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SAVANNAH RIVER NUCLEAR SOLUTIONS



SRNS Today

Furthering HBCU support

SRNS continues support for mutual education goals



This month

Tritium Finishing Facility • Neutralizing contamination • Solid Waste • Future City



Stuart MacVean
SRNS President and CEO

Welcome

to the February 2020 edition of

SRNS Today

Education opens doors to the future.

Savannah River Nuclear Solutions is proud to help open those doors through our support of educational opportunities. From elementary grades through universities and beyond, SRNS offers resources to bring the world of science, technology, engineering and mathematics to students in classroom settings and in real-world experiences.

Our recent signing of a Memorandum of Understanding with South Carolina State University and Claflin University—two Historically Black Colleges and Universities—demonstrates our level of commitment to enriching the future of education in our state. It's mutually beneficial. Students receive exciting opportunities and our company's support helps develop a steady pipeline of potential employees who are trained and enthusiastic in helping us meet our missions and goals.

Those missions are vital to our nation. The National Nuclear Security Administration recently approved Critical Decision 1, or CD-1, for the Tritium Finishing Facility. This key milestone is a step forward in positioning SRS in continuing its tritium missions for decades to come. We also welcomed LTC Joseph Kling, Chief, Nuclear Weapons Advocacy and Modernization with the U.S. Strategic Command, for a visit to the Savannah River Site. LTC Kling spoke to employees about the importance of the proposed Savannah River Plutonium Processing Facility mission. SRNS also continues its dedication to fulfilling our Environmental Stewardship missions for the Department of Energy-Environmental Management, as evidenced by the completion of an innovative cleanup system for contaminants from the former P Reactor. I'm proud of our employees and the work they do to support all our missions at SRS.

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

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 employees and other stakeholders of the company's operational- and community-related activities. If you have questions or comments, please contact us at 803.952.6131 or visit our website.

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Stuart MacVean (center) signs an MOU that provides extensive SRNS resources in support of two historically black South Carolina universities. Marcus Burgess, Associate Vice President of Major and Planned Gifts, Claflin University (left), and Dr. James Clark, President, South Carolina State University, provide their signatures as well.

SRNS continues HBCU support with signing of two MOUs with S.C. State and Claflin

SRNS continues to support Historically Black Colleges and Universities (HBCUs), including the recent signing of a memorandum of understanding (MOU) with South Carolina State University (SCSU) and another with Claflin University (CU).

"The primary purpose of these MOUs is to ensure we understand and support each other's needs," said Stuart MacVean. "As we work to fill our pipeline, we're seeking candidates who have qualifications that meet our education and training requirements in any one of several occupations. We're confident these agreements with South Carolina State University and Claflin University will further strengthen the valued partnership we have enjoyed for many years now."

The MOUs feature a \$25,000 donation and internship opportunities for SCSU and CU students in a wide range of potential careers involving business administration, operations and STEM-based (science, technology, engineering and math) professions. The monetary donation will fund 10 \$2,500 student scholarships for each university.

"These MOUs will ensure students graduate with a high degree of confidence that they will be successful in obtaining the skills needed to qualify for jobs at SRNS," said MacVean. "That's the goal we're mutually pursuing."

SCSU President Dr. James Clark stated that he believes the SCSU MOU represents an important long-term commitment between SRNS and students. "We are grateful for the resources the SRNS executive



"We are grateful for the resources the SRNS executive team has generously provided to us. This will be used to further enhance the state's only undergraduate Nuclear Engineering Program. This effort demonstrates the value of partnerships and collaborations between corporations and institutions of higher education working together for a common and admirable cause."

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The MOUs were signed at the SRS-HBCU Partnership Summit held Feb. 3 at Aiken County's Applied Research Center and endorsed by Congressman James E. Clyburn (D-SC).

SRNS has established extended partnering agreements with several HBCUs since becoming the management and operations contractor at SRS in 2008.



A CEO who 'gets it'

National Safety Council honors MacVean as one of nine CEOs world-wide for dedication to employee safety and health

The National Safety Council (NSC) has recognized Stuart MacVean as one of its "2020 CEOs Who Get It." The NSC's recognition honors a small number of CEOs from companies world-wide who go the extra mile to protect employees both on-and-off the job.

Since becoming SRNS President and CEO in 2016, MacVean has actively led a portfolio of safety and health programs designed to modernize and enhance the safety culture, wellness and training at SRNS and in the community.

MacVean has addressed the generational shift at SRS by leading enhancements to onboarding and mentoring programs to accelerate hiring and training in support vital Site missions. His vision led to the creation of a program for employees—after 90 days of joining the company—to access training modules taught by SRNS senior leaders. The program allows new employees to get a broader understanding of company expectations and the safety culture that make SRS one of the safest industrial sites in the world.

In 2019, MacVean led the SRNS workforce to a new company safety record, exceeding 25 million safe work hours without a lost work day because of an on-the-job injury.

"One of Stuart's most recognizable character traits is his authentic concern for worker safety and health. He takes safety personally and goes the extra mile to inspire employee ownership for safety performance while also bolstering hazard recognition and control mechanisms in work package development," said Rick Sprague, Senior Vice President, Environmental, Safety, Health and Quality.

The February issue of NSC's Safety+Health magazine will feature MacVean and the eight other national and international recipients of the 2020 CEOs Who "Get It" title.

The National Safety Council is a nonprofit organization whose mission is to eliminate preventable deaths at work, in homes and communities, and on the road through leadership, research, education and advocacy. Founded in 1913 and chartered by Congress, NSC advances this mission by partnering with businesses, government agencies, elected officials and the public in areas where it can make the most impact.

USSTRATCOM visitor stresses value of proposed pit mission

Last month, LTC Joseph Kling, Chief, Nuclear Weapons Advocacy and Modernization with the United States Strategic Command (USSTRATCOM), spoke to the employees working on the proposed Savannah River Plutonium Processing Facility mission. He shared a lot of information, but one simple message: The plutonium pit mission, proposed for SRS, is important to USSTRATCOM, the nation and its nuclear deterrent.

"Senior leaders in the Department of Defense (DoD) routinely tell Congress and routinely tell the public that the nuclear mission is the number-one priority mission for the DoD," he told the group. "And leaders of the Nuclear Weapons Council – and that includes the USSTRATCOM commander, the NNSA Administrator as well as others – also routinely tell the public and routinely tell Congress that this infrastructure, this plutonium pit production, is the number-one priority infrastructure mission. So that means that all of you here are part of the number-one infrastructure mission of the number-one priority DoD mission, and that is awesome."

USSTRATCOM is one of 11 unified commands in the DoD. Its mission is to deter strategic attack and employ forces, as directed, to guarantee the security of our nation and our allies. The command's assigned responsibilities include strategic deterrence and nuclear operations, among others.

LTC Kling pointed out that the most recent Nuclear Posture Review outlined the nation's need to recapitalize its pit production capability



LTC Joseph Kling, Chief, Nuclear Weapons Advocacy and Modernization with USSTRATCOM speaks to employees working on the proposed Savannah River Plutonium Processing Facility mission.

in order to address the aging of existing pits and provide the nuclear posture needed.

He said that visiting SRS gave him an opportunity to meet and talk with the personnel who are preparing for that proposed mission. "It's great to see that you are actively engaged in meeting that challenge that is set before you," he said.

Tritium Finishing Facility receives CD-1 approval

An SRS project to update vital tritium capabilities in support of the nation's nuclear deterrent has achieved a key milestone. The DOE's National Nuclear Security Administration approved the conceptual design, cost range and schedule range for the Tritium Finishing Facility (TFF), which will position SRS to continue executing its tritium missions for decades to come.

Tritium is a radioactive isotope of hydrogen and a key element in nuclear weapons. SRS prepares the nation's only tritium supply for national defense, and it ships tritium-loaded containers, called reservoirs, to the Department of Defense, where they are installed in weapons.

TFF will replace SRS's H Area Old Manufacturing Facility (HAOM), which currently houses the assembly, inspection and packaging processes for tritium production. HAOM dates from the 1950s, and potential problems related to the age of the facility, including maintenance cost, could pose the risk of negatively impacting operations. Replacing HAOM will ensure safe, reliable and efficient operations for the future.

"Investment in the Nuclear Security Enterprise's infrastructure represents critical and tangible proof of America's commitment to nuclear deterrence," said Lisa E. Gordon-Hagerty, DOE Under Secretary for Nuclear Security and NNSA Administrator. "TFF will ensure a vital capability for decades to come with greater efficiencies and reduced operating costs."



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With this approval, the TFF project may proceed to the next major milestones, which include approval of the project's preliminary and final designs and authorization to release funds for construction. TFF is expected to come online in 2031.

"SRNS is executing missions that are vital to our country's national security," said Stuart MacVean, SRNS President and CEO. "Modernizing facility infrastructure ensures our ability to both safely and efficiently meet the needs of the NNSA and ultimately, the nation."



Solid assessment

Solid Waste Management program self-assessment draws praise

Taking a hard long look at operations is important to achieving performance excellence. Assessments by internal and external parties play a key role in ensuring the ongoing success of various programs at SRS.

The SRS Solid Waste (SW) Program recently underwent an assessment performed by the Office of Enterprise Assessment (EA) to verify compliance in characterizing and dispositioning radioactive waste, such as low-level waste, mixed waste and transuranic waste.

The SW Program supports both DOE–Environmental Management (EM) and NNSA missions at SRS, serving programs such as the Savannah River Tritium Enterprise (SRTE) as well as plutonium downblend operations and project implementation in K Area for expediting removal of plutonium from South Carolina.

“Disposing of contaminated waste from facilities in underground trenches, vaults, or other approved safe methods, along with monitoring to prevent unintentional spread of contamination from waste disposal units, is our mission,” said SRNS SW Programs Manager Kerri Crawford. “The Solid Waste Management program at SRS is vital to the safety and security of our nation.”

EA is performing assessments across the DOE complex—including SRS—to ensure the highest standards of safety and program execution.

The SRS SW Program performed a rigorous self-assessment to prepare for the Office of Environmental Assessment visit, including procedure reviews, document reviews, staff interviews and evolution observations to identify any needed adjustments. Ultimately, the EA assessment reported no findings and no deficiencies in its

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assessment, while noting that the SRS Solid Waste Program was “thorough, appropriately critical and effective.”

Ike White, Senior Advisor for EM to the Under Secretary for Science, congratulated the team. “Good job by the SRS team in preparing for the assessment,” White said in an email to SRS Site Manager Mike Budney. “...the exceptionally rigorous self-assessment done at the Site before the EA review was very well done.”

Janice Lawson, SRNS Deputy Vice President for EM Operations agreed and thanked the SRNS employees responsible. “Our Solid Waste Management program is among the best in the DOE complex, as proven through the recent assessment,” Lawson said. “The report commends our structure and consistency, and I want to thank our employees for their continued commitment to maintaining excellence.”

Photo: The Solid Waste Management Facility at SRS is responsible for the disposition of SRS solid waste, which includes sanitary, construction and demolition, hazardous, low-level radioactive and transuranic wastes.

Project complete

Massive underground wall built of recycled iron filings neutralizes chemical contamination from former P Reactor

SRNS has completed construction of a massive underground wall-like structure made of iron filings that allows groundwater to flow through and neutralize chemical solvents found in the aquifer beneath SRS.

The wall is as long as three basketball courts and, on average, about four inches thick. It extends 135 feet below the earth’s surface at its deepest point.

Subcontractor workers mixed large amounts of a food-grade, starch-like material with 1.5 million pounds of iron filings obtained from reclaimed automobile engines. The material is then injected down 22 strategically-placed wells.

“Incredibly, the weight of this reactive permeable wall is equal to approximately 500 Toyota Prius vehicles and acts much like a giant water filter to remove degreasing solvents like those used at dry cleaning stores,” said Mark Amidon, Savannah River National Laboratory Geologist. “The iron causes the physical structure of the solvents to break down into a harmless material. The solvents are completely destroyed.”

This environmental cleanup system is designed to work for decades with routine monitoring and has been proven effective in other parts of the United States.

“This highly efficient environmental cleanup technology is another asset within the arsenal of environmental restoration tools assembled for use across SRS by SRNS working with DOE,” said Seth Miller, the SRNS Project Manager, Area Cleanup Projects (ACP). “Precision placement at greater depths, enabled us to intercept the contaminated groundwater in a narrow zone as it travels along an old, subsurface stream bed channel. It’s quite an accomplishment.”

“What’s impressive is that the team was able to make key process improvements, which enabled the safe and successful completion of this project ahead of schedule,” said Philip Prater, DOE Senior Physical Scientist.

“For example, SRNS personnel were able to recognize early on and take advantage of cooler air temperatures. The cooler weather greatly improved the volume of iron injected each day,” added Prater. “Further, ACP ensured excess iron was distributed where groundwater contaminant levels were the highest, which provided improved remedial effectiveness.”

From 1954 to 1984, the Site’s P Reactor produced tritium and plutonium in support of the nation’s Cold War nuclear deterrent. Solvents were typically used at the reactor to decontaminate items or prepare equipment for repair. Over time, the solvents seeped into the subsurface contaminating the aquifer.



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‘Maintenance for a Day’

Career tour reveals advantages of technical school education

Students from the Richmond County (Ga.) Career, Technical and Agricultural Education Program recently toured SRNS facilities to learn more about employment opportunities in maintenance.

Students from multiple high schools participated in presentations and a comprehensive tour of two SRS buildings housing maintenance equipment, machinery and personnel.

“As we move forward as a company, we need to recruit the next generation of personnel who will be responsible for maintaining our facilities and keeping the Site operating for decades to come,” said Dennis Cheeks, SRNS Site Functional Maintenance Manager. “For this tour, we brought in high school students to spark an interest in a career path where they can use their technical skills and to show them various job opportunities available at SRS.”

Cheeks emphasized the steps that students can take to enhance their viability as job candidates. Additionally, he provided actions and examples of negative behaviors that could potentially eliminate them as future employees at SRNS. He challenged the students to surround themselves with positive influences and to be aware that decisions they are making today can have longstanding consequences in the future.

Multiple SRNS speakers urged the students to obtain degrees from local technical school programs designed to fulfill many of the basic job requirements at SRS. These programs include welding, nuclear operations and radiation control, as well as electronic and mechanical maintenance.

“The students visiting today are at that point in life where they need to make a decision in the next year or two as to what type of career to pursue,” said Cheeks. “We want to give as much

“Salaries are competitive with excellent benefits. You can earn a very good living here while pursuing a rewarding career. I’ve really enjoyed my time at SRS. You can too.”

Taylor Williams

information as possible to help them make that decision and to offer a general explanation about our missions at SRS.”

Taylor Williams, SRNS Security Maintenance, shared the value of the knowledge and experience she gained while earning an Electrical and Computer Engineering Technology degree at Augusta Technical College and then working at SRS for the last 18 months.

She also emphasized the financial and employee benefits of working for SRNS within the maintenance field.

“Salaries are competitive with excellent benefits. For example, they give you four weeks of vacation beginning day one,” said Williams. “You can earn a very good living here while pursuing a rewarding career. I’ve really enjoyed my time at SRS. You can too.”

Discussions also included the merits and cost of a two-year technical college degree versus a four-year college degree, the importance of an effective resume and practical interview skills. Cheeks emphasized there was a nationwide shortage of students entering technical schools, so educating high school students regarding these career opportunities has become a focus of many employers in order to fulfill technical vacancies.

Teach-In!

Engineers, students intersect during annual classroom STEM activities

SRS engineers and scientists recently provided student “Teach-Ins” featuring interactive science and engineering-based demonstrations at 20 local middle schools in support of National Engineers Week.

More than 60 SRS engineers and scientists volunteered to conduct a total of 133 Teach-Ins over a two-week period. Managed by SRNS since 2008, Teach-Ins have reached more than 20,000 students within several school systems near SRS.

“SRS Teach-Ins allow students to directly interact with actual engineers,” said seventh grade teacher Ingrid McNeil, Episcopal Day (EDS) School, Augusta, Ga. “Through Teach-Ins, students gain a better understanding of how engineers go about solving problems in the different disciplines of engineering.”

Middle school students participating in the Teach-In Program benefit from a wide range of science and engineering demonstrations and clever presentations to include: the properties of fire, making a bridge out of straws, air-powered model cars, creating homemade hover crafts and fiber optic communication systems.



Photo, left: Using only noodles and marshmallows, Kennedy Wilson (left) and Lily Jones explore engineering during the Teach-In at Episcopal Day School in Augusta, Ga.

Photo, below: SRNS Engineer Graham Jones measures the height of a tower built by students (from left) Ellie Trotter, Jones, Will Cearley, Christian Norville and Mason Dozier.



S.C. students shine in annual regional Future City competition

Teams of middle school students from across South Carolina have been building large, and often complex, table top models in hopes of winning this year's Regional Future City® Competition.

Special awards were presented to select teams and the first, second and third place winners were announced after each table top model was carefully examined and team members quizzed by a panel of guest judges. Merriwether Middle School, North Augusta, S.C., took first place honors, with second place going to Kennedy Middle School, Aiken, S.C., and third to Westview STEMS Magnet Middle School, Greenwood, S.C.

"All our research showed just how much work is accomplished by engineers, especially nuclear engineering at SRS," said Hailey Meteraud, an eighth grader at Merriwether Middle School. "Since all of this really interests me, I've decided to be an engineer."

The first-place team received an all-expense-paid trip to compete in the Future City Competition National Finals in Washington, D.C., this month.

Each year, student teams are presented a new design challenge. This year, "Clean Water: Tap into Tomorrow," asked students to create a resilient water system to maintain a reliable supply of clean drinking water.



The team from Merriwether Middle School in North Augusta, S.C., took home first place honors in this year's Regional Future City competition.

With guidance from a volunteer mentor and their supporting teacher, each team of students conducts research, designs the city and gathers the materials needed to convince the judges that their city is the best.

SRNS Education Outreach personnel has managed the local Future City regional competition for 17 years, in partnership with the Ruth Patrick Science Education Center at the University of South Carolina Aiken.

SRTE support enables nuclear physics research at Jefferson Lab

SRS tritium expertise and capabilities have played a supporting role in nuclear physics experiments at the Thomas Jefferson National Accelerator Facility (Jefferson Lab) in Newport News, Va.

A DOE Office of Science national laboratory, Jefferson Lab is home to one of the most powerful microscopes in the world—the Continuous Electron Beam Accelerator Facility. More than 1,600 researchers use this accelerator facility to study the subatomic particles that make up the universe.

Researchers at the lab were interested in conducting experiments that used the accelerator's beam to study the nuclei of tritium. To safely acquire and properly contain the tritium, the nuclear physicists and engineers at Jefferson Lab turned to SRTE for help.

SRTE engineering personnel went to Jefferson Lab to collaborate on the design for a ventilation system and reusable tritium hut to ensure tritium would not contaminate the experimental area in the event of a mishap. They returned to test the system, which showed that the designs worked as intended.

SRTE HVAC Design Authority Greg Howard said, "This assignment was a challenge because their facilities were not designed to work with tritium. We worked together to modify their existing infrastructure to create an HVAC system and containment hut that would not only provide them a safe environment for this tritium experiment but also a system that could be reused for future missions at the lab."

Jefferson Lab nuclear physicists and engineers designed a target cell for the tritium. SRNL reviewed the design focusing on the potential for tritium embrittlement or cracking in 7075-T6 aluminum, the primary confinement vessel designed for the experiments.

Once preparations for the experiment were complete, SRTE filled, packaged and delivered the tritium target cell to Jefferson Lab. When the experiments were complete, the tritium cell was returned to SRTE for unloading and proper disposal.



SRNS Facility Manager Cheryl Parrow monitors relamping by mentor-protégé company US&S employees Josh Miller (center) and Matthew Bradham.

Mentor-Protege Program at SRNS boosts small businesses, supports EM missions

SRNS is sharing knowledge and experience with small business mentor-protégé programs throughout the DOE complex while steadily increasing small business participation at SRS.

"I believe DOE-Headquarters Small Business Director Charlie Smith recognizes the value of our mentor-protégé program, and as a result, he and members of his staff recently hosted our quarterly Protégé Center of Excellence event in Washington, D.C., inviting our SRNS protégé companies," said Alex Agyemang, SRNS Small Business Liaison Officer.

Agyemang noted that few DOE sites have a small business mentor-protégé program, and those with a program often manage only one or two companies. "Mentor-protégé programs are a tremendous asset for small businesses and participating EM contractors," said Agyemang. "Teaching these small and often new companies best practices and showing them how to provide-high value products and services helps all involved."

Agyemang noted that choosing to support local small businesses has a significant economic "ripple effect" in the communities surrounding SRS. Mentor-protégé companies awarded contracts at SRS often hire local residents and frequently satisfy a large percentage of their procurement needs using nearby commercial vendors.

According to Agyemang, recent economic impact studies have shown for every dollar SRS organizations spend, it returns two dollars to the five counties surrounding SRS. "The impact on local economies can be impressive," added Agyemang. "One of our local mentor-protégé companies based in North Augusta has thrived within this business model. In fact, they recently expanded, having obtained a similar contract at Los Alamos National Lab."

As each mentor-protégé receives their Mentor-Protégé Agreement, they can obtain subcontracts to conduct similar work at other EM sites. The agreement serves to significantly simplify the procurement process, saving countless federal procurement dollars through streamlined purchasing methods.



SRNS donates \$10,000 to Barnwell County Soup Kitchen

SRNS has donated \$10,000 to the Barnwell Soup Kitchen. Pictured at the check passing were (from left) Jacinda Dickerson, Soup Kitchen volunteer and Board member; Kristin Huber, SRNS Government and Community Relations; Sherrie Still, Soup Kitchen Director; Bart Kelley, Pastor of Barnwell First Baptist Church; and Chris Caldwell, SRNS Government and Community Relations. The soup kitchen prepares more than 8,000 hot meals annually for the hungry and homeless in Barnwell County, S.C. The contribution will help stock the kitchen so that more than 30 volunteers can serve guests each weekday. Director Sherri Still said, "The primary goal has always been to feed and treat guests with kindness and respect in order to make a difference in each and every one of the lives of those who walk through our doors."

SRNL marks five million safe hours

In December 2019, SRNL achieved more than five million hours of operations without a lost work day, marking just shy of three years without a workplace injury or illness causing an employee to miss work.

Laboratory Director Dr. Vahid Majidi said, "The team's commitment to safety, security and quality is essential to the personal and professional well-being of every lab employee. It's also critical to achieving the larger goals of our laboratory."

In 2018, SRNL was the safest of the 17 national laboratories, based on the measure of employee days away or restricted due to workplace injury or illness. The laboratory has been designated as the safest across the DOE complex eight years in the last decade.



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We make the world **safer.**