Onsite startup testing is complete on a project designed to accelerate removal of high-level radioactive waste from underground tanks at the Savannah River Site (SRS). The project, called Tank Closure Cesium Removal (TCCR), is being deployed by liquid waste contractor SRR. TCCR is an innovative technology that includes pre-filters, ion exchange columns, and a specially engineered resin to remove cesium—a highly radioactive chemical element—from the salt waste to accelerate waste removal and tank closure.

Onsite testing involved running the water through the TCCR process, including the pre-filters and ion exchange columns; valve manipulation; pump tests; ventilation tests; and checks of alarms, interlocks, remote cameras, radiation monitors, and the programmable logic computer that controls the automated process.

Initial factory acceptance testing of the TCCR process was conducted by the vendor, Westinghouse Electric Company, in Richland, Washington. After it passed all factory testing, the equipment was delivered to SRS on 10 tractor trailers and assembled onsite by SRR workers.

Completion of onsite testing means the site is another step closer to launching the demonstration of TCCR, said Jim Folk, DOE-Savannah River Assistant Manager for Waste Disposition.

“Tank Closure Cesium Removal is important to the liquid waste mission because it has the potential to supplement our overall waste pre-treatment capability, ultimately accelerating the pace of waste removal and tank closure work,” he said.

Post-testing activities and pre-commissioning activities, such as safety basis implementation, operational procedures, training, and readiness assessments are planned to complete by the end of the calendar year, then processing through TCCR will begin.

SRR employees exceeded their goal for the 2018 SRR United Way Employee Campaign

The SRS liquid waste contractor raised $275,292 to benefit United Way agencies across the CSRA, exceeding the goal of $270,000.

The campaign theme, United We Stand, United We Can, set the pace for this year’s fundraising efforts, said SRR United Way Committee Chair Chad Neill.

“The SRR United Way Employee Campaign was truly a team effort,” Neill said. “Everyone worked together to make sure we were successful again this year. It’s a great feeling to know SRR is part of the solution in helping the United Way fight the hard battles in our communities.”

Some of the SRR United Way fundraisers this year included bake sales; a chili cookoff; and softball, bowling, and golf tournaments. Employees also had the opportunity to support the United Way through the annual eCard pledge campaign, in which employees can designate gifts to the United Way. Some employees also donated their time through several United Way community-service projects in Aiken, Barnwell, and Richmond Counties.

SRR President and Project Manager Tom Foster congratulated the committee members and other volunteers for a job well done and presented checks to local United Ways at the victory celebration held November 8, 2018, at the Red Pepper Café in Aiken.

“Our campaign is a significant contributor to the overall United Way program,” Foster said. “The support provided graciously by SRR employees helps the United Way extend its reach. The SRR workforce consistently displays an unwavering willingness to give their time, effort, and resources to help our neighbors in need.”

Since 2009, SRR employees have donated over $5 million to local charities and educational institutions.
SRR Completes First Radioactive Transfer to Mega Disposal Unit

About 8,500 gallons of low-level liquid waste from an underground waste tank at SRS have been treated and transferred to Saltstone Disposal Unit (SDU) 6, making this the first transfer of radioactive liquid waste to the mega-volume unit.

The low-level liquid waste, known as decontaminated salt solution (DSS), was treated at the Saltstone Production Facility and placed into SDU 6, the newly constructed disposal unit with a 32.8-million-gallon capacity.

SDU 6 was designed and built by SRS liquid waste contractor SRS and will accommodate the large stream of DSS from the Salt Waste Processing Facility (SWPF), currently undergoing testing and commissioning. Until SWPF comes online, SDU 6 will be filled with the DSS processed by the site’s interim salt waste processing facility, the Actinide Removal Process/Modular Caustic Side Solvent Extraction Unit (ARP/MCU).

ARP/MCU removes the highly radioactive isotopes, primarily cesium, from the tank waste, which are then transferred to the Defense Waste Processing Facility to be turned to glass and safely stored at SRS, awaiting permanent disposal. The remaining waste stream — the DSS — is transferred to the Saltstone Production Facility for stabilization into a grout-like waste form. The waste is then pumped into the SDU, where it solidifies into saltstone, a non-hazardous waste form.

SDU 6 will also receive DSS from the recently installed TCCR demonstration project. TCCR is designed to remove cesium from the high-level waste currently stored in H Tank Farm.

DOE is committed to safe and efficient waste removal at SRS, according to Jim Folk, DOE-Savannah River assistant manager for waste removal at SRS, and will solidify into saltstone, a non-hazardous waste form.

Construction of Second 32-Million-Gallon Disposal Unit Progresses

Construction of a second large-scale saltstone disposal unit (SDU) at SRS is progressing safely and on schedule.

SDU 7 will be the second of seven mega-volume SDUs to be built at SRS and is designed to hold 32 million gallons of waste.

DOE-Savannah River SDU 7 Federal Project Director Shayne Farrell said the structures are key to the SRS cleanup.

“SDUs provide safe, permanent storage for low-activity waste and underscore the Department of Energy’s commitment to closing the high-level waste tanks at SRS,” said Farrell.

In late October, crews finished installing the leakage detection system. It’s comprised of a clay liner and high-density plastic liner sandwiched between two concrete layers called mud mats. Those mats provide a solid surface for the SDU concrete floor. Both the lower and upper mud mats are complete.

An automated operation — called a screed machine — was used to place the cement mud mats, saving time and money. The machine screens, or levels, the poured concrete with laser precision. From a safety perspective, using the machine means fewer people interfacing with heavy equipment in the area.

The screed machine requires a crew of eight, including the machine operator, rather than a 24-person crew to complete the labor-intensive task. Machine-screeding can complete up to 10,000 square feet per hour versus about 1,500 square feet per hour by traditional hand-screeding.

Excavation was completed this summer for SDU 7’s foundational footprint. More than 170,000 cubic yards of soil was relocated in about two months using eight off-road dump trucks in 6,700 round trips to a nearby stockpile. A locally owned, small-business subcontractor — BK All American Company — completed the excavation with more than 20,000 hours of safe work.

SRR President and Project Manager Tom Foster said SDU 7, like its sister unit SDU 6, will be integral to the site’s liquid waste mission. SRR is the site’s liquid waste contractor.

“The SDU 7 work completed so far has been significant in preparing the liquid waste program for the arrival of Salt Waste Processing Facility operations,” Foster said. “I am proud the team has put safety first during this process because when we put safety first, operational excellence follows.”

The same subcontractor that constructed the SDU 6 cell will build the SDU 7 cell.
Now in its 35th year since the groundbreaking, the facility immobilizes sludge waste stored in the SRS liquid waste tanks by combining it with borosilicate glass. The mixture is then poured into 10-foot-tall stainless steel canisters.

Before DWPF was built, a pilot facility was designed and constructed to demonstrate the project’s viability. That facility tested new remote operation concepts, like pouring glass into the canisters and decontaminating and welding the canisters.

The attitude at the site was extremely positive toward the new project, according to John Owen, who has worked at SRS since 1977. At the time, the site was called the Savannah River Plant, operated by the company DuPont.

“DWPF was the first large project at the site since original construction,” said Owen, who has worked in DWPF Melter Engineering since 1992. “The DuPont company position was that the site could continue to build additional waste tanks or use those resources instead to start making room for future waste generation by emptying waste tanks and stabilizing that waste.”

Local, state, and federal officials, dignitaries, and site employees were among the more than 1,000 people attending the DWPF groundbreaking. The event featured displays depicting new technology being developed for the facility’s mission, including the melter, known as the heart of DWPF. The melter heats the waste-glass mixture to 2,100 degrees Fahrenheit, achieving the vitrification process.

“Waste vitrification had been pursued in other countries. However, those processes were very different from the vitrification process developed for DWPF,” said Dan Iverson, a melter engineer who attended the DWPF groundbreaking and had operated a small-scale pilot melter. “It is exciting to see a complex and remotely operated process in successful operation for so many years.”

Since DWPF began operating in March 1996, it has poured over 16 million pounds of glass and filled over 4,100 canisters. The current SRS liquid waste contractor SRR has operated DWPF since July 2009. SRR is responsible for processing over 6 million pounds of glass and pouring more than 1,400 canisters.

Jim Folk, DOE-Savannah River Assistant Manager for Waste Disposition, said SRS has come a long way since the DWPF groundbreaking and is making great progress at dispositioning radioactive liquid waste.

“The mission at SRS began with developing nuclear materials for national defense,” Folk said. “The waste generated as a byproduct is being remediated, which started and continues with DWPF. Eight of the 51 waste tanks are operationally closed, and we continue to develop and implement technology to disposition the high-level waste at SRS.”