

IEER Comments on the Savannah River Site Spent Nuclear Fuel Management Draft EIS

February 8, 1999

Mr. Drew Grainger
NEPA Compliance Officer
U.S. Department of Energy
Savannah River Operations Office

Building 742A, Room 183
Aiken, SC 29802

Re: Savannah River Site (SRS) Spent Nuclear Fuel (SNF) Management Draft Environmental Impact Statement (EIS), DOE/EIS-0279D

Dear Mr. Grainger,

Following are comments of the Institute for Energy and Environmental Research regarding the above referenced Draft EIS. We support the Department of Energy's (DOE) efforts, as expressed in the preferred alternative, to deploy techniques other than conventional reprocessing.

Demonstrating that nuclear wastes, such as spent fuel, can be managed without separation is essential to sound nonproliferation policy, and ending reprocessing at SRS is a critical step in reducing risks and saving money at that facility.

Still, we are concerned about shortcomings in the Draft EIS, especially in two areas. First, the discussion of reprocessing does not provide a convincing rationale for the proposed use of the canyons. Second, the Draft EIS does not lay out a clear plan for ensuring that the technical uncertainties associated with the melt and dilute option will be resolved so that the technology can be implemented within the next five years.

Reprocessing is not DOE's preferred alternative for most aluminum-based SNF, but the Draft EIS does open the door wide to the possibility that DOE will reprocess at least some of this fuel. The Draft EIS states DOE could reprocess aluminum-based SNF if "any health or safety concerns" are identified prior to the melt and dilute facility becoming operational. (p. S-18) This is a meaningless criteria for future decision making. One could make a sound case that there is an inherent health and safety concern merely because the SNF exists and is, or will be, in storage at SRS. The Final EIS should lay out meaningful criteria by which DOE will determine if the health and safety concern is sufficient to require urgent action and also consider interim measures which could be taken to minimize risks until a melt and dilute facility is operational.

DOE has identified reprocessing as the preferred alternative for several types of material. Fuels from the Experimental Breeder Reactor-II (EBR-II) and the Sodium Reactor Experiment are proposed for reprocessing because they have been declad and so would oxidize rapidly if exposed to water. The result would be a release of fission products to the storage pool. The Draft EIS

highlights this concern by pointing out that there has already been an instance of water intrusion into a storage container of EBR-II fuel and subsequent corrosion that lead to a decision to reprocess.

This experience is extended to almost all the other materials proposed for reprocessing. The potential health and safety vulnerability described for unirradiated Mark-42 targets is a cladding breach which results in plutonium oxide being released to the storage basin. The potential for water intrusion to cause corrosion of materials stored in cans is used as the rationale for reprocessing failed or sectioned Tower Shielding Reactor, High Flux Isotope Reactor, Oak Ridge Reactor, and Heavy Water Components Test Reactor fuels, a Mark-14 target, cans of oxide from the Sterling Forest Reactor, and other cans of powdered/oxide fuel which arrive at SRS while the H-Canyon is still operating.

Clearly, if there is indeed an urgent risk, we support efforts to minimize or eliminate that risk. But we also believe DOE has a responsibility in this EIS, as well as in its decision making processes generally, to fully and openly review the facts. Unfortunately, the Draft EIS ignores important information and so provides a misleading argument.

The Final EIS should include a more complete discussion of the options for managing the materials currently proposed for reprocessing. For each material mentioned above, the EIS should address at least the following:

1. At the time EBR-II fuel was reprocessed in response to corrosion, why was not all the EBR-II fuel and other material described above reprocessed?
2. What has changed since the decision was made to reprocess the can of corroding EBR-II fuel which makes it urgent to reprocess the fuel and other material before a melt and dilute facility becomes operational?
3. What steps has DOE taken since the discovery of corrosion of some EBR-II fuel to assess and control the hazards associated with the remaining nuclear fuels and materials?
4. What is the evidence that Mark-42 target cladding is likely to breach or that storage cans are likely to leak before a melt and dilute facility becomes operational?
5. If the cladding were to breach or a can were to leak, how much radioactive material would be released into the basin before a melt and dilute facility is expected to become operational? How much of this released material would be captured by the basin's filtration system? How can the filtration system be improved to capture more of the released radioactive material? What are the hazards associated with the releases?
6. What is the estimated risk of continued storage (with and without leakage) until a melt and dilute facility is operational?
7. The Draft EIS proposes reprocessing the EBR-II and Sodium Reactor fuels beginning in April or May of this year and the remainder of the material over the next three years. If the EIS is not complete in time to issue a Record of Decision before April, will DOE contend that the situation is so urgent that emergency action to reprocess the EBR-II and Sodium Reactor fuels is warranted? If not, how will delays in completing the EIS affect the proposed schedule for reprocessing these two fuel types and all subsequent materials? How will other possible delays in reprocessing affect plans for the materials discussed in this EIS and other materials proposed for reprocessing?

By deferring any or all the reprocessing proposed in this EIS, could money or personnel be made

available to expedite planning and construction of a melt and dilute facility?

As we understand DOE's current policy, if a container shows signs of leakage and corrosion of the material inside, DOE would move quickly to reprocess the material regardless of the outcome of this EIS. A reasonable alternative which should be added to the EIS is for DOE to continue managing these fuels under this policy until they can be stabilized in the melt and dilute facility.

The final item proposed for reprocessing is a core filter block from the Idaho National Engineering and Environmental Laboratory. Here DOE seems to have changed its rationale for reprocessing entirely. For the filter block, DOE contends reprocessing is necessary because it is not cost effective to develop a treatment option for a unique item. The hazard associated with this filter block is not well described in the Draft EIS, and so the reason for taking any action is unclear. Most importantly, though, DOE should refrain from extending the rationale for reprocessing so broadly. Doing so could set a dangerous precedent.

This precedent may be particularly important as DOE decides how to manage additional nuclear materials not evaluated in the Draft EIS. For example, DOE recently prepared a Processing Needs Assessment but has yet to make decisions regarding how to manage the nuclear materials evaluated in that study. Whether the decision will be based on health and safety criteria, economic considerations, or mere convenience is unknown at this time but could be affected by precedent established in this EIS. The Final EIS should consider this relationship to other decisions, at least by discussing them in terms of cumulative impact and preferably by integrating the decisions.

The melt and dilute alternative is proposed for most of the spent fuel and other material discussed in the Draft EIS. In order to safely implement the melt and dilute option, DOE has identified the development of an adequate offgas system as a critical need. The offgas system must be able to capture volatilized radionuclides sufficiently to ensure compliance with relevant standards. We believe DOE's goal, however, should be to use a system capable of limiting releases well below those standards.

The history of DOE's efforts to solve technical challenges and to construct and operate new facilities in a timely and cost effective manner gives us pause. In this EIS and throughout the decision making process, DOE should frankly acknowledge past mistakes and the institutional problems that have lead to project failures and to cost and schedule overruns. DOE should also initiate steps to ensure that the development of a melt and dilute facility proceeds along a different path.

To begin with, DOE should publish in the Final EIS all available information regarding the requirements of an offgas system including the radionuclides of concern, their concentrations, design limitations and other considerations, relevant regulatory requirements, and DOE requirements. Additionally, DOE should open the development and review process to interested people from throughout the DOE system, private industry, academia, and the public. The best chance for success will come from a process which is completely open and which benefits from a dynamic cycle of review, criticism, and improvement.

Thank you for considering these comments. If you have any questions, please contact me at 2350 10th Avenue East, #113, Seattle, WA 98102 or by phone at 206/329-7394 or by email at bcostner@emeraldnet.net.



Sincerely,

Brian Costner
Consultant

Additional resources:

IEER's factsheet:

[Reprocessing and Spent Nuclear](#)

[Fuel Management at the Savannah River Site](#), February 1999

[Savannah River Site Spent Nuclear Fuel Management Draft](#)

[Environmental Impact Statement](#), December 1998, DOE/EIS-0279D

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