

● JULY 2017

SAVANNAH RIVER NUCLEAR SOLUTIONS



SRNS Today



This is a drill...

SRNS leads first-ever 'Active Shooter' emergency exercise at SRS

This month

Tritium Extraction Facility milestone • Intern reception • Outreach impact • VIP visitors





Stuart MacVean
SRNS President and CEO

Welcome

to the July 2017 edition of

SRNS Today

SRNS is committed to being the best client for our Department of Energy customer. With safety as our primary focus, delivering and exceeding customer expectations is the goal we strive for every day.

The Savannah River Site held its annual evaluated exercise for emergency response on July 12, with more than 400 people participating from both on-site and off-site contractors, federal and local agencies, and area medical centers. This year's exercise focused on an "active shooter" scenario, yielding important lessons learned in what was one of the first of its kind exercises across the DOE complex. The event was attended by Jim Hutton, DOE Office of Environmental Management (EM) Deputy Assistant Secretary for Safety, Security and Quality Assurance, who applauded SRS for its preparedness efforts. Thanks to everyone who participated to make this drill a success for our site and our customer.

Recently, the Savannah River Tritium Enterprise delivered a significant milestone to their National Nuclear Security Administration customer by completing three tritium extractions in a single year. This was the first time that the schedule for the Tritium Extraction Facility has called for more than one extraction per year.

Along with Jim Hutton, we had several other high-profile visitors tour the site this month. Roger Jarrell, Senior Advisor to the Secretary of Energy for EM, toured SRS, including H Canyon and the K Area mock-up facility. Additionally, staff members from the U.S. Senate Armed Services Committee, along with staff from U.S. Senators Lindsey Graham and Angus King, visited several SRS operations. We were pleased to show how we are delivering to our customers on these tours.

DOE trusts SRNS to help make the world safer every day, and we take that obligation very seriously.



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 803.952.9584 or visit our website.

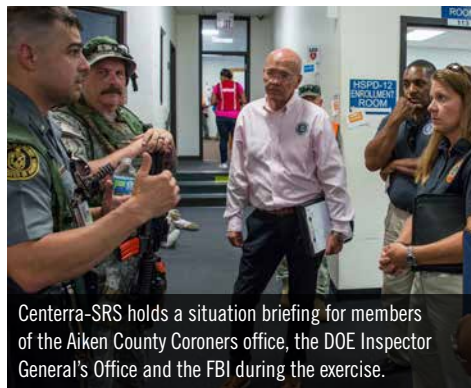
www.savannahrivernuclearsolutions.com



Centerra-SRS Protective Forces respond to reports of an Active Shooter in the 2017 SRS Emergency Exercise.



The SRS Rescue Task Force team provides medical attention to exercise "victims."



Centerra-SRS holds a situation briefing for members of the Aiken County Coroners office, the DOE Inspector General's Office and the FBI during the exercise.



Exercise "victims" are escorted by Centerra-SRS Protective Forces to safety.

SRS 'active shooter' drill yields important lessons for future scenarios

SRS conducted an emergency response exercise in early July that focused on an Active Shooter scenario, yielding important lessons learned in what was one of the first of its kind across the DOE cleanup complex. More than 400 people participated as responders, controllers and evaluators in the July 12 exercise, which was the culmination of nearly two years of planning and training led by the DOE Savannah River Operations Office and SRNS.

The scenario presented to the site's responders involved a disgruntled employee and her spouse entering the SRS Badge Office to take revenge. Mannequins were used to depict the 13 people "killed" in the scenario, while 15 other "victims" were wounded and required medical treatment.

After the first mock assailant was neutralized by site protective forces contractor Centerra-SRS, the Rescue Task Force teams (SRS Fire Department and Centerra) entered the building to provide immediate medical attention to victims. The Behavioral Response Team, staffed by SRNS Workforce Services, provided psychological first aid to witnesses of the attack. SRS executives also held a mock news conference to demonstrate how they would answer media questions in a real event.

James Hutton, the DOE Office of Environmental Management's Deputy Assistant Secretary for Safety, Security and Quality Assurance, was on hand for the exercise and applauded SRS for making it a priority. "This exercise was well worth the effort because the effectiveness of our response to events like this is measured in lives saved," Hutton said. "There will be lots to learn that we can incorporate in training and preparedness going forward."

SRNS upgrades key power distribution equipment

A new infrastructure project being undertaken at SRS is replacing 60-year-old power distribution equipment to ensure the lights stay on for key nuclear materials and spent nuclear fuel storage facilities.

SRNS recently kicked off the replacement of the 13.8kV switchgear in K and L Areas, a project that is set to be completed next year without interrupting power to either facility.

K Area provides for the handling and interim storage of excess plutonium and other special nuclear materials, while L Area is the consolidation point for all aluminum-clad spent nuclear fuel from research reactors across the United States and around the world.

"These facilities are vital to SRS operations and our national security mission," SRNS President and CEO Stuart MacVean said. "Ensuring the reliability of the infrastructure to support these missions is one of our most important jobs."

The current power distribution systems at K and L Areas entered service in 1951 and are long past their intended operational life. The facilities have experienced an increased number of outages in recent years and replacement parts are no longer commercially available.

"To maintain the current system, we've had to cannibalize replacement parts from other areas on site and, of course, those parts are just as old as the ones being replaced," said Tim Spieker, Project Manager.

Additionally, the switches in the existing facility run on compressed air and the air tanks had degraded in recent years such that workers could not access the facilities unless power to the facility was completely turned off.

"They can't go in to do anything without turning the whole building off," Spieker said. "Each time it took three or four days. The replacement project will increase reliability tremendously, which will allow everyone to be more efficient."



A new 13.8kV switchgear has been installed in 151-1L.

The \$19 million project is being jointly funded by EM and the National Nuclear Security Administration. The effort is projected to finish ahead of schedule with completion set for summer 2018.

Though the K and L Area projects are separate, they are being managed as one project to increase efficiency.

"We're managing it like one big project, tackling them one right after the other," Spieker said. "There is so much similarity and it's much more cost effective to do it this way."

DOE-EM's Roger Jarrell tours SRNS facilities

SRNS EM Operations Program Manager Jimmy Winkler (left) explains H Canyon control room processes to Roger Jarrell (second from right), Senior Advisor to the Secretary of Energy for EM during his recent tour of H Canyon. Also participating in the tour were SRS Site Manager Jack Craig (second from left) and Allen Gunter, DOE Senior Technical Advisor to the Assistant Manager for Nuclear Materials Stabilization. During Jarrell's visit in July, he also toured other site facilities including the K Area plutonium down-blend mockup.



Paying it forward

Engineers share impact of SRNS education outreach programs

In 2003, seventh-grader Thomas Nail sat in the front row of his classroom at Davidson Fine Arts in Augusta, Ga., while his teacher introduced engineers from the Savannah River Site (SRS).

"The engineers first quizzed us on basic science questions," said Nail, now a mechanical engineer at SRNS. "Then it got really interesting when they brought out a hovercraft and let us each take turns riding it. For some reason, that hovercraft always stuck with me."

Constructed of plywood, gardening plastic, CDs, duct tape, some staples, a bolt and a leaf blower, the hovercraft represented how air pressure can translate into lifting power, just like a basketball filled with air can bounce.

The demo inspired Nail and his friends to later build their own hovercraft and become more involved with various STEM (science, technology, engineering and math) competitions.

After graduating from high school, Nail attended Georgia Southern University and majored in mechanical engineering. In 2015, Nail accepted a job at SRNS, where he volunteered for the CSRA Teach-Ins. Nail partnered with Mark Duignan of SRNL to lead experiments on thermodynamic principles to a class at Davidson Fine Arts.

A few weeks later, Nail attended a lunch for the Teach-Ins volunteers, and something unexpected happened.

"It all started when we were sharing stories about the activities we led for the students," said Bill Wabbersen, an SRNS engineer. "I began describing my homemade hovercraft, and in that moment, I saw Tom's face light up. It took us both by surprise."



SRNS engineer Bill Wabbersen (left) and Thomas Nail reminisce about a photo showing Nail (second from left) listening to Wabbersen at a 2003 CSRA Teach-Ins at the Davidson Fine Arts School in Augusta, Ga. Today, Nail is a mechanical engineer at SRNL's F/H Labs.



Wabbersen was in fact one of the engineers who visited Tom's class over a decade ago.

In the early 1990s, Wabbersen began volunteering in education outreach with co-worker Ray Tran. "We've visited nearly every school in the CSRA in 25 years," said Wabbersen. "This wouldn't be possible without our SRNS Education Outreach, because they ensure we go through the proper channels to reach the schools. We wouldn't be able to just walk up and volunteer on our own."

The partners-in-teaching have observed the audience is more likely to open up when the entertainment starts and the science and math become hidden. "When I conduct these workshops, I try to find the wonder in myself that I had when I was young," Wabbersen added. "We also try to connect to the five senses, just like the day Tom rode on that hovercraft. There's a distinct sound it makes, and it feels different than sitting in a regular chair."

Today, Nail works on the safety significant fire suppression system in F/H Laboratories. "I've reached between 30,000 and 40,000 students, and I had never gotten feedback from anyone who decided to pursue the STEM fields as a result of what I do until I met Tom," concluded Wabbersen.



SRNS President and CEO Stuart MacVean (right) chats with interns Benjamin Langdale (from left), Logan Stringfield, Serenity Edwards and Jacqueline Phillips.

Reception provides chance for interns to share work experiences with leadership

Interns working at SRNS provide a wealth of knowledge, immeasurable enthusiasm and a unique perspective throughout their internships. More than 150 interns, managers and executives gathered for the annual SRNS Intern Reception in Aiken, S.C.

"I didn't realize the significance that SRS had on our country's history before my internship," said University of Georgia senior, Daniel Garon. "It's incredible how some of these facilities have been running for more than sixty years. For me, it's been rewarding to get a hands-on experience by working in H Canyon for the electrical systems to support group to maintain the facility."

According to SRNS Internship Program Coordinator Nate Diakun, the purpose of the Intern Reception is to provide the students an opportunity to meet with senior management and demonstrate the company's appreciation for the interns' work.

"The internships provide opportunities intended to grow the students and to create an environment where knowledge transfer can take place between the mentors and their interns, who hopefully, will be our future employees," said Diakun. "There are so many amazing, creative solutions that can be brought to the forefront by this generation."



Intern William Gregory (right) gets some career pointers from Rick Sprague, SRNS Senior Vice President for Technical Services.



Interns Lacey Brunson and Martin Pope discuss their SRNS experience.



New TEF milestone

SRTE conducts three tritium extractions in single year

For the Savannah River Tritium Enterprise (SRTE), providing tritium for the nation's defense needs is nothing new. The facilities at SRS have been supplying the gas, which is the radioactive isotope of hydrogen used in modern nuclear weapons, since the 1950s.

Recently, however, SRTE achieved a new milestone by conducting three tritium extractions in a single year to meet the FY17 schedule for supplying the national defense. This marks the first time that the schedule for SRTE's Tritium Extraction Facility (TEF) has called for the performance of more than one extraction in a year.

"Achieving this significant milestone—especially doing it safely, securely and in a disciplined manner—has required a tremendous team effort on the part of the entire SRTE team," said Lt. Gen. Frank G. Klotz (Ret.), Department of Energy Under Secretary for Nuclear Security and National Nuclear Security Administration Administrator. "Our ability to provide tritium is an important element to maintaining the safety, security and effectiveness of the nation's nuclear weapons stockpile."

"I owe our employees my appreciation, not just for the teamwork and dedication that brought us to this milestone, but for the way they work every day to fulfill our important national mission," said Wallis Spangler, SRNS Senior Vice President for NNSA Operations & Programs.

Tritium is an integral component in the nuclear weapons stockpile; to perform as designed, every U.S. nuclear weapon uses tritium. The gas, however, decays at about five percent per year. That means that, in order to keep our nation's defense functional, the tritium has to be replenished on a regular basis.

Since 2007, SRTE has used its modern Tritium Extraction Facility to supply tritium by extracting the gas from rods irradiated at the Tennessee Valley Authority's Watts Bar reactor. In earlier decades at



Operators Paul Holloway and Jerry Wright at work in the Tritium Extraction Facility.

SRS, rods were irradiated in its own reactors. The last SRS reactor was permanently shut down in the 1990s.

Tritium is also supplied by recycling the gas from the reservoirs of existing weapons returned from the stockpile. That mission, which is also carried out exclusively by SRTE, involves cleaning and purifying the gas to remove decay products and impurities before mixing and loading into new reservoirs for the U.S. military.

Zero emissions, totally renewable

SRNL, Hawaii Hydrogen Carriers take hydrogen forklifts to next level through DOE Small Business program

SRNL and Hawaii Hydrogen Carriers (HHC) are collaborating to create a new generation of hydrogen powered forklifts thanks to DOE's Small Business Vouchers (SBV) pilot.

SRNL has been awarded \$300,000 to work with HHC to ensure, optimize and validate the performance of a metal hydride-base, onboard hydrogen storage system for Proton Exchange Membrane (PEM) fuel cell powered forklift trucks.

Forklifts with gaseous hydrogen storage units require high pressure – up to 5,000 pounds per square inch (psi) – but the new solid-state system operates at pressures of only 600 to 800 psi while storing more than twice the amount of hydrogen in less space. As a low-pressure alternative, the system will be safer, run longer before refueling and require less maintenance. In addition, the metal hydride based storage system can be refueled directly from a solar-powered water electrolyzer, making the hydrogen completely renewable and less costly, which in turn makes the technology more broadly adoptable by all sizes of companies.

Scott McWhorter, Integrated Energy Systems Section Manager at SRNL and Project Lead, said the knowledge and expertise SRNL can offer small businesses is why these partnerships are important.

"SRNL's R&D capabilities including full system engineering can be accessed by small businesses through the voucher program," McWhorter said. "We provide resources they wouldn't normally have, allowing them to innovate faster and be more competitive nationally and internationally."

For this project, SRNL will provide: analyses and testing of HHC's prototype; engineering expertise for troubleshooting; and modeling capabilities to examine the different scenarios and conditions under which the system will operate. The ultimate goal is to end up with a metal hydride based fuel cell powered forklift that is cost competitive with current systems on the market while exceeding the performance and ability to operate and maintain these compressed gas systems.

Craig Jensen, President of HHC, said he is amazed at the advantages the partnership with national laboratories has done for this project so far. "The long history of work on metal hydride systems at SRNL has already started paying dividends," remarked Jensen. The team is hoping to demonstrate the improved system in the upcoming months which will allow HHC to accelerate the commercialization of these systems.



▲ Scott McWhorter (left), Integrated Energy Systems Section Manager at SRNL, and Craig Jensen, President, Hawaii Hydrogen Carriers, with the metal hydride fuel cell power system

▶ A forklift powered by HHC's metal hydride-based hydrogen storage system for fuel cell applications



"For small businesses, there can be so many hurdles, but partnerships like this with SRNL, helps remove those barriers," he said. "SRNL's expertise is making this project a success."

HHC created the prototype forklift with the metal hydride base storage units with the support of Sandia National Laboratories and Hydrogenics. SRNL will now take this technology one step further towards commercial viability.

SRNL is one of eight DOE national laboratories participating in the DOE SBV, an initiative to provide American small businesses the expertise and technical resources to combat challenges such as affordability or limited resources.

Senate Armed Services Committee staffers tour SRS

Staff members from the U.S. Senate Armed Services Committee, along with staff from U.S. Senators Lindsey Graham and Angus King, visited SRS in July to tour several SRS operations. Their visit included a tour of the Tritium Extraction Facility which supplies the radioactive hydrogen isotope used in our nation's nuclear defense, along with the plutonium down-blending mock-up and waste management facilities. The group also visited SRNL, participating in briefings and tours for two major lab mission areas: national security and environmental stewardship. For national security, the group received a classified briefing and toured the FBI Radiological Evidence Examination Facility. For environmental stewardship, the group toured the shielded cells and received briefings on GrayQb, virtual reality and the Mark-18a program.



SRNS Program Manager Bob Snyder (left) describes TEF operations to tour participants.



Words of wisdom on 'Becoming the boss...'

How do you become an inspirational leader? You work hard every day to become the boss you would want to work for. That was the message from Major General Garrett Harencak, Commander, U.S. Air Force Recruiting Joint Base, San Antonio-Randolph, Texas, to more than 170 members of SRNS Leaders Emerging Among Professionals (LEAP) and Aspiring Mid-Career Professionals (AMP). During his talk, Major General Harencak shared his perspective on loyalty, taking risks and staying calm during crises. LEAP and AMP are peer-led organizations that provide opportunities for professional development, outreach and networking for SRNS employees.

DOE-EM recognizes SRNS for strategic procurement sourcing

The DOE-EM has recognized SRNS for being good stewards of taxpayer dollars. SRNS participates in EM's Strategic Sourcing Initiative (SSI), which applies an organized, systematic and collaborative approach to acquire commonly used goods and services, and enables contractors to partner with companies to develop optimal solutions, share best practices and create a strategic sourcing community.

"EM prime contractors working together to leverage common commodities, thus enabling pricing and processing efficiencies, is critical to achieving the ultimate goal of maximizing taxpayer value for every dollar spent," said Ralph Holland, Head of Contracting Activity for DOE-EM.

SRNS developed an integrative approach to supply chain management through innovative system and process changes, achieving a SSI savings for EM totaling \$16.3 million in FY16. SRNS also had the highest total eSourcing savings amount, \$6.9 million, and the highest site strategic savings amount, \$7.8 million. eSourcing allows SRNS to obtain bids from different suppliers via an online portal.

SRNS hosts CSRA Lean Alliance meeting

The SRNS Continuous Improvement (CI) group hosted the Central Savannah River Area Lean Alliance on June 14, with a dozen attendees from four local companies, including MTU America, Shaw Industries, Savannah River Remediation and South Carolina Manufacturing Extension Partnership (SCMEP).

SRNS CI Manager PK Hightower gave an introduction about the SRNS lean methodology called FIT (Focused Improvement Transformation), which has been integrated into the company's business system.

"With FIT, employees are the key to identifying and implementing daily improvement," said Hightower. "It's about looking at ways to improve, even in small ways, on a daily basis and staying accountable to tracking your progress toward your identified goals."

Geoff Hendrick, L Area Deputy Facility Manager, presented an overview about a Value Stream Analysis in L Area that optimized the use of the Transfer Bay in L Area's Disassembly Basin.

The meeting concluded with a driving tour of SRS led by Kim Cauthen, SRNS Environmental Compliance and Area Completion Projects.

The CSRA Lean Alliance is coordinated by SCMEP, a nonprofit resource for small to mid-size South Carolina businesses.



The SRS Public Tours bus rolls past the now decommissioned C Reactor.

Seats still available for 2017 SRS Public Tours program

Registration continues for the SRS 2017 Public Tour Program. Seats are available for the sitewide tours held twice each month through December. The SRS tour program is managed by SRNS.

The driving tours provide a view of the historical and operational facilities at SRS where plutonium and tritium were produced during the Cold War. Participants also learn about the site's current activities and future missions.

"The positive results received through our visitor surveys are highly appreciated," said Elizabeth Harm, Tour Program Coordinator. "We welcome the opportunity for visitors to see how safely and securely SRNS manages and operates this important part of our national nuclear defense system. We want to continue to offer this to all who may be interested in this diverse and amazing place to visit."

The tour includes a stop at the Savannah River Ecology Laboratory (SREL), a research unit of the University of Georgia and part of SRS since the site was constructed. Tour participants are treated to a presentation on SREL's mission and a visit with some of the animals that call SRS home.

Today, SRS is a key DOE industrial complex responsible for environmental stewardship, while managing nuclear materials in support of our nation's national defense and U.S. nuclear nonproliferation efforts. The site also develops and deploys environmental cleanup technologies, responsible for treating nuclear and hazardous wastes left from the Cold War.

The tours are free of charge and begin at the Aiken County Applied Research Center, an extension of the SRNL, located off Highway 278, near New Ellenton.

Each tour begins at 12:30 p.m. and typically ends at 4:30 p.m. Seats are filled on a first come, first served basis, up to 50 people per tour. Large groups can be accommodated by calling (803) 952-8994. Participants must be 18 years of age or older and U.S. citizens.

To register for a tour, visit www.srs.gov/general/tour/public.htm or call (803) 952-9472. More information can be obtained about SRS and the tour program at www.srs.gov.

Cool project

PMCS employees rescue walk-in refrigerator for use by Barnwell charity

Generations Unlimited provides services to the elderly in Barnwell County, including serving a daily lunch at senior centers in Barnwell and Blackville and providing home delivered meals. This nonprofit organization was recently notified that a walk-in refrigerator/freezer would be available, free of cost, from a West Columbia elementary school. The only trouble was, they didn't have the means to dismantle or deliver the unit.

Fortunately, a Generations Unlimited staff member recalled a newspaper article about SRNS employees assisting with a cooler refurbishment at the Golden Harvest Food Bank in Aiken a year ago and reached out for help.

SRNS Project Management and Construction Services (PMCS) volunteers were happy to assist; however, the project was time sensitive as the contractor performing renovation work at the school required that the unit be removed the first weekend after summer break began.

PMCS employees Tommy Williamson, T.C. Green, Stan Hampton, Johnny Holden, Jeff Cox and Michael Sanders stepped up, and disassembled and relocated the cooler/freezer to Generations Unlimited in one day. The unit was then reinstalled on a new foundation in Barnwell requiring an additional day of work.

"The donated walk-in cooler will allow us to expand our operation and provide even more meals to our elderly neighbors and those who cannot leave their homes due to disabilities," said Jenny Riley, Special Projects Manager, Generations Unlimited. "It would be difficult, if not impossible, for us to purchase a big ticket item like this. We couldn't have asked for a better experience or group of guys!"

"We were glad to put our previous experience with Golden Harvest's cooler to work and ensure the unit did not go to waste," said Williamson, SRNS Senior Project Manager. "We recognize the importance of this amazing program and are pleased to know the added refrigerated space will greatly help them with their important mission and all the people they assist."



SRNS employee Stan Hampton works on the finishing touches to a walk-in refrigerator/freezer donated to Generations Unlimited.



SRNS Corporate Communications designs new SRS logo

SRS has unveiled a new logo to represent the site. Designed by SRNS Corporate Communications, the orange, green and blue "mark" represents the three SRS focus areas—Environmental Stewardship, National Security, and Science and Energy—and their synergy inherent in SRS missions. To help employees build the SRS brand, a set of tools—approved logo versions, a PowerPoint template and an updated branding guide—has been made available on the SRS internal website. The ultimate goal for the brand identity is to communicate and establish a positive relationship among SRS employees and stakeholders. The brand serves as a public face of the site, as well as the framework that shapes the site's many communication avenues.

Whitt appointed to Denmark Technical College Board

Kevin Whitt, Operational Excellence Site Training Manager for SRNS, was recently appointed by Gov. Henry McMaster to Denmark Technical College's Area Commission. Whitt and the commission are tasked with focusing on the education and training needed for today's workforce.

"The goal of any technical college is to provide students the knowledge, skills and abilities to move directly into a position within local industry, and to meet that goal, local industry has to be an integral part of the process," said Whitt. "Engaging with local business leadership and assisting in program development and implementation will also be key focus areas. Finally, recruiting and retaining students must be a top priority."



Kevin Whitt

Whitt is prepared for the challenge, as he played an integral role in helping to build the curriculum for the Aiken Technical College Nuclear Fundamentals Certificate program.



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