

**Savannah River Site
Citizens Advisory Board**

**Recommendation #281
Disposition Costs for SRS Research Reactor Spent Nuclear Fuel**

Background

Savannah River Site (SRS) has the mission for receiving spent fuel from foreign and domestic research reactors and this has been an on-going program since the 1960s. Receipt of Research Reactor Spent Nuclear Fuel (RRSNF) from foreign sources is planned to continue until 2019 and the receipt of domestic RRSNF could continue until 2019 or even later. The Citizens Advisory Board (CAB) supported this program and felt that receipt of such fuels is a positive contribution to the Site's missions and the nation's nonproliferation goals where there was a defined disposal path.

The receipt of the RRSNF has resulted in the accumulation of a large inventory at SRS. Presently, the Site has more than 15,000 items of RRSNF in L-Reactor Basin. Continued receipt of RRSNF will require additional storage and will bring into question the viability of continued storage with an aging storage location and potential deterioration of RRSNF over a long period of time. RRSNF received and processed in a timely manner in the H-Canyon has many advantages. This approach takes vulnerable materials from locations where security may not be adequate and moves the materials to a highly-safeguarded setting. Further, processed highly enriched uranium could be recovered and prepared for reuse in U.S. private power reactors. However, measures presently being taken by the Department of Energy (DOE) may preclude the ability of SRS to safely and effectively process RRSNF for disposition. DOE has directed Savannah River Nuclear Solutions (SRNS) to reduce the operational status of H-Canyon from full operations to a non-operational standby condition as follows. The Letters of Direction regarding H-Canyon indicate that DOE-SR has directed SRNS to perform periodic "cold runs" in order to exercise equipment and maintain a minimum qualified crew until processing decisions regarding RRSNF have been determined. This action may essentially remove from consideration the most promising and capable means for processing RRSNF, which is processing through the H-Canyon Purex process.

Comments

The CAB is not convinced that the present proposed scheme is the most cost effective and may not offer the advantage of reducing costs in FY12 which have been estimated to be as high as \$100 million. It is not altogether clear that the measures being taken are entirely a cost-saving action but it does raise an interesting question in the view of the CAB. The CAB would like to understand the cost implications for reducing the status of H-Canyon operation. The CAB is aware that many factors go into making a decision for changing the operational status of any facility such as H-Canyon, but we would like to at least understand the economic implications for such a move. Therefore, we propose that the DOE present some life-cycle cost cases that help frame the debate from an economic standpoint. Further, an understanding of this data should be open and made known to the public.

It may be useful to assess this concept using three study cases. One case that should be assessed is the concept of receiving the RRSNF at SRS for temporary storage in L-Reactor Basin and then processing the RRSNF through H-Canyon (consistent with recent plans) with

the waste being ultimately disposed of in the Defense Waste Processing Facility glass canisters for final placement in a federal repository.

A second case that should be assessed is one where the RRSNF is stored in L-Reactor Basin for up to 50 years and then disposed of in a manner suitable for that option.

A third case that perhaps should be assessed is a hybrid of the two earlier options if DOE deems that such a third case is viable.

This recommendation deals with the evaluation of disposition costs for the RRSNF in the L-Reactor Basins. A study of disposition costs should assess the cost effectiveness of some of the proposed options.

Recommendations: The Savannah River Site CAB recommends that DOE:

1. Develop a planning case that establishes disposition costs for the RRSNF in L-Reactor Basin plus the additional fuel yet to be received at SRS considering the case that the fuel is processed promptly in H-Canyon and the waste is processed through the DWPF.
2. Develop a second planning case that establishes disposition costs for RRSNF in L-Reactor Basin (plus any additional fuel planned to be received) considering the fuel is stored in the Basins for an extended period and then dispositioned in a manner that DOE would deem adequate.
3. Consider development of a third case (a possible hybrid case) for storage and disposition costs of RRSNF if studies indicate a viable case that is worthy of consideration.

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Sponsored by the Nuclear Materials Committee