and degradation mechanisms. Since 1999, the site has done extensive modeling. The group strives to understand issues such as to what length the crack will grow, propagation rates, and tank top loading. Cracks have approached 15 inches in length in some cases. Waste in Type I and Type II tanks has been lowered to below known leak sites. There are no leaks in Type III tanks because they were stress-relieved during construction.

The inspection component includes non-destructive methods such visual, ultrasonic, pressure testing, and radiography. The tank inspection program primarily uses visual and ultrasonic inspection. Mr. Little summarized the Inspection Program History, beginning with an explanation of the direct periscope inspections. In the 60's, very rudimentary ultrasonic testing started. It measured the thickness of the walls and inspected for general corrosion. Ultra sonic testing (UT) measurements were used for twelve years from 1972 to 1984. In the 80's, video inspections were added. In the 90's, the site inspected for pitting and thinning on selected tanks, but not for stress corrosion cracking. In 2002, SRS initiated their current ISI program to look at all three degradation methods.

Mr. Little then explained the technical bases history. DOE evaluated this program complex-wide and chartered a Tank Structural Integrity Panel (TSIP) to issue complex-wide guidance. Their guidance was codified in DOE Order 435.1. The site currently operates under an In-Service Inspection (ISI) Program that complies with order 435.1 and under an Annual Visual Inspection Program per the Federal Facilities Agreement (FFA).

Mr. Little explained that each July, the site is required to submit a formal report to the Department of Health and Environmental Control (DHEC) that summarizes the results of the previous year's inspections. Every year, 25% of the exterior of the primary tank is photographed "in detail" so that, over the course of four years, there is 100% detailed photography of the primary tank exterior via available risers.

Mr. Little showed a video clip of the P-Scan wall crawler and explained that it has an on-board camera that monitors the crawler during data acquisition and has the capability of acquiring close-up pictures/video of the tank wall. Information that can be collected by the crawler includes information on wall thinning, pitting, and stress corrosion cracking via on-board transducers that introduce ultrasound into the wall of the tank. The results are analyzed by nationally certified personnel and then reviewed by experts on site. Based on this review, additional inspections may be done. The UT can't be used in Type IV tanks.

Mr. Little explained the panel review and UT inspection in more depth. The TSIP's recommendation was to look for pitting at interfaces (e.g. liquid to air interface) since this is where wall corrosion would most likely occur. In order to meet the criteria for looking at

interfaces, the site looks at the entire height of the tank. The site also focuses on areas of high stress concentrations, which are usually around the welds.

Tank 34 results provided an excellent example for Mr. Little to detail the program to the group. In a recent photographic inspection, dated 7/8/03, the tank inspection group noticed the presence of a "stain". After comparing the area to a photograph from 7/27/99, the group opted for additional detailed photographic inspection. They also smeared the stain with radiological equipment and sent the crawler in to perform the ultrasonic examination. The UT inspection found no signs of degradation. The stain also disappeared on its own due to water washing across the surface of the tank (water is used as a couplant to facilitate sending ultrasound from the transducer into the material being examined).

Another good illustration was Tank 15. The site group selected six of that tank's known leaksites as part of the full scope inspection. Tank 15 is a Type II tank that was not stress-relieved during construction and was known to have stress corrosion cracking. These cracks can typically spread out perpendicular from the centerline of the weld one to three inches. This particular crack behaved differently because there had been a weld repair during construction. It didn't pass the radiographic inspection, so the tank construction personnel had to go back in, re-grind, and reweld the joint. In 2007, these leaksites will be re-inspected in order to detect geometric changes in the cracks as input to our knowledge of the way that cracks behave.

The results for Tank 15 showed no detectable wall thinning and no reportable pitting. Five new flaws were characterized as well. The adjacent Tank is 16, which was the first to start leaking. Using and characterizing flaws from Tanks15 and 16 allowed the site to build the models they have today.

Mr. Little used Tank 50 as another example. Mounds of solid material were discovered in the bottom of this tank while under surveillance. He moved on to talk about probe evaluations, leak detection capabilities, and visual surveillance.

He explained that by using the visual surveillance program the loading of waste on interior equipment, such as cooling coils, could be established. He talked about the programs available to remove salt build-up. He illustrated how salt adheres to cooler surfaces and builds up around structural support and cooling coils. He explained how under visual observation, the workers can stop, wash the coils, and then continue to drop into the tank.

He told the group that SRS would continue inspections. They will continue to compare information from yesterday with today's information to detect changes in appearance. The site can go back on a repetitive basis looking for any degradation methods that might have occurred. By 2007, there will be a baseline of every Type III tank. Twenty-two of the Type III tanks are one-time inspections, unless there is an abnormality detected. Five of the Type III tanks will be inspected on a periodic basis.

Mr. Little reiterated that the site has 40+ years of visual and UT information. There is a long-term program implemented that directly supports structural integrity. The site can accurately measure wall thickness, pitting, and stress corrosion cracking.

Mr. Poe asked about a communication that would allow the site to communicate with off-site citizens about tank leaks. He is concerned about Type I and II tanks that are known to be the leakers. He asked about the annulus and the bottoms of the annulus pans. He stated that waste has been in Tank 16 since the early 60's and he would like to see the waste removed.

Mr. Willoughby questioned if inspections are done on the metal cooling coils from which the salt was removed. Mr. Little responded that the site does visual inspection for pitting and corrosion. There is no technology yet to measure the wall thickness of coils in the tanks. The coils can be monitored from the standpoint of the cooling water flowing through them.

As for the bottom of the annulus, the site does limited visual inspections of the slots underneath the tanks. Mr. Little continued that the tank inspection group looks for general corrosion. There has been no degradation mechanism detected, except for minor surface corrosion. There are no signs of pitting or of active corrosion. At this point, the inspections are limited to visual. Mr. Little added that the site monitors the air in annuli, the coiling coils, and the groundwater in surrounding areas. Historical archives are kept, as well.

Mr. Poe expressed concern over the in-leakage of rainwater. Mr. Little responded that steps have been taken in the last few years to reduce and minimize water in-leakage. Raincovers have been designed and built to minimize water in-leakage.

Mr. Lawless asked about problems with tank closure. Mike Johnson referred to a previous presentation the committee had on handling more waste in the annuli of old style tanks. He talked about what the site is doing to seal a leak from any external work that may be going on. The annuli are also equipped with systems to handle these problems. He added that at the same time, the site has a contingency plan to transfer out the waste.

The group discussed possible motions and increased inspections. Mr. Carter emphasized that right now, the most important thing the site could do is to get the waste out of the tanks. Mr. Poe wanted to make sure that no activity is escaping into the ground water. Mr. Willoughby suggested that Mr. McLeod draft a recommendation to circulate and present at the January CAB meeting.

Salt Liquid Waste Treatment-Ginger Dickert.
Ms. Dickert told the group that she wanted to talk about Low Curie Salt (LCS). The site needs regulatory approvals to send this salt to SaltStone. Ms. Dickert explained the tailored salt treatment approach and added that there is more to the story than the three-pronged approach discussed with the committee earlier.

She showed a composite of all Type III tanks that illustrated the available tank working space of 1,492,000 gallons. She added that further volume reduction is no longer available. About 1 ½ million gallons of wash water are used for preparing each sludge batch. In order to process salt, other waste has to be moved out in order to continue to move the sludge. If the site does no salt processing whatsoever, the Defense Waste Processing Facility (DWPF) would have to eventually shut down, because there would be no available space for storing washwater for evaporation. The

site must make progress in removing and dispositioning waste before the Salt Waste Processing Facility (SWPF) comes on line.

The three radioactive elements of concern are stronium, cesium, and the actinides. Ms. Dickert explained the processes. The first treatment is in the canyon. Chemistry control neutralizes waste and causes perciptiate of stronium and actinides. She told the group that she would explain the actinide and cesium stream and how they are separated throughout their cycle.

Using visual aids illustrating the waste and radioactive curies that the site must deal with, Ms. Dickert effectively showed each stage of the process, how much waste is present, and how many radioactive curies would be left behind. She explained the next step in cesium processing is saving space and putting waste in a less mobile form. The cesium will stay in concentrated supernate. The high concentraton of cesium will go to the Salt Waste Processing Facility (SWPF) where the cesium and actinides can be separated and sent to DWPF, and the decontaminated salt solution would go to Saltstone.

Ms. Dickert showed the committee simulated salt cake, which looks like rock salt. She demonstrated that by tipping it, you see a liquid. Cesium stays in the liquid. If the site could extract the liquid, then they could extract the cesium. Savannah River was a chemical site, but the kind of technology now used is hydro, soil, and groundwater, as opposed to a chemical technology to remove the interstitial liquid. It took five million dollars and six months of pump time to drain one tank. The remaining solutions had more actinides than expected. The next step is to remove the actinides. This process will involve one similar to the old In-Tank-Precipitation (ITP) process. The facility is in a state of readiness and scheduled to come on line in January 2004. It will cost the site fifty-million to prepare the facility to remove the actinides. The sludge, SWPF material, and the actinides will go to the federal repository at Yucca Mountain.

SRS will be left with cesium, strontium, and decontaminated actinides. The overall curie count is less than 5% of the original curies. This stream will go to Saltstone; the glass will go to the Repository. Therefore, 95% of the curies go Yucca Mountain.

Ms. Dickert then covered the Groundwater Performance Assessment (PA) with the group. She explained the clay cap that will be put into place over SaltStone. She explained the monitoring wells that are very conservative and well within limits.

She discussed the Environmental Assessment (EA) for groundwater. Under the new EA, more curies are left, but these curies don’t impact the drinking water standard. If cesium ever seeped into the ground water, by the time it would get there, there would be no impact to the drinking water standard because cesium has a thirty-year half-life.

She explained the "Intruder analysis" concept and a new proposal versus the old standard for the EA. Although the new percentage is 33%, to put this in perspective, someone would get 360 millirem a year just living in South Carolina. In addition, under the new plan SRS is out of all tanks by 2019. Another added benefit is that the site saves 6.5 billion dollars. This robust program gives SRS the opportunity to disposition waste and get it into a more stable form.

Next Ms. Dickert explained the Class C and Class A waste classifications, which have to do with concentrations in waste forms. LCS is Class C waste going to the vaults. Ms. Dickert's salt group discusses the issues with DHEC, the Nuclear Advisory Council (NAC), and other working and regulatory groups on a regular basis. She emphasized that all of the groups are considering alternatives, finding common goals, and striving to move forward with a strategy.

Ms. Dickert explained the differences between sludge/salt canisters and cesium-only canisters. The sludge and salt canisters can be sent to the federal repository, with the cesium getting "a free ride." Any delay in the site's moving ahead, will result in cesium only canisters, which would increase the number of canisters. Ms. Dickert's opinion is that the Federal government is not going to ship cesium-only canisters. A decision needs to be made so that the site can move forward on this critical path.

Mr. Lawless asked about the lawsuit. Ms. Doswell responded that legislation has been proposed. There is an upcoming meeting in Washington, if there is an agreement, we can move forward with the state. DHEC has always requested open discussion from the outset.

Mr. Willoughby asked if the site, for some reason, could not process cesium through SWPF, would there were another form in which cesium could be stabilized, contained, meet (less than) Class C standards, and then buried. Ms. Dickert responded that it would be too costly to put cesium in grout form and transport it. The site has looked at interim options and containers. However, this would cost billions of dollars, and the site can't come up with that kind of money. The bottom line is that the site has to have the SWPF.

When asked about DWPF, Ms. Dickert responded that if nothing is done at all, the site runs out of feed for DWPF in 2008. The SWPF is scheduled for 2009/early 2010. Saltstone is a grout plant permitted under a Wastewater permit. However, the site still needs the landfill permit for the vault itself. Saltstone is approved to operate at .478curies/gallon for grout. The site is planning to process Tank 41 waste and is a year away from the .5 curie/gallon goal.

Mr. McLeod asked about policy and long-term stewardship issues. Right now, the lawsuit prevents the low curie salt from going to Saltstone. The legal issue must be resolved. Ms. Dickert reiterated that the Governor's NAC and DHEC are working with SRS with a goal of a strategy everyone can support.

Surface and Volume Release Criteria for Materials-Sonny Goldston

Mr. Willoughby then invited Mr. Goldston to update the group on thedevelopment of release criteria for material that may be potenitally contaminited with radionuclides. Mr. Goldston told the group that based on the committee's encouragement in CAB recommendation #132, Solid Waste (SW) developed a dose based release criteria that meets the DOE applicable order 5400.5. The release criteria are calculated such that an exposed person would receive a dose of less than 1.0 mrem/year. The most significant improvement is that we have developed volumetric release criteria as well as surface release criteria. We can release materials from areas that are potenially contaminated to on site landfills such as the C&D landfill or the Three Rivers Landfill . More good news is that SRS has opened and is already using the C&D landfill for construction and

demolition debris, but SRS has not yet released any materials to the landfill under the new release criteria.

Mr. Goldston continued. The developed criteria are beginning to be implemented now in a carefully controlled fashion. As an example, under the new criteria we can take soils that may have been removed from near a HLW tank, ensure there is no DOE-added radioactivity and that the release criteria has been met, and dispose of them in theThree Rivers or the C&D landfill. Previously, these soils would have had to be disposed in the E-area trenches or Low Level Waste (LLW) Vaults.

Mr. Goldston then reviewed and explained the release criteria values themselves. He explained each grouping and the dose bases.

Mr. Willoughby then asked for public comment. Some discussion ensued of the recommendations and letter that the WM Committee is bringing to the full CAB November 17-18.

He then adjourned the meeting at 7:30.