



Savannah River Site Citizens Advisory Board

Recommendation 162

HLW Accelerated Sludge Removal

Background

The Savannah River Site (SRS) has produced nuclear materials for national defense, research, and medical programs since it became operational in 1951. The first SRS High Level Waste (HLW) tanks were placed in service around 1953. In total, 51 HLW tanks were constructed at SRS. These HLW tanks were not intended to be a permanent storage method for HLW but were only considered as interim storage. The oldest of these tanks has already been in service for approximately 50 years. Only two tanks have been closed leaving 49 underground HLW storage tanks still in operation at SRS. There are approximately 37 million gallons of liquid HLW stored in these tanks. Of this quantity, approximately 3 million gallons are sludge waste and 35 million are salt waste. The sludge waste, which is insoluble and settles to the bottom of a waste tank, generally contains insoluble radioactive elements. The salt waste, which is soluble and dissolved in the liquid rather than settling to the bottom of the waste tanks, contains a large amount of radioactive element cesium (Ref. 1).

Of the 49 waste tanks, 23 will require sludge removal and 9 tanks may require annulus cleaning. In some tanks (not all tanks have an annulus), the annulus is a two and one-half foot wide area between the steel primary tank and the steel annular pan providing leak detection as well as secondary containment. SRS has completed a 2-year Systems Engineering Evaluation to effectively prepare sludge-containing tanks for closure at a significant cost reduction. This process called "Waste on Wheels (WOW)" is a "portable" sludge removal system that can be moved from tank to tank and used on all HLW tanks requiring sludge removal and annulus cleaning (Ref. 2).

Comment

The SRS Citizens Advisory Board (CAB) commends SRS for developing the WOW concept. The prospects of the WOW system are extremely exciting and the SRS CAB is eager to see them implemented. It appears to offer considerable advantages over the originally proposed clean out methods. It will be quicker thereby lowering the environmental risks. It will be safer offering considerably lower exposures to workers. It could save significant costs (\$100's of millions) and help accelerate the HLW tank closure schedules, pending resolution of the Waste Incidental to Reprocessing lawsuit. HLW tank clean out can proceed; however, actual tank closure may be impeded by the WIR lawsuit. In addition, WOW is a promising technology that has the potential to address annulus cleaning and meet the commitments expressed in Recommendation No. 135 (Ref. 3).

Recommendation

The SRS CAB recommends that:

1. SRS accelerate the implementation of the WOW process and report on the progress of the acceleration to lower the costs and risks as soon as the information becomes available from a successful HLW Tank clean out using the WOW process.
2. SRS characterize the annulus waste and evaluate the need for annulus cleaning in HLW Tank 5. SRS provide a schedule for development of a plan to demonstrate the WOW process for annulus cleaning on Tank 5 or another HLW tank requiring annulus cleaning and present the plan to the Waste Management Committee before November 19, 2003.

References

1. "Savannah River Site High Level Waste System Plan", Westinghouse Savannah River Company, Report HLW-2002-00025, Revision 13, March 2002.
2. "Accelerated Sludge Removal", presentation to the WM Committee by Neil Davis, April 17, 2003.
3. Citizens Advisory Board Recommendation No. 135 (adopted January 23, 2001), "HLW Tank Annulus Cleaning".

Agency Responses

[Department of Energy-SR](#)