

# External Technical Review Summary

United States Department of Energy Office of Environmental Management (DOE-EM)

## External Technical Review of the Salt Waste Processing Facility Design at the Savannah River Site (SRS)

### Why DOE-EM Did This Review



The Salt Waste Processing Facility (SWPF) is intended to remove and concentrate the

radioactive strontium (Sr), actinides, and cesium (Cs) from the bulk salt waste solutions in the SRS high-level waste tanks. The sludge and strip effluent from the SWPF that contain concentrated Sr, actinide, and Cs wastes will be sent to the SRS Defense Waste Processing Facility (DWPF), where they will be vitrified. The decontaminated salt solution (DSS) that is left after removal of the highly radioactive constituents will be sent to the SRS Saltstone Production Facility for immobilization in a grout mixture and disposal in grout vaults. Parsons to design, construct, commission and initially operate the SWPF. *The external review objective was to review the Preliminary Design of the SWPF, with focus on the technical sufficiency of design to support development of a baseline cost and schedule.*

### What the ETR Team Recommended

The External Review Team recommends that the following high priority technical risks be addressed:

- Completion of further design without final geotechnical data potentially could result in requiring redesign of the PC-3 Central Process Area base mat and structure due to changes in the soil-structure interaction as well as changes to the in-structure response spectra.
- Cost and schedule impacts arising from the change from ISO-9001 to NQA-1 quality assurance requirements.

- The "de-inventory, flush, and then hands-on maintenance" approach may result in unacceptable maintenance worker radiation exposure.
- The uncertainty related to the ability to procure a number of manual and automatic valves of a unique design which must be seismically qualified.
- Process or equipment impacts caused by inadequate characterization of the undissolved solids coming in with the waste feed.

### What the ETR Team Found

Based upon the technical review, the following conclusions were reached:

- The SWPF project is ready to move into final design.
- Technical Issues associated with the structural design of the facility can be addressed as part of the normal design evolution. However, geotechnical investigations are behind schedule for a project at this stage of design. This represents a significant project-level risk.
- The primary processes are technically sound, and the planned large-scale equipment tests will provide very useful data to confirm and/or improve upon the current design.
- The unique operations and maintenance approach (dark cells with no expected maintenance and other equipment maintenance by flushing and hands-on maintenance) will require rigorous design and quality assurance measures to support procurement and construction.
- The current design is dependent on procuring a seismically qualified valve that isolates the process system in the event of an earthquake. The design of this valve is very different from other valves which have been seismically qualified for nuclear applications. If this valve cannot be purchased, a significant change to the current design will be required. An immediate effort should be made to determine if the valve can be procured.

To view the full ETR reports, please visit this web site:  
<http://www.em.doe.gov/Pages/ExternalTechReviews.aspx>

July 2009

*The purpose of an External Technical Review (ETR) is to reduce technical risk and uncertainty. ETRs provide pertinent information for DOE-EM to assess technical risk associated with projects and develop strategies for reducing the technical risk and to provide technical information needed to support critical project decisions. Technical risk reduction increases the probability of successful implementation of technical scope. In general, ETRs assesses technical bases, technology development, and technical risk identification and handling strategies.*



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