

News from the Savannah River Site

US DEPARTMENT OF ENERGY • AIKEN • SC 29808

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Savannah River Remediation Successfully Demonstrates Modified Salt Waste Process

AIKEN, S.C. (April 21, 2016) – The U.S. Department of Energy announced today that Savannah River Remediation (SRR), the Liquid Waste contractor at the Savannah River Site (SRS), has refined and improved the efficiency in the salt waste system.

When batches of salt waste are prepared, they are carefully created to ensure they meet requirements related to lower radioactive levels. Through proper waste preparation and improved filtration systems, SRR has been demonstrating that eliminating the addition of monosodium titanate (MST – a sorbent, which means it attracts other materials) from the salt waste processing system, improving that operation.

Over time, SRR has been able to identify salt solutions with smaller amounts of soluble radioactive materials in the waste batches. As a result, there is little benefit to adding MST in processing the salt waste. By eliminating MST, SRR is reducing the amount of solids and increasing the process flow rate capacity of material to other liquid waste facilities.

To date, SRR has successfully processed approximately 200,000 gallons of the salt waste using this method. This new filter-only (without MST) demonstration will continue for several more months as engineers collect performance data during several operating cycles for future evaluation.

DOE-Savannah River Assistant Manager for Waste Disposition Jim Folk said this change in the process demonstrates an opportunity to increase treatment rates and reduce the waste stored.

“This demonstration shows we will process more waste without sacrificing safety,” Folk said. “DOE continues to look for methods to remove more high-level waste from the tanks and close the tanks.”

Acting SRR President and Project Manager Mark Schmitz said the innovative thinking that produced this new concept helps current production.

“By improving the process, we have the opportunity to be more efficient by saving money and processing more materials while eliminating the MST material we had to deal with on the back end of the process,” Schmitz said. “It is another innovation by the team.”

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How It Works

The two key components of the salt waste processing system – Actinide Removal Process (ARP) and Modular Caustic Side Solvent Extraction Unit (MCU) – have worked together as an integrated system since their startup in 2008 to remove nearly all of the radioactive isotopes from salt waste solutions prior to the salt waste being transferred to the Saltstone facilities.

After preparing salt waste batches, the waste first heads to ARP, which is designed to capture and remove the relatively small quantities of soluble strontium and actinides (such as plutonium) by adding MST to radioactive salt solutions stored at SRS and then filtering out the MST that has absorbed the radioactive contaminants. This filtration process has continued to improve and now removes more than 99.9 percent of any solids in the treated salt solution, including the MST with radionuclides attached to it.

These filtered solids are then transferred to the Site's Defense Waste Processing Facility (DWPF), where waste is mixed with molten glass, poured into 10-foot tall stainless steel canisters, welded shut and temporarily stored onsite awaiting final disposition at an off-site Federal repository. The remaining filtered salt solution is then sent to the MCU for further processing to remove the radioactive cesium.

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SRS is owned by DOE. The SRS Liquid Waste contract is managed by SRR, which is composed of a team of companies led by AECOM with partners Bechtel National, CH2M and BWX Technologies. Critical subcontractors for the contract are AREVA, EnergySolutions and URS Professional Solutions.

Additional information on the Department of Energy's Office of Environmental Management and the Savannah River Site can be found at <http://www.em.doe.gov> or <http://www.srs.gov>.

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Savannah River Site engineers have refined and improved the system used to process salt waste.