



SRS Citizens Advisory Board

Nuclear Materials Management Subcommittee

Meeting Record

September 28, 1998
Sheraton Augusta Hotel
Augusta, GA

The Citizens Advisory Board (CAB) Nuclear Materials Management (NMM) Subcommittee met Monday, September 28, 9:30 – 11 a.m. and 7 - 9 p.m. at the Sheraton Hotel in Augusta, GA. Subcommittee Chair Tom Costikyan presided at both meetings.

Board members in the morning session were Ann Loadholt, CAB chair, Ed Tant, Wade Waters, Arthur Belge, Ken Goad, Karen Patterson, and Tom Costikyan. The Department of Energy Savannah River (DOE-SR) Associate Deputy Designated Federal Official was Gerri Flemming. Donna Martin, Mark Dupont, Ray Conatser, Rick Geddes, John Dickenson, and Harold Peacock attended from Westinghouse Savannah River Company. Kent Fortenberry attended from the Defense Nuclear Facilities Safety Board. Public attendees were Trish McCracken and Don McWhorter. News reporter Brandon Haddock, Augusta Chronicle attended.

Members from the Pantex Site Specific Advisory Board (SSAB) were Sam Arkaifie, Janette Kelley, Mavis Belisle, John Blakley, Sidney Blankenship, Pam Allison, and Becky Lopez. DOE officials from Pantex were John Bernier and Tom Walton. Oak Ridge Site Specific Advisory Board members were Randy Gordon, Charles Washington, and Bill Pardue.

Persons attending 7 – 8:30 p.m. were Tom Costikyan, Ed Tant, Wade Waters, Ann Loadholt and Brendolyn Jenkins. Gary Little was the Associate Deputy Designated Federal Official. Donna Martin attended from Westinghouse Savannah River Company. Sidney Blakenship, Janette Kelly, and Mavis Belisle attended from the Pantex SSAB.

Morning, 9:30 – 11 a.m.

National Academy of Sciences study on Treatment Options for Research Reactor Fuel

Tom Costikyan, CAB NMM subcommittee chair opened the meeting and introduced Dr. Kevin Crowley, study director, and Dr. Milt Levenson, principle investigator for the report "Research Reactor Aluminum Spent Fuel: Treatment Options for Disposal."

As study director of the project, Dr. Crowley prefaced the report discussion with background on the National Academy of Sciences (NAS) complex and the roles of the National Research Council and the Board of Radioactive Waste Management with the organization. According to Crowley, the NAS complex consists of private, nonprofit, and self-perpetuating honorary societies comprised of distinguished scientists, engineers and health professionals.

The National Research Council (NRC) is the operating arm of NAS. Crowley explained that public service to government agencies is rendered through the NRC. Volunteer committees of scientific and technical experts, managed by a professional staff conduct all NRC studies.

The Board on Radioactive Waste Management is responsible for the NRC's work on any activities dealing with radioactive waste issues. Crowley said the product of each study is a report issued by NRC, which is endorsed and reviewed with full Academy approval. Crowley emphasized that each report undergoes a rigorous peer review process. According to the NAS charter approved in 1863, Crowley said the NAS will assist government agencies at their request if the issue deals with science or health.

Crowley then explained how the study process evolves. The NAS chair appoints an expert or a group of experts to begin the information-gathering step. In the case of the Research Reactor study, Crowley said the Academy chose to identify a principal investigator rather than a group. The principal investigator, Dr. Milt Levenson, then joined the study director and they began holding information-gathering meetings with SRS personnel. Discussions with SRS personnel were one-on-one and helped Dr. Levenson identify the major issues and select the appropriate consultant to help with the issues. The entire report process took about two months, according to Crowley.

Crowley added that although DOE provided the funding for the study, he emphasized the report is peer reviewed by a team of experts, and then reviewed by the NAS before the document becomes a NRC report. DOE was not allowed to review the material at any time during the report generation and review.

A question was asked if there is a federal notice about the report. Crowley said NAS is not a government agency and only committee experts and staff participate in the reviews.

Crowley then introduced Dr. Levenson who proceeded to explain the process further. Levenson explained the task had a very narrow scope—(1) to determine if all appropriate technologies were considered, (2) to determine if the waste form and package program was acceptable, and (3) to determine the credibility of the costs and schedules.

Levenson said a consensus committee normally conducts an academy review consisting of several experts. However, the NAS chose to try a new concept of one principal investigator, aided by subject matter experts as consultants. Levenson said he identified five major areas with serious questions. He identified two experts for each area and included their observations and direct comments in the appendices. Levenson emphasized the body of the report were his words, approved by the Academy. He said he would explain the review process in more detail later in the presentation.

Levenson then felt it important to trace his background and experience to validate his qualifications to produce the study. Levenson graduated with a chemical engineering degree in 1943 and proceeded to work on the Manhattan Project. He served as associate laboratory director at Argonne for 25 years, worked with Bechtel and also worked with EPRI. Every DOE sampling unit is based on a design he patented in 1950.

DOE requested the study to be completed within a three-month period so that the information could be used in a draft environmental impact statement on managing spent nuclear fuel at SRS. As a result, Levenson said he chose to have concluding observations rather than recommendations or conclusions.

The first question focused on treatment option set. Was it complete? Levenson said the conclusion was "yes, but". Although the options DOE is considering are credible, Levenson said two credible options are not being considered. The DOE task force had rejected chloride volatility because it supposedly had not been demonstrated. Levenson said he participated in the demonstration in the 1960s and the process had been successful.

Another credible option Levenson said had not been considered was conventional processing. Levenson said DOE had asked the task team to look at treatment options other reprocessing. Levenson said he chose to make the observation that reprocessing should have been included as a treatment option.

Concerning waste disposal, Levenson there is no scenario of zero risk, although he felt the risk of transporting and storing the material were low, as were the proliferation risks.

Levenson said waste acceptance would not be determined until Yucca Mountain is complete. Packaging and handling the fuel should be the major concern at this point, he said; the storage of fuel in Yucca Mountain is secondary because of the time it will take for Yucca Mountain to start taking spent fuel. Additionally, the waste acceptance criteria is subject to change.

Cost and schedule activities were rated at several levels by Levenson and two consultants known for their long-time work in professional cost estimation. Levenson said the cost estimates were valid, but only for 20% of the total costs. He pointed out that 80% of the costs dealt with handling, shipping and receiving fuel and they were common to the cost estimates of each option.

The schedules developed for the program as well as costs were not accurate according to Levenson and the consultants because decontamination and decommissioning of facilities was not considered when the comparisons were made. Differences in costs to modify a building as opposed to constructing a new building also were not included.

Additionally, Levenson said privatization was a big factor in estimating costs although DOE has never proven effectiveness with privatization. Levenson did say D&D is overlooked because the money for the activities comes from Environmental Management, a different organization within DOE.

In summary, Levenson said his observation was that SRS has no control to determine the fuel shipments and as a result, the entire study is based on a less than realistic view of the future. For example, the present program is based on legacy fuel; fuel from reactors not yet designed or built is not being considered. Levenson said SRS has a need for a phased program to manage the fuel.

Levenson's observation was that SRS should cost activities such as receiving, storing, and handling, reprocessing and dry storing the fuel, rather than just looking at the treatment. He referenced the Highly Enriched Uranium Task force recommendation in which they suggested that the Navy send its spent fuel to SRS to recover the material for weapons. DOE said no because SRS had a 10 year supply of uranium. Levenson said DOE ignored the wording which stated they should send the fuel to the organization which knew how to handle spent nuclear fuel. Levenson said he would not support reprocessing for the indefinite future but he would definitely encourage DOE to expand reprocessing to cover any fuel that could become a safety hazard in the future.

Concerning a question on criticality among SNF, Levenson said he does not see any serious risks with the occurrence of criticality nor serious risks with any aspects of treatment or storage of SNF. He did say storing SNF underground is an order of magnitude safer than storage in wet basins or above ground dry storage.

Concerning waste form criteria, Levenson acknowledged it might still be a while before an acceptable waste form is identified. Levenson said the small amount of material added from reprocessing SNF would not impact the overall disposal program.

For a path forward, Levenson suggests that DOE implement a systems-oriented strategy, specifically to determine a true estimate of the total inventory, particularly near the end of the program. The post-2015 inventory is uncertain and may eventually cost money for taxpayers, Levenson added, unless DOE could accelerate the number of receipts from overseas and begin the stabilization process. The faster the spent fuel is returned to the US, the faster the material is stabilized and readied for permanent disposal, he said.

Additionally, Levenson said DOE should reprocess the SNF as soon as possible, while the canyons are in an operating mode. As he mentioned before, Levenson said some fuel is already labeled for reprocessing

due to health and safety concerns. The approval for processing exists but should be expanded to include the same type of fuel that could deteriorate and cause safety hazards in the future.

Karen Patterson asked about the proliferation issue of reprocessing SNF. Levenson said a proliferation issue does not exist if the highly enriched uranium is diluted to low enriched uranium before it leaves the canyon. Levenson said he does not know of any instance in which someone stole iron ore to make machine guns. He equated the low-enriched uranium to iron ore, pointing out low enriched uranium is not attractive for weapons use.

Levenson further explained that a greater proliferation danger is the potential sale of a complete weapon to a rogue state. As an example, Levenson said Omar Qhadafy has made a statement he would pay \$1 billion for one nuclear weapon. From a rogue nation standpoint, a firing mechanism isn't even necessary, just the fact they have a weapon containing usable materials.

Ray Conaster asked if Levenson's general contention is that there is only a minor concern of proliferation implications dealing with processing of SNF. Levenson agreed. He further stated that consultants addressed nonproliferation in the appendices. Proliferation concerns at SRS do not make sense, Levenson also said, because SRS has a large inventory of weapons-grade material and it is a weapons material secure site.

Charles Washington, Oak Ridge SSAB, asked if Levenson was satisfied with the review of the report by the NAS-assigned experts. Levenson said the report process included two different reviews by a majority of experts, many of which did not have strong positions on any type of technology. He also explained that he was not free to ignore comments of any reviewer and he did not know who had been selected to review the report or who authored the various comments. The NAS committee reviewed all of Levenson's responses to the reviewers' comments.

A question was asked if DOE was allowed to review and respond to the draft report. Levenson said two-way dialogue was conducted during information gathering, but not during any of the remaining report process from writing the report to review of the document. When NAS committee approved the report, copies of the report were sent to congressional committees and to the media.

Levenson said the questions he asked DOE during the report process generally gave them direction on his concerns. Several mid-course actions were taken by DOE to improve the research of SNF treatments.

Patterson asked if Levenson could clarify his position on reprocessing. Levenson said DOE should consider reprocessing, at least while the canyons are operable. Even with doing nothing, there is still no zero release. In addition, because it may take DOE 20 years to gain approval to direct dispose of SNF, reprocessing would be a good stabilization choice for storage.

One audience member asked if Levenson had enough time to publish the report. Levenson said the scope was clearly limited and those questions practical to answer were identified. He did not need more time for the topic; however, more time could have allowed a more indepth look at various issues, such as nonproliferation. On average, an NAS report takes about two years and will be produced by a team of experts.

Concerning a question on costs, Levenson said DOE paid \$300,000 for the report, which basically covered administrative costs and printing. Levenson and all of the reviewers are volunteers.

Trish McCracken asked about Levenson's patents with DOE and if he was a DOE employee. Levenson said he is retired from Bechtel, where he was employed for eight years. Prior to Bechtel, he worked with EPRI.

In conclusion, Levenson said he suggests that DOE look at spent fuel treatment and management with a systems point of view. Levenson said DOE should try to ship as much fuel to SRS as early as possible to avoid uncertainties later. Levenson also suggested that DOE reconsider conclusions from the HEU task force report conducted in 1992.

Costikyan asked if it would be feasible to keep the canyons operating if there is not enough work to justify their operations.

Levenson said it would be less expensive to upgrade buildings rather than to D&D and facility and build a new facility. In the commercial industry for example, power reactors at the end-of-life never have a zero book value. There are many components of a reactor such as piping, which do not deteriorate that comprise the total system costs. Levenson said he does not believe building new processing facilities would be a good use of time or money. Again, he suggested a phased strategy in which DOE would bring back as much SNF as possible before 2015 because SNF treatment is just one component of a larger and long term SNF disposal program.

Evening, 7 – 8:30 p.m.

Costikyan opened the evening session of the SRS CAB NMM subcommittee meeting by stating that he would provide a status of upcoming activities. Following the status, the meeting consisted of informal discussion among Pantex and SRS CAB members.

Costikyan said he attended the public meeting for the Surplus Plutonium draft environmental impact statement on August 13 at the North Augusta Community Center. He said about 1200 people attended, including many politicians who offered outspoken support for all aspects of the disposition activities.

Sidney Blakenship, Pantex SSAB co-chair, said Amarillo had equally enthusiastic support for the plutonium disposition missions, although many of the politicians' support was based on jobs.

Costikyan said the SRS CAB job is not to be economic cheerleaders but the CAB would not be against economic benefit if it were a by-product. Chambers of commerce should be the cheering sections, not the SRS CAB, he emphasized. Costikyan said the SRS CAB supports plutonium disposition work at SRS due to their increasing awareness of the need for DOE site integration and the site's capabilities.

Equity also causes some hesitation on the SRS CAB, Costikyan suggested. Blankship said he feels equity is built into economic benefit.

Blakenship also commented on the SRS CAB recommendation #61 on the surplus plutonium EIS. He said he did not feel the SRS CAB was supporting missions at SRS to be a cheerleader of the site. He said the SRS CAB appeared to support disposition work at SRS as a viable option because SRS has experience in plutonium processes.

Blakenship added he did not think economic benefit should be the driving factor to site pit disassembly operations at Pantex. Blankenship said that as a result of touring SRS, he is more convinced that DOE should chose a location for the missions without binding a site beyond its ability to cope. Blankship did stress he hoped disposition missions would be acceptable to the SSABs in the location DOE chooses.

Costikyan then discussed the Nuclear Regulatory Commission (NRC) oversight pilot project of the Receiving Basin for Offsite Fuels. Costikyan attended a meeting with NRC, DOE and regulatory agencies and he said the most important statement he heard was "NRC methodology is less prescriptive than DOE oversight." Costikyan said NRC regulation of DOE facilities could potentially add another layer of management, involving more time and money if NRC is not allowed total responsibility.

In closing, Costikyan said the SRS SNF draft EIS is expected for release in late October, with the DOE-HQ nonproliferation study planned for release after the EIS is released. Costikyan said the subcommittee has been waiting for over a year for the document. The subcommittee will likely develop a recommendation on both documents for full CAB approval.

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