



Blue Ribbon Commission

Augusta, Georgia

January 7, 2010

Tom Clements

SE Nuclear Campaign Coordinator

Friends of the Earth

Columbia, South Carolina

tomclements329@cs.com, 803-834-3084

Good afternoon and thank you for the opportunity to speak before the Blue Ribbon Commission.

My name is Tom Clements and I'm from Savannah, Georgia and currently live in Columbia, South Carolina. Early in my life I lived across the river from the Savannah River Site in Waynesboro, Georgia, so I am quite familiar with the Savannah River Site (SRS) and the area. I have been active on DOE and SRS issues from a public interest perspective for over 30 years, becoming first involved when I realized that the Barnwell, S.C. site had been proposed for a reprocessing plant in the mid-1970s.

I am currently the Southeastern Nuclear Campaign Coordinator for the environmental organization Friends of the Earth, based in Washington, and in the past have worked for the U.S. Forest Service, the U.S. office of Surface Mining, the Greenpeace International nuclear campaign and was the director of the Nuclear Control institute in Washington.

We can all agree that the management of high-level nuclear waste (HLW) is a problem that needs to be addressed and that the work of the Blue Ribbon Commission (BRC) is important to the country and especially to states which have nuclear power plants or Department of Energy facilities such as SRS. Thank you for your service towards addressing the nuclear waste problem.

Nuclear Issues in Georgia, South Carolina, at SRS

As you know, Georgia has four operating nuclear power plants, South Carolina has seven operating reactors and SRS currently has over 36 million gallons of high-level nuclear waste, over 3000 vitrified high-level waste canisters now in storage and about 12,000 research reactor

spent fuel assemblies, with more planned to be shipped to the site. There is growing concern about all the fate of the nuclear waste associated with these facilities.

Base High-level Waste Decisions on Science not Politics

While determining the way forward with HLW is of critical importance, there is now time to get the process right and to base it on science, technology and sound policies rather than politics. Yucca Mountain has been mired in politics since it was named in 1987 in politically driven amendments to the Nuclear Waste Policy Act.

I am not going to address here the specific and myriad problems with reprocessing as many other have done that. But I will say that any claim of reprocessing being “recycling” is bogus given the host of unusable waste streams, including high-level waste, intermediate-level waste, low-level waste, radioactive gas discharge and contaminated uranium. Potential reuse of the 1% plutonium portion of spent fuel does not constitute “recycling” nor does storing thousands of tons of contaminated uranium separated during reprocessing.

Intermediate Storage at Reactors, SRS Can be Safe

While there may be disagreement with their approach, the Nuclear Regulatory Commission has licensed dozens of dry cask storage facilities and the Commission has just directed the staff to “to assess the environmental impacts and safety of long-term SNF and HLW storage beyond 120 years....well beyond the current analysis that supports at least 60 years of post-licensed life storage with eventual disposal in a deep geologic repository.”

Likewise, the Savannah River Site has said that vitrified high-level waste containers can be stored in “glass waste storage buildings” with an “estimated useful” life of 100 years.” There are currently around 3000 HLW canisters in storage and over 7000 in total are to be filled.

Never Any Plan to Remove all SRS HLW to Yucca Mountain

In this area, we have been subjected to misinformation that all the SRS vitrified HLW canisters had been slated for Yucca Mountain. The Yucca Mountain Environmental Impact Statement (EIS) - (Yucca Mountain EIS, DOE/EIS-0250, page A-1: http://nepa.energy.gov/nepa_documents/EIS/EIS0250/VOL_2/VOL2_A.PDF) - is quite clear that there was not room for all DOE HLW. There was only room in the Yucca Mountain facility as presented for 7000 MTHM of DOE HLW, including only 8,315 canisters (4667 MT) of around 20,000 canisters from SRS, Hanford, Idaho National Lab and West Valley.

As SRS will produce around 7000 canisters and the EIS states that there was “no determination of which waste would be shipped to the repository, or the order of shipments,” it is clear that only a portion of the HLW containers were likely to go to Yucca Mountain as was being analyzed and DOE has now admitted this. Thus, SRS has long faced the possibility of “orphaned” HLW.

Decades of Failure and Rejection of Commercial Reprocessing near SRS

In addition to the legacy of reprocessing for military purposes and the massive amount of waste left behind, the South Carolina-Georgia community has experience with the pitfalls and false starts of pursuit of commercial reprocessing.

People are quite familiar with the failed effort to operate a reprocessing plant by Allied General Nuclear Services (AGNS) at Barnwell, South Carolina, immediately adjacent to the eastern boundary of SRS. Presidents Ford and Carter defunded this project and changed U.S. policy to be against reprocessing. Efforts by the private backers to secure loan guarantees or new partners failed and Barnwell was abandoned.

As a testament to citizen actions and legal interventions, today the hulk of the Barnwell plant sits a monument to the folly of reprocessing. Thankfully for us and the nation it never operated. If it had operated we in the SC-GA area could have ended up with a facility like the problem-plagued West Valley reprocessing plant which operated from 1966-1972, which was our country's hard lesson in the cost and environmental problems associated with reprocessing. That site is still being cleaned up at tax payer expense these 40 years later.

Westinghouse Examines Commercial Reprocessing in F- and H-Canyons - Rejected

But an aim to reprocess commercial spent fuel here is ever lurking. In 1995 the Westinghouse Savannah River Company proposed using SRS for commercial spent fuel storage in the Receiving Basin for Off-Site Fuel (RBOF), with reprocessing of the nation's spent fuel in modified F-Canyon and H-Canyon. The cost presented for this was ridiculously low and no explanation was given about how canyon modifications would be carried out nor how the resultant massive volume of waste would be handled. It is unknown who requested the Westinghouse proposal or what the motivation was but it was thankfully rejected and not pursued. But the "dream" of a reprocessing plant at SRS was only dormant.

H-Canyon and Reprocessing: Its Time has Passed

The F-Canyon is now closed and it is unclear what's next for the H-Canyon as a decision to reprocess HEU spent research reactor fuel may well be on hold due to cost reasons. DOE has just completed a study - OVERVIEW OF CRITERIA FOR INTERIM WET & DRY STORAGE OF RESEARCH REACTOR SPENT NUCLEAR FUEL, November 2010, <http://sti.srs.gov/fulltext/SRNL-STI-2010-00688.pdf> - looking at longer-term wet and dry storage for research reactor fuel, thus perhaps foretelling the end of a costly facility that can't be supported given real budgetary constraints that are starting to hit DOE.

If H-Canyon were to be pursued for reprocessing R&D of commercial spent fuel, as has been suggested, DOE must answer, amongst others, the following questions:

- what are the upgrades and modifications necessary to pursue this, how much do they cost and where does the money come from at a time when the budget is shrinking?
- what is the plan for capture of radioactive noble gasses such as krypton-85?
- where would the spent fuel come from?
- who would carry out any reprocessing R&D projects – private entities or DOE?
- what is the path forward with necessary NEPA documentation and when will there be opportunity for public comment?
- what is the objective of such R&D?
- how would such R&D impact other possible missions?
- how would the shut-down and D&D schedule be impacted and who pays if closure is delayed?
- where are the so-called “recycling reactors” for which fuel would be produced?
- is reprocessing without “pure Pu separation” simply a modified PUREX process such as COEX?
- where is a policy document, reviewed by OMB, changing the mission of H-Canyon?
- what is the role of the BRC in commenting on use of this aged facility?

Global Nuclear Energy Partnership (GNEP) Stumbles, Falls with SRS Reprocessing

In the last half of the first decade of the 21st century, along came the Global Nuclear Energy Partnership (GNEP), which solicited plans for deployment of a reprocessing technology at a specific site. For the SRS area there were two ambitious proposals submitted:

1. EnergySolutions - for the old AGNS (Barnwell) reprocessing site on the eastern boundary of SRS;
2. Savannah River National Laboratory & the Economic Development Partnership of Aiken and Edgefield Counties for SRS itself.

It is unclear how either proposal could have been carried out given such things as cost, land ownership, NRC licensing questions, policy issues and environmental constraints - such as noble gas capture, high-level waste storage, LLW disposal, and storage of contaminated uranium (reprocessed uranium, RePu).

On December 4, 2008, DOE held a meeting in Aiken to solicit comments on the draft GNEP Programmatic EIS (PEIS). The overwhelming number of comments by members of the community were against reprocessing in the area.

At least one prediction at the PEIS hearing was made by a commenter that no final PEIS would ever be issued and no Record of Decision (ROD) would be issued and that the entire GNEP process would be dropped. Those comments were prescient as GNEP was officially discarded on June 29, 2009 in a Federal Register notice in which it was stated: “DOE announces that it has decided to cancel the GNEP PEIS because it is no longer pursuing domestic commercial reprocessing, which was the primary focus of the prior Administration’s domestic GNEP program.” Another attempt at reprocessing at SRS had been misguided and bit the dust.

Barnwell LLW Facility Closure by Legislature – SC Has Had Enough Nuclear Dumping

As reprocessing implies receipt of spent fuel for chemical treatment, with resultant hosts of waste streams, the idea of more nuclear waste dumping in the South Carolina strikes a nerve. The Barnwell LLW dump, which opened in 1971, with operation by Chem Nuclear but ownership by the State of South Carolina, was finally closed on July 1, 2008 to states not a part of the Atlantic Compact (SC, CT, NJ), after a valiant legislative decision forced by the public. This victory for citizen involvement shows that South Carolinians will not stand by forever and be dumped on by the nation. Our time as a national nuclear dump is now over and any talk of us becoming a HLW dump or reprocessing site will once again spur citizens to take action against dictates of a few private companies or by a government out of touch with the will of the wider community, the part of the community that does not profit from the act of nuclear dumping or processing.

The South Carolina legislature, sensitive to lobbying against nuclear waste dumping at Barnwell, learned its lesson and stripped out language from a bill in 2009 which would have incorrectly deemed reprocessing to be a renewable energy resource. If bills come before the legislature in the future which attempt to smooth the way for reprocessing, it is clear that they will be opposed by a coalition of citizen groups and will mobilize more people from the community to act.

“Energy Park” Proposal – EM’s Fiasco Detracts from the Clean-Up Mission

The slog towards the goal of reprocessing by special interests continued with an attempt in 2009 by DOE to prepare an Environmental Assessment (EA) on the leasing of government land at SRS for an ill-defined “energy park.” (SRS Environmental Bulletin, *EA being prepared for the proposed lease of SRS lands to the SRS Community Reuse Organization*, April 16, 2009, <http://www.srs.gov/general/pubs/envbul/documents/v20n9.pdf>.) One of the uses for an energy park appeared to be for reprocessing. DOE attempted to side step requirements of NEPA and also the federal law (10 CFR 770) concerning transfer of surplus defense property to private use (which had to be demonstrated to be financially viable).

This effort to clandestinely transfer land for an ill-defined “energy park,” possibly for some sort of reprocessing and nuclear reactor venture, failed and DOE was forced to withdraw the proposed EA. But this has not stopped special interest from pursuing an “energy park” for dirty missions, with an aim to do so with public funds.

It was the DOE’s Office of Environmental Management (EM) which proposed the vague “energy park” idea, as a way to show that cleaned up lands could be transferred to beneficial use, and it was EM that posed the possibility of using an SRS “energy park” for spent fuel storage or for fast reactors. But EM has no money for this idea and no private entities have stepped forward with a 100% privately backed plan for any type of “energy park” project. The community will be vigilant if any type of give-away of land is attempted and if government funds are attempted to

be garnered for missions which create more waste. The community will back clean jobs and clean missions but not reprocessing and “interim” spent fuel storage.

As EM’s mission is “to reduce risk and complete cleanup” it is unclear why EM itself would be promoting a concept that could bring in more nuclear waste which would increase clean-up costs and increase risks. Such is contrary to the stated mission of the office and has left many in the community wondering what EM is up to and if special interests have captured the “energy park” scheme. In any event, it is clear that EM must stick to its clean-up mission, which by far remains the budget king at SRS.

Going further, the main site contractor, Savannah River Nuclear Solutions (SRNS), presented on September 28, 2010 a grand scheme for an “energy park” that involves reprocessing, small modular reactors, biofuels, and high-temperature reactors, with an ultimate goal of fusion reactors. (*SRS Energy Park - Vision and Implementing Concepts*, <http://www.srs.gov/general/outreach/srs-cab/library/meetings/2010/fb/srsenergypark.pdf>)

In the SRNS concept, four modular reactors were presented as being of interest, with three of them being part of a plan which is a “potential alternative to Yucca Mountain.” MOUs have been signed with the companies backing the Hyperion SMR and the GE Prism SMR, which is described as being able to burn “surplus Pu and recycled LWR fuel.” Such SMRs, it must be noted barely exist even on paper and have not begun any NRC licensing process.

Consideration of Future Possible Missions at SRS are not the BRC’s Role

The BRC charter is clear in that the Commission is not charged to speculate about future missions at SRS or other DOE sites but rather to make recommendations on the way forward with HLW management, which includes financial impacts of such management. The agenda of the January 7 meeting appears to be more of a platform for politicians pushing future missions at SRS, including reprocessing, rather than one to maximize receipt of facts and comments from the well-informed public. While many politicians do not want to see HLW stored indefinitely at SRS, a noble goal, many are engaged simply to push for new missions and new jobs, for which the tax payer will foot the bill. Such new missions, including reprocessing, and the impact on jobs are irrelevant to the Commission’s work.

Reprocessing has Failed Elsewhere, Money Remains Incentive

The questions begs: What is the motivation for pushing for reprocessing when it’s proved wrong and rejected time after time? Does it have anything to do with energy policy or does it have to do with money and profit and manipulation by special interests of big government willingly manipulated?

We have seen the same pursuit of reprocessing in the UK and Japan, where reprocessing is an abysmal failure. And in Russia, which like UK hasn’t reused any separated plutonium. And in mainland Europe, which has now pulled out of reprocessing, leaving only France to pursue a

state-sponsored socialist industry. If the dream is “recycling” or “closing the fuel cycle” then all reprocessing programs will continue to fail as reprocessing yields much nuclear waste which isn’t reused and costly fast reactors have proved not to work in country after country. But the success by companies involved in reprocessing is to harvest money from tax payers and rate payers to keep their money machine going.

All Forms of Reprocessing Pose a Proliferation Risk

While some claim that proliferation-resistant forms of reprocessing can be developed, the goal of all reprocessing technologies is to end up with some type of mixture of reactor-grade plutonium. Once the plutonium is separated and in some type of concentrated form, purified plutonium can be easily separated by chemical processing. A proliferant would far rather have a plutonium mixture than face the daunting task of having to construct some form of reprocessing facility to separate plutonium from the highly radioactive spent fuel.

According to a 2009 study entitled “Proliferation Risk Reduction Study of Alternative Spent Fuel Processing,” (<http://www.bnl.gov/isd/documents/70289.pdf>), by Brookhaven National Laboratory, all forms of reprocessing present proliferation risks and only “modest improvements” can be made to reduce the proliferation risk.

The abstract of the above paper states:

“This paper presents the results of an evaluation of the relative proliferation risks of particular reprocessing technologies of current interest. The assessment focuses on determining whether three alternative reprocessing technologies - COEX, UREX+, and pyroprocessing provide nonproliferation advantages relative to the PUREX technology because they do not produce separated plutonium. This study considers how a facility may be threatened under various proliferation scenarios. For each alternative, the measures of proliferation risk considered include the relative difficulty of achieving the objective, the time required, the cost to the adversary, the likelihood of detection, the cost of safeguards and physical protection, and the characteristics of the material acquired. This evaluation found only a modest improvement in reducing proliferation risk over existing PUREX technologies and these modest improvements apply primarily for non-state actors.”

Plutonium left in spent nuclear fuel is far more proliferation-resistant than any form of separated plutonium and this “spent fuel standard” should be the one that any type of reprocessing meets.

Geology at SRS says it All: No Spent Fuel Storage or Reprocessing

As we consider SRS for reprocessing and spent fuel storage, geology may well be the trump card against these pursuits. SRS is located in the Atlantic coastal plain, which has sandy soils and high water tables, unsuitable for storage of nuclear waste in any type of container. We can see the folly of storage of high-level liquid waste at SRS as many of the tanks are sitting

essentially in top of the water table, this magnifying the urgency of the emptying of the tanks and vitrifying the liquid waste.

Conservation groups in the states of Georgia and South Carolina have caught on that reprocessing at SRS is a bad idea from an environmental perspective. The largest and most active groups – Sierra Club of South Carolina, Conservation Voters of SC, SC Coastal Conservation League - have already gone on record against reprocessing, even without a clear proposal being put forward. If more definitive plans for interim spent fuel storage or reprocessing are revealed, then it is very likely that opposition will grow.

As Dick Riley, former governor of South Carolina, said during discussions about high-level waste management in 1982: “There is a basic law of political physics, often overlooked...that waste tends to stay where it is first put.” To this we can add the corollary that “all temporary storage sites tend to be de facto repositories.”

Thus, I feel sure that a goal of the larger SC-GA community will be to stop SRS from becoming a site to which spent nuclear fuel is taken on an “interim” basis or for reprocessing, to stop us from becoming the new Yucca Mountain.

Recommendations and Conclusions:

1. For environmental, technical and geology reasons, no “interim” spent fuel storage or reprocessing at SRS; Yucca Mountain or any another repository must not be pursued simply to give special interests as “way out” of SRS for high-level reprocessing waste from what is mistakenly called a “closed fuel cycle”;
2. Clean-up of SRS must remain the focus and the BRC must not complicate the mission of cleaning up the site by making proposals which could result in more waste at SRS;
3. Future projects at SRS must not create more nuclear waste burden & be privately financed;
4. Secure on-site storage of commercial spent fuel - Hardened On-site Storage (HOSS) - and secure storage of DOE HLW
5. The Yucca selection was tainted by politics from the start, so it’s time to base decisions on science;
6. Honor the pledge to develop a plan to remove SRS waste and not generate more;
7. If H-Canyon for reprocessing R&D is pursued for commercial spent fuel – what are the cost of upgrades, life extension costs, Kr-85 capture, NEPA documents, NRC licensing, etc.?
8. Be aware that varied communities and coalitions in South Carolina and Georgia will oppose SRS becoming a HLW dump or reprocessing site
9. If the BRC makes any recommendation for reprocessing or reprocessing R&D, please explain in detail how the myriad of waste streams, including contaminated uranium, will be handled and disposed of. Please clarify that the majority of material from reprocessing is waste and will not be recycled.

