

**Recommendation #255
Potential Waste Solidification Building (WSB) Cost Savings**

Background

In September 2000, the United States and the Russian Federation signed the Plutonium Management and Disposition Agreement, which committed each country to dispose of 34 metric tons (MTs) of surplus plutonium. To meet this goal, the National Nuclear Security Administration (NNSA) plans to construct the Mixed Oxide Fuel Fabrication Facility (MFFF) and associated processes (Pit Disassembly and Conversion Facility – PDCF). These will combine plutonium oxide from weapons with uranium oxide, to produce a mixed-oxide that will be fabricated into nuclear fuel to be irradiated at U. S. commercial nuclear power plants. NNSA awarded a contract to Shaw AREVA MOX Services (formally Duke COGEMA Stone and Webster) to design a mixed-oxide (MOX) facility, based on processes and facilities successfully operated by AREVA NC, Inc. in France. The MFFF and PDCF will be located at the Savannah River Site and managed by DOE's NNSA.

The Waste Solidification Building (WSB) is a stand-alone structure, which will receive liquid waste through underground transfer lines from MFFF and PDCF. The WSB will take the high activity and the low activity liquid waste streams from MOX and PDCF and process the waste stream by evaporating, neutralizing, and cementation into packages and then prepare it for disposal. The WSB will produce TRU and LLW cement-based solid waste forms acceptable for shipment and disposal. The TRU waste form will be transported to the E-Area Savannah River Site Waste Management Area Project – Solid Waste, for ultimate shipment to the Waste Isolation Pilot Plant (WIPP) for permanent disposal. The LLW waste form will be transported offsite for disposal, although onsite disposal in E-Area could be considered if the waste meets the acceptance criteria. In addition, the WSB will transfer low-level liquid waste to the SRS Effluent Treatment Facility (ETF) through an underground pipe connected to an existing transfer line for treatment and discharge.

The WSB needs to be operational to support the start of cold testing at the MFFF in 2013. The design effort for the WSB was suspended in 2004. The design effort recommenced in late 2006 with an estimated total project cost of \$245 - \$330 million (Ref. 1).

Comment

On November 18, 2003, the Savannah River Site (SRS) Citizens Advisory Board (CAB) approved a recommendation related to the Inspector General's Audit Report on the WSB (Ref. 2). At that time, the estimated cost for the WSB was \$58 million and construction was to begin in December 2004. The SRS CAB agreed with the report's finding that there was a lack of coordination between NNSA and DOE's Office of Environmental Management (EM) related to the treatment and ultimate disposal of waste from the MFFF

and PDCF processes. The SRS CAB recommended that the two organizations resolved the issues of the WSB waste streams and improve communication related to overlapping responsibilities.

The SRS CAB now understands that the WSB estimated cost is between \$245 and \$330 million. In addition, EM will have a longer presence at SRS than originally anticipated (2019 – old date versus 2031 – new date). Previously, EM’s cleanup mission target completion was 2019 at which time its landlord and waste missions were to have diminished and NNSA would have taken more of an active landlord role. However, the EM mission is now projected to last until 2031, and the SRS CAB believes there may be considerable savings for the taxpayer if existing waste facilities could be utilized instead of building the new WSB.

Recommendation

The SRS CAB recommends that by July 29, 2008, DOE:

1. Identify existing/planned EM waste treatment capabilities suitable for use or modification to satisfy the Waste Solidification Building (WSB) capabilities and report these findings to the SRS CAB.
2. Prepare a cost benefit analysis documenting overlapping capabilities, cost saving potentials (if any), and reassurance for the need to construct and operate the WSB.

References

1. WSB Update, presentation to the Waste Management Committee by Bill Clark – NNSA, Office of Site Engineering and Construction Management, March 11, 2008.
2. Citizens Advisory Board Recommendation No. 179 (adopted November 18, 2003), “Inspector General Waste Solidification Building Report”.

Agency Responses

Department of Energy-SR