

● AUGUST 2018

SAVANNAH RIVER NUCLEAR SOLUTIONS



# SRNS Today



## TRU waste out of S.C.

SRNS ships more containers  
to WIPP in New Mexico

### This month

EFCOG awards • Cost savings • Sunstruck • Awards and honors • Visitors of note





**Stuart MacVean**  
SRNS President and CEO

# Welcome

to the August 2018 edition of

# SRNS Today

SRNS is celebrating a major milestone—we're marking our ten-year anniversary this month as the managing and operating contractor at the Savannah River Site. Since our arrival in 2008, SRNS has become a recognized leader in the Department of Energy complex in safety and security, environmental cleanup, nuclear material management, nuclear technology, national defense and nonproliferation.

To mark our decade of success, all SRNS employees were invited to celebrations where managers from across the company discussed significant achievements in safety performance throughout the past 10 years. Employees viewed a short video and were presented with umbrellas and cake to mark the occasion. It was a pleasure for me to attend some of the events to thank employees face-to-face for their efforts and continued commitment to their work and to safety.

SRNS also had several other successes to celebrate in August. We made a safe shipment of transuranic waste to the Waste Isolation Pilot Plant, helping to remove waste from South Carolina; two of our employees received Teamwork Awards from the Energy Facility Contractors Group for exceptional performance; and SRNL has teamed with Florida International University to examine a range of fixative and coating materials that could be a huge improvement in stabilizing residual contamination in excess nuclear facilities like 235-F.

For 10 years, SRNS has been proud to help make the world safer. And using our experience, dedication and commitment to safety, we'll continue to do so through the end of our contract.



Savannah River Nuclear Solutions, a Fluor-led company with Newport News Nuclear and Honeywell, is responsible for the management and operations of the Department of Energy's Savannah River Site, including the Savannah River National Laboratory, located near Aiken, S.C. The SRNS corporate and community offices are located in the renovated 1912 "Old Post Office" building in Aiken. 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](http://www.savannahrivernuclearsolutions.com)



SRNS President and CEO Stuart MacVean addresses SRNS Employees at a recent 10-year anniversary celebration.

# SRNS marks 10 years

## Sitewide celebrations highlight company achievements

SRNS recently celebrated its 10-year anniversary as the SRS management and operations (M&O) contractor.

All SRNS employees were invited to celebrations where managers discussed significant achievements in safety performance during the contract. These achievements include surpassing 10 million safe hours on three occasions; receiving 121 safety awards and recognitions from national, regional and local organizations; and SRNS' safety performance being sustained with nearly 40 percent of its workforce being hired since 2008. SRNS recently surpassed 15 million safe hours.

"Our safety culture is driven by the SRNS workforce and it exemplifies this team's commitment and compassion. I am proud to work with each of you, congratulations on a job well-done, and keep up the momentum," said SRNS President and CEO Stuart MacVean.

As the M&O contractor, SRNS is making the world safer by developing innovative approaches to environmental stewardship and nuclear materials challenges; supplying tritium for our country's nuclear weapons deterrent; securing nuclear materials to prevent unwanted proliferation; and transforming nuclear materials into assets and stable wasteforms.



SRNS employees Melody Bell (left) and Maretha Harris greet each other at a celebration.



SRNS employees Duane Hoepker (left) and Jason Davis check out a cake at one of the celebrations held across the site.

# TRU waste out of S.C.

## SRNS ships more containers to WIPP in New Mexico



SRNS recently shipped five standard waste boxes of transuranic waste to the Waste Isolation Pilot Plant (WIPP) in New Mexico, continuing its mission to ship materials out of South Carolina.

“We are pleased to be making more shipments to WIPP,” said Mike Budney DOE-Savannah River manager. “This has been an important mission for SRS and our employees are committed to ensuring safe, secure and efficient removal of transuranic waste from the state.”

In 1999, DOE opened WIPP, a geologic repository near Carlsbad, N.M., and SRS made over 1,650 shipments totaling more than 10,600 cubic meters of transuranic waste before shipments to WIPP were suspended in 2014. WIPP began accepting waste again in 2017 and since then, SRNS has made 10 shipments.

“Before WIPP began accepting shipments again, they issued new, more stringent criteria for waste certification,” said Kerri Crawford, SRNS solid waste programs manager. “For our legacy waste that had already been packaged, characterized and certified, we took the time needed for a thorough review to ensure the waste was acceptable under the new criteria. Since shipments have resumed, we have been able to ship 86 cubic meters of waste to WIPP and continue preparations to ship more.”

The term transuranic means those elements with an atomic number greater than that of uranium (92). These wastes typically consist of protective clothing, tools, rags, equipment and miscellaneous items contaminated with small amounts of plutonium.

# EFCOG awards

## Energy Facility Contractors Group honors teamwork on key issues

SRNS employees Darlene Murdoch and Kevin Whitt, and Aparajita Ellis, Savannah River Remediation (SRR), were recently honored with Teamwork Awards from the Energy Facility Contractors Group (EFCOG) for exceptional performance by groups who were instrumental in addressing a key EFCOG issue.

Whitt, SRNS Training Director, along with other members of the Training Working Group, was recognized by the EFCOG and awarded a Teamwork Award for partnering with other EFCOG members from DOE sites across the country to develop standardized training programs and methods across the complex.

“By standardizing the training material and teaching strategies across the DOE complex we are better able to administer industry-leading and most importantly, uniform training curriculum at every DOE site,” said Whitt. “This also allows greater flexibility for employee mobility between sites and reduces risks associated with various teaching curriculums and instruction methods.”

Although DOE’s nuclear complex reaches from coast to coast, the sites and national laboratories frequently work together and rely on each other’s unique strengths and capabilities.

As a member of the working group and partnering with the DOE National Training Center, Whitt’s efforts to establish continuity in training across the DOE complex addressed one of the EFCOG’s emerging focus areas aimed at continuously improving the integration of business and operational practices between the sites.

Murdoch, SRNS Director of Operational Excellence and Chair of the EFCOG Contractor Assurance Working Group, and Ellis, SRR Director of Contractor Assurance and Co-chair of the EFCOG Contractor Assurance Working Group, received an EFCOG Teamwork Award for their collaboration to develop a system to measure the health of each site’s Contractor Assurance System (CAS).

Murdoch and Ellis’s work yielded a Contractor Assurance Maturity Model for use across the complex to measure the health of DOE contractor’s individual CAS systems. This model includes an effectiveness tool and assessment plan, which homogenizes each contractor’s CAS implementation to achieve desired standards. The group also developed a process for contractors to develop their own guides to establish contractor assurance best practices.

“The DOE Contractor Assurance System ensures transparency between DOE and their contractors. It is an important program that safeguards the most effective use of tax payer dollars and assures proper alignment of the DOE and its contractors to accomplish mission needs in the most effective way possible,” said Murdoch.

With a more standardized approach to implementation of CAS, DOE and site contractors have a normalized framework for managing



SRNS’ Darlene Murdoch and Kevin Whitt, along with SRR’s Aparajita Ellis, recently were honored with EFCOG Teamwork Awards.

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**Kevin Whitt**

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processes, resources, outcomes and ultimately, assessing contractor performance and the necessary level of federal oversight.

The EFCOG is comprised of DOE contractor employees with the mission of promoting excellence in all aspects of the operation, management and integration of DOE facilities in a safe, environmentally sound, efficient and cost-effective manner through the ongoing exchange of information on lessons learned.

USC Aiken is...

# Sunstruck

## SRNS funding makes planetarium program shine

Approximately one billion trillion stars fill the known universe, and only one has supported life on Earth for millennia—the sun. With a diameter 100 times the size of the Earth and a surface temperature of 10,000 degrees Fahrenheit, this star amazes those who investigate its properties.

Located on the University of South Carolina Aiken (USCA) campus, a new Ruth Patrick Science Center (RPSEC) planetarium show, Sunstruck, has made the study of the sun easy and visually captivating.

Purchased by SRNS for \$10,000, Sunstruck reveals the wonders of our sun and its incredible energy that is now threatening several forms of our electronic technology and, in time, the way we live on this planet. Through this astrological adventure, visitors travel to the distant future to discover our sun's connection to the universe's cosmic cycle of life.

"It is fitting that Savannah River Nuclear Solutions sponsored this particular show," said Gary Senn, Ph.D., Director, RPSEC. "The sun operates with nuclear energy, and SRNS operates nuclear facilities at the Savannah River Site. We extend a special thank you to Savannah River Nuclear Solutions for helping us inspire others to explore the majesty of the heavens."

More than 20 years after the USCA planetarium first opened, it now boasts expanded seating and a state-of-the-art Digistar 6 planetarium projection system. The Digistar 6 system enables guests to enjoy full-color video that surrounds them in the domed facility.

"SRNS recognizes the value offered to our community through the Ruth Patrick Science Center's strong emphasis on STEM-related education opportunities," said Wallis Spangler, SRNS Senior Vice President. "A STEM-based education is fundamental to nearly every occupation found at the Savannah River Site. So, we are pleased to continue our long-term partnership with our friends at USCA."



Wallis Spangler (left), SRNS Senior Vice President, experiences first-hand the impact of the new Sunstruck planetarium show now featured at the Ruth Patrick Science Center as Gary Senn, Ph.D., RPSEC Director, provides the demonstration.



Wayne Cadden, SRNS Subcontract Technical Representative, monitors the progress of a new, highly cost-effective method to resurface cracked, aging roads found at several SRS locations.

## SRNS innovative infrastructure improvements save dollars and environment at SRS

Thousands of tons of asphalt, milled up from decades-old roads at SRS, are being repurposed by SRNS to inexpensively resurface frequently used gravel roads on site, avoiding the high costs associated with new pavement and disposal at a nearby landfill.

SRS has over 2,000 miles of roads. Two of the most traveled—Roads 2 and F—recently had two-to-four inches of asphalt milled away and were then repaved, the first roads of significant length to be resurfaced since the 1990s at SRS.

Milling asphalt involves the use of a large special machine to remove cracked and aged asphalt to ensure a good foundation for the new surface. A secondary benefit is to prevent the new surface from being an excessive height above the shoulders of the road. This approach is considerably less expensive than building up the shoulders to a safe height.

"However, just laying another two inches of new asphalt onto the old, milled pavement doesn't get you much, because the underlying cracks just work their way up and through the new asphalt," said SRNS Engineer Richard Swygert.

Swygert explained that in the past, to prevent this from occurring, paving fabric was placed between the two layers of pavement, an effective, yet highly expensive solution.

In preparing cost estimates for the two repaving projects, Swygert was surprised to see that the geosynthetic fabric itself cost almost as much as the new asphalt surface.

"Discussions with our local contractor about this cost issue resulted in a cost avoidance of \$68,000 by placing an Open Graded Interlayer between the old and new pavement instead of the geosynthetic fabric," said Swygert. "This layer of open graded (coarse) asphalt creates a surprisingly strong, yet flexible, long-term buffer, serving as a much less expensive and highly effective way to protect our new road surface."

Milling Road 2 and Road F also solved the challenge of finding a way to improve the condition of several highly traveled gravel roads that crisscross the 310 square-mile site.

According to Swygert, the U.S. Forest Service is using specialized equipment to mix a thick layer of the millings with and over the existing gravel found on SRS secondary roads. This greatly improves the condition of these roads at a fraction of the price it would cost using traditional maintenance methods.

Excess millings from the Road F project were transported by truck to a gravel road connecting a highway at SRS to a training facility used by SRS security personnel.

"I always compare asphalt millings to gold," said Swygert. "What first appears to be waste material can serve a valuable purpose elsewhere."

Through the SRS Community Reuse Organization, Orangeburg County, S.C., has received 7,000 tons, nearly all the Road 2 millings previously placed in short-term storage at the SRS landfill. Miles of roads can be upgraded with this recycled material.

Through recent research, Swygert determined that purchasing milled asphalt costs about \$25 a ton delivered versus \$90-\$110 a ton for new asphalt. "So, repurposing the milled asphalt versus paving secondary roads onsite is highly cost effective," he said.

Asphalt is the most recycled material in the world by volume. Each year, more than 75 million tons of asphalt is recycled. Recycling asphalt also benefits the environment by reducing quarrying, mining and the consumption of oil-based products while protecting many natural resources.

"Asphalt is a flexible material," said Swygert. "What you see on the surface reflects what's going on underneath."

# Additive manufacturing yields savings

## National laboratory uses 3-D printing for air sampler redesign, saves customer \$1.2 million

When SRNL redesigned its patented Aerosol Contamination Extractor (ACE), it chose to use additive manufacturing, more commonly known as 3D printing, instead of conventional machining to deliver \$1.2 million in customer savings.

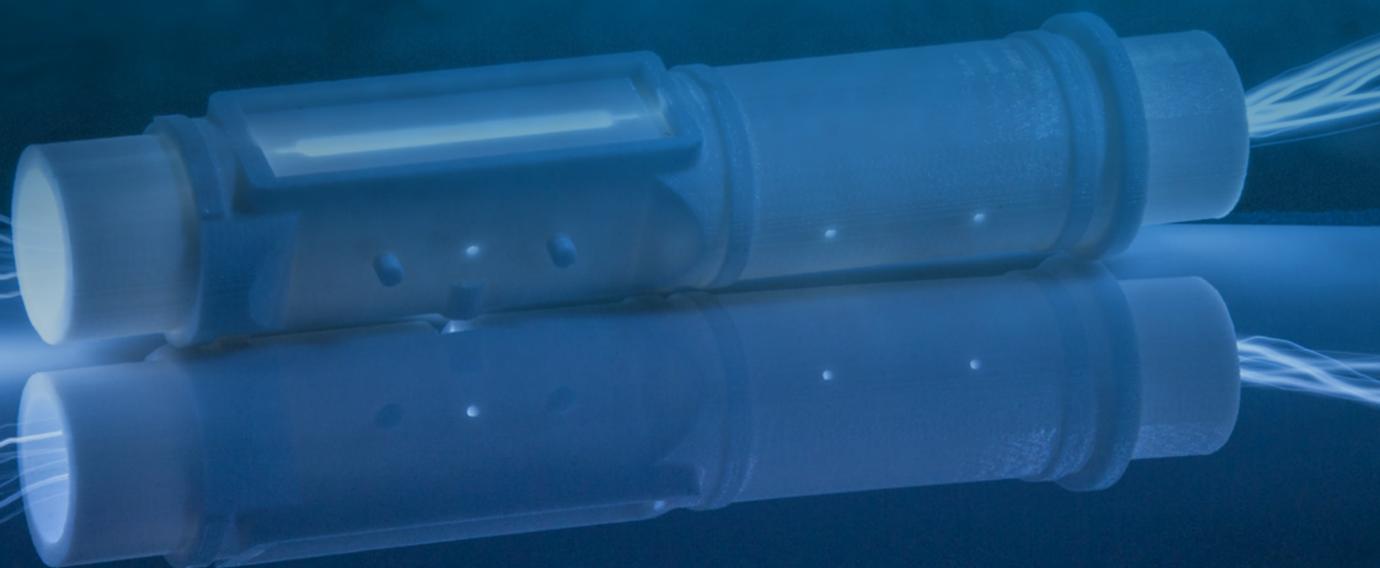
The ACE is a portable air sampler that uses an electrostatic process to collect particles for analysis. The small size and portable nature of the ACE sampler makes it attractive for field campaigns. However, due to the high cost of producing the original ACE design—more than \$4,000 in machining for the critical flow assembly alone—the ACE was built and deployed only sparingly.

However, when a federal law enforcement agency had a critical need for a large number of ACE samplers, SRNL used additive manufacturing to make the project possible within its budget. The lab redesigned the ACE, replacing the complex machined flow assembly with a two-piece, thermoplastic flow assembly for manufacture on one of the lab's many 3D printing machines.

Using this approach, the new flow assembly part was reduced to a cost as low as \$50. A test unit was made and met all performance goals, resulting in the delivery of 300 thermoplastic flow assemblies to meet the agency's need.

Since SRNL began producing the ACE flow assemblies using the 3D printing process, ACE samplers have been used across the DOE complex, including Oak Ridge National Laboratory, the Hanford Site, and the Nevada National Security Site.

SRNL replaced its \$4,000 conventionally-machined prototype design with this \$50 3D printed two-piece polycarbonate flow assembly, pictured below.



JP Pabon of EM's Office of Technology Development participated with FIU students and SRNL representatives in a demonstration of fixative techniques for radioactive materials.

## SRNL, FIU collaborate on fixative to better stabilize contamination

SRNL and Florida International University (FIU) are teaming to examine a range of fixative and coating materials that could be a major improvement to help stabilize residual contamination in excess nuclear facilities.

"Once you've 'fixed' the residual radioactive material in a building and/or a surface, you've substantially reduced risk and potential worker exposure," said SRNL Engineer Michael Serrato. "You've also created a much more stable envelope for any future disposition activity that may be selected for a facility. Once we can demonstrate the durability of the material we're using, this can be a very significant tool to use in excess facilities around the world."

Conventional decontamination and fixing platforms are widely used. Most, however, are inherently flammable. SRNL and FIU tested a number of commercial fixatives and decontamination agents based on parameters that included non-ideal environmental conditions, radiological exposure, and flame testing. FIU performed the flammability testing at temperatures up to 800 degrees Fahrenheit.

While a number of materials have been tested, the fixative material that looks most promising is a commercially available compound typically used as a fireproof coating in the commercial construction industry.

SRNL staff, along with students from FIU, conducted a cold test of the material in July at a mockup facility at SRS. The mockup is being used as a training and test facility prior to radiological work in the 235-F facility, an inactive SRS facility that was once used in the processing of plutonium-238 for deep space missions. The cold testing allowed team members to demonstrate application techniques (direct pour vs. spray coating application) and quality control measures, and gave the FIU students an opportunity to get a first-hand look at the remediation challenges associated with an excess nuclear facility.

A field demonstration in the 235-F facility is scheduled for late August.

Performance monitoring of the fixative material will take place during the last several months of 2018. The demonstrations are also enabling SRNL staff to develop formal testing standards that could be used in future applications.

The activity is being carried out through the EM Office of Technology Development as part of the DOE-FIU Science and Technology Workforce Development Program, an innovative program between DOE-EM and FIU's Applied Research Center designed to create a "pipeline" of minority engineers specifically trained and mentored to enter the Department of Energy workforce in technical areas of need.



James McConnell, NNSA Associate Administrator for Safety, Infrastructure and Operations (NA-50), presented awards to two SRTE teams. Accepting the awards on behalf of the teams are Tracey Franklin (left) and Ryan Hyde.

## NNSA's McConnell presents awards to SRTE teams

James McConnell, NNSA Associate Administrator for Safety, Infrastructure and Operations (NA-50), presented two teams of SRNS employees with NA-50 Excellence Awards. The awards recognize teams for accomplishments involving innovation, effectiveness, teamwork, overcoming adversity and enabling future successes. Both teams were recognized for initiatives that have helped prepare the Savannah River Tritium Enterprise (SRTE) to continue successfully fulfilling its vital missions in support of the nation's nuclear security. The Hydroburst Upgrade and Relocation Team relocated and upgraded one of SRTE's testing functions that provide important data on the reservoirs used in our nuclear deterrent. The Tritium Rally Readers Replacement Project Team, a collaboration among SRNS and NNSA - Savannah River Field Office personnel, replaced the system that would be used to account for personnel in the event of an emergency in the facility.



Staff from four regional Congressional offices took advantage of the August recess to tour SRS on Aug. 6-8. Tour participants included (from left) SRNS Government and Community Relations Director Teresa Haas; Martha Ruthven and Emily Saleeby, office of U.S. Rep. Joe Wilson; Carlton Norwood Jr., office of U.S. Rep. Rick Allen; Jason Murphy, office of U.S. Rep. Tom Graves; Cory Gattie, office of U.S. Sen. Johnny Isakson; SRNS Tour Coordinator Bob Bonnett; Nancy Bobbitt, Sen. Isakson; and SRNS Government Relations Manager Chris Caldwell.



Sandra DeVoe Bland (left), Promise Zone Coordinator and loaned Savannah River Nuclear Solutions executive to the Southern Carolina Regional Development Alliance; Wilbur Cave, Allendale Alive; and Mindy Metts, Savannah River Site Community Reuse Organization, represented the Allendale Team on how best to improve the Allendale school system for the 2018 STEM Coalition Challenge Collaboration in Pittsburgh, Pa., and sharing a \$1 million-prize.

## SRNS supports Allendale team in US2020 STEM win

An SRNS loaned executive recently played a major role towards helping a team of organizations representing Allendale, S.C., win the 2018 STEM (Science, Technology, Engineering & Math) Coalition Challenge, sponsored by US2020.

The Allendale Team will share the \$1 million-dollar prize with seven co-winners from across the country. The prize money will be used to implement innovative learning strategies and bring hands-on STEM mentoring and maker-centered learning to underrepresented students throughout Allendale County.

US2020, a division of Citizen Schools, is working to increase the number of STEM professionals mentoring and teaching students through hands-on projects with a focus on serving underrepresented communities, especially girls, underrepresented minorities, and low-income children.

"The South Carolina Promise Zone and the Savannah River Site Community Reuse Organization (SRSCRO) have facilitated the formation of a strong team, where the true winners will be the students in Allendale Schools," said Sandra DeVoe Bland, Promise Zone Coordinator and loaned SRNS executive to the Southern Carolina Regional Development Alliance. As a loaned executive, Bland's contributions were instrumental towards the creation of this partnership between schools and business and capturing of the vision on how their share of the \$1 million-dollar award will help shape the academic future of the Allendale County school system.

In 2017, the US2020 Allendale Team was formed by Bland, the Promise Zone and SRSCRO to help students become proficient in science, technology, engineering and math.

The innovative approach targets elementary, middle and high school student with a progression from robotics to coding. The robotics focus for elementary schools reminds student scholars that learning is fun. Coding is introduced through the "Girls Who Code" curriculum and is open to all middle school students. The Clemson Emerging Scholars program will expand to include a mentoring component where the high school students will mentor elementary students and track with them.



A.D. Bollig, Vice-Chair for this year's SRNS UW campaign, addresses the crowd at the Day of Unity.

### Day of Unity informs employees about UW campaign

SRNS employees gathered to celebrate the official kickoff of the 2018 United Way campaign at the second annual "Day of Unity," held Aug. 1. SRNS' Day of Unity gives employees the opportunity to learn more about SRS' long-held tradition of giving to the United Way.

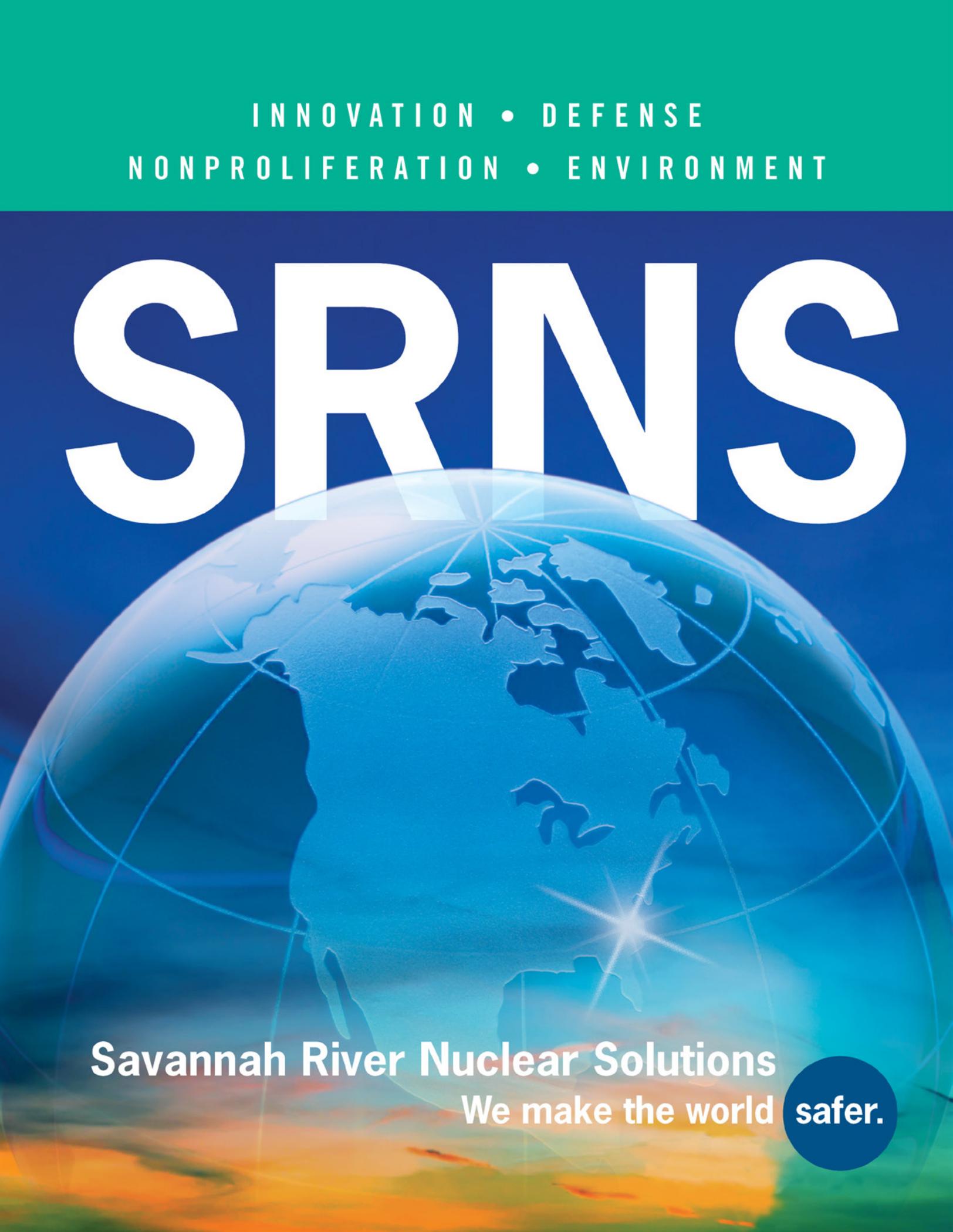
Norm Powell, SRNS Senior Vice President of Business Services, who is serving as this year's Executive Sponsor, spoke on the importance of supporting the United Way. "At SRNS, we are always united in our commitment to create resilient communities," said Powell.

After hearing from advocates of United Way, the employee campaign video, produced by Andrew Jones of SRNS Communications and Video Services, was unveiled. This year's UW logo was created by Duane Hoepker, SRNS Corporate Communications.

The event also included a United Way Agency Fair featuring 13 agencies from the Central Savannah River Area.

INNOVATION • DEFENSE  
NONPROLIFERATION • ENVIRONMENT

# SRNS



**Savannah River Nuclear Solutions**

**We make the world safer.**