



## Recommendation No. 152

April 23, 2002

### PUREX Waste Alternative Treatment Evaluation

#### **Background**

Approximately two years ago, the SRS Citizens Advisory Board (CAB) was notified that DOE was suspending the Consolidated Incineration Facility (CIF) operations (Ref. 1). At that time, DOE-SR was working with SCDHEC to determine the RCRA permitting status during this interim period. During a Waste Management (WM) Committee meeting on April 25, 2000, the reasons to suspend operations were identified as a lack of projected waste streams to be treated by CIF and , the resultant high cost to treat the main waste stream, spent solvent from the PUREX and HM solvent extraction processes and subsequent aqueous flushes (Ref. 2). This organic/aqueous waste liquid is referred to as PUREX.

However, SRS has a Site Treatment Plan (STP) commitment to treat 50% of the legacy PUREX waste by FY09 and the remaining volume by FY19. There are 36,670 gallons of legacy PUREX remaining at SRS that needs to be treated. This waste is composed of an aqueous fraction and an organic fraction. Prior to the pause in operations, CIF had only treated 5,330 gallons of the total PUREX volume (42,000 gallons) in 3 years of operation and all of this volume was associated with the aqueous fraction (i.e., very lightly contaminated liquids that have been described as "boiling water").

To meet the STP commitments, DOE was going to have to re-start CIF at a later time or find another treatment option for the legacy PUREX waste. SRS began a systems engineering evaluation in mid FY 00 to determine if there were a viable alternative to re-starting CIF. In addition to the technical and cost analysis studies performed on each identified alternative, a separate study was performed to determine the technical improvements required to increase the throughput rate of legacy PUREX at CIF and to reduce its operational costs.

SRS recently completed this evaluation and has received a CIF permit modification from SCDHEC that allows a year-by-year extension of CIF closure based upon an annual report of the alternative treatment progress. The highest ranked options are treating the PUREX organic waste by direct stabilization and sending the PUREX aqueous waste to Tank 50 for stabilization at the Saltstone Processing Facility. The recommended path forward is to initiate the necessary programs and to treat the waste using the selected alternative treatments instead of proceeding with restart and operation of CIF. However, because of some uncertainties associated with the direct stabilization of the PUREX organic waste, the evaluation recommends that CIF not undergo RCRA closure until 10% of the organic waste is successfully treated using the selected stabilization process (Ref. 3). While stabilization appears viable at bench scale, it still has not been demonstrated on an operational scale, including the choice of the actual stabilization media to be used.

#### **Comment**

The SRS CAB commends SRS on the systems engineering approach used. The evaluation was very thorough, and the use of the technical peer review provides assurances of the validity of the results. Allowing the CIF Focus Group the opportunity to review the draft report and suggest points of clarification is greatly appreciated. The report fulfilled the SRS CAB's concern about the identification of the best available technology for treatment of the PUREX legacy waste.

It appears at this time that the selected alternative treatments are environmentally sound, cost-effective and will exceed all regulatory requirements. According to the recent presentation on the evaluation status (Ref. 4), all PUREX aqueous waste (13,000 gallons) can be treated by the end of FY 03 and the remaining PUREX organic waste (25,000 gallons) can be stabilized by FY 09. This means that if the proposed program stays on schedule, all of the legacy PUREX waste will be treated 10 years ahead of schedule. The STP is being modified to reflect the FY 09 commitment date; however, there is no plan to include the FY 03 milestone for the PUREX aqueous waste.

#### **Recommendation**

The SRS Citizens Advisory Board (CAB) recommends that SRS:

1. Verify in writing to the SRS CAB its plan to blend the PUREX aqueous waste into the Saltstone feed as soon as practical after the Saltstone Processing Facility is restarted and that the process will be targeted for completion by the end of FY03.
2. Provide an update schedule of planned activities on treating the PUREX organic waste by direct stabilization by August 27, 2002.

#### **References**

1. March 2000 SRS CAB meeting minutes - Comments from Tom Heenan
2. Consolidated Incineration Facility Update, presentation to the CAB WM Committee by Ray Hannah, April 25, 2000.
3. PUREX Waste Alternative Treatment Evaluation Draft Final Report, Westinghouse Savannah River Company, Report WSRC-RP-2002-00171, March 2002.
4. PUREX Waste Alternative Treatment Evaluation Status, presentation to the CAB WM Committee by Marshall Looper, February 5, 2002.

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#### **Agency Responses**

*Department of Energy-SR*