They’re called the Dream Team
SRNS employees answer the challenge of 235-F

This month
H Canyon First Cycle start-up • Thermal neutron source • United Way fundraising • Sports Challenge
H Canyon restarts First Cycle unit operation, the next step in processing spent nuclear materials

On August 5, the SRS H Canyon restarted First Cycle unit operations for the first time in more than five years, enabling the uranium from spent nuclear fuel (SNF) currently stored at SRS to be shipped out of South Carolina.

In First Cycle, uranium from SNF is separated from aluminum, fission products and other impurities. This is the fourth of five unit operations to restart since the DOE Amended Record of Decision in 2013, allowing SRS to process 1,000 bundles of SNF and 200 High Flux Isotope Reactor (HFIR) cores. The fifth and final operation—blend down to low enriched uranium (LEU)—is the last unit operation that remains to be restarted.

“LEU blend down is estimated to restart within two years,” said Patrick McGuire, DOE Assistant Manager for Nuclear Material Stabilization. “After blend down, the LEU will be shipped to a Tennessee Valley Authority (TVA) vendor for the manufacture of fuel to be used for the production of commercial nuclear power. The last shipment was in November 2011. As more material is shipped, more SNF will be able to be removed from storage in the SRS L Area Basin, processed through H Canyon and shipped to TVA.”

Deborah Thomas and Audrey Davis are both Senior Control Room Operators and have been working in H Canyon for 31 and 29 years, respectively. They both expressed their excitement at seeing First Cycle running again.

“It’s a milestone to me, being close to retirement age and seeing this equipment start up again,” said Davis. “We are cleaning up the environment and playing a role in our nation’s nuclear nonproliferation missions by safely and productively dispositioning the spent fuel we have stored here.”

“First Cycle is really the heart of the canyon—without it, nothing else will run,” Thomas added. “It’s exciting to show this to the new operators. This is kind of our last hurrah and it is nice to know that we have left our mark and done it safely.”

In the blend down process, highly enriched uranium recovered from bundles of spent fuel rods from foreign and domestic research reactors is mixed with natural uranium to make LEU.

“Disposition of the approximately 1,000 bundles and up to 200 HFIR cores is expected to be completed in 2024, potentially allowing DOE to authorize more missions for H Canyon,” said McGuire. “Producing LEU again in H Canyon helps keep our nation safe, while providing clean energy; it would be hard to find a better mission than that.”

H Canyon is the only operating, production-scale, radiologically shielded chemical separations facility in the U.S. Originally constructed to produce nuclear materials in support of our nation’s defense weapons programs, the facility’s mission now is to help disposition and stabilize nuclear materials and SNF from legacy cleanup, and both foreign and domestic research reactors.
New lease on life

National Laboratory facility gets a makeover as a powerful thermal neutron source

A portion of the Savannah River National Laboratory (SRNL) unused for more than two decades is now renovated and the home of the lab’s new thermal neutron source, which started operations in June.

The first-of-a-kind neutron source replaces an aging facility at the lab that uses a Californium source which, because of its radioactive half-life, will begin to see its effectiveness limited later this summer.

The thermal neutron source, more than three times more powerful than the existing capability, will be used to provide continuing analysis for corrosion control and other support to the National Nuclear Security Administration’s (NNSA’s) tritium mission, which SRNS carries out in support of the nation’s nuclear defense. It will also support the lab’s radiochemistry program.

“It’s always exciting to expand the lab’s capabilities, but even more so when we are able to repurpose under-utilized facilities,” said Dr. Terry Michalske, SRNS Executive Vice President and Director, SRNL. “The new thermal neutron source will be a resource not just to SRSL but eventually to the entire DOE complex.”

The diminishing capabilities of the existing neutron-generation facility have been known for some time and, beginning in 2010, SRNL made equipment modifications and procedural changes that extended the existing capability through this summer.

The project to replace the neutron-generation capability came with a $3 million price tag for design, equipment, installation, shielding and support infrastructure, and is ahead of a milestone to have the facility up and running by the end of June.

The new thermal neutron source, built by Adelphi Technologies, was installed in a portion of SRNL that was used for testing and demonstrating analytical equipment for H Canyon in the early 1990s. The nonradioactive facility had legacy materials that needed to be dealt with, including residual nitric acid solution in a 60-gallon tank and acid-gapping, before the source could be installed.

“It was like coming back to your garage and opening it back up after 25 years,” said SRNL Analytical Development Director Mark Barnes. “There was quite a bit we needed to clean out, but the facility itself was well-suited for the new mission.”

While the primary reason for replacing the neutron source is to serve the NNSA missions at SRS, the new source potentially has additional applicability that may see interest from other DOE sites and academia.

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“Once a pipette was received, it would take an average of 22 days to be calibrated by a trained metrologist at SRSL, and it would cost $188 per pipette,” added Perella. “Currently, SRSL has only two qualified metrologists, which has resulted in a backlog of pipettes for use in F/H Laboratories.” (A metrologist performs work related to the repair and calibration of instrumentation, specializing in how to achieve precise measurements in a laboratory setting.)

The team discovered the pipette vendor could calibrate the pipettes for $44 per pipette, so they could be ready for use as soon as they went through Receiving on Site. Overall, the RE is projected to save the company over $396,000 in FY16-17, which includes the cost difference between $188 and $44 for each calibration and the hours saved from the significant decrease in turnaround time. Additionally, the RE will result in the elimination of an annual $344 recalibration cost for every pipette in the laboratory.

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“The event improves the overall measurement process, which reduces the amount of costly rework,” Perella said. “One of the advantages of an RE is that you’re able to get input from people with different backgrounds, who can provide their unique perspective on a problem. Not only does this free up metrologists for other required tasks, but having the pipettes calibrated by the vendor won’t affect the quality of the pipettes.”

In fiscal year 2016, continuous improvement activities have resulted in productivity and efficiency savings of $16.5 million for SRNS.

PHOTO: Scientist Marion Cofer of SRNL Analytical Laboratories uses an M&TE pipette.
They’re called the Dream Team

Elite team of employees work to meet the 235-F risk reduction challenge

The 235-F Risk Reduction “Dream Team” at SRS. (Front row, from left) Franklin McKinnis, Jamellia Reid, Greg Hughes, Agusta Steward, David Miken; and (back row, from left) Antonio Jenkins, Tim Smith, Phil Smith, Tony Jones, Michael Simms, Wayne Minton, Ron McCullough, Anna Turner, Debbie Coleman, Sylvester Palmer. Not pictured: Charlie Hyde, Chris Campbell and Jeff Hasty

The 235-F Risk Reduction Operator Antonio Jenkins looks on while fellow operator, Sylvester Palmer, practices using a tool in the clean 235-F mock up facility.

The men and women working to clean up the inactive 235-F Plutonium Fuel Form facility, or PuFF, are an elite team of experienced professionals. Called “the Dream Team” by facility management, the crew was handpicked to take on one of the riskier SRS environmental management cleanup activities.

As the project enters its second year, the risk reduction approach is paying off. To reduce the risk of a facility fire, the team has been able to safely and efficiently remove and control fixed combustibles, upgrade the fire detection system, and de-energize unneeded electrical circuits. To aid removal of materials from the cells and support material characterization, the team is draining and cleaning shield cell windows after their partial disassembly, installing lighting and mechanically isolating the cells.

The 18-member crew was chosen primarily for their experience in handling radioactive materials, which came during the SRS transuranic waste (TRU) campaign. TRU wastes typically consist of protective clothing, tools, rags, equipment and miscellaneous items contaminated with small amounts of plutonium (Pu).

“We knew that we would be facing a lot of unknown challenges, and we needed a team who could handle them,” said Jeff Hasty, 235-F Risk Reduction Manager. “In my 25 years of experience, this is the only handpicked crew I have seen.”

The facility was used to make spheres and pellets out of Pu-238 that served as the heat source in radiolytic thermal generators used to electrically power deep space missions. The work left behind about 1,500 grams of Pu-238. Facility cleanup is challenging as workers face tight spaces with limited accessibility and very fine Pu-238 particulate dust that is easily disturbed. The biggest health threat is inhalation, so workers must be careful to not stir up the dust.

“Some of us were asked if we would come to this project after TRU was over,” said Ronnie Farmer, 235-F Risk Reduction First Line Manager. “We said yes, but only on one condition: you let us get the people who we want for this job. We were looking for people with the right temperament and experience, and upper management let us pick the people we needed to do this job correctly and safely.”

Teamwork and self-motivation are the hallmarks of the team’s success. “If you sit back and watch them, they all know each other’s job and work together so well, it is sometimes hard to tell who is who,” said Hasty. “They are all willing to pitch in for the job.”

The team also has a strong commitment to the safety excellence promoted by SRS. They regularly pause and call “time outs” as needed to reassess situations and determine safer alternatives.

“The fact is that the combination of experience, respect, management support, humor and comradery is what makes this team great,” said Hasty. “They care about each other and it shows.”

The cleanup mission is estimated to complete by 2021. The Pu-238 that is removed, along with any contaminated equipment, will be safely packaged and stored for eventual shipment to the Waste Isolation Pilot Plant in New Mexico.
Where are they now?

SRNS Family Scholarship winners follow in families’ career footsteps

Each year, SRNS awards $3,000 in scholarships to 15 children of SRNS employees. It’s an investment that pays off, not only in furthering these students’ education, but also in acquiring new employees and interns for the company. Grace Halkerson, Jeff Bickley and Josh Livingston are scholarship recipients who have done just that. After graduating from Georgia Tech in 2015, Halkerson began working as an intern in SRNS Site-Wide Procedures. At school, she worked on graphic design for a multimedia club; now, she uses her experience to help optimize and update forms and other documents.

“I’ve always had an interest in art, and the scholarship helped cover the costs of art supplies and books for my courses,” Halkerson said. “When I was in high school, I didn’t picture myself working at SRS like my parents, but my job continues to be a good opportunity for me to gain experience in a professional environment.”

Bickley also didn’t anticipate working at SRS when he received the scholarship in 2009; however, he interned at SRNS in 2012 and 2013. During his first internship, Bickley worked on the SRNL thermal cycling absorption process (TCAP), which is used in hydrogen isotope separation for the Tritium facility and for medical purposes.

“I was able to assist with all facets of the construction of the TCAP coils from bending them into shape, to packing, x-ray testing and assembling them as well as writing code,” Bickley said. “The next summer, I worked with the wind-turbine drivetrain testing facility project designing circuit boards, performing computer system validation and fabricating miscellaneous electrical parts.”

After graduating from the University of South Carolina (USC) in 2014, he started working as an instrumentation and electrical engineer at H Canyon. Today, he serves as the Design Authority for the canyon’s vessel air purge system, assists in troubleshooting and repairing instrumentation and develops Commercial Grade Deductions, which involves purchasing “off the shelf” items and performing quality checks to certify them as Safety Significant parts.

Also working in the field of electrical engineering was Livingston, a senior at USC. Last summer, he interned with the Process Control and Automation Engineering group, and in May he returned to work with SRNL’s Research and Development group.

“I experienced the steps necessary to go from prototyping to actual production, and the embedded systems I worked on align with what I study in school,” said Livingston.

United Way Agency Day offers SRS employees a chance to learn about charitable agencies

United Way agencies from the Central Savannah River Area (CSRA) recently showcased their work for United Way Agency Day at SRS, giving SRNS employees an opportunity to learn about how the annual SRNS employee United Way campaign impacts local nonprofit organizations.

Child Enrichment Inc. was one of the United Way of the CSRA’s partner agencies at the event. The nonprofit features two programs: the Child Advocacy Center (CAC) and Court Appointed Special Advocates (CASA). The CAC provides free counseling, forensic interviewing and expert court testimony for child victims of abuse and their non-abusing family members. CASA represents children who have been removed from their homes due to abuse and neglect until they are placed in a safe and permanent home.

Another agency at the SRS open house was the Community Ministry of North Augusta (CMONA), which provides short-term emergency assistance for food, utility bills, prescription medications, clothing and household items for residents of North Augusta and Belvedere.

“Last year, we helped over 2,400 families, and the dollars we received from United Way made that possible,” said Nancy Joyce, Director of CMONA. “The most rewarding part of my job is when we follow up with former clients who felt on hard times but now have found employment through our referrals or other local organizations.”

The SRNS employee United Way campaign is taking place this year. Last year, employees raised over $1 million for the United Way. In addition, $200,000 was provided by SRNS parent companies through corporate giving.

“We wouldn’t be here without Savannah River Site employees,” said Sharon Rodgers, President, United Way of Aiken County. “We couldn’t operate without your generous contributions and the hours you give volunteering at our member agencies. Volunteers help us keep costs low, so we can increase the number of programs we fund to assist people in Aiken County who need them desperately.”

SRNS Environmental Management Operations (EM Ops) stepped up to the plate during the twelfth annual SRNS United Way Softball Tournament, all to benefit a local charity. Team Black Ops came in second by a narrow margin at the tournament, winning over $2,500 for their charity, Area Churches Together Serving, or ACTS. Formed in 1986 by area churches to centralize area food and clothing donations, ACTS is a nonprofit organization that serves residents of Aiken County.

Team Black Ops was headed by SRNS Senior Vice President EM Operations Wyatt Clark. Prior to the event at Citizens Park in Aiken, S.C., Clark and other employee “owners” raised money for their team so they could then “buy” players. The players ranged from $20 to $350, depending on their skill level.

On July 28, Clark and Dan Billings, Building/ Crane First Line Manager in H Canyon and EM Ops Software Tournament Coordinator, visited ACTS to deliver their donation to Executive Director Carla Cloud. Otsul said that last year ACTS provided over $106,000 in utility assistance for Aiken residents.
Local educators tour SRS

Dr. Forrest Mahan, Aiken Technical College’s new President, toured SRS with 11 students from the Nuclear Fundamentals Certificate Program. Dr. Mahan and the students met with SRNS President and CEO Carol Johnson, as well as other executives as they toured a wide range of SRS facilities.

SRNS contributes $10,000 to Arts Center

SRNS Director of Government and Community Relations Teresa Haas presents a check for $10,000 to Mary Coleman, Executive Director of the Aiken Center for the Arts (ACA), and Skipper Perry, ACA Board member. The $10,000 contribution will be used to support art outreach and awareness programs including opportunities for children and adults in the CSRA.

SRNS H Area team walks away with bragging rights as winners of the annual SRS Sports Challenge

The SRS Employee Association (SRSEA) recently hosted the SRS Sports Challenge, where goodnatured rivalries between companies at SRS raised thousands of dollars for United Way agencies in the greater Aiken-Augusta area.

The SRNS “H Area Dissolvers” finished in first place with an overall score of 102.

“We appreciate the opportunity to play for local United Way agencies. They make a tremendous impact in our communities. We look forward to defending our winning title at the Sports Challenge next year.”

Danielle Elliott

The 10 “field day”-inspired events ranged from the physically demanding boardwalk, where teams raced for 60 yards with two long boards strapped to their feet to “Yardzee,” the outdoor version of the popular dice game. Other events included tug of war, basketball free-throw relay, homerun derby, chipping golf balls, medley relay, disc golf, football relay and cornhole.

“We appreciate everyone taking the time to spend their Saturday to benefit our local United Way agencies. It wouldn’t be possible without our planning committee, volunteers and participants who demonstrated good sportsmanship and teamwork.”

Ben Burnau, Executive Director, SRSEA.
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