

● AUGUST 2016

SAVANNAH RIVER NUCLEAR SOLUTIONS



SRNS Today

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





Carol Johnson
SRNS President and CEO

Welcome

to the August 2016 edition of

SRNS Today



“Why SRS Matters”

To see the H Canyon segment of our video series “Why SRS Matters,” please [click here](#) or visit www.savannahrivernuclearsolutions.com/annual/Why_H-AREA_Matters.mp4

It takes talented people to make the complex operations at the Savannah River Site work smoothly and efficiently. In this edition, you’ll meet some of the people who make it all happen.

For the first time in five years, the H Canyon First Cycle unit operation was restarted. This paves the way for uranium from spent nuclear fuel currently stored at SRS to be processed for shipment out of South Carolina. As you’ll see in the story on the next page, the H Canyon employees involved with the restart are genuinely excited to be a part of this operation. Their enthusiasm and their skill are part of how we make the world safer.

You’ll also read about our risk reduction activities on pages 6-7. A hand-picked team—known as the “Dream Team”—is working on the clean up of Building 235-F, a facility that was used to make spheres and pellets out of plutonium-238 to serve as the heat source to power deep-space missions. Cleanup is a challenging task, with tight spaces, limited accessibility and very fine plutonium-238 particulate dust that is easily disturbed. The men and women working on this project are self-motivated and committed to each other’s safety, all hallmarks of an organization committed to excellence and to making the world safer.

As you may have heard, I’ll be leaving SRNS at the end of September to resume my retirement. The Savannah River Site and its wonderful employees will always hold a special place in my heart, and it’s an experience I’ll treasure forever. Stuart MacVean will come on board as the new SRNS President and CEO, and I hope you’ll give him the same support that you have given me.

I hope you enjoy this edition of “SRNS Today.” As always, thank you for your interest in Savannah River Nuclear Solutions.

Carol

Savannah River Nuclear Solutions, LLC, is a Fluor-led company whose members are Fluor Federal Services, Newport News Nuclear and Honeywell. Since August 2008, SRNS has been the management and operating contractor for the Savannah River Site, a Department of Energy-owned site near Aiken, South Carolina, including the Savannah River National Laboratory. The SRNS corporate and community offices are located in the renovated 1912 “Old Post Office” building in Aiken, S.C. The primary initiatives of SRNS are national security, clean energy and environmental stewardship. SRNS Today is published monthly by SRNS Corporate Communications to inform our stakeholders of the company’s operational and community-related activities. If you have questions or comments, please contact us at 803.952.9584 or visit our website.

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H Canyon restarts First Cycle unit operation, the next step in processing spent nuclear materials



H Canyon Senior Control Room Operators Deborah Thomas (top) and Audrey Davis prepare for the startup of the First Cycle unit operations.

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 SRS carries out in support of the nation's nuclear defense. It will also support the Site'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 SRS, 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 non-radioactive facility had legacy materials that needed to be dealt with, including residual nitric acid solution in a 60-gallon tank and ancillary piping, 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.

"This is the first facility of its kind, and we're able to take on much more extensive and complex experiments," said David DiPrete, an advisory scientist on the project. "Down the road, we expect to do nuclear physics work as well."



Small device, big savings

Pipette calibration improvements projected to save nearly \$400,000

They analyze thousands of materials—soil, water, gases, decommissioning debris, waste and process control samples—in support of SRS and DOE missions across the nation.

The SRNS F/H Laboratories staff rely on a wide range of laboratory equipment and supplies to perform this analytical work. To ensure the most cost-effective methods for using pipettes, a tool used to transfer or measure out small quantities of liquid, employees from Analytical Laboratories mapped out the process for obtaining pipettes during a recent RIE, or Rapid Improvement Event. RIEs are part of SRNS' Focused Improvement Transformation (FIT) continuous improvement program.

"F/H Labs currently uses approximately 80 M&TE (Measurement and Test Equipment) pipettes, and each pipette had to be calibrated by a trained metrologist at the Savannah River Standards Laboratory (SRSL)," said Bill Perella, Senior Scientist, SRNL Analytical Laboratories.

During the weeklong RIE session in June, a multifunctional team was able to develop a standard work process for how pipettes should be retrieved, the proper way to troubleshoot potential pipette issues and how to properly retire a pipette after use.

"The RIE helped us understand how to ask the right questions about the time-consuming process involved with calibrating pipettes," Perella said. "It helped to brainstorm options that could improve the turnaround time from receiving the pipette on site to the time it would be calibrated and ready for use."

"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 RIE 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 RIE will result in the elimination of an annual \$344 recalibration cost for every pipette in the laboratory.

"The event improves the overall measurement process, which reduces the amount of costly rework," Perella said. "One of the advantages of an RIE 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.

The 235-F Risk Reduction "Dream Team" at SRS: (front row, from left) Franklin McKinnis, Jamellia Reid, Greg Hughes, Angela Steward, David Miller, and (back row, from left) Antonio Jenkins, Tim Smith, Pete Smith, Roy Jones, Michael Sims, Wayne Minton, Tony McCall, Ronnie Farmer, Debbie Coleman, Sylvester Palmer. Not pictured: Charles Byrd, Clem Campbell and Jeff Hasty



They're called the Dream Team

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

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 29 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.



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.

Where are they now?



Grace Halverson works on creating a fillable form as part of her duties as an SRNS Sitewide Procedures intern.

SRNS Family Scholarship winners follow in families' career footsteps



H Canyon Instrumentation and Electrical Engineer Jeff Bickley (above, left) works on troubleshooting one of H Canyon's neutron monitors with John Litchfield; Josh Livingston interned this summer with the SRNL Research and Development group.



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 Halverson, Jeff Bickley and Josh Livingston are scholarship recipients who have done just that.

After graduating from Georgia Tech in 2015, Halverson 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," Halverson 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.

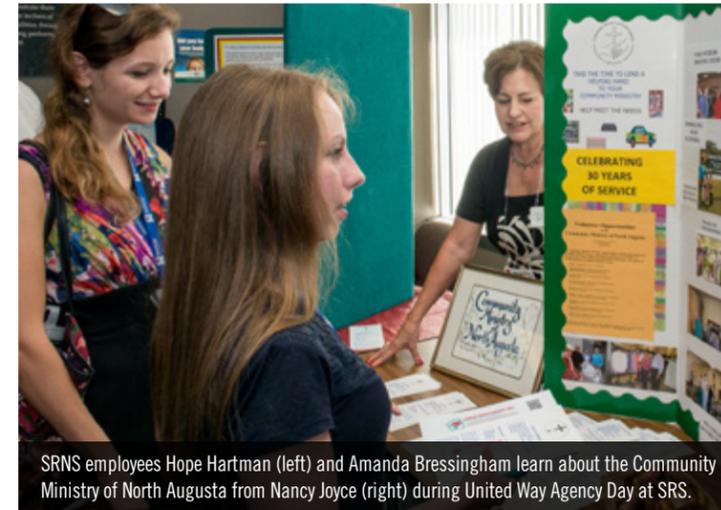
During his first internship, Bickley worked on the SRNL thermal cycling absorption process (TCAP), which is used in hydrogen isotope separation for the Tritium facility and for medical purposes.

"I was able to assist with all facets of the construction of the TCAP coils from bending them into shape, to packing, x-raying and testing 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 Dedications, 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've 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.



SRNS employees Hope Hartman (left) and Amanda Bressingham learn about the Community Ministry of North Augusta from Nancy Joyce (right) during United Way Agency Day at SRS.

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 fell 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 month. 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."

'Raising the Steaks' rounds up more than \$3,000 for UW

SRNS raised more than \$3,100 for United Way of Aiken County at "Raising the Steaks" on Aug. 12. The event, catered by Outback Steakhouse, was held at Aiken Electric Cooperative, and more than 190 meals were served to SRS employees and special guests from the community.

The event specifically benefitted United Way of Aiken County, which supports over 50 critical need programs through its 35 partner agencies.

"I just want to thank everybody who is involved with selling tickets and waiting tables. It could not be a successful event without everybody at the site coming together," said Sharon Rodgers, President, United Way of Aiken County.

"Raising the Steaks" is part of the SRNS employee United Way campaign, which took place in August. The campaign benefits nine United Way agencies in South Carolina and Georgia.

Softball tourney winners donate \$2,500 to UW charity

SRNS Environmental Management Operations (EM Ops) stepped up to the plate during the twelfth

annual SRS 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 Softball Tournament Coordinator, visited ACTS to deliver their donation to Executive Director Carla Cloud. Cloud said that last year ACTS provided over \$106,000 in utility assistance for Aiken residents.



Wyatt Clark (left), Carla Cloud and Dan Billings



The "H Area Dissolvers" team compete in the boardwalk during the second annual SRS Sports Challenge. Pictured from left are David Thornton, Brandon Thornton, Sterling Robertson, Jodie Saverance, Allan Hickman, Danielle Elliott and Brooks Hubbard.

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 good-natured 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.

"Overall, it was an exciting event, and there was a high-level of competition in each of the activities," said Danielle Elliott, H Area Dissolvers team captain and H Area Training Specialist. "Our team pulled together and focused on each event. 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."

The one-day event took place at Riverview Park in North Augusta, S.C. SRS employees from Savannah River Nuclear Solutions, Savannah River Remediation, Centerra, CB&I AREVA MOX Services, LLC, and the Department of Energy-Savannah River participated in the event.

Overall, the SRSEA Sports Challenge raised over \$4,400 for local United Way agencies through corporate sponsorships and concession stand sales.



"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.

"This event is all about enjoying the outdoors and having fun for a good cause," said Ben Burnau, Executive Director, SRSEA. "I 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."



● Rep. Rick Allen tours SRNL

SRNL Principal Engineer Monica Phillips describes research on GrayQb™ technology to Georgia Congressman Rick Allen during his recent visit to SRS. GrayQb™ is a device for non-destructive detection and examination of gamma and alpha radiation levels and sources. Rep. Allen also received briefings on SRNL's work in national security, environmental stewardship and engineering development.



● 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 President and CEO Carol Johnson and Dr. Forrest Mahan, President of Aiken Technical College

● Local educators tour SRS

Dr. Forrest Mahan (above), 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.

Dr. Sean Alford (right), Aiken County Schools Superintendent, recently toured several technical labs in the SRNL complex, including the SRNL Additive Manufacturing Lab for 3-D printing. During the tour, Dr. Alford also met with SRNS executives to discuss future workforce opportunities at SRS.



Dr. Sean Alford (right) and SRNL's Travis Hubbard

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