



## **SRS Citizens Advisory Board**

Nuclear Materials Management Subcommittee

### **Meeting Summary**

**May 18, 1995**

**Aiken, South Carolina**

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The Citizens Advisory Board (CAB) Nuclear Materials Management Subcommittee held a meeting on Thursday, May 18, 9:30 a.m.- 4 p.m. at the Savannah River Site in Aiken, South Carolina. Subcommittee members who attended included Tom Costikyan, Alice Hollingsworth, and Brian Costner. Tony Clark represented CAB member Mildred McClain. Savannah River Site resource personnel attending included Karl Waltzer and deLisa Bratcher, Department of Energy-Savannah River (DOE-SR), and Ray Conatser, Mark DuPont, Rick Geddes and Donna Martin, Westinghouse Savannah River Company (WSRC). Members of the public attending were LeVerne Fernandez and Carl Zeh.

### **Meeting Objective**

Tom Costikyan, NMM chairperson, began the meeting by stating the subcommittee's meeting purpose was to develop a recommendation on the Foreign Research Reactor Draft Environmental Impact Statement (FRR DEIS) to take forward to the full Board at the May 23 meeting. He recommended that the group support the nation's nonproliferation policy and consider bringing the spent fuel rods into the United States. Without supporting the return of fuel to the United States, Costikyan said it would be harder to lead the world into the low enriched uranium fuel process.

### **Application of Screening and Performance Criteria**

Karl Waltzer, DOE-SR, said the DEIS is constructed of a wide variety of alternatives and suggested the subcommittee develop what it considers the best solution. He added that screening criteria developed by the CAB would be used to take a broad-based look at the alternatives in the DEIS. The three management alternatives in the DEIS are: (1) accept and manage the spent fuel to the United States; (2) assist countries in managing the spent fuel overseas; or (3) a hybrid of management alternative 1 and management alternative 2.

Costikyan questioned if alternative 2 provided the same degree of support of the nonproliferation policy as alternative 1. Waltzer said he believed alternative 2 does achieve the nonproliferation goal. The only alternative that would not meet the nonproliferation goal would be the no action alternative.

If the spent nuclear fuel is processed overseas, the countries would be required to take back the high-level waste generated from processing. Waltzer said the United States would likely have to

accept the high-level waste because many countries do not have the capabilities to store the waste.

In another point, LeVerne Fernandez, a member of the public, stated that many processing facilities overseas (including the facilities in Scotland and England) do not currently have the capabilities to blend high enriched uranium (HEU) to low enriched uranium (LEU). The conversion process, he stated, would be costly. Fernandez also questioned if foreign facilities have put in writing their willingness to process spent nuclear fuel to LEU. He said that the DEIS was misleading on that point. In addition, political instability could affect a country's support of the nonproliferation policy.

Waltzer presented to the committee his attempt at using the CAB-developed screening and performance criteria to weigh pros and cons of each alternative. Compliance with environmental laws as a screening criteria covered such issues as transportation, packaging and environmental impacts. Environmental justice issues would be included in environmental impacts.

Brian Costner brought up the point that equity can result in an adverse impact on the bearer. For example, Site A generates the waste yet Site B has to store it. Waltzer responded saying equity does have political influence but there is not enough information in the DEIS to come to an equity conclusion under screening criteria.

Other issues that did not meet screening criteria but should be considered in performance criteria, Waltzer pointed out, were ultimate disposition (no repository exists therefore no waste acceptance criteria exists), cost and equity. A short discussion on waste acceptance criteria focused on vitrification at the Defense Waste Processing Facility as the closest to waste acceptance form. It was pointed out that waste acceptance criteria will be set when an EIS is conducted for the geologic repository.

### **Facility Capabilities and Fuel Type**

Costikyan directed the discussion toward facility capabilities and fuel types. He said according to the DEIS, the Idaho National Engineering Laboratory and SRS are the only two facilities that can immediately take the foreign research reactor fuel. Other facilities—Oak Ridge, Nevada Test Site, Hanford—can manage the material in a storage capacity but only if facilities are constructed. The Receiving Basin for Offsite Fuel (RBOF) at SRS has high quality water chemistry and has demonstrated effectiveness for storing aluminum-clad fuel.

Eighty percent of the foreign fuel is aluminum-clad. According to Rick Geddes, SRS is currently storing fuel in its basins that is identical to the fuel discussed in the FRR DEIS. It was also pointed out that SRS has possession of over 80% of DOE aluminum-clad fuel. Storage of aluminum-clad fuel is more restrictive than commercial spent fuel in that the aluminum cladding has a tendency to corrode if stored too long in water-filled basins with poor water chemistry control.

Costner questioned if anyone in the United States had experience in dry storage of aluminum-clad fuel. Fernandez said he has conducted research on spent nuclear fuel and Japan, Taiwan and

Australia are the only countries he is aware of that use dry storage for aluminum-clad fuel. He pointed out that the process is expensive, and in the case of the Taiwan fuel, many storage problems have been identified.

### **Wet Storage Capabilities**

Emphasis turned toward SRS's wet storage capabilities, with questions on SRS's maximum wet storage limits. According to SRS personnel, RBOF is 1/2 to 2/3 full and will be full by 1997. In total, the site has about 15,000 spent fuel rods in storage (approximately 200 metric tons)

SRS personnel added that RBOF basin could not currently accommodate all of the fuel from foreign reactors, but if the site was chosen to receive the fuel projects currently underway to improve water chemistry control would permit storage in the L Reactor Disassembly Basin. In addition, the foreign fuel rods would be shipped in intervals over a 13-year period. Concerning upgrade of basins, SRS plans include spending greater than \$30 million in 1995 and 1996 to improve the water quality.

Fernandez said SRS has a 30-year record that demonstrates its capability to handle spent fuel in RBOF. Concurrent with spent fuel storage capability is the country's safety record of transporting radioactive waste.

A question was asked if aluminum-clad fuel would be placed in basins with water chemistry equal to RBOF. According to Ray Conatser, WSRC, average conductivity for reactor basins, constructed of concrete, is 100-150 mS/cm while conductivity at RBOF, constructed of epoxy-coated concrete walls and stainless steel flooring, is 1 or 2 mS/cm. With the L Reactor Disassembly Basin water chemistry improvements underway, SRS expects to achieve conductivity levels less than 50 mS/cm and substantial decreases in corrosion potential.

Costner addressed the need for DOE to be absolutely certain upgrade of the reactor basins will work before putting new fuel in the modified basin. He said DOE must have confidence it does not add to instability problems.

Regardless of the method chosen for interim storage, it was emphasized that short term wet storage is required. SRS personnel said the upgrade of the reactor basins is currently fully funded and that there is a high level of confidence the basin can be maintained safely for up to five years

### **Dry Storage Considerations**

Discussion then turned to dry storage considerations for managing spent nuclear fuel. Fernandez said a dry storage facility in Japan has successfully stored fuel for more than 10 years, but at high costs.

Any type of dry storage facility at SRS would not be completed for several years. There were also questions on the potential for the fuel to reach criticality if stored in dry storage and later in a repository without changing the fuel's chemical form.

## **Chemical Separation (Processing) Discussion**

Costner asked which canyon will be used to conduct processing, pointing out that he had previously heard that DOE could operate both canyons through 1998 to stabilize vulnerable materials, then consolidate operations to H Canyon after 1998.

Rick Geddes said SRS has conducted numerous studies of alternative canyon operating scenarios. Previous studies generally projected future operations in H Canyon. Some current studies focus future activities in F Canyon. No decisions will be made until better a definition of future missions is available. However, the canyons are essentially comparable and the environmental impact would be the same regardless of the canyon chosen for foreign fuel processing. Since projected foreign fuel receipts decline significantly after 2005, at some point, it may not be economical to continue processing. As a result, the remaining fuel would need an alternative management strategy.

SRS personnel presented an inhouse study showing three different approaches to managing spent fuel if it was sent to SRS: (1) Process all aluminum-clad fuel available at SRS before 2005, dry store all subsequent receipts (2) Process "at-risk" materials (SRS production fuels and targets) and dry store other aluminum-clad at SRS and subsequent receipts; (3) No processing: dry store all aluminum-clad SNF presently at SRS and all subsequent receipts. The information showed the largest cost and schedule uncertainties associated with disposal of unprocessed fuels.

Costner said the uncertainties with processing, such as costs associated delays in schedules and safety concerns with the 40-year-old canyon buildings, were not mentioned in the inhouse study. He cited increased environmental regulations and safety standards could account for major changes in processing schedules from past operations.

Geddes responded that data used to develop future schedules and costs were based on current conditions and reflect a lower capability and higher costs of operation than historical experience. He emphasized that while uncertainty regarding future operations exists, SRS studies show the uncertainties associated with processing to be much smaller than those associated with dry storage and direct disposal.

Fernandez questioned the statement in the DEIS saying that processing was a non-preferred alternative, but may be the most appropriate method to cost effectively stabilize the fuel. Waltzer responded that DOE would prefer not to process spent nuclear fuel in the United States because it generates waste streams and weapons-grade highly enriched uranium. Processing would set a bad example for the remainder of the world.

Fernandez continued by saying the waste generated would be very small compared to the 35 million gallons of high level waste in storage at SRS. And if the United States is not capable of guarding its nuclear materials, the country is in trouble. He also felt processing the material, then blending the highly enriched uranium to the non-weapons grade low enriched uranium would set a good example to the world of supporting nonproliferation.

Costner said the other take from the policy issue is the traditional argument of processing as a "acceptable" waste management form. The signal to other nations could be to process, yet many nations do not have the capabilities to control the products. The capacity to inventory the material would be very difficult, even by the International Atomic Energy Agency (IAEA).

In support of processing, Fernandez said it would be irresponsible to future generations if the United States did not stabilize the fuel in an acceptable form. Costikyan agreed that the United States has a moral obligation to stabilize the material. Costner said if the United States does process, it should comply with international inspections.

Concerning operation of the canyons, Costner asked if the CAB was willing to accept optimistic processing schedules for material such as foreign research reactor fuel while SRS is also taking care of materials at risk. He found it difficult to believe that the Department of Energy could quickly start up the canyons when operation of the canyons is the largest item in the site budget. He also strongly suggested the CAB should not address processing or put qualifications in the recommendation on the FRR EIS, but rather, identify areas of concern with DOE's fragmented approach to operation and policy dealing with processing.

Costner also pointed out that the simple procedure of processing 80,000 gallons of plutonium solutions in F Canyon will take up to 18 months. He stated "DOE is tied in knots": the proven technique versus the need should not advocate processing to the world.

### **Commercial Spent Nuclear Fuel Storage**

In 1977, President Jimmy Carter stopped all processing of commercial spent nuclear fuel the United States. A point was made that the United States does not reprocess its commercial fuel, although many other countries are reprocessing commercial fuel.

Costikyan said he predicts nuclear power will have a recurrence in importance as an energy source as fossil fuel is depleted. He asked if material stored in the repositories is retrievable. SRS personnel responded that ultimate disposition locations are called repositories because the material is, in fact, retrievable.

### **Transporting Spent Nuclear Fuel**

Public fear of transporting radioactive waste, and how to alleviate those fears, was discussed. Tony Clark, Citizens for Environmental Justice, said the public is often worried about the wrong things such as potential of explosion during transportation or fuel "leaking" and eventually getting into the river.

Costner agreed and said DOE must start at the point of acknowledging their fears and the response should be in a way to explain the history and consequences of accidents. For example, if an "accident" occurred, it would more likely be as a result of an automobile accident rather than contamination from being near the transported material.

Clark and Costner both recommended that the CAB address transportation issues in detail. Waltzer suggested to use the risk information given in the EIS.

## **Budget Considerations**

Clark stated the final decisions are going to be determined by the budget situation, emphasizing the CAB should ask DOE to follow through on requests for funding to manage fuel that comes to SRS, regardless of the method selected.

## **Summary**

Costner said the FRR DEIS does not contain enough information to make a decision on whether processing or dry storage is the best way to stabilize the spent nuclear fuel for interim storage. He added that the SRS study discussing three scenarios of processing, partial processing and dry storage and no processing presented earlier was not included in the EIS.

Fernandez said the DEIS was misleading and it was not fair to the public. He sees a problem and does not want his children and grandchildren to solve it.

In response, Costikyan said the CAB NMM subcommittee will have to presume DOE has presented the entire issue. He then recommended that the subcommittee look at major points and substantiate the reasoning behind each point. He summarized the points in the following way.

Point 1: State that the CAB is in agreement with the nation's nonproliferation policy, and management alternative 1Ñbringing the spent nuclear fuel back to the United StatesÑ provides the greatest degree of support.

Point 2: State that both alternatives support the policy, but bringing the material back to the United States ensures the most control of the material

Point 3: Ask the CAB to recognize the Savannah River Site's 40 years of technical experience with aluminum-clad spent nuclear fuel

Point 4: Acknowledge that wet storage is not acceptable as a long-term storage option

Point 5: Ask DOE to provide certainty that it will improve the water chemistry in L Reactor Basins and closely monitor the fuel rods.

Point 6: Try not to misrepresent the viability of dry storage technology, but show there is some cost uncertainty.

Point 7: State that processing provides the least uncertainties for final disposition of material and transporting the material out of the state.

**Note: Meeting handouts may be obtained by calling the SRS CAB toll free number at 1-800-249-8155.**