S.C. Governor's Nuclear Advisory Council
Report on US-DOE SRS EM Top-To-Bottom Review

December 20, 2002

At its October 16, 2002, quarterly meeting, the SC Governor's Nuclear Advisory Council received a briefing on the US Department of Energy's Top-To-Bottom Review of Environmental Management programs at US-DOE weapons complex facilities. DOE and contractor staff from Savannah River Site presented the results of recent review of plans for final disposition of high level waste at SRS. Among the objectives stated by DOE for this review process was to reduce long-term EM costs for the Site by expediting clean-up activities.

Representatives of the SC Department of Health and Environmental Control then briefed the Council on a lawsuit that has been filed in U.S. District Court in the District of Idaho in response to proposed changes in the EM plans for DOE's Idaho National Engineering Lab (INEL) facility that resulted from the Top-To-Bottom review of that site. DOE's motion to dismiss the lawsuit was denied, and the case is now being heard by the District Court. Since the EM issues addressed in the Idaho lawsuit are similar to the EM issues that will affect the future of SRS, SC-DHEC has joined the Idaho lawsuit at *amicus curiae* (friend of the court).

Following discussion by the Council, the Chair appointed a subcommittee of members who had earlier reviewed the Final Supplemental EIS on Salt Processing Alternatives (DOE/EIS-0082-52, June 2001) to examine the issues raised in the briefing in more detail and to report back to the chair of the Council within 30 days. The sub-committee consisted of Dr. Carolyn Hudson, Dr. Vince Van Brunt, and Ben C. Rusche as chair.

Members of the subcommittee reviewed numerous documents listed in the attached reference list and met with DOE-SRS and SC-DHEC staff. Based on this review, the subcommittee concludes that US-DOE has been moving steadily toward the approach of disposing of a much larger fraction of fission product waste (mostly Cs137) at SRS and two other former weapons material production sites, Hanford (Washington) and INEL, than the Department had previously indicated.

Over the last 2 years the Department has been evaluating ways to reduce costs and expedite cleanup and closure of facilities no longer required for production or waste treatment. The approval of the "Radioactive Waste Management Manual" (DOE Order 435.1, July 9, 1999) directed sites such as SRS to seek ways to accelerate closure of unused facilities and to expedite placing wastes remaining on site into the final processing steps or disposition to increase safety and environmental protection and reduce costs. Based on Order 435.1, DOE and its contractors have established a category of materials called

“incidental wastes” or “waste incidental to reprocessing” (WIR) and are proposing to reclassify high level radioactive waste into this category of materials after on-site processing.

The Idaho lawsuit is challenging the legality of Order 435.1 as a violation of the Nuclear Waste Policy Act of 1982 (NWPA) and the Administrative Procedures Act because the reclassification of materials would allow DOE to exempt high level waste from the stringent provisions found in the NWPA. The lawsuit alleges that “incidental waste” as it is defined by Order 435.1 is high level waste and that, absent a presidential directive to the contrary, the NWPA mandates that all high level radioactive waste must be disposed of in the geologic repository established by the NWPA. If Order 435.1 and its proposed application by DOE is sustained, then the Department would be allowed to store permanently high level waste that has been reclassified as “incidental waste” in concrete storage tanks at SRS and the other two sites rather than in the geologic repository as required by NWPA.

The application of the DOE approach has the potential of “procedurally” converting up to 200 MCi of Cs137 in the supernatant in storage tanks to “incidental waste” and storing some or perhaps a large fraction of the Cs137 curies in the SRS saltstone or similar facilities rather than disposing of them in the repository at Yucca Mountain. These wastes have been stored at SRS under active management and monitoring for up to 40 years.

The Defense Waste Processing Facility (DWPF) is currently vitrifying the sludge wastes from the storage tanks at SRS and storing the vitrified waste forms on site awaiting opening of the repository. The sludge wastes are mostly strontium wastes Sr90, primarily a beta emitter with a distinctly less hazard potential than the Cs137 that is a 0.5 Mev gamma emitter. Indeed, it could be argued that the vitrified waste forms without Cs137 may not be a self-protecting waste form which is a criterion for the repository.

The subcommittee believes that the objective of expediting the treatment of the high level wastes based on the provisions of DOE Manual Order 435.1 could result in waste management and disposal actions that are contrary to the requirements of the Atomic Energy Act (AEA), the NWPA, and 10CFR60 provisions that define high level waste as: (1) irradiated reactor fuel; (2) liquid waste resulting from the first cycle solvent extraction system or equivalent and the concentrated wastes from subsequent extraction cycles or equivalent; (3) solids into which such liquid wastes have been converted. Order 435.1 appears to suggest, if not direct, DOE and its contractors to ignore these provisions from the NWPA; the same NWPA definition which is used appropriately in the NRC regulations contained in 10CFR60.

For South Carolina the primary consideration is disposition of the high level waste (primarily Cs137 and Strontium). For perspective, the total inventory of Cs137 and Sr90 in the high level waste at SRS is about 400 mega curies split about 50-50. Sr90 is beta emitter, thus exposure comes from contact; Cs137

exposure is from 0.5 Mev gamma. The SRS planning document anticipates with the Order 435.1 approach that almost all of Sr90 would go to the repository. For Cs137, the previous DOE strategy would have removed and sent more than 99% of the Cs137 Mci to the repository. The newly proposed approach would dispose of about 20 Mci of Cs137 in saltstone at SRS with 180 Mci going to DWPF and then the repository. Further it has been suggested that DOE may consider putting up to 200 Mci in saltstone.

The subcommittee believes that Order 435.1 is an appropriate approach for dealing with the very limited "heels" of supernatant waste that will remain in the waste tanks and can be processed under Order 435.1 and left in grout when the tanks are permanently closed. In this situation the Order 435.1 process for reclassifying the very limited residuals as low level waste makes sense and is safe and economic. What is of concern is the prospect that the more offensive of the two major fission products, Cs137, would be permanently stored in grout on site while the less hazardous Sr90 is sent to the repository. This approach seems to turn logic and rationality on its head. The subcommittee recommends that South Carolina state that while the original approach putting 5000 Ci of Cs137 in saltstone is appropriate, 20 or more Mci is highly questionable.

With this background the NAC should intensify its interactions with SRS and DHEC urging DOE to follow the NWPA and prepare the high level waste for disposal in the geologic repository. SC-DHEC's filing as a friend of the court in the Idaho lawsuit is to be commended and supported. Close monitoring and cooperation with DOE-SRS in connection with the DOE-EM activity should be pursued to develop a strategy that will provide adequate protection on and off site for very limited residual high level wastes that may be appropriate for long storage or disposition on-site (e.g. "heels" in tanks and processing vessels). Without compromising safety, the state should work to ensure that SRS, as the likely National Nuclear Security Administration site, continues to be a major asset for the state and the nation for years to come.

References and Documents

1. SRS Salt Processing Alternatives (FEIS) June 2001 DOE/EIS-0082-S2

2. Natural Resources Defense Council Inc. and others vs. Spencer Abraham, Secretary, USDOE, Case No. CV-01-413-S-BLW, Memorandum Decision and Order in U.S. District Court for District of Idaho, August 09, 2002

3. a. Radioactive Waste Manual, US DOE, DOE-435.1-1 approved 7-09-99, change 1:6-19-01
   b. Implementation Guide for use with DOE M 435.1-1, Chapter 1, General Responsibilities and Requirements.

4. Collection of NRC Documents related to SRS Tank Waste
   - Classification of Savannah River Residual Tank Waste as Incidental, William Travers, EDO to Commission Dec. 15, 2000.
   - NRC Voting Record, Classification of SRS Residual Tank Wastes, Secy 99-284 May 30, 2000.

5. Summary of Public Comments on DOE Order 435.1, Radioactive Waste Management, US DOE,

Office of Environmental Management 7-12-1999

6. US DOE Record of Decision: SRS Salt Processing Alternatives, Oct. 17, 2000, Federal Register Vol. 66, No. 201, Page 52752, 52756

7.
   - WSRC, Waste Incidental to Reprocessing (WIR) Evaluation with attachments, To: Keith Collingsworth, Federal Facility Liaison, DHEC from J.V. Odum, WSRC, March 25, 2002
   - USDOE û SR, Waste Incidental to Reprocessing, Charles Anderson, DOE-SR to Greg Rudy, Manager DOE-SR, March 8, 2002.
   - Waste Incidental to Reprocessing Evaluation for Disposing Salt Cake to Salt Stone, Feb., 2002 Multiple Authors.

8. Record of Decision for SR High Level Tank Closure EIS. Mark W. Frei DOE, EM, to Acting Asst. Sec. for Project Conclusion, July 22, 2002

9. Draft, Proposed Letter for Governor Hodges, unpublished from NAC, Aug. 3, 2001

10. Letter to Secretary of Energy Spencer Abraham from Governor Jim Hodges on NRDC vs. DOE, CV-01-413-S-BLW (US District Court of Idaho)

11. E-mail John Stucker, chair NAC to Ben Rusche, member NAC, regarding meeting with Governor Hodges Staff

12. E-mail note from DHEC to NAC committee chair, Ben Rusche suggesting appropriate language to refer to NRDC/IDAHO lawsuit, 11-02-2002

13. Undated abstract from DOE related to Salt Waste Initiatives

14.
   - 10CFR60 Disposal of High Level Radioactive Waste in Geologic Repositories
   - 10CFR61 Licensing Requirements for Land Disposal of Radioactive Waste Chapter 10, CFR, Jan. 1, 1993

15. Public Law 97-425, Jan. 7, 1983, “Nuclear Waste Policy Act”

16. Environmental Management Program Performance Management Plan, WSRC-RP-2002-00245, Rev. 6, 8-07-02