SRS Citizen's Advisory Board

Waste Management Committee

North Augusta Community Center, N. Augusta, SC
January 11, 2005

The Citizens Advisory Board (CAB) Waste Management (WM) Committee held a meeting on January 11, 5:00 p.m., at the North Augusta Community Center, N. Augusta, SC. The purpose of the meeting was to discuss Transuranic (TRU) Waste Update, the 3116 Implementation: Salt Process and Tank Closure including Grout in High Level Waste (HLW) Tanks, Defense Waste Processing Facility Recycle and hear public comment. Those in attendance were:

CAB Members
Bill Lawless*
Karen Patterson*
Bob Meisenheimer*
Perry Holcomb
Jean Sulc
Jerry Devitt
Mel Galin
Leon Chavous
Wendell Lyon

Stakeholders
Lee Poe
Mike French
Joe Whetstone
Rick McLeod
Janet Wedlock
Joe Ortaldo
Sam Booher
Ranowul Jzan
Rick McLeod
Eleanor Galin
Tracy Carroll
Bill McDonell
Bruce Morson

Regulators
Jim Barksdate, EPA
Shelly Sherritt, SCDHEC

DOE/Contractors
Bill Spader, DOE
Doug Hintze, DOE
Jim McCullough, DOE
Tom Treger, DOE
Greg Johnson, DOE
John Harbour, SRNL
Elmer Wilhite, SRNL
Jim Cook, SRNL
Ed Stevens, SRNL
Tom Robinson, WSRC
Joe Carter, WSRC
Sonny Goldston, WSRC
Kim Cauthen, WSRC
Rick Runnels, WSRC
Mike Milnes, WSRC
Michele Wilson, WSRC
Mike Chandler, WSRC
Bruce Martin, WSRC
Teresa Haas, WSRC
Lyddie Broussard, WSRC
Jim Moore, WSRC

*Members of the WM Committee
** Darryl Nettles is a member of the WM Committee but was unable to attend.

Bill Lawless, WM Chair, welcomed those in attendance and asked them to introduce themselves.

Transuranic (TRU) Waste Update:
Doug Hintze, DOE, handed out the Defense Nuclear Facility Safety Board (DNFSB) letter sent to the Savannah River Site (SRS) expressing concern about safety issues with TRU drums. The

DNFSB expressed concern the Hanford site had found hydrogen and oxygen buildup to flammable levels in their TRU drums and believed the same situation could occur at SRS. During a DNFSB staff visit, the site, using 1990's drum data, had taken the position that a similar condition could not exist at SRS. Subsequently, the site found a drum with hydrogen and oxygen buildup. Upon further review, over 100 drums were identified with a high hydrogen/high oxygen condition.

On December 6, TRU drum operations were suspended due to concerns with the adequacy of the program safety basis. At the same time, two investigations were initiated. The contractor, Westinghouse Savannah River Company (WSRC) will conduct one investigation that is due on January 14. DOE will complete the other investigation by January 28. In February, the results of these investigations will be available to the CAB. The Site Manager and WSRC President briefed the DNFSB in Washington today, January 11.

Required paperwork reviews for previously characterized drums continues so that when drum handling operations resume, a higher rate of shipping can occur if transportation assets are available. If higher rates can be achieved, the site expects no negative impact on meeting the FY05 shipping schedule.

3116 Implementation:
Doug Hintze stated the National Defense Authorization Act for Fiscal Year 2005 was signed into law by the President on October 28, 2004. Section 3116 provides the Secretary of Energy, in consultation with the Nuclear Regulatory Commission, the authority to determine that certain waste does not require disposal in a geologic repository as high level waste. There is no definition of what "in consultation" means. The Department is trying to determine the roles of each organization. Section 3116 only applies to SRS and the Idaho site. All other sites in the DOE complex and some equipment at SRS that does not fall under 3116 must follow DOE Order 435.1.

There are different requirements for concentrations of waste that exceed Class C limits and those that do not exceed Class C limits. The site expects that the high-level waste will not exceed Class C limits. In this case, the waste must be disposed to meet performance objectives of 10 Code of Federal Regulations (CFR) 61 Subpart C and pursuant to State-approved closure plan or State-issued permit, based on other regulatory authority (e.g., Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)). If it would not meet Class C limits, then NRC would become more involved.

The NRC will also monitor the program. The monitoring program remains to be worked out.

Other exclusions to Section 3116 include:

- Provisions do not apply to any material transported from applicable states
- Does not modify or impair existing agreements, e.g., Federal Facility Agreement (FFA)
- Not a precedent and not binding on Washington, Oregon or any other States
- Does not affect existing statutes or regulations: Waste Isolation Pilot Plant Land Withdrawal Act, West Valley Act, Atomic Energy Act, or CFR 191

DOE-Environmental Management (EM) is developing an implementation strategy in order to meet the SRS Performance Management Plan objective to have salt processing initiated by October this year. A very preliminary schedule and responsibilities are as follows:

- DOE-EM will develop a Waste Determination document that provides DOE's technical evaluation of a waste stream against each of the requirements of Section 3116 and will be used to support the Secretarial approval. The DOE-EM priority is SRS Salt Processing (Fiscal Year (FY) 05), SRS Tank Closure (FY05) and Idaho National Engineering and Environmental Laboratory (INEEL) Tank Closure (FY06). There will be a Waste Determination document developed for the priority items above and each individual tank to be closed. – Objective: February 1, 2005 for salt processing
- Develop Memorandum of Understanding signed between DOE and NRC. – Objective: February 1, 2005
- DOE will distribute the Salt Processing Waste Determination document for public review and comment. – Objective: March
- NRC will review the Salt Processing Waste Determination document that could take approximately eight (8) months which would put the date into September 2005. The site is trying to expedite the process with hopes of making a July/August time frame. – Objective: July/August 2005
- Secretary of Energy (SOE) will approve the document. – Objective August 2005
- Based on the SOE-approved Waste Determination document, SCDHEC will issue permits for the Salt Processing.– Objective: September 2005

The preliminary schedule outlined above was very much at high risk. It is projected the site will miss the October salt processing date by one or two months.

Tank Closure
Doug Hintze reviewed the FFA regulatory commitment for the two tanks to be closed. The tanks and commitments are Tank 19 closed by October 31, 2006 and Tank 18 closed by February 28, 2007. Near term activities that need to be completed are as follows:

- Publish revised Record of Decision for Tank Closure Environmental Impact Statement
- Public review of General Closure Plan
- Public review of Tank 19, 18 and 1F Evaporator Waste Determinations
- Public review of Closure Modules for Tank 19, 18 and 1F Evaporator

Grout in High Level Waste (HLW) Tanks
John Harbour, PhD, WSRC Savannah River National Laboratory (SRNL), indicated the purpose of the presentation is to review SRS tank closure practices regarding the October 18, 2004 report entitled, “What the DOE Knows it Doesn’t Know about Grout”, by Brice Smith, PhD, Institute for Energy and Environmental Research (IEER). Arjun Makhijani is President of IEER. (For a new release from him on their new report on SRS and tanks, see www.ieer.org/reports/srs/arjstmt.html). Dr. Harbour reviewed the procedure and material used to close tank 17F and 20F. A model of the tank with a representative amount of waste remaining in the tanks was passed around the group. The tanks are capable of holding 1.3 million gallons of material. (Not all tanks at SRS hold 1.3 million gallons. The Type I tanks have a 750,000 gallon

nominal capacity, the Type II tanks have a 1.03 million gallon nominal capacity and the Type III and Type IV tanks have a 1.3 million gallon nominal capacity.) The tank vessel consists of a carbon steel liner with a concrete basemat, wall and dome. Note, there is no steel liner at the dome. They are 85 feet diameter and 45 feet tall. The inside of the tanks were emptied as much as possible and then cleaned with a spray and slurry pumps to remove as much material as possible. 2,200 gallons of material was left in Tank 17F and 1,000 gallon of material in Tank 20F. In photos previously seen by the committee, the 3/8 inch thick steel plates welded to the bottom of the tanks could be visible in the photo indicating the small amount of waste left in the tank.

Three layers of grout were placed in the tanks. The grout used is comparable to concrete but rather than having large stones (aggregate) as fill, this grout uses fine sand so that the grout is more fluid. The first layer was a reducing grout that keeps the technetium in a stable state. There was no mixing process used when the grout was introduced to the tank. Enough of the first layer of grout was introduced to cover the residual waste. The second layer of grout was a bulk fill for structural stabilization so the walls wouldn't cave in. The third layer on top was a very strong grout for intruder protection. Approximately 8,000 cubic yards of grout were placed in each tank, which is equivalent to 1000 Ready Mix truck loads at 8 cubic yards per truck.

Over the short term, the first 1,000 years, the grout will reduce water infiltration to limit waste transport. In addition, the chemical nature of the grout will maintain stability of many of the contaminants of concern. In 1,000 years, the grout is conservatively assumed to turn to sand-sized particles and be equivalent to the soil at the tank farm. Over the long term, 1,000 to 10,000 years, the chemical nature of the grout will make the infiltrating water high in pH and chemically reducing. This high pH and reductive capacity of the infiltrating water maintains the stability of many of the contaminants of concern. The computer model, Multimedia Environmental Pollutant Assessment System, was used to predict the number of millirems at the seep line. The model inputs include SRS specific hydrogeologic structure and closed tank configuration.

The process, model inputs and results were reviewed by NRC and approved by the Environmental Protection Agency (EPA) and SCDHEC. The model met the performance objective of having a dose rate less than four (4) millirem/year at the seep line that is approximately one mile away from the tanks.

Dr. Harbour reviewed several of the issues that were stated in the IEER report. The IEER issues and SRS comments are as follows:

- IEER: The lack of mixing in the tanks will lead to inhomogeneous grout/sludge mixture. SRS: Mixing was not assumed in the SRS performance evaluation. The performance is predicted based on both the long term and short term as recorded above.
- IEER: Durability issues concerning cracking within the grout through cold joints, thermal fluctuations (freeze/thaw cycles and heat generated from radionuclide decay), shrinkage, drying, interconnected networks, etc.

SRS: Compliance to 4 millirem/year at the seep line is not significantly impacted by cracks in the grout. The modeling assumption of breakdown of the grout and concrete basemat to 'sand' at

1,000 years is conservative. For example, a sensitivity analysis for Tank 17F, in which the grout and basemat break down to 'sand' after only 100 years, reveals that the maximum dose rate at the seep line does not change although the time for the maximum dose shortens slightly. Credit was not taken for the steel liner in the model.

- IEER: The safe drinking standard for the Savannah River will be exceeded for Stronium-90 if a release of 1 part in 1,000 occurs (after 100 years) where 1 percent of Stronium-90 inventory remains in the tanks.

SRS: IEER calculation does not include the impact of a relatively long transport time for Stronium-90 in SRS soil and its decay during this transit time due to the approximate 30 year half life. The performance evaluations for Tanks 17F and 20F predicts that the Stronium-90 contribution to the seep line dose is less than 0.001 millirem/year.

Dr. Harbour stated that the IEER issues have been previously considered and addressed in the performance evaluations for each tank. Tanks 20F and 17F have been successfully closed in a way that is protective of the environment and public as reviewed by NRC and approved by EPA and SCDHEC.

Salt Process

Jim MuCullough, DOE, reviewed the Salt Processing Project Status. The scope of work includes treatment and disposal of approximately 33 million gallons of supernate and saltcake waste (approximately 84 million gallons when dissolved and adjusted for processing) by 2019. The Low Curie Salt (LCS) process will treat approximately 8 million gallons for waste starting October 2005. The Actinide Removal Process (ARP) and Modular Caustic Side Solvent Extraction (MCU) will treat approximately 2 million gallons of waste starting October 2006. Estimated cost is $100 million. The Salt Waste Processing Facility (SWPF) will treat approximately 74 million gallons of waste starting July 2009. Estimated cost is $400 million. Treated low level salt waste will be disposed via grout in Saltstone. Concentrated radioactive material removed from salt waste will go to the Defense Waste Processing Facility for vitrification and prepared for off site disposal as high level waste. While the planned start date was December 2002, the process hasn't started yet.

The LCS feed tank will be complete in February 2005. A recovery plan for one of the tanks previously used for In-Tank Precipitation (ITP) is being developed and the path forward for characterization of the next salt cake tank is being implemented.

The ARP design activities are progressing on schedule with project tracking to October 2006 startup. Demolition and removal activities at 241-96H continue.

The MCU subcontract for design and fabrication was awarded December 2004. The design capacity is approximately 1 million gallons per year. Site preparation work is continuing. The impact of the solvent carry-over issue is currently under evaluation.

The design and procurements for the Mixer at Vault Road Concept (MAVRC) project for the Saltstone Facility are progressing on schedule as are the design of modifications to Vault #4 to

support processing of 0.2 Curies/Gallon of salt waste. The project is on schedule to support an October 2005 start of salt waste disposal.

Preliminary design activities are progressing just slightly behind schedule but significantly under cost. The Critical Decision (CD)-2 approval milestone is fifty percent complete and due to be complete May 2005. DOE is working with DOE-EM to address DNFSB issues regarding Natural Phenomenon Hazard design. The DNFSB has issued Recommendation 2004-2 whose impact is being determined.

The SRS is implementing all elements of the modified salt processing strategy in order to initiate disposal of salt waste via the LCS process in October 2005.

Lee Poe asked why it was necessary to build the ARP and Solvent Extraction Facilities that would only operate for one year and process only two million gallons.

Defense Waste Processing Facility (DWPF) Recycle:
Doug Hintze stated that funding for DWPF recycle is in the 2007, 2008, 2009 schedule. No action is on going due to resource needs for 3116 implementation and Waste on Wheels.

Other:
Lee Poe asked about the leaks in waste tank 12 as reported in a DNFSB report. Doug Hintze stated that the site was in the midst of rewetting the tank but would be below the known leak spots. Waste removal of the tank was outside the contract period and the tank would sit. There is the capability to pump any leakage back into the tank if needed and the tank will be monitored for leakage.

Public Comment:
Bill Spader, DOE, stated that the End State Vision, previously called the Risk Based End State Vision, would be reissued for public comment. The expected reissue date is sometime in February or March.

Joe Whetstone, a member of the public, relayed some comments from Tom Clements. They were:

- The CAB should push for more thorough cleanup. This could help preserve key jobs at the site.
- There are 13 mega tons of dirty plutonium that DOE was developing a disposition on. What is the reason for the report not being ready?
- When facilities are closed, will signs be posted stating that this is a contaminated area, exercise caution?

Adjourn:
Bill Lawless explained he would be stepping down as Chair of the Waste Management Committee to be the Vice Chair of the CAB. He expressed appreciation for all the support he has had and hoped that the same support would be given to Bob Meisenheimer whom he expected would be the next chair.

Action Item:
The following are the action items from the meeting:

- The Waste Management Committee will be updated on the TRU waste drum issue in February. - Doug Hintze/Lyddie Broussard
- Bill Lawless requested that we invite someone from the NRC to speak to the CAB Waste Management Committee on the 3116 NRC review process and schedule. NRC is to visit the site the last week of January. - Doug Hintze/Jim Moore
- Joe Whetstone requested to know (1) the amount of curies at Idaho vs SRS and (2) the number of people that could be impacted at Idaho vs SRS. - Doug Hintze/Jim Moore
- Bill Lawless requested a presentation on the performance assessment for Saltstone. - Elmer Wilhite/Jim Moore
- Bill Lawless asked if the public would see the agreement between NRC and DOE before it was signed. Doug Hintze said no but he didn't know why it couldn't be provided after it is signed. - Doug Hintze/Jim Moore
- Bill Lawless requested a recapitulation of the schedule for 3116 and the tank closure. It should include the public review. He would like it this week. - Doug Hintze/Jim Moore
- Lee Poe requested that if there is a big change in how SCDHEC expects SRS to close tanks the public should be told. Mr. Poe felt that the public was comfortable with how the first two tanks were closed and would be concerned if there were a big change. - Shelly Sherritt/Doug Hintze/Jim Moore
- The question came up of when the next tank would close after 18 and 19. It was stated the next date was fiscal year 2010. Bill Lawless said he would like to see the schedule. - Doug Hintze/Jim Moore
- Perry Holcomb questioned how the tanks would be selected in the future for closure. He asked if they would be selected by risk factor or type. He asked if the highest risk material was in the Type III tanks. - Doug Hintze /Jim Moore
- Lee Poe said that Larry Ling sometime in the past gave a very good presentation on how the reducing grout holds on to the contamination. He requested the presentation be given again. - Doug Hintze/Jim Moore
- Bill Lawless and Joe Whetstone requested pictures of the bottom of tanks 18 and 19. - Doug Hintze/Jim Moore
- Bill Lawless asked about the disposition of removed material from the demolition activities in the Filter/Stripper Building (241-96H). - Jim McCullough/Jim Moore
- Bill Lawless would like to have the WOW program reviewed in the April or May timeframe. - Doug Hintze/Jim Moore