SRS Citizen's Advisory Board

**SRS Citizens Advisory Board**

# Nuclear Materials Committee

**Aiken Federal Building, Aiken, SC**
**October 27, 2003**

The SRS Citizens Advisory Board (CAB) Nuclear Materials Committee (NMC) met on Monday, October 27, 5:00 PM, at the Aiken Federal Building, Aiken, SC. The purpose of this meeting was to discuss the Safe, Secure Plutonium Storage in 235-F, Receiving Basin for Off-site Fuels (RBOF) Deinventory Status, Spent Fuel Disposition Planning Status, and to receive public comment.

Attendance was as follows:

| **CAB Members** | **Stakeholders** | **DOE/Contractors** |
|---|---|---|
| -Gerald Devitt | Bill McDonell | Kevin Hall, DOE |
| Leon Chavous | Karen Patterson | Alice Doswell, DOE |
| -Perry Holcomb | Russ Messick | Sachiko McAlhany, DOE |
| -Wade Waters | Ernie Chaput | George Mishra, DOE |
| -Bill Willoughby | | Julie Petersen, DOE |
| | | Randall Ponik, DOE |
| | Rick McLeod* | Larry Davis, BWXT |
| | | Craig McMullin, BWXT |
| | | John Dickenson, WSRC |
| | | Bill Bates, WSRC |
| | | David Burke, WSRC |
| | | John Dewes, WSRC |
| | | Mike Low, WSRC |
| | | Tom Cowlam, WSRC |
| | | Janice H. Hearn, WSRC |
| | | Albert N. Holloway, WSRC |
| *CAB Technical Advisor | | Eric Fitzgerald, WSRC |
| -NM committee members | | Rick Sangston, WSRC |
| +Facilitator | | Bill Swift, WSRC |
| ^Press | | Helen Villasor, WSRC |
| | | Teresa Haas, WSRC |
| | | Lyddie Broussard, WSRC |

Jerry Devitt, NMC Chair, welcomed the group at 5:00 PM, requested that each attendee introduce themselves and their affiliation. He announced the evening's topics and introduced Eric Fitzgerald as the first speaker. . He reminded the committee that the first presentation was in response to the committee's request for more information about 235-F in light of the specific concerns identified by the Defense Nuclear Facilities Safety Board (DNFSB) in June 2003.

**Safe, Secure Plutonium Storage in 235-F, Eric Fitzgerald, WSRC, Operations Business Unit**

Mr. Fitzgerald opened his presentation with an overview of the mission history of 235-F. He recapped the purpose of the Actinide Billet Line, Plutonium Experimental Facility, Plutonium Fuel Form Facility and the Material Transfer Room explaining that these functions are no longer in operation. He stated the primary function of 235-F today is for the storage of nuclear materials in the facility's vaults. In addition to 235-F's storage capability, the vaults are also used for shipping, receiving, and repackaging of nuclear materials.

Mr. Fitzgerald explained that the Documented Safety Analysis (DSA) for present operations of 235-F is based on a graded approach and is compliant with the requirements set forth in Part 10 of the Code of Federal Regulations. He further stated that the Safety Analysis Report, Technical Safety Requirements, and Hazard Analysis were revised earlier this year, and the Fire Hazard Analysis is presently under review.

Mr. Fitzgerald characterized 235-F as utilizing a layered approach and detailed the specifics of facility design and equipment that are key to maintaining safety. Mr. Fitzgerald explained how the receipt and shipping program, environmental controls, and requirements for training, repackaging and packaging were important to safe operations in 235-F.

Under the present plans, the deinventory of FB-Line will be supported through the expansion of 235-F's storage capacity. In addition to the additional storage racks, the surveillance capability for 3013 containers will also be added to 235-F as per Mr. Fitzgerald. He explained that the current operations in 235-F are safe and in regulatory compliance, but the proposed mission for expanded storage, surveillance capability, and an extended facility life will require additional analyses to ensure safety controls are fully addressed.

In discussing the traditional nuclear facility safety approach, Mr. Fitzgerald highlighted the primary details from the documented safety analysis. He explained that unlike the K Area Material Storage (KAMS) facility, 235-F takes credit for safety attributes provided by the facility and its equipment. Unlike KAMS where material is maintained only within certified containers, the material in 235-F is controlled in cells, cabinets, certified and non-certified containers.

In regards to the DNFSB concerns, Mr. Fitzgerald provided additional information on each of the specific fire-related issues. In discussing these concerns, he explained that through limited occupancy and reduced combustibles; acceptable controls are in place for the existing mission and to ensure worker protection. A new mission for 235-F will require a new Fire Hazards Analysis (FHA) according to Mr. Fitzgerald.

A second issue was the status of the Nuclear Incident Monitors (NIMs). The current NIM installation meets ANSI standard requirements for the current mission, but further evaluation would be required for any future project to determine the need for additional NIM coverage.

Another issue raised by the DNFSB was the amount of Plutonium 238 hold up in the facility. According to Mr. Fitzgerald, the surface contamination and all readily accessible material has been removed. As a means of gathering more accurate data, a new hold up assay is scheduled.

Mr. Fitzgerald explained that the current numbers are very conservative due to the type of equipment that was used at the time and the calculations that were performed. In summary, Mr. Fitzgerald emphasized that 235-F will continue safe operations and new additional analyses will be conducted as warranted to support new missions.

During the question and answer period, it was explained that while repackaging of materials is an authorized activity in 235-F, if the new mission requires the opening of a 9975 container, that activity would have to first be analyzed for 235-F. When questioned if the safety documentation presently identifies an upper storage limit in terms of source term and form, the committee was told such information was included in the approved documentation. In response to questions about assurances of container content, the committee was provided with the details of the quality control program. A discussion was held on the proposed FY04 budget and security controls for the new mission in 235-F. The timing of the shutdown of FB-Line and the establishment of the surveillance and maintenance project in 235-F was questioned. The committee was told that this would be considered as part of the project integration.

**Receiving Basis for Off-site Fuels (RBOF) Deinventory Status, Albert Holloway, WSRC, Operations Business Unit**

Mr. Holloway began his presentation with an overall description of the RBOF facility. He explained that the cask entry area was where a typical 70–ton cask would be used to transport the actual fuel into and out of RBOF. Once a cask was brought into the facility, the cask was removed from the railcar into the cask basin. An operator, using remote handling tools, removed the cask lid under water. The fuel was then placed into a RBOF storage rack. In preparation for a shipment out of RBOF, the operator would load fuel into the cask, and then place a lid on the cask. These operations were also performed remotely under water. The cask was then removed from the cask basin, decontaminated to shipping limits, and placed on a railcar for shipment.

The combined capability of the two RBOF basins is approximately 9000 fuel elements. Over its history, Mr. Holloway explained that RBOF handled many different types of fuel elements. Upon receipt, these elements were stored until it was time to repackage the elements and ship them to other facilities for final processing.

The fuel elements stored in RBOF included domestic and foreign fuel types. As a result, there were many different shapes and types of fuel elements, each with its own challenges. The primary technical challenge was to find the most efficient way to safely move each of the different types of fuel. The operators were sometimes called upon to modify the outer shell of the fuel element for packaging. Each element was then repackaged into a suitable bundle, and loaded it into a robust cask for shipment across the site when it was time for processing.

According to Mr. Holloway, original plans called for all the fuel to be moved from RBOF no later than September 2007, with a goal of completing the move in 2006. In 2002, the site adopted accelerated cleanup targets, and by utilizing lessons learned from prior shipments, the team felt confident that a September 2004 was achievable. At this time, there is only one fuel element left which is expected to be moved very soon. This will result in completing the RBOF deinventory nearly a year ahead of the most recent accelerated schedule.

During the question and answer period, Mr. Holloway answered questions related to the innovations developed for fuel handling. He also explained that all of the fuel once stored in RBOF has now been moved to the site's canyon facilities for processing or to the storage basin in L Area. The committee was told that the fuel receipt program is still ongoing and future shipments would go directly to L-Area basin.

**Spent Fuel Disposition Planning Status, Randall Ponik, US-DOE, Spent Fuel**
Upon his introduction, Randall Ponik reminded the committee that until approximately 18 months ago, SRS had been pursuing an option for processing spent nuclear fuel (SNF) in a treatment facility known as Melt and Dilute. The intent of the treatment was to prepare the spent fuel for disposal in Yucca Mountain. The Melt and Dilute program was halted in response to the Environmental Management Reform Initiative.

In an effort to control cost and accelerate clean up throughout the DOE Complex, an assessment of the DOE-Managed Spent Nuclear Fuel (SNF) Program was included as part of the Assistant Secretary's top to bottom review of Environmental Management (EM) activities. The Melt and Dilute project was halted in lieu of the results of independent assessments that concluded that there was a potential for cost savings and schedule acceleration if the related SNF activities at DOE sites were consolidated into a national strategy.

Mr. Ponik stated that he was a member of a DOE team that is now undergoing a review to develop an integrated plan for the disposition of SNF throughout the DOE Complex. It is their hope to develop an integrated national program for DOE activities that focuses on risk reduction and optimization of activities related to the disposition of SNF. The team's focus included the coordination of all activities related to SNF including characterization, stabilization, transportation, as well as interim and long-term storage.

The project team is presently considering four potential disposition technologies. The technologies include three that have been analyzed in the existing Environmental Impact Statement (EIS) but a fourth option, which is known as "ship as is" to the repository is also under consideration. Mr. Ponik explained that while the Melt and Dilute, direct disposal and conventional processing could be pursued with an amended Record of Decision, the "ship as is" option would require further analysis with an EIS.

Another issue that the project team has considered was the planned fuel swap between Idaho and SRS. A primary driver for this swap was the optimization of fuel types for the Melt and Dilute process. With the re-evaluation of this process and the perceived concerns related to nuclear materials shipments in light of "September 11$^{th}$", it is very possible that this swap will not take place once the final decisions are made.

According to Mr. Ponik, the foreign research fuel receipt program is scheduled to conclude in 2009. The domestic fuel receipt program is scheduled to continue until 2035 but that may occur earlier.

While no decisions have been made at this time, a recommendation from the Assistant Secretary of EM is expected in the near future.

During the question and answer period, Mr. Ponik explained that the "ship as is" option is to take the fuel elements from the basin, place it in a shipping cask, and send it to Yucca Mountain and have the repository package it as needed to place it in storage. This is different from the direct disposal option that requires the fuel element to be dried once it was removed from the basin and placed into a standardized canister with appropriate poisons that allows Yucca Mountain to accept it and place it in a waste package without any other action. Concerns about the timing of shipments to Yucca Mountain were raised by the committee.

In response to questions about co-disposal, Mr. Ponik explained that a waste package going into Yucca Mountain would hold five logs from the Defense Waste Processing Facility (DWPF). The void created by the logs in the center of the waste package will be filled with a spent fuel canister; thus the fuel is co-disposed. Criticality and fuel degradation concerns were discussed and Mr. Ponik told the committee that the Nuclear Regulatory Commission had reviewed relevant technical issues during SRS' development of direct disposal and melt and dilute technologies and indicated that, at that time, there was nothing to disqualify either technology as suitable-for safe storage at Yucca Mountain.

**Public Comment**
Mr. Devitt asked the committee to consider if any potential recommendations should be driven by any of the evening's presentation and to let him know.

At the request for any other public comment, Bill Willoughby questioned a news article that he read about plutonium shipped from Charleston and asked if it would be processed at SRS. He was told that this was not an EM program but all waste generated from any other DOE program at SRS was part of the waste forecast.

Mr. Devitt asked for any other public comment and with none, he then adjourned the meeting at 6:20 PM.

***For additional information or meeting handouts, call 1-800-249-8155.***

**Follow-Up Actions**
NM committee to determine if any recommendations are warranted from this meeting's presentations. (Responsible Person: Jerry Devitt)