SRS Citizen's Advisory Board

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Strategic and Legacy Management Committee
Risk Based End State Workshop Meeting Summaries

North Augusta Community Center, N. Augusta, SC
April 13, 2004

The Citizens Advisory Board (CAB) Strategic and Legacy Management (SLM) Committee held a workshop on April 13, 8:30 a.m., at the North Augusta Community Center, N. Augusta, SC. The purpose of the workshop was to receive information and give comments on the draft Risk Based End State (RBES) Vision Document and hear public comment. Those in attendance were:

CAB Members
William Lawrence*
Bill Vogele*
Wendell Lyon*
Meryl Alalof
Jean Sulc
Darryl Nettles
Bill Willoughby
Perry Holcomb
Bill Lawless
Jerry Devitt
Murray Riley
Leon Chavous

Stakeholders
Lee Poe
Mike French
Ernie Chaput
Steve Conner

Regulators
Dawn Taylor, EPA

DOE/Contractors
Charlie Anderson, DOE
Alice Doswell, DOE
Kevin Smith, DOE
Roger Rollins, DOE
Doug Hintze, DOE
Sachiko McAlhany, DOE
Helen Belencan, DOE
Tony Polk, DOE
Virginia Kay, DOE
Gerri Flemming, DOE
George Mishra, DOE
Teresa Haas, WSRC
Paul Huber, BSRI
Bruce Schappell, WSRC
Mary Flora, WSRC
Joe Carter, WSRC
Michael Chandler, WSRC
Joe D'Amelio, WSRC
Jim Cook, WSRC
Mike Serrato, WSRC
Mike Nelson, WSRC
Michele Wilson, WSRC
Crag Martin, WSRC
Carl Strojan, SREL
Dwain McMullin, WSRC
Kelly Way, WSRC
Jim Moore, WSRC

*Members of the SI Committee
** Carolyne Williams, Jennifer Barrington, Mel Galin, Harold Rahn, and Gloria Williams-Way, members of the SLM Committee were unable to attend.

William Lawrence, SLM Chair, welcomed those in attendance. Mr. Lawrence introduced the facilitator, Dwain McMullin.

Dwain McMullin, WSRC facilitator, explained the objective of the meeting and reviewed some general ground rules. He explained that copies of the RBES are available on CD and the web site. Comments should be sent to Jim Moore, 742A, Room 182, Savannah River Site (SRS), Aiken, SC, 29808, or to the e-mail address: jim02.moore@srs.gov. The public comment period will end on May 21.

Meeting Purpose and Desired Outcome: Tony Polk, DOE Soils and Groundwater Project Director, explained that the purpose of the meeting was to discuss the draft SRS RBES Vision that was issued March 30, 2004, and receive public input. The purpose of the document is to clearly define the end state at SRS for hazards, missions and land use when the SRS Environmental Management (EM) Cleanup Project is complete in 2025. Mr. Polk reviewed the background of the Vision document.

The RBES begins with the end in mind to improve the cleanup process and effectiveness by focusing on clearly articulated, technically defensible and achievable goals. The RBES is not a decision document nor does it signal shortcuts around any current law or regulation. It is an opportunity to identify technical, regulatory and political barriers to achieving the end states and clarify the Site vision at the end of the cleanup effort.

The SRS hazards can be summarized in five major categories: Nuclear Materials, Radiological Waste, Non-Radiological Waste, Inactive Waste Units and EM Facilities. Some assumptions considered when developing this Vision document are that SRS land will be federally owned, controlled and maintained in perpetuity as established by Congress, the EM Cleanup project and mission will be complete by 2025, and will be consistent with SRS Future Land Use.

Variances, defined as significantly different cleanup approaches or different end state relative to the original August 2002 SRS EM Performance Management Plan (PMP), were reviewed. Those variances included Future Land Use and Exposure scenario modifications, area risk methodology and protocols to be used, alternate disposal for Plutonium (Pu)-238 contaminated waste, in situ decommissioning in lieu of demolition, and revise "glass durability" Waste Acceptance Criteria (WAC) for the high level waste federal repository.

Environmental Management Cleanup Project Overview: Charlie Anderson, DOE Deputy Manager for Cleanup, explained that in order to accelerate cleanup, the site has been making more dollars available for cleanup by reducing overhead and relocating activities to the central core area.

The scope of work will include taking materials and waste to disposition, facilities to decontamination and decommissioning, Areas to closure and other EM mission support. The

estimated cost is $17.9 billion with EM work complete by 2025. This scope of work is divided by EM Project Baseline Summaries (PBSs).

The material to disposition is the Pu, Uranium and Spent Nuclear Fuel (SNF). The waste to disposition includes all the high-level waste (HLW), salt waste, hazardous waste (HW), low-level waste (LLW), transuranic (TRU) waste, mixed waste (MLLW) and other solid waste. There are a total of 1, 013 facilities involved. The areas to closure have 306 areas already complete, 50 in remediation and 159 awaiting remediation. Other EM mission support includes infrastructure, safeguards and security, emergency management activities, geological surveys and natural resources management. This scope of work is included in the performance measure Gold Metrics. The scope of work not included in the PMP is the National Nuclear Security Administration (NNSA), reimbursable programs/Work for Others, and the Office of Science Savannah River Ecology Lab. Mr. Anderson reviewed the activities in each of the areas.

Nuclear Materials and Spent Nuclear Fuel: Sachiko McAlhany, DOE Nuclear Materials Stabilization Projects, explained that there was not a detailed discussion of nuclear materials in the RBES document since this is an end state document. The plutonium is planned to be packaged in DOE 3013 containers or equivalent with the target of completion by the end of 2006. The enriched uranium will be packaged in H Area and moved to the Tennessee Valley Authority with completion planned by the end of 2007. The plutonium and uranium residues are being packaged in HB Line with expected work complete by 2006. The depleted uranium and uranium will be packaged for disposition in F and M-Areas and shipped off-site by 2009. The SNF work was performed in the Receiving Basin for Offsite Fuels and in L Basin and H Canyon.

For the end state, nuclear materials will be dispositioned and facilities will be deactivated and decommissioned (D&D) by 2025. The main risk is having the complete disposition of the materials to support the facility closure. For SNF, the risk is the acceptance at the Federal Repository.

Risk Informed Decisions for Soil and Groundwater Closure Projects: Bruce Schappell, Manager, Reactor Areas Soil and Groundwater Closure Projects (SGCP), Bechtel Savannah River, Inc., explained that the SGCP consider future land use plans when assessing risk and evaluating remedial alternatives. The Tri-Party Core Team decisions are made with consideration of the end state of the Operable Units (OUs) and Integrator Operable Unit (IOUs).

For the risk evaluations, conceptual models are developed in which the baseline risk is calculated. The land use and end state assumptions are defined and the various scenarios are evaluated. The scenarios evaluated are on human health, ecological risk and groundwater assessments. The human risk scenarios include the on-unit worker, future industrial worker, future resident and trespasser. The alternative analysis is then given in the Corrective Measure Study/Feasibility Study. Based on the alternatives, the Core Team determines the clean-up decision.

The SGCP incorporates Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

requirements to perform a comprehensive analysis of risk to potential current and future receptors. The anticipated end states of the OUs form a basis for establishing remedial goals.

Soils and Groundwater Remediation Project: Tony Polk, DOE Soils and Groundwater Project Director, explained that by 2025, all the residual hazards related to soil and groundwater will be cleaned up. The waste units are concentrated at the core of the site. Remediation is complete on 300 units out of 515 as of the beginning of fiscal year 2004. Of the 215 waste units to complete, one third are high risk units, one third are medium risk and one third are low risk units.

Risk factors in the SGCP include toxicity hazard and extent of contamination, migration and mobility of contaminants, similarities of source term, geographic location, proximity to operating facilities and the site boundary, future land use and regulatory commitments and expectations. Remedial actions are considered for any human health risks within a range of 10^{-4} to 10^{-6} and are required for risks greater than 10^{-4}.

In order to achieve overall project completion, SGCP is working with its Regulator Core Team to deploy low cost technologies and natural remedies, expand approaches that streamline regulatory documents and negotiate in-place waste stabilization whenever possible. These environmental restoration activities are being sequenced with decommissioning activities to support objectives of closing whole areas of SRS earlier and deleting them from the National Priorities List (NPL).

SGCP related variances to the RBES include future land use and exposure scenario modifications and area risk methodology and protocols. This includes an integrated risk assessment that includes environmental media and EM facilities.

Facilities Deactivation and Decommissioning: Helen Belencan, DOE D&D Project Manager, reviewed the current D&D contract target scope of 112 facilities primarily in the T, M, D and F-areas and the maximum scope that includes 113 additional facilities in other areas for fiscal year 2004 through 2006. The D&D end states include in-situ disposal and demolition. The lifecycle scope of D&D facilities totals 1013 units to D&D. As of March 31, 2004, 65 facilities have been completed with 948 left to go.

Three factors affect the facility risk ranking and sequencing decisions. They are environmental, safety and health risk, programmatic risk and economics. Environmental, safety and health risk include the cumulative radiological and chemical source terms, the proximity to the site boundaries and facility conditions. The programmatic risk includes the complexity, characterization and integration with SGCP to achieve area closure. These are then balanced against the economics to do the cleanup.

The revised Performance Management Plan (PMP) end state vision assumes that the SRS will remain Federal property with a central core area surrounded by an environmental buffer zone. In 2025, the remaining facilities outside of the central core will be turned over for National Security mission related operations or decommissioned.

Risk Informed Decisions at the Savannah River Site Low-Level Waste Disposition: Jim Cook, WSRC Savannah River Technology Center, spoke in place of Elmer Wilhite. Mr. Cook

explained his purpose was to illustrate how risk informed decisions are made to allow safe and cost-effective disposal of radioactive wastes managed by DOE. In addition, to present the application of DOE Order 435.1 process and basis for DOE regulation as applied to LLW management at SRS, including LLW arising from accelerated cleanup.

DOE Order 435.1 is the formalized regulation of LLW disposal. A Performance Assessment (PA) and Composite Analysis (CA) are reviewed by DOE personnel and approved by the DOE Deputy Assistant Secretary. A Disposal Authorization Statement (DAS) is essentially a license. The DAS requires an approved PA and CA with resolution of approval conditions and maintenance, monitoring and closure plans. The maintenance of the PA and CA include evaluating changes that could affect the performance, design, or operating bases for the facility. This includes research, field studies and monitoring. If necessary, the PA/CA is revised. There is an annual determination of the continued adequacy of the PA/CA with comparisons of LLW disposal operations versus the PA/CA.

A PA is an analysis of a radioactive waste disposal facility conducted to demonstrate there is a reasonable expectation that performance objectives established for the long-term protection of the public and the environment will not be exceeded following closure of the facility.

A CA is an analysis that accounts for all sources of radioactive material that may contribute to the long-term dose projected to a hypothetical member of the public from an active or planned low-level waste disposal facility. The analysis is a planning tool intended to provide a reasonable expectation that current low-level waste disposal activities will not result in the need for future corrective or remedial actions to ensure protection of the public and the environment.

Mr. Cook reviewed the performance measures included in a PA and CA. He explained the PA results are used to establish radionuclide disposal limits used as WAC to regulate waste acceptance. Proposed waste disposal actions go through a screening process to test whether they are bounded by the PA and the CA. Actions not clearly bounded go through an Unreviewed Disposal Questions (UDQ) evaluation. If the UDQ evaluation concludes that the action is not bounded by the PA or CA and new PA limits or CA analysis are needed, a Special Analysis must be done. PA/CA revisions are scheduled periodically. Some decisions made using PA/CA are the LLW with high Iodine-129 that was sent to the Nevada Test Site for disposal because the SRS PA did not permit disposal of such waste at SRS and a high volume of low activity LLW was dispositioned from the vaults to trenches saving $63 million. A CA validated decisions on HLW tank closure and Old Burial Grounds closure.

Savannah River Site High Level Waste Disposition: Joe Carter, WSRC Closure Business Unit, reviewed the HLW system mission and gave a summary of the total inventories and the approved SRS HLW disposition paths. He indicated that the HLW was the highest risk material on site.

The currently approved HLW program end states are that the insoluble sludge will be washed and converted to borosilicate glass while the soluble waste will be processed in In-Tank Precipitation or full-scale Salt Waste Processing Facility (SWPF). The tanks will be closed by waste removal and grouted in place. The Defense Waste Processing Facility (DWPF) will be

closed. This process is slow in that the canisters from DWPF will continue to be shipped to Yucca Mountain until fiscal year 2040. The cost of the plan is expensive with the estimated cost of a full-scale SWPF at greater than $1,500 million and the cost per year of the HLW operating system at $300 million/year.

The accelerated HLW cleanup plan empties the "higher risk" HLW tanks sooner (by 2010), stabilizes the liquid waste sooner (7 years sooner) and readies HLW glass for shipment to the National Repository sooner (20 years sooner). The estimated cost savings are $7,100 million while meeting all environmental standards, policies and regulations. The proposed change in the salt treatment is the key to the acceleration. The change in the proposed end state is that the soluble waste will be processed using the tailored salt treatment strategy. The saltstone approach is technically and environmentally sound. The Nuclear Regulatory Commission Class C limits will be met, the same as Barnwell, groundwater is protected to drinking water standards, and the hypothetical intruder receives less than one-third background radiation dose.

There are two main challenges to the success of the HLW accelerated cleanup plan. The need for South Carolina policy decisions and the Natural Resources Defense Council (NRDC) lawsuit challenging DOE's process to declare decontaminated material non-HLW, sometimes referred to as the Waste Incidental to Reprocessing (WIR) lawsuit. South Carolina would need to allow an increase in the total radioactivity disposed at Saltstone and the long-term stewardship of "low-risk" waste form (solid waste versus liquid waste). SRS is working with the stakeholders to develop alternative disposition strategies which achieve the accelerated schedules, the majority of the cost savings, and to maximize the total radioactivity disposed at Yucca Mountain.

Transuranic Waste Program: Joe D'Amelio, WSRC, reviewed the past generation, amount of inventory and waste characteristics of TRU waste. The new SRS contract challenges the disposition of TRU waste by 2006 (previously 2034) and the savings of approximately $2,000 million. The challenge will be the disposal of Pu-238. Pu-238 is approximately 500 times more difficult to contain than Pu-239 and has a high dispersibility. It is approximately 280 times more radioactive than Pu-239 and there are 10 times more incidents of worker exposure when processing 10 times less material.

In addition to the challenges of disposing of Pu-238, the site is working with DOE-Carlsbad Field Office in developing a TRUPACT III container to handle the non-drummed waste. The purpose of this package is to minimize repackaging and size reduction. Characterization equipment needs to be developed. In addition, there is concern about preparing the TRU material before the Waste Isolation Pilot Plant (WIPP) WAC and Waste Analysis Plan modification are resolved.

The site is currently shipping about 24 shipments per month of drummed TRU waste to WIPP. This should be complete by 2006. The site is working on shipping the non-drummed waste to WIPP as soon as the issues and technology are resolved.

Risk Based End State Variances for Savannah River: Tony Polk, DOE Soils and Groundwater Project Director, reviewed the RBES variances from past plans. The variances are the future land use and exposure scenario modification, the Area risk methodology and

protocols, alternate disposal for Pu-238 contaminated waste, in situ decommissioning in lieu of demolition and the revision of the "glass durability" WAC for the HLW Federal Repository.

After this discussion, Mr. Polk opened the floor for additional comments on the RBES Vision Document.

Public Comment: Mr. Lawrence thanked everyone for attending, and with no public comments, the meeting was adjourned.

Public Comments and Questions on the RBES Document:

During the discussions, individuals made comments and asked questions related to the RBES document. The following are the public comments and questions recorded on the flip-chart:

- In DOE Order 435.1, risk is not defined. It should be defined in the RBES. – Perry Holcomb
- Is "in perpetuity" a DOE-Headquarters (HQ) guidance? – Ernie Chaput
- Are all the DOE sites creating RBES documents? – Mike French
- The RBES should consider risk perceptions by the public. – Bill Lawless
- Variances in the RBES need more understanding, e.g., Are alternatives to disposing of salt included? – Lee Poe
- How do you deal with alternative uses of SRS? New missions? How are these put into the document? – Ernie Chaput
- Does the RBES consider the ecology impact during remediation? This needs to go into the policy portion of the document. – Bill Willoughby
- Will the Deactivation and Decommissioning (D&D) of the Mixed Oxide Fuel Fabrication Facility (MFFF) and the Pit Disassembly and Conversion Facility (PDCF) be covered in Environmental Management (EM)? – Lee Poe
- The Spent Nuclear Fuel (SNF) disposition, will SNF go to the federal repository and will it be gone from SRS by 2025? -
- How do you identify facilities needed for future missions? Is there a DOE-wide review? Can a contingency list be set up for these? – Ernie Chaput
- With budget holdbacks (e.g., High-Level Waste (HLW)), how does the site keep talented people? – Bill Lawless
- How will the site take care of nuclear material in the nooks and crannies in the facilities? – Bill Willoughby
- Spent Nuclear Fuel – Has the site put any in dry casks for shipment yet? Will this be done for just-in-time shipments? – Lee Poe
- Will 235-F be available for storage of material from Hanford? Suggestion – Change K-Area and 235-F to "interim" storage facilities? – Perry Holcomb
- Does the site have approval to send material to Yucca Mountain, e.g., spent fuel, aluminum clad fuel? What is the schedule for acceptance? What are the options for moving Plutonium (Pu) offsite? – Ernie Chaput
- Referencing Bruce Schappell’s presentation – Does the alternative analysis include effects on ecology?

- For the risk evaluation scenario's, the trespasser and future resident are not included in the RBES strategy. They should not be included in the evaluations either. – Lee Poe
- What is the value of public comments? Has anything ever changed due to public comments? – Lee Poe
- How do you show the RBES process has an impact on regulator acceptance? Has it made a difference? – Lee Poe
- When looking at assessments, etc., do you consider the baseline of the National Environmental Research Park (NERP) and is the Savannah River Ecology Lab (SREL) part of the process? – Ernie Chaput
- The site needs to do a very good job of explaining the RBES to the public. – Lee Poe
- Can the site delete the 'resident' scenario for consideration? It is misleading to the public. In the RBES the site should explain how we use this scenario and why. – Lee Poe
- What is the status of the plug-in Record of Decision (ROD)? What can be done to speed up the process and/or reduce the paperwork? – Bill Lawless
- What is the status and plans for the use of mixing zones? – Bill Lawless
- What is the process for de-listing from the National Priority List? – Lee Poe
- How does the SRS compare with other sites in the remediation of the waste units? – Bill Lawless
- What is the time frame for remediation of the 69 "high" risk sites? – Bill Lawless
- How do you address non-carcinogenic risks, e.g., VOC, etc.?
- On Page 5 of the Soil and Groundwater presentation, what does "inaccessible" mean? – Bill Willoughby
- Is there any agreement from NNSA to pick up ownership of site facilities? – Ernie Chaput
- Will SRS submit more information to the State Historic Preservation Office (SHPO)? – Lee Poe
- What is the schedule for information to go to SHPO on the D&D'ed buildings of historical significance? Is the material that goes to SHPO available to the public? – Lee Poe
- What is the process for handling artifacts? – Lee Poe
- Is there a role at SRS for the Office of Legacy Management? – Carl Strogan
- How do we get facilities for potential future missions on the list for consideration to be saved from D&D? – Ernie Chaput
- Is there a vulnerability of security overlap when considering D&D'ing facilities? – Jean Sulc
- What happens when NNSA, etc., takes ownership of a facility, is it immediate? – Perry Holcomb
- Detailed budget numbers should be put in the PMP and RBES Report to see the potential impact of budget cuts. – Mike French
- There needs to be an early evaluation (cost and alternatives) of facilities scheduled for in situ end state to verify that in situ makes sense. – Lee Poe
- DOE should consider NRC's work on how to decommission facilities. – Bill Willoughby
- In relation to the Composite Analysis and in order to make risk informed decisions, what is the inventory in the HLW tanks? Canyons? The 100 Area? – Lee Poe
- It should be clarified in the report that the analysis is on dose limits and not necessarily risk. – Bill Willoughby

- In relation to HLW and the WIR, the site needs to get the alternative plan to the CAB and WM Committee as quickly as possible. – Bill Willoughby
- What is the alternative path to the WIR lawsuit? – Bill Lawless
- What is the volume of HLW generated annually? – Perry Holcomb
- Is the site still reevaluating non-compliant items for WIPP? – Bill Willoughby
- At one time there was talk about the definition of TRU waste being revised, is that still being considered? – Bill Willoughby
- What was the role of the regulators in the creation of the RBES document? – William Lawrence

Action Item:

- Public comments received at the meeting will be placed in the public comment matrix. – Jim Moore