SRS Citizen's Advisory Board

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Waste Management / Nuclear Materials Joint Committee

Meeting Summary

August 8, 2001
Savannah River Site
Bldg. 742-A, Conference Room 129
Aiken, SC

The Savannah River Site Citizens Advisory Board (SRS CAB) Nuclear Materials (NM) and Waste Management (WM) Committees held a meeting on Wednesday, August 8 to discuss the methodologies for evaluating an option of sending americium/curium to the Defense Waste Processing Facility for stabilization.

CAB Members	Stakeholders	DOE/Contractors
Ken Goad	Mike French	Bill Brasel, DOE-SR
Jean Sulc	Robert Ingram	Sachiko McAlhany, DOE-SR
William Lawrence	Todd Davis, DNFSB	J.A. Smart, DOE-SR
Perry Holcomb	Brandon Haddock, Augusta Chronicle	Gerri Flemming, DOE-SR
Bill Willoughby		Kim Hauer, WSRC
Wade Waters		Tom Campbell, WSRC
Murray Riley		Kelly Dean, WSRC
David Adcock		Teresa Haas, WSRC
Gerald Devitt		Mike Dunsmuir, WSRC
Vera Jordan		John Dickenson, WSRC
		Donna Martin, WSRC

Kim Hauer, HLW Maintenance/Outage Manager, Westinghouse Savannah River Company (WSRC), was introduced to provide an update on the americium/curium (Am/Cm) stabilization project. Hauer said he would discuss base operations, the systems engineering approach used by WSRC to evaluate the americium/curium stabilization options, the recommended disposition option of sending the material to the Defense Waste Processing Facility (DWPF), the safety strategy to send the material through the canyon to DWPF and how SRS would handle potential situations that could arise.

In current normal operations, material is transferred from F-Canyon underground to Tank 33 as a safety basis. Canyon transfers to the Tank Farm are performed daily. Inter-area transfers of material from F Area to H Area are conducted once or twice a month. Currently the site is removing materials from Tank 8 for preparation into the next feed batch (Sludge Batch 2) for DWPF. As a typical example, materials travels from Tank 8 material travels through diversion boxes to Tank 40, one of two DWPF feed tanks. Sludge Batch 2 will then be transferred to DWPF. Hauer said an inter-area transfer was currently being conducted and that such a transfer could last from four days to two weeks.

Because costs of vitrifying americium/curium in the Multi Purpose Plutonium Facility (MPPF) started to increase drastically and DOE made a decision to declare the material excess, Hauer said WSRC was requested to evaluate the disposition option of sending the material through the HLW system. WSRC evaluated several options using a systems engineering approach. Evaluation criteria included scope integrated safety schedule and cost Integrated safety and schedule were weighted the same and the highest and focused on such items as radiological controls, waste minimization and minimizing the impact on canyon operations. Hauer said also the goal was to find an option with the least impact to other programs and an option that could help support future missions.

Wade Waters, Waste Management committee chair, asked how long the systems engineering approach had been used. Hauer said WSRC had used the systems engineering approach to solve problems for about five years. He added that the systems engineering approach was a standard industry practice but the one used for the HLW option was customized for SRS. Stabilization of Am/Cm through the MPPF was one of the options evaluated along with the HLW option.

After the systems engineering evaluation was conducted, Hauer said WSRC identified the HLW option as the preferred option because it was safe, similar to base operations, rapidly reduced Am/Cm risk, improved HLW infrastructure and supported current and future missions.

Ken Goad, Nuclear Materials committee chair, asked if sending the Am/Cm through the HLW system would cause any problems for future decontamination and decommissioning activities. Hauer said that the transfer line would be flushed at the end of the transfer using abrasive material and any future problems would be unlikely.

Several members asked if any special equipment would be needed or changed to make the Am/Cm transfer. Hauer said the material falls within the waste acceptance criteria and no additional shielding would be needed except potentially in vulnerable areas. An advantage of using the HLW option included bringing a new header online to improve current and future mission support, an action that had been proposed but would not have occurred as early.

Concerning the end product of the stabilization work, vitrification in the MPPF would have produced small canisters of glass logs about two feet high. The logs would be stored and retrieval of the Am/Cm would be available. In the HLW option, the material would go directly into the HLW system, vitrified in DWPF and stored in canisters destined for disposition at a national geologic repository.

Perry Holcomb, CAB member, asked if the alpha radioactivity in the DWPF glass log containing Am/Cm exceeded waste acceptance criteria. Hauer said it was within the waste acceptance criteria. Sending the Am/Cm through DWPF also would not affect production, according to Hauer. Only 10 logs would be added to the total DWPF production of HLW glass logs.

Concerning the safety strategy of stabilizing the material through the HLW system, Hauer said the F Canyon safety strategy previously identified for the MPPF process was used and existing HLW transfer Authorization Basis limits will bound the proposed transfer. The strategy will prepare the system for future sludge batches by aligning waste acceptance criteria across facilities. The Diversion Box 8 ventilation capacity will be addressed by either a change in chemistry or hardware.

Bill Willoughby, CAB member, asked if the Am/Cm could be recovered from the glass logs. Hauer said it was possible but would be very costly. He pointed out, however, that DOE has other sources for Am-241 if it is needed. Gram quantities of americium are located at Oak Ridge and targets on site contain curium and californium. Sachiko McAlhany, DOE said DOE had to question

if it was cost effective to retain the material and the final conclusion was that there was no national need for Am/Cm.

The option of sending Am/Cm through the HLW system was considered on several different occasions, said Bill Brasel, DOE. It was first evaluated during the Interim Management of Nuclear Materials Environmental Impact Statement but was not selected because the transfer would have created impacts in normal operations. Additionally, DOE was still evaluating the potential programmatic need for the material.

Several contingencies are in place to avoid any problems with the transfer, said Hauer. If solubility of the material tested higher than anticipated, there are two options: (1) a chemical strike would be conducted to precipitate the soluble portion, or (2) the Am/Cm would not be transferred until after the sludge batch is washed. If the setting is too great, the sludge batch would be washed before transfer.

The meeting concluded with discussion on the amount of radioactivity in each log. The following information was requested from DOE:

- **Contents of Sludge Batch #3**
- **DWPF SAR**
- **Table showing contents of Tank 17**

In addition, Jimmy Mackey, CAB Environmental Remediation committee chair not present, submitted a list of questions to be read at the meeting. The questions and DOE's answers are attached.

<u>Questions directed to DOE-SR from Jimmy Mackey, SRS CAB member; DOE Responses Included</u>

a. **Address the July 2001 EH-2 Oversight Inspection Report on the AM/CM Stabilization Pretreatment Process.**

   The report has just been issued but no findings were reported and no safety issues noted. This report dealt with vitrification in the Mult Purpose Plutonium Facility (MPPF).

b. **What impact will the Monitor Report have on the AM/CM project?**

   The monitor was found not to work well and it was not thought it would perform well in a large radiation environment.

c. **Will there be any timelines for implementation of the AM/CM project and completion baseline date.**

   The MPPF project was scheduled to begin in December 2005. If the HLW option is chosen, the material will be incorporated into Sludge Batch 3 and preparations would begin as early as 2003 and last through 2007

d. **How will the technical aspects of the EH-2 report (July 2001) affect the PEIS data on the AM/CM project for the preferred alternative selection?**

   The EH-2 report will have no bearing on PEIS data. The stabilization of Am/Cm was addressed in the site EIS, Interim Management of Nuclear Materials.

e. **Please provide a copy of the original SAR which did not address three accident scenarios & SAR Addendum on the F-canyon regarding the storage of the AM/CM in tank 17-1 and the usage of tank 16.3 for the transference of the AM/CM solutions.**
f. **When was the last time the tank was sampled because of the advent of increased evaporation of water that causes the concentration to increased due to the extreme heat of the radioisotopes?**

   DOE has never sampled the tank due to adjustments of evaporation. The tank was sampled and a full analysis was run in June 2001 and also in 1998, 1995 and 1993.

g. **What is the current correct amount of curies for the AM/CM solution? (Note: It was already several hundred thousand curies).**

   The curie count is 175,000.

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