

# Nuclear Science Week



Several photographs were taken before the COVID-19 pandemic.



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# \$5M DOE grant to boost future workforce at SRS

FROM OFFICE OF ENVIRONMENTAL MANAGEMENT

A \$5 million grant that DOE recently awarded to a local nonprofit will strengthen the workforce pool needed to support the Environmental Management (EM) and National Nuclear Security Administration (NNSA) missions, particularly at the Savannah River Site (SRS).

“EM will need a talent pipeline to continue forward with progress tackling the environmental cleanup legacy. Continuing our partnership with the Savannah River Site Community Reuse Organization (SRSCRO) and the regional academic community is a great resource to accomplish that goal,” said Kristen Ellis, EM Senior Advisor for STEM and Talent Acquisition.

Mindy Mets, Director of Regional Workforce Programs for SRSCRO, said the grant award allows local citizens across the South Carolina and Georgia region to have multiple pathways to develop critical skills needed in today’s workforce.

“DOE’s support of the Workforce Opportunities in Regional Careers (WORC) program is making a meaningful impact in the lives of local citizens in our community,” Mets said.

With a total estimated value of \$5 million for five budget periods, the grant helps ensure that local residents have opportunities to develop skills needed for careers relevant to the EM and NNSA missions. Through the grant, local colleges and universities will provide education and training that align with SRS and regional employer requisite skills, experience, certifications, and proficiency across multiple scientific, engineering, technical, craft, and business-support disciplines.

Augusta University’s nuclear science program is funded by the WORC grant. Brooke Stagich was a student in the program, and she is grateful for the experience. She currently works as a Senior Scientist at Savannah River National Laboratory (SRNL).

“The WORC grant and Augusta University’s nuclear science program made up a significant part of shaping my future. They opened the door to a long road of opportunities that eventually led to my current career path,” Stagich said.

Alaina Adams works as a Laboratory Technician at SRNL. She completed the Environmen-

tal Remediation and Restoration Program at the University of South Carolina Aiken. The program is supported by the WORC grant.

“I am blessed with a great job, which I may not have attained if it was not for my education,” Adams said. “Things in life tend to fall in line

where they are supposed to when you take the right path in life.”

The latest \$5 million grant is a renewal of the first \$5 million WORC grant DOE awarded to the SRSCRO in 2016. Both grants build on the previous EM-funded Advancing Nuclear Skills



Brooke Stagich



Alaina Adams

Regionally (ANSR) Program. That program, which began 10 years ago, established new nuclear training certificate and degree programs at local colleges and universities.

The WORC programs include student scholarships, student retention strategies, student outreach, and promotion of relevant education and training programs, including those developed through the ANSR Program. To date, over 1,200 local scholarships have been awarded to students through these programs, helping fill the SRS workforce pipeline.

WORC academic partners in South Carolina are Aiken Technical College, University of South Carolina Aiken, and University of South Carolina Salkehatchie. WORC academic partners in Georgia are Augusta Technical College and Augusta University. SRSCRO serves as the fiscal agent and provides management and coordination of regional efforts for the WORC programs.

*From Office of Environmental Management, EM Update, Vol. 13, Issue 18, page 3 (2021)] Reprinted with permission.*



# SRNL independent under BSRA has compelling future

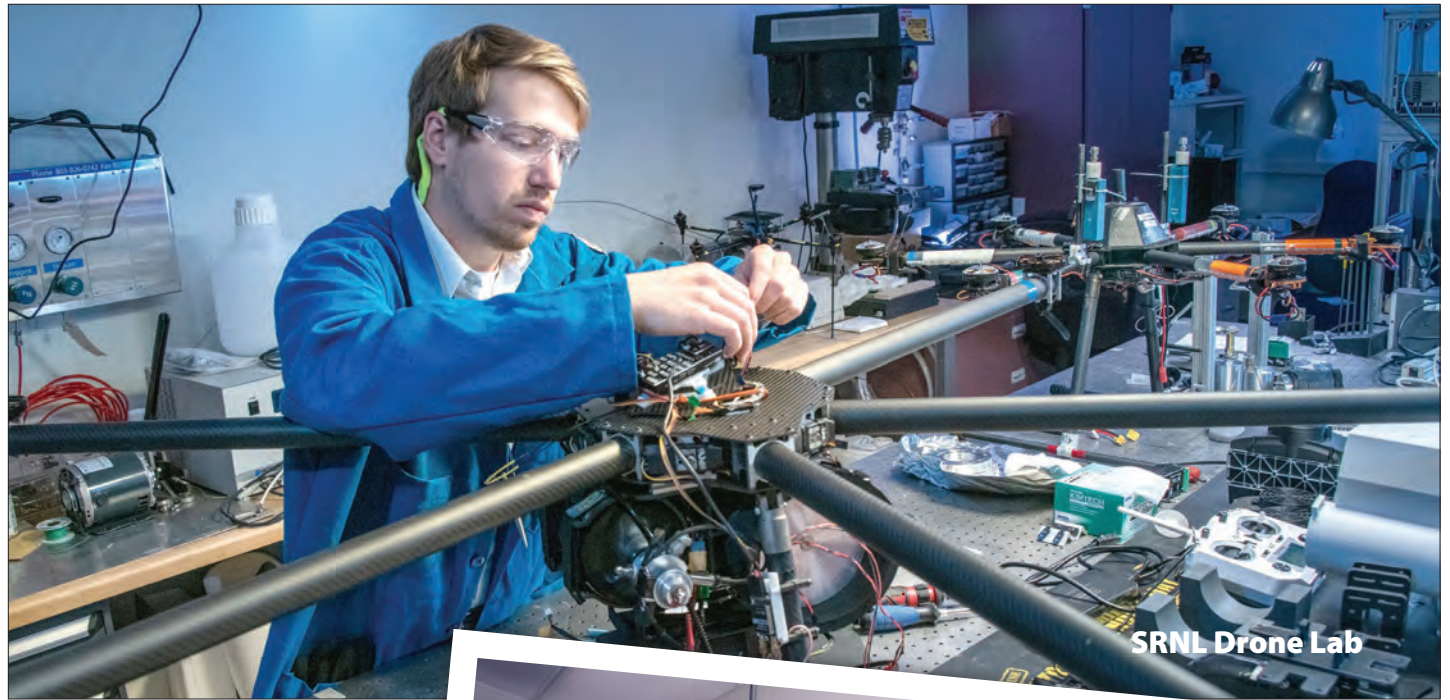
The Department of Energy's (DOE's) Savannah River National Lab (SRNL), one of the country's premier environmental, energy and national security research facilities, is now being managed and operated independently by Battelle Savannah River Alliance, or BSRA. BSRA officially took over managing and operating SRNL from Savannah River Nuclear Solutions, LLC (SRNS) in June 2021.

BSRA is a non-profit, public service-focused organization wholly owned and operated by Battelle Memorial Institute. Battelle is the world's largest, independent non-profit research and development organization with experience managing and operating seven national laboratories, and demonstrated performance driving operational process improvement and culture change. The alliance includes five regional universities – Clemson University, Georgia Institute of Technology, South Carolina State University, University of Georgia, and University of South Carolina – as well as small business partners Longenecker & Associates and TechSource.

The alliance is strongly committed to executing a long-range vision for SRNL with a focus on assuring scientific and technological excellence, driving a culture of operational excellence, and ensuring the continued high quality and integrity of its critical environmental management and national security missions. BSRA brings the leadership and organizational structure necessary to implement sustainable performance excellence with a focus on safety and security, laboratory growth, and facility modernization.

Employing approximately 1,000 people, SRNL primarily conducts research and development for DOE and other federal agencies, providing practical, cost-effective solutions for the nation's environmental, nuclear security, energy, and manufacturing challenges. As the DOE Environmental Management (EM) laboratory, SRNL provides strategic scientific and technological support for the nation's \$6 billion per year waste clean-up program.

Additionally, SRNL continues engagement with international collaborators to ensure exchange of lessons learned in treatment and closure technologies and strategies in Japan, Canada, the UK and elsewhere. It also collaborates with multiple international agencies such as the Global Initiative to Combat Nuclear Terrorism, the Southeast European Law Enforcement Center, the European Union Border Assistance Mission to Moldova and Ukraine, and the International Atomic Energy Agency. Supporting a range of international programs and partners,



SRNL has completed work in over 50 countries across the globe.

Dr. Vahid Majidi, who was the Director of SRNL for the incumbent contractor SRNS, continues to serve as the Laboratory Director under BSRA.

"I'm honored to lead one of the nation's foremost research institutions working at the forefront of science and technology to solve complex environmental challenges," Dr. Majidi said. "We'll continue to work closely with the DOE, the Savannah River Site contractors, our SRNL leadership team, laboratory staff and community to move SRNL forward. Working with BSRA and through a significant expansion of SRNL's core competencies and programs, we will continue to deliver high-impact science, technology and engineering solutions into the future."

SRNL's core competencies, which continue to serve the DOE mission areas of environmental and legacy management, national security, and science and energy security, will expand into seven core competencies. As the DOE EM laboratory and lead laboratory for Legacy Management (LM), SRNL's core competencies meet the needs of EM and LM while at the same time addressing the needs of the National Nuclear Security Administration (NNSA), other DOE mission areas, and SRNL's strategic partners. The seven core competencies provide a foundation for pro-



grammatic growth for SRNL and include the following:

- Accelerating remediation, minimizing waste, and reducing risk
- Enabling next-generation nuclear materials processing and disposition
- Creating manufacturing solutions for EM, NNSA, and energy security
- Assuring production and supply of strategic materials and components
- Sensing, characterizing, assessing and deterring nuclear proliferations
- Securing connected control sys-

tems and associated data

- Engineering new materials and their applications with data-driven modeling and simulation

Being an independent national laboratory under the new management and operation of BSRA offers an exciting, compelling vision for the future of SRNL and provides DOE a leadership team and strategy to deliver excellence in science and technology, operations, and continued community engagement.



“While the mission to safely reduce the risk of radioactive liquid waste stored in aging waste tanks has remained the same, processes and operations have dramatically improved over the last year.”

**Phil Breidenbach, SRR President and Project Manager**



More than 4.2 million gallons, an SRS record, of grout has been converted to saltstone this year at the Saltstone Production Facility.



A Savannah River Remediation operator conducts the first transfer of salt waste to the Salt Waste Processing Facility in October 2020.

# SRS Liquid Waste: A record-setting year

BY ALEXIS BERRY

In the new era of salt processing at the Savannah River Site (SRS), Savannah River Remediation (SRR) is helping set new records every day.

SRR, the Site’s liquid waste contractor, has been providing feed for the Salt Waste Processing Facility (SWPF), which is operated under a separate Department of Energy (DOE) contract by Parsons, since hot commissioning began in October 2020. Parsons designed and built SWPF and began one year of operations at the facility in January 2021.

SRR has transferred 1.7 million gallons of radioactive salt waste to SWPF this fiscal year through July 31, 2021, which surpasses the record set in 2013 for the amount of salt waste transferred to a processing facility in a fiscal year. In Fiscal Year 2013, 1.3 million gallons were processed at the interim salt processing facilities that SRR operated from 2009-19.

One of the products from SWPF is decontaminated salt solution (DSS) which is processed at the Saltstone Production Facility (SPF), operated by SRR. In the SPF, the DSS is mixed with dry materials to form a grout. The

grout is transferred to on-site Saltstone Disposal Units (SDUs) where it hardens as a form called saltstone that is safe for permanent disposal. Due to the production performance at SWPF, SRR has been able to produce more than 4.2 million gallons of grout – another SRS record.

SRR – whose parent companies are Amantum, Bechtel, Jacobs, and BWX Technologies – is achieving these milestones for DOE-Environmental Management (EM) in partnership with Parsons. DOE-EM is reducing the risk of the radioactive liquid waste stored at SRS. Processing salt waste, which helps advance waste tank closure, is a priority for DOE-EM.

After the completion of one year of operations in January 2022, SWPF will begin transition into the liquid waste contract at SRS.

The liquid waste at SRS, 35 million gallons in 43 underground waste tanks, is a by-product of Cold War-era national defense, research, and outer space mission work. It is stored in the SRS Tank Farms, where the liquid waste processing system begins. The type of waste, whether it is high-activity “sludge waste” or low-activity “salt waste,” determines its route through the liquid waste system.

In order for SWPF to process tank waste, the feed material must first be combined into one-million-gallon salt batches. SRR collaborated with the Savannah River National Laboratory to improve processes and decrease analytical time. The efforts led to a recent salt batch being qualified in a record seven weeks, whereas previous batches required as much as six months.

This innovation has been just one of many over the life of SRR’s contract. The team has been trusted with the SRS liquid waste mission since 2009 and has earned multiple contract extensions over this period, a testament to the exemplary workforce, according to SRR President and Project Manager Phil Breidenbach.

“While the mission to safely reduce the risk of radioactive liquid waste stored in aging waste tanks has remained the same, processes and operations have dramatically improved over the last year,” Breidenbach said.

The highly integrated operations of SWPF with the balance of the liquid waste system is critical to the overall success of this risk reduction, according to Michael Pittman, vice president and SWPF project

manager for Parsons.

“We are excited by the collaborative partnership with DOE and our fellow contractors as the work SWPF is doing at SRS is setting a new standard for integrated liquid waste operations,” Pittman said. “Conservative decision-making and safety focus are essential in all nuclear operations and certainly paramount to the success of SWPF, but what truly makes this project special is the sense of urgency and desire for mission accomplishment accompanying that commitment to safety. The SWPF team is committed to safely maximizing the liquid waste remediation potential and eliminating the environmental risk to the region.”

Workers have transformed an already robust safety culture into one that also lives the company’s values of safety, integrity, ownership, teamwork, and continuous improvement.

With the promise the Liquid Waste facilities have demonstrated over the last year, the future of waste processing, and the safety of the community and environment, is bright. And from this day forward, SRR continues to make history.





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*Savannah River Remediation is safely reducing the risk to the community and the environment of radioactive liquid waste stored in aging waste tanks*



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**Salt Waste Preparation**



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# Not your typical apprenticeship

## Innovative SRNS program sets new standards for filling job pipeline at Savannah River Site

Savannah River Nuclear Solutions (SRNS) has taken the concept of an apprenticeship program, typically found within construction trades, and innovatively expanded it to create even more opportunities at the Savannah River Site (SRS). Their goal is to quickly offer 100 new, paid apprenticeships leading to both hourly and professional jobs across the company.

High school and college graduates, as well as unemployed and underemployed adults, can take charge of their future through the SRNS Registered Apprenticeship Program.

These registered apprenticeships typically begin as limited-service employment positions and are expected to last approximately one to four years during which time the apprentice will complete on-the-job and classroom training while earning a scalable wage. Each program is designed to train apprentices on the processes necessary to perform as a qualified full-service employee in the specific discipline.

“We’re thinking outside the box,” said Sean Alford, SRNS Executive Vice President and Chief of Administration. “This type of apprenticeship program is not found in your average American corporation or government agency. SRNS is moving from the standard use of college interns and saying, ‘Why not apprentices instead, for the many students who have a year-long internship commitment with us?’”

A broad range of apprenticeship positions creates multiple options for successful applicants.

“This is an important, high priority initiative at SRNS,” said Alford. “We’re working hard to establish and grow it. The benefits for the apprentices, SRNS, DOE, our partners and the community are truly significant.”

According to Janéssa Smith, SRNS HR Business Partner, upon completion of the apprenticeship program participants will receive an occupational certificate. “An apprenticeship certificate from SRS will qualify those who successfully complete the program for full-time jobs with SRNS and potentially for openings in other companies within their chosen industry.”

In order to create additional hiring opportunities, SRNS has modified their policy to



**Savannah River Nuclear Solutions Senior Training Instructor David Jackson (center) observes Nuclear Production Operator Apprentices as they practice work typical of their future job responsibilities, as potential full-service employees at the Savannah River Site.**

permit managers to hire apprentices prior to the completion of their apprenticeship.

“We believe each participant will appreciate the opportunity to ‘test drive’ their job of interest and our company as a whole. At the same time, we’re serious about evaluating each person as a potential full-time employee, and helping each establish a career with SRNS,” said Smith. “That said, we now have the mutually beneficial advantage of offering participants who we believe are a good fit the option to join our corporate family before the formal end of their apprenticeship. It’s a new recruiting paradigm, a new way of thinking, and we’re already experiencing the success it has to offer for all involved.”

Smith said the program also encourages applications from military veterans and non-students.

As a part of this new program, SRNS has recently entered into an agreement with the Georgia Cyber Center and the Augusta Economic Development Authority to provide multiple paid apprenticeship opportunities

in the works, to include: Project Controls personnel, Supply Chain Management Resource employees and Associate Chemical Management Center Analysts,” said Smith. “And the list is growing.”

Smith said SRNS is currently reaching out to partner with other organizations as well, such as small businesses associated with the SRNS mentor-protégé program and local technical colleges. The second cohort of SRNS Nuclear Operator Apprentices recently graduated after completing the Aiken Technical College (ATC) Nuclear Fundamentals Certificate program.

Twelve apprentices participated in the eight-month Nuclear Operator Apprenticeship Program, which provides ATC students a unique learning opportunity. Students spent two days a week receiving instruction from ATC and two days a week training at SRS.

Apprentices learned basic qualifications to become a production operator, including: conduct of operations principles, radiation worker training and qualification, and how to perform shift rounds.

“To ensure the development of a viable workforce in our community, we aspire to establish 300 registered apprenticeships throughout companies in the following counties: Aiken, Allendale, Bamberg, Barnwell, Edgefield and Orangeburg,” said Alford. “SRNS is striving to ensure nearly one-third of these apprenticeships will be at SRS.”

“We’re working closely with Apprenticeship Carolina and the Lower Savannah Council of Governments to make this a reality. Together, in partnership, our goal is to pursue and champion employment solutions expected have impact at the local, regional, state and national level.”

“Qualifying for many of our apprenticeships is not difficult,” said Smith. “In fact, depending on the apprenticeship profile you pursue, you can be accepted into our program with zero experience. We will provide all the training you need. After this, you now own a portable credential proving you can do the work for any company needing that skillset.”

Postings for apprenticeship positions can be found at: <https://savannahrivernuclear.com/>. Select the “Careers” tab, then click “Apply Now.”

to military veterans, their spouses and those transitioning out of the U.S. Armed Services. At no cost to the selected applicants, they receive extensive classroom instruction through the Cyber Center WorkForces Program and on-the-job training as on-site SRNS Information Technology apprentices.

Applicants can now apply for numerous apprenticeship openings with SRNS, as each opening is posted on their website. SRNS employs approximately 6,000 people to support a wide range of DOE missions.

To date, 11 types of jobs at SRNS have been registered with the U.S. Department of Labor as apprenticeship positions. They include: Facility/Production Operator, Process Software Engineer, Software Engineer, Telecommunications Engineer, Systems Engineer, Records Management Clerk, Maintenance Mechanic, Fire Protection Engineer, Radiation Control Inspector, Process Control Technologist, and Electrical and Instrumentation Mechanic.

But according to Smith, the number will increase. “We have more apprentice profiles





The facility being repurposed as the Savannah River Plutonium Processing Facility.

## Three SRS capital projects underway to serve national security missions

The Savannah River Site (SRS) has entered into an exciting period. For the first time since initial construction over 70 years ago, the Site is actively engaged in three separate major capital projects: the Tritium Finishing Facility, the Surplus Plutonium Disposition Project, and the Savannah River Plutonium Processing Facility. The three projects will prepare the Site to increase its workload in support of the Department of Energy's (DOE's) National Nuclear Security Administration (NNSA), the agency tasked with maintaining and enhancing the safety, security, and effectiveness of the U.S. nuclear weapons stockpile and working to reduce the global danger from weapons of mass destruction.

Although SRS is managed by DOE's Office of Environmental Management, NNSA's National Defense related missions are the reason the Site was established in the 1950s and have continued to be a significant portion of the Site's work. For Dave Olson, Executive Vice President - NNSA Capital Projects for Savannah River Nuclear Solutions (SRNS), the company responsible for management and operations at the Site, the support for NNSA is a particular point of pride. "The proportion of SRNS' work that serves NNSA missions has grown over the last few years, and continues to grow," he said. "These three projects are a concrete (no pun intended) symbol of that growth."

Each of the current capital projects is devoted

to a separate NNSA mission at SRS.

The Tritium Finishing Facility (TFF) will replace a Cold War-era facility in the Site's Savannah River Tritium Enterprise (SRTE), which serves as the Nation's provider of tritium, the radioactive isotope of hydrogen necessary for the Nation's nuclear deterrent. Since the Site's earliest days, one of its key missions has been the supply of tritium and related products and services. That work is currently carried out in four primary operating facilities, including the H Area Old Manufacturing (HAOM) Facility, the oldest and largest of SRTE's operating facilities. HAOM, which dates to the 1950s, houses SRTE's assembly, inspection and packaging capabilities. It has been expanded twice in its long history, most recently in 1984.

The TFF project will replace HAOM, to give SRTE the ability to efficiently continue these vital functions throughout the coming decades, since the Nation's need continues. The TFF projects include construction of two new adjacent buildings, plus a new replacement warehouse, along with the destruction of three existing warehouses.

In December 2019, the conceptual design, cost range, and schedule range were approved, a milestone known as Critical Decision-1 (CD-1). The facility is expected to come on-line in FY31. In the meantime, SRTE initiated a Strategic Reinvestment Period in early 2020 to ensure that HAOM can continue to meet out-year mission

requirements until the TFF is brought online.

The Surplus Plutonium Disposition (SPD) project will expand the existing capability for downblending surplus plutonium in preparation for removing the material from South Carolina. Downblending, also referred to as dilute and dispose, uses an adulterant to dry blend with plutonium oxide, producing a mixture that is more secure (not usable for nuclear weapons) and can be safely disposed of at a geologic repository. This strategy is used by both the Office of Environmental Management and NNSA at SRS.

In 2016, DOE announced it would disposition up to 6 metric tons (MT) of excess non-pit plutonium using plutonium downblending ("non-pit" refers to plutonium that is not currently in the form of a pit – the central core of a nuclear weapon). In 2020, DOE and NNSA announced plans to use the strategy to dispose of an additional 7.1 MT of surplus non-pit plutonium.

Along with expanding glovebox operations in the existing K Area facilities, by increasing from one shift of operations to four shifts and other measures, SRS is undertaking the SPD project to provide additional downblending capability in K Area. The expansion includes three new gloveboxes, along with support systems such as security and safety systems, electrical, piping, active confinement ventilation, fire protection systems, etc. It will also include the construction of a HEPA/Electri-

"The proportion of SRNS' work that serves NNSA missions has grown over the last few years, and continues to grow. These three projects are a concrete (no pun intended) symbol of that growth."

Dave Olson,  
Executive Vice President -  
NNSA Capital Projects for  
Savannah River Nuclear  
Solutions (SRNS)

cal Building and ventilation stacks.

Like TFF, the SPD project received CD-1 approval in December 2019. Site preparation has begun, with construction to begin in FY23. Construction is expected to be completed and operations begun by FY28.

The Savannah River Plutonium Processing Facility (SRPPF) will enable a new mission for SRS, continuing the Site's 70+ year history of support for the Nation's nuclear deterrent: the production of plutonium pits. NNSA has tapped SRS as one of the legs of its two-site strategy to produce these necessary components, with SRS designated to produce 50 pits per year and another 30 produced at Los Alamos National Laboratory, in New Mexico.

This strategy will repurpose the unfinished Mixed Oxide Fuel Fabrication Facility as the SRPPF. In addition, the project includes repurposing another facility as a Training & Operations Center, along with use of various other new and existing support facilities. The project received CD-1 approval in June 2021, capping an intense two-year effort to produce the massive package of CD-1 documents, including the conceptual design and numerous specific plans.

Individually, any one of these three projects would represent a significant commitment to supporting NNSA's multiple missions. When taken together, they demonstrate that SRS' service to the Nation is not just seven decades of history, it's the future.



# Breakthroughs in additive manufacturing could hasten advanced reactor development

## BWXT demonstrates ability to additively manufacture high-temperature alloys, refractory metals

The development of advanced nuclear reactors is continuing at a rapid pace, but issues still remain working with some specialty materials that are important to these reactors. Engineers and designers at BWX Technologies, Inc. (BWXT) have developed new additive manufacturing technologies for the design and manufacture of reactor components made from high-temperature alloys and refractory metals.

Advanced reactors are designed to operate at very high temperatures, and the ability to additively manufacture (otherwise known as 3D printing) parts from these alloys and metals can further speed development.

Specifically, BWXT has demonstrated the ability to additively manufacture nickel-based super alloys and refractory-metal-based alloys for use in nuclear components. The company also accomplished component-level qualification, leading to a more efficient certification of nuclear materials configured in complex geometries.

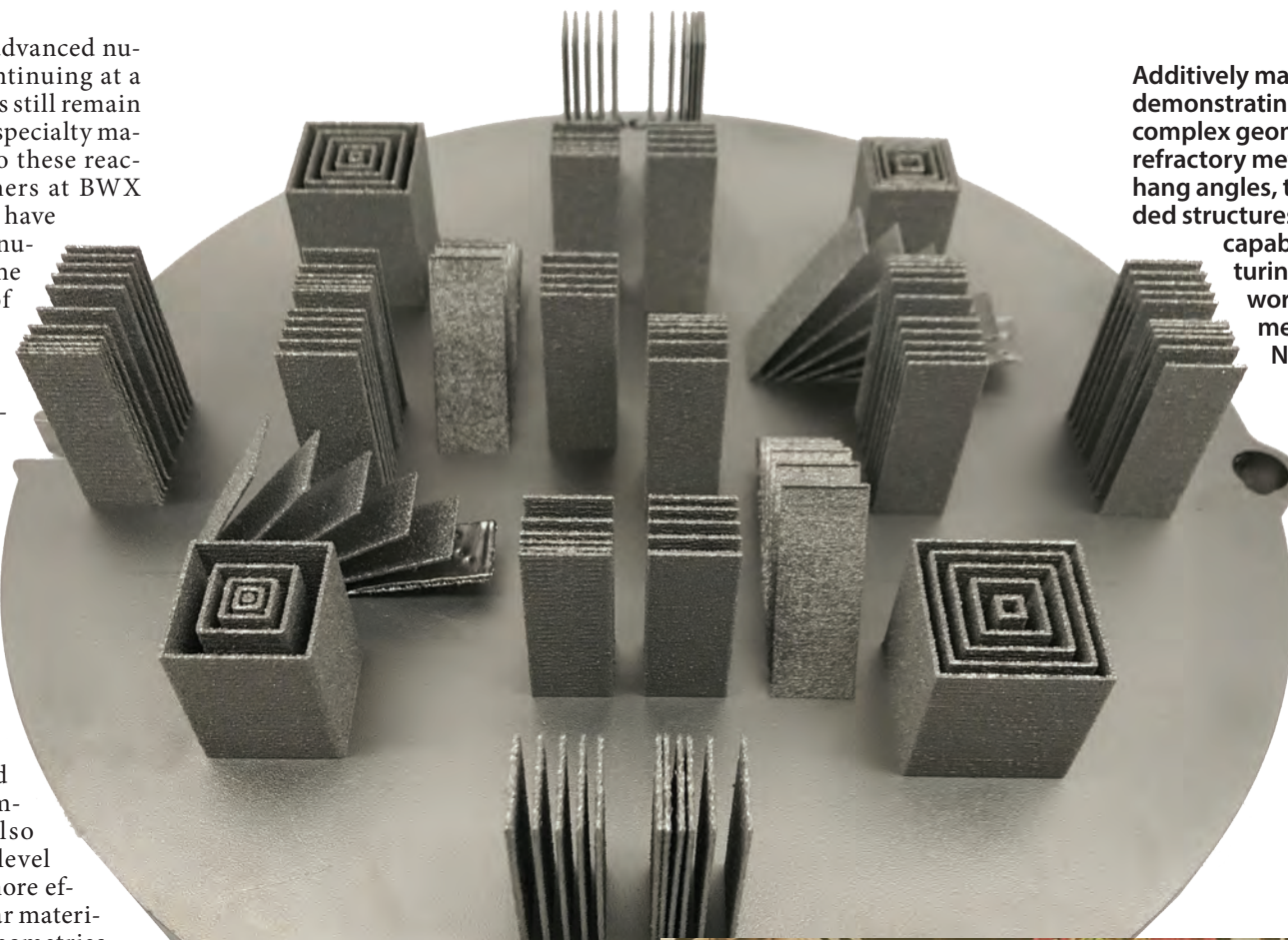
Additive manufacturing technologies will be transformational for the nuclear industry because they enable the creation of shapes not possible with conventional manufacturing techniques. Additionally, verifying the ability to additively manufacture high-temperature super alloys and refractory metals enables designs that possess improved thermal energy management, increased safety margins and accident-tolerant characteristics.

With refractory metal alloy-based core components, it is conceivable that an advanced reactor can reach core exit temperatures of 2,700°F and overall plant efficiencies of approximately 50%.

Additionally, these material develop-

ments could have an immediate impact on the current commercial reactor fleet and the goal of achieving an accident tolerant fuel design.

BWXT plans to use its unique design expertise and advanced manufacturing capability to reduce the costs of advanced nuclear energy systems. Specifically, BWXT's designs and manufacturing methods will enhance the power output and longevity of a reactor, while maintaining affordable costs to manufacture.



Additively manufactured test component demonstrating BWXT's ability to 3D-print complex geometries and shapes using refractory metals. Note the various overhang angles, thin components, embedded structures and close spacing that are capable with additive manufacturing. This material is based on work supported by the Department of Energy under Award Number DE-NE0008744.

### About BWXT

*BWXT is a member of the Savannah River Remediation, LLC team working at the Savannah River Site, and its portfolio of nuclear work covers a wide variety of nuclear operations, nuclear fuel production and environmental management activities across North America.*

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# SRNS

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## Mission statement

### Mission

CNTA serves to educate the public by providing objective information on the value of nuclear technology with respect to our health, economy, environment, and national security.

### Vision

CNTA will become the recognized avenue for the collective engagement of its members in increasing the awareness and support of nuclear technology and its benefits to the public.

### Value

Through inclusiveness and engagement, CNTA and its volunteers create a voice to provide the public with factual, objective information on nuclear subjects, while also providing opportunities for its members' personal and professional growth.

## What CNTA is

Citizens for Nuclear Technology Awareness (CNTA) is an organization committed to providing educational programs that deliver factual information about the benefits and risks of nuclear technologies and the Savannah River Site (SRS) to the public.

Some of the organization's objectives include:

- Increase public knowledge of all things nuclear
- Ensure that SRS, Plant Vogtle and nuclear technology as a whole will continue to play an important role in the local and national economy
- Educate young people on nuclear technology
- Fund scholarships that encourage the pursuit of degrees and certifications in the nuclear industry
- Provide networking and community building opportunities to young professionals new to the area

Another major objective of CNTA is to inform elected officials and the public about the need to acquire new missions for SRS, a major component of the U.S. nuclear defense production complex. CNTA advocates specific new missions that will keep SRS viable well into the 21st century.

As we approach our 30th birthday, CNTA has become an organization with members that include world-class companies, local business leaders, elected officials and individuals who support our mission to "Be the Voice of Truth on Nuclear Matters."

## CNTA's 2020 Board of Directors



### Daren Timmons, Chair

Daren Timmons is University of South Carolina Aiken's Provost & Executive Vice Chancellor of Academic Affairs.



### Steve Sheetz, Vice-Chair

Stephen O. Sheetz is a mechanical engineer who is now providing consulting services on tritium and pit programs for the Savannah River National Laboratory (SRNL).



### Charlie Hansen, Treasurer

Charlie Hansen is a retired contractor and federal senior executive who served for 46 years in the Naval Nuclear Propulsion Program, commercial nuclear power generation and in U.S. Department of Energy (DOE) waste management programs.



### Jeff Allender

Jeffrey S. Allender is an Advisory Scientist and Program Manager at SRNL.



### Sally Bartelmo

Sally Bartelmo is a Shift Operations Manager in the Saltstone Facility for Savannah River Remediation.



### Roger Burnett

Roger R Burnett is a Chief Project Controls Specialist at Parsons.



### Dean Campbell

Dean Campbell is the Director of Public Affairs and Project Communications for Savannah River Remediation, the liquid waste contractor at the Savannah River Site (SRS).



### Wyatt Clark

Wyatt Clark is the Senior Vice President of Environmental Management Operations for Savannah River Nuclear Solutions (SRNS), the managing and operating contractor at SRS.



### Paul Cloessner

Paul Cloessner is the Vice President, National Nuclear Security Administration (NNSA) Chief Business Officer for SRNS.



### Musa Danjaji

Musa Danjaji is a full professor of Nuclear Engineering at South Carolina State University.



### Mark Davis

Mark Davis is the Deputy Vice President of NNSA Operations and Programs at SRS. He retired from the Navy in 2017.



### Alan Dobson

Alan Dobson has worked in the Nuclear Industry since 1975.



### Jhivaun Freeman-Pollard

Jhivaun Freeman-Pollard is the Project Director, Tank Closure and Regulatory Strategies for Jacobs at SRS.



### Dara Glass

Dara V. Glass heads up the Aiken office of BWX Technologies, Inc. as Regional Director, managing daily operations for the company.



### Joyce Hopperton

Joyce Hopperton is Director, Environment, Safety, Health, and Quality Assurance for Centerra - SRS.



### Fred Humes

Fred Humes is the President/CEO of the Applied Research Center.



### Karl Lutterloh

Karl G. Lutterloh is Vice President and Trust Officer at Security Federal Bank.



### Forest Mahan

Forest Mahan is currently the fifth president of Aiken Technical College.



### Jesus "Zeus" Mancilla

Jesus "Zeus" Mancilla, PE is Deputy Manager for K Area Complex Nuclear & Criticality Safety Engineering at SRS.



### Matthew McCoy

Matthew McCoy is an Engineer with SRR, supporting the Saltstone Project.



### Craig McMullin

Craig W. McMullin has more than 40 years of experience in the field and recently retired as a Senior Program Manager of Special Projects at SRNL for SRNS.



### Nick Miller

Nick Miller is the H Area Facility Manager at SRS.



### Chuck Munns

Charles L. Munns is the President of Munns Advisement, LLC. Admiral Munns was President and Chief Executive Officer of SRNS from 2007-2009. Previously, he served for 34 years in the U.S. Navy attaining the rank of Vice Admiral.



### John Veldman

John Veldman retired as Associate Laboratory Director for National and Homeland Security at SRNL after 38 years of service.



### James Marra, Executive Director

James C. Marra is a veteran in the nuclear industry. He began his nuclear career at SRNL as a Senior Engineer and progressed to the level of Advisory Engineer. He also spent time as a Senior Scientist for the U.S. Department of Energy's Office of Environmental Management.

### Allison Hamilton Molnar, Director of Operations

Allison Hamilton Molnar has been involved with local governments and non-profit work since high school. At CNTA she organizes events, is the point of contact for members, provides payroll and accounting services and works behind the scenes so CNTA can function efficiently. She also currently serves as CNTA's webmaster.

## CNTA turns 30

In 1991, a handful of citizens and a few companies in the Central Savannah River Area of South Carolina and Georgia banded together to form a nonprofit, grassroots organization that would be pro-nuclear and proud of it.

Out of that passion, Citizens for Nuclear Technology Awareness (CNTA) was born. And it is unlike any other organization

in the area.

CNTA carries out educational programs to provide factual information about the benefits and risks of nuclear technologies. The organization has published hundreds of news articles, opinion pieces and guest columns over the past three decades and has taught thousands of students nuclear fundamentals. CNTA has also provided over \$100,000 in scholarships and grants to local students and presented to hundreds of community groups.

While continuing its mission to educate, CNTA has expanded its role in the last de-

cade to include young professional mentoring and networking opportunities. The organization has an active group of young professionals today who fundraise to pay for free membership to anyone under 40 and organize events to help build a community of engaged and educated young people.

The faces, names, and technology have changed over 30 years, but CNTA is steadfast in its commitment to be the voice of truth on nuclear matters. To be a part of CNTA is to be a part of the future of nuclear technology. The group and its members remain

dedicated to sharing the positives, correcting the negatives, and addressing the fears about nuclear. As one of the founding members, Fred Davison (who the Distinguished Scientist Award is now named after) said, "Make no mistake. Public understanding and public support go hand in hand. If we are ever to have public support of nuclear technologies, we must have public understanding."

If interested in joining CNTA or learning more about the organization, contact them at [cnta@bellsouth.net](mailto:cnta@bellsouth.net), call 803-649-3456 or visit the website at: [www.cntaware.org](http://www.cntaware.org).



## Join CNTA

Citizens for Nuclear Technology Awareness (CNTA) needs your help to continue to provide quality nuclear education to our region. There are many ways to contribute to CNTA, including joining as a member and volunteering on a committee or for a one-time event. If you are interested in joining us, please email [cnta@bellsouth.net](mailto:cnta@bellsouth.net) for more information.

### Communications Committee

The Communications Committee is responsible for providing accurate and timely information to the media, stakeholders and the public that reflect the goals and objectives of CNTA.

### Speaker's Bureau

The Speaker's Bureau identifies experts on topics in nuclear technology to deliver presentations to groups, clubs and organizations that request speakers on such topics.

### Education Committee

The goal of the Education Committee is to educate the public on the benefits, uses and facts of nuclear technology through initiatives that include: "Bringing Nuclear into the Classroom;" Nuclear Blitz teach-ins; the Lifelong Learning Academy ; and awarding scholarships and awards to students and teachers.

### Young Professionals Committee

The purpose of the Young Professionals Committee is to recruit and engage young professional members by providing them with mentorship and professional development opportunities, as well as raising funds to allow free memberships for those under 40.

### Membership Committee

The Membership Committee aims to create innovative initiatives to provide and promote value to members and retain current membership while working to attract new members.

### Golf Committee

The Golf Committee is responsible for planning the annual Charity Golf Tournament, which includes soliciting sponsors and raffle items, marketing and managing concession sales. The Annual CNTA Golf Tournament is the organization's largest fundraiser, raising an average \$16,000 annually. Volunteers are also needed at the tournament!

## The importance of nuclear science education

Nuclear science is a prominent and expanding field, especially in the state and region. The proximity of the Savannah River Site, expanding missions and research opportunities at the Savannah River National Laboratory, the expansion of the Plant Vogtle facility, and the importance of radionuclides in medical physics each represent some of the various rewarding career opportunities for gradu-

ates with nuclear science experience. Four-year degree programs in nuclear science are not common, and graduates will have knowledge and skills to set them apart from others. Nuclear workers have a high-value skill set in an expanding field.

Some students in nuclear medicine work closely with imaging physicians to diagnose and treat disease. This field combines chemistry, physics, mathematics, computer

technology, and medicine. Other students major in nuclear medicine, which provides information about both the structure and function of virtually every major organ system within the body. This ability to characterize physiology separates nuclear medicine from other imaging modalities like X-ray and MRI.

Currently, there are 418 student internships at SRS with SRNL, SRR, or SRNS.

## Kudos to CNTA members

Citizens for Nuclear Technology Awareness (CNTA) annually provides scholarships for high school and college students and provides grants for educators for use in the classroom. Fundraising events are one element that supports these programs.

In 2020, CNTA launched its Community Gift Card Program to help raise funds for their charity raffles and provide much needed cash for local businesses struggling with COVID-19 restrictions. To date, this program has contributed over \$3,500 to local businesses.

The program is a "win-win" for CNTA and local businesses. CNTA receives gift cards and items for their charity raffles and local businesses receive the cash from gift card purchases. The program asks CNTA members to either buy and donate gift cards to CNTA or donate cash for CNTA to purchase gift cards.

In 2021, the program raised over \$2,200 from 21 donors for use as raffle items in the CNTA Charity Golf Tournament. All funds raised were used to purchase gift cards to restaurants and small businesses in the local region.

It is gratifying to see our members and friends (and your neighbors) embrace this program to help local businesses and in return support CNTA's educational outreach efforts.

The Community Gift Card program was born out of the unique circumstances of COVID-19, but plans are to continue this program, as CNTA and its members are proud supporters of our community. This simple way of giving back to the businesses who support us will hopefully be around for years to come. More information on the program and options to donate can be found at: <https://cntaware.org/about-us/>.

Allison Hamilton Molnar  
Jim Marra  
Citizens for Nuclear Technology Awareness

## CNTA ATC Nuclear Scholarship






The Citizens for Nuclear Technology Awareness (CNTA) Aiken Technical College (ATC) Nuclear Scholarship recipient for spring 2021 is Lauren N. Stevens, from Augusta, Georgia, and the recipient for fall 2021 is Selena Cheadle from North Augusta, SC.

Previously a \$1,000 award, the scholarship has been split into two \$500 scholarships awarded each semester.





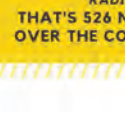
Recipients are deserving second-year students enrolled in a nuclear program at ATC.



The faculty and staff at ATC identify the students to receive the awards. Information on the ATC Nuclear Scholarship can be found at their Foundation website.

### 5 FACTS ABOUT NUCLEAR MEDICINE TECHNOLOGY

-  THERE ARE OVER 40 MILLION NUCLEAR MEDICINE PROCEDURES PER YEAR.
-  THE DEMAND FOR RADIOISOTOPES INCREASES 5% ANNUALLY.
-  RADIATION IS USED TO STERILIZE MEDICAL EQUIPMENT BECAUSE THE STERILE SHELF-LIFE OF THE ITEM IS THEN PRACTICALLY INDEFINITE.
-  NUCLEAR MEDICINE PROCEDURES ARE PAINLESS AND DON'T REQUIRE ANESTHESIA.
-  OVER 10,000 HOSPITALS WORLDWIDE USE RADIOISOTOPES IN MEDICINE.

### 5 FACTS ABOUT NUCLEAR TRANSPORTATION

-  OVER 140 MARINE SHIPS ARE POWERED BY MORE THAN 180 SMALL NUCLEAR REACTORS AND MORE THAN 12,000 REACTOR YEARS OF MARINE OPERATION HAS BEEN ACCUMULATED.
-  RADIOISOTOPE POWER SOURCES HAVE BEEN AN IMPORTANT SOURCE OF ENERGY IN SPACE SINCE 1961 AND IT COULD POTENTIALLY BE DEVELOPED INTO THE POWER THAT GETS HUMANS TO MARS.
-  NUCLEAR PROPULSION SYSTEMS HAVE LONG CORE LIVES, SO THAT REFUELING IS NEEDED ONLY AFTER 10 OR MORE YEARS IN MOST SUBMARINES.
-  RADIOISOTOPE THERMAL GENERATORS (RTGs) ARE USED IN SPACE MISSIONS. THE HEAT GENERATED BY THE DECAY OF A RADIOACTIVE SOURCE, OFTEN PLUTONIUM-238, IS USED TO GENERATE ELECTRICITY.
-  OVER A PERIOD OF MORE THAN 50 YEARS: THE US NAVY HAS ACCUMULATED OVER 6200 REACTOR-YEARS WITHOUT A SINGLE RADIOLOGICAL INCIDENT. THAT'S 526 NUCLEAR REACTOR CORES OVER THE COURSE OF 240 MILLION KM.



# Paving the way for global remediation

**A**iken continues setting the pace for global technology.

Since late 2020, the Department of Energy's (DOE) Salt Waste Processing Facility (SWPF) – a first-of-a-kind, one-of-a-kind facility that was designed, built, and is being operated by Parsons Corporation – successfully processed more than 1 million gallons of radioactive nuclear waste; an accomplishment that is helping make the world safer.

Parsons has supported DOE at the Savannah River Site (SRS) for more than 30 years and has served as the prime SWPF contractor since 2002, with responsibility for technology development, design, construction and commissioning, as well as operating the facility for one year. SWPF began hot commissioning with legacy radioactive material in October 2020 and initiated its one year of full operation in January 2021.

The SWPF is designed to significantly increase the Site's ability to empty and close radioactive waste tanks and dramatically reduce that legacy environmental risk.

"The operational success of SWPF is a testament to the commitment and dedication of DOE and Parsons workforce over the last 19 years through design, construction, testing, and now processing," said Chris Alexander, President of Parsons Engineered Systems business unit. "This historic milestone is only possible because of the strong partnership between the Department of Energy and Parsons, and we look forward to delivering a safer, healthier, more sustainable world."

In 2002, DOE selected Parsons to design, build, commission, and operate SWPF with the goal of processing 32 million gallons of

radioactive salt waste stored in underground tanks at SRS. Removing salt waste, which fills over 90 percent of the tank space in the SRS tank farms, is a major step toward emptying and closing the Site's remaining 43 high-level waste tanks. Parsons finished building SWPF in April 2016, eight months ahead of schedule and more than \$65 million under the target cost of the contract for construction activities.

"The dedicated men and women of SWPF have met the challenges of initial start-up of this first-of-a-kind nuclear facility with a primary focus on safety, but also a strong sense of urgency," said Mike Pittman, Parsons Vice President and Project Manager of SWPF. "SWPF operations and the resulting



increased treatment capacity delivers immense value to the nation by increasing the efficiency and volume of processed nuclear waste, greatly reducing the time needed to accomplish the nuclear remediation mission."

Startup of the SWPF is the last major

piece of the liquid waste system at SRS and represents a significant leap forward in DOE's ability to tackle the largest and one of the most challenging environmental risks – legacy radioactive tank waste. It is expected that nearly all of the salt waste inventory at SRS will be processed by 2031.

"The operational success of SWPF is a testament to the commitment and dedication of DOE and Parsons workforce over the last 19 years through design, construction, testing, and now processing. This historic milestone is only possible because of the strong partnership between the Department of Energy and Parsons, and we look forward to delivering a safer, healthier, more sustainable world."

**Chris Alexander,**  
President of Parsons Engineered Systems business unit

**DID YOU KNOW??**

**Nuclear power is responsible for 70% of France's electricity, with 17% coming from recycled fuel**

**CNTA**  
Citizens for Nuclear  
Technology Awareness



## 2021 Robert Maher Memorial Scholarship winner announced

In July, Citizens for Nuclear Technology Awareness (CNTA) and Savannah River Remediation (SRR) announced Kennesaw State University (KSU) student Alisa Machiwalla as the winner of the 2021 Robert Maher Memorial Scholarship.

The scholarship is sponsored by SRR, the liquid waste contractor for the U.S. Department of Energy at the Savannah River Site (SRS).

Machiwalla, who is from Marietta, Georgia, is pursuing a bachelor's degree in mechanical engineering with a minor in nuclear engineering. CNTA Executive Director Jim Marra said CNTA is proud to award this \$5,000 scholarship to such an ambitious, enthusiastic, and deserving student.

"Alisa has a great passion to pursue nuclear research and grow her knowledge and experience in the field," Marra said. "All these go-getter qualities make Alisa the ideal candidate to award this scholarship. No doubt she will be an exemplary addition to the nuclear industry.

Her career aspiration is to find solutions to issues that involve clean, sustainable nuclear energy. She also hopes to be involved in the research, design, and implementation of innovative technology, such as the cost-competitive Generation IV reactors or the implementation of small modular reactor technologies.

In the spring of 2019, she joined Southern Nuclear as an engineering co-op student, completing three rotations with the company, first in the monitoring and diagnostic center at the corporate office and second/third at Plant Vogtle. She has also interned with Enercon in the Next Era and Entergy groups, where she supported engineers to provide upgrade designs for their nuclear plants.

"With the knowledge that I have gained through my experience, I understand now more than ever that with plants closing around the country, nuclear needs to become cost-competitive in the market to meet the demand for clean and reliable energy," Machiwalla said. "I strive to help ensure this future."

She plans to continue assisting in nuclear research at KSU and complete the Nuclear Engineering Minor Program.

At KSU, she serves as the American Nuclear Society Kennesaw chapter president.

The Robert Maher Memorial Scholarship is a joint project of CNTA and SRR. Maher, vice president and general manager for Strategic Mission Development at SRS, passed away in 2002 after a 48-year career at the Site. A visionary with a broad view of the Site's potential, Maher helped shape SRS.



Alisa Machiwalla

"With the knowledge that I have gained through my experience, I understand now more than ever that with plants closing around the country, nuclear needs to become cost-competitive in the market to meet the demand for clean and reliable energy. I strive to help ensure this future."

### Alisa Machiwalla, winner of the 2021 Robert Maher Memorial Scholarship

The annual scholarship was established in Maher's memory to support students pursuing science and engineering degrees in preparation for careers in the nuclear field. Details on the scholarship can be found at <https://cntaware.org/maher-memorial-scholarship/>.

*CNTA is an Aiken-based charitable educational organization dedicated to providing factual information about nuclear topics and educating the public on nuclear issues. For further information, call CNTA at 803-649-3456 or e-mail [cnta@bellsouth.net](mailto:cnta@bellsouth.net).*

## CNTA awards 2021 Educator Grants

Citizens for Nuclear Technology Awareness (CNTA) awarded three grants to local teachers to help fund science-related curriculum in their classrooms in the spring of 2021.

The grants, each about \$500, will be used to fund projects that promote an increased understanding of science, technology, engineering, and math (STEM); atomic and nuclear fundamentals; radiation and nuclear materials safety; and applications of nuclear technology.

The 2021 grant winners are:

- Angela Virella, 6th grade English language arts (ELA) and social studies, Jackson STEM Middle School
- Kristina Istre, 8th grade physical science and STEM, A.R. Johnson Health Science and Engineering Magnet School
- Donita Legoas, 6th grade earth science and STEM, A.R. Johnson Health Science and Engineering Magnet School

With the project "We Will Cross That Bridge... When We Build It," Virella will help give students the opportunity to design, build, and construct various bridges using a variety of materials. In the process, students will also be able to apply math, science, ELA, and social studies standards to the learning process.

"This grant will allow students to have a real-world application to 21st century skills in all core subject areas," Virella said. "Students will be able to design and create structures to scale and create

working budgets and application of real business skills."

Istre's project, "Energy of the Future!," will allow students to work in cooperative peer groups to build a hydrogen fuel cell car while experimenting with the process of using solar energy to split water into hydrogen and oxygen.

Legoas' project, "Solar, Wind, Water, and Nuclear, Oh My!," will introduce students to the world of nonrenewable and renewable energy. Students will investigate to see how turbines work, how solar energy converts sun energy to mechanical movement, and how homes can use various means of energy conservation and clean energy resources.

"Students will learn the path of energy from its source to its final destination where it powers their cell phones and game systems, they love so dearly," Legoas said.

In addition to CNTA, sponsors of the CNTA Educator Grants Program are American Nuclear Society-Savannah River, Huntington Ingalls Industries, and Savannah River National Laboratory.

CNTA is excited to establish this educator grants program to facilitate more educational outreach by the organization, said Dr. Jim Marra, CNTA Executive Director.

"These grant awards are part of our continued partnership with area educators to provide instruction in the areas of science and math. We hope students find these activities informative, interesting and most importantly fun," Marra said.



OFFICE OF WORKERS' COMPENSATION PROGRAMS  
DIVISION OF ENERGY EMPLOYEES OCCUPATIONAL ILLNESS COMPENSATION  
UNITED STATES DEPARTMENT OF LABOR

## Start Your Claim With Us!

### ARE YOU or SOMEONE YOU KNOW

- A current or former worker employed at a Department of Energy facility, a beryllium vendor, or in the uranium mining industry?
- Diagnosed with an illness such as cancer, beryllium disease, or any other condition, potentially caused by toxic exposure during that employment?



If you answered yes to both questions above, you may be entitled to compensation.

The EEOICPA provides lump sum compensation and medical benefits to current and former nuclear weapons workers whose illness is a result of working in the nuclear weapons industry. Survivors of qualified workers may also be entitled to benefits. Covered illnesses include but are not limited to radiation-induced cancer, chronic beryllium disease, beryllium sensitivity, chronic silicosis, or any illness due to exposure to toxic substances.

For additional information, contact the Savannah River Resource Center toll-free at 1-866-666-4606, or visit our website at [www.dol.gov/owcp/energy](http://www.dol.gov/owcp/energy)





## CNTA to host annual Edward Teller Lecture on Oct. 28

The 30th Annual Edward Teller Lecture and Banquet will be held on Thursday, Oct. 28, 2021, 6:30 p.m. at the Amentum Performing Arts Center located at 126 Newberry St. S.W. in downtown Aiken. The Lecture will be followed by a dinner reception across the street at Newberry Hall, 117 Newberry Street SW. Citizens for Nuclear Technology Awareness (CNTA) sponsors the annual Edward Teller Lecture and Banquet as a public outreach. The event is named in honor of the famed nuclear pioneer who played a key role in advancing nuclear science during the Second World War.

Our distinguished guest speaker is Dr. Brent Park. Dr. Park is a physicist, a retired national laboratory executive, and a former Deputy Administrator for Defense Nuclear Nonproliferation at the National Nuclear Security Administration (DOE/NNSA). Prior to joining DOE/NNSA, Dr. Park retired from Oak Ridge National Laboratory (ORNL) where he led and managed the science-to-application efforts for national security programs. Before ORNL, Dr. Park was the director of NNSA's Remote Sensing Laboratory, where he led efforts to advance and field cutting-edge diagnostics and communications instruments in support of counterterrorism and radiological incident response for the nation.

Several award and scholarship winners will be recognized at the event. These include the Fred C. Davidson Distinguished Scientist Award, the Nuclear Service Award, the Robert Maher Memorial Scholarship, the Aiken Technical College Scholarship, the CNTA High School Essay Contest scholarship winners, and Educator Grant recipients.

The event will begin at 6:30 p.m. with tickets at \$50 per person. Tickets can be purchased by contacting the CNTA office at [cnta@bellsouth.net](mailto:cnta@bellsouth.net), calling the CNTA office at (803) 649-3456, or by purchasing them online at

<http://cntaware.org/event/30th-annual-teller-lecture/>. Tickets must be paid for or invoiced in advance of the event. Tickets will not be sold at the door. Instead of paper tickets, attendees will receive email confirmation and will check in at registration stations at the event.

Dr. Edward Teller was a native of Hungary and came to the United States, as did many other Jewish scientists escaping from Nazi Germany. During the Manhattan Project, Dr. Teller was a central figure in the design and production of nuclear weapons and nuclear weapons materials. Though Dr. Teller was the "father of the hydrogen bomb" and convinced President Truman of its need to counter Soviet advances, he nevertheless considered the teaching of theoretical physics as his primary occupation. President George W. Bush presented him with the Presidential Medal of Freedom in July 2003. Dr. Teller died at his home in California in September 2003 at age 95.

Dr. Teller presented a public lecture in Augusta, GA in 1992 and consented to CNTA naming its annual lecture and banquet in his honor. The Annual Edward Teller Lecture and Banquet is CNTA's largest community outreach program. The audience primarily consists of community leaders, elected officials, and nuclear professionals. High school and college students also attend courtesy of corporate and collegiate donations.

Notable lecturers have included authors, industry leaders, elected officials, nuclear medical pioneers, national laboratory directors, and many others with an impressive list of accomplishments in support of the nuclear industry and national security.

CNTA is an Aiken-based charitable educational organization that provides factual information on nuclear topics and educates the public on nuclear issues. For further information, call CNTA at 803-649-3456 or e-mail [cnta@bellsouth.net](mailto:cnta@bellsouth.net).

## Six area high schoolers win 2021 CNTA essay contest

Six area high school students won scholarships resulting from their winning entries in the 2021 Citizens for Nuclear Technology Awareness (CNTA) High School Essay Contest. Three students won \$1,000 apiece, and three students won \$500 apiece. The winners of the 15th annual writing contest are:

### \$1,000 winners

- Benjamin DiPrete, Greenbrier High School, for "The Comparative Consequences of Energy."
- Brian Johnson, Richmond County Technical Career Magnet School, for "The Four Major Electrical Energy Sources."
- Rachel Walden, North Augusta High School, for "Environmental Impacts of Coal, Natural Gas, Nuclear and Solar Power."

### \$500 winners

- Melissa Murph, North Augusta High School, for "Nuclear Technology vs Its Opponents."
- Madison Ackroyd, Aiken Scholars Academy, for "Nuclear Power: A Sustainable and Environmentally Safe Energy Source."
- Kaytlin Sturkey, Richmond County Technical Career Magnet School, for "How We Touch the Earth."

The goal of the CNTA Essay Contest is to increase high school student awareness of nuclear technologies and their impact on society. Each student picked one of three topics for this year's contest: (1) the relative carbon footprints and other by-products from four major electrical generation technologies; (2) current nuclear

waste disposition methods and how to deal with this waste safely and securely; or (3) the use and lifecycle of nuclear technology in medicine.

"Successful essays required the integration of science, technology, social understanding, and language arts," said Dr. Marissa Reigel, Chair of the CNTA Essay Committee. "Researching a technical topic, relating the information to society, and effectively communicating the information in writing are critical skills for high school students."

Dr. Jim Marra, CNTA Executive Director, positively remarked on this year's nuclear-themed essays. "This year's winners focused primarily on the comparison between nuclear power and other common electrical generation technologies," said Marra. "These students took a hard look at the data, and the overwhelming consensus is that nuclear power is necessary to reduce carbon footprints and to ensure clean, sustainable energy for generations to come."

The contest was open to high school juniors and seniors in Aiken, Allendale, and Barnwell counties in South Carolina and Burke, Columbia, and Richmond counties in Georgia; homeschool students; and students of CNTA member families.

CNTA would not be able to conduct this contest each year without the help of our sponsors. The 2021 sponsors include Savannah River Remediation, Savannah River National Laboratory, and private donations.

The \$1,000 winning essays are available on the CNTA website at [www.cntaware.org](http://www.cntaware.org). For further information, call CNTA at 803-649-3456 or email [cnta@bellsouth.net](mailto:cnta@bellsouth.net).

**DID YOU KNOW??**

**RADIOACTIVE ISOTOPES  
ARE USED TO TREAT  
A WIDE VARIETY OF  
CANCERS**





# Aiken Technical College

50 **YEARS** 1972  
—  
2022

EDUCATING MINDS

---

CHANGING LIVES

---

ENRICHING  
COMMUNITIES



CELEBRATING NUCLEAR SCIENCE WEEK ► October 18 – 22, 2021

# AIM for a Career IN NUCLEAR



## Nuclear Technology Supports

- ▶ Environmental Management
- ▶ Energy
- ▶ Food & Agriculture
- ▶ Manufacturing
- ▶ Medicine
- ▶ National Security
- ▶ Research and Development
- ▶ Space Exploration



## Educational Degree Options

- ▶ High School Diploma
- ▶ Technical College Training
- ▶ Military Training
- ▶ University/College Degree



## Employability Skills Needed

- ▶ Creative Thinking
- ▶ Flexibility
- ▶ Teamwork
- ▶ Dependability
- ▶ Motivation
- ▶ Time Management



## Nuclear Career Options

- ▶ Administrative
- ▶ Chemists
- ▶ Engineers
- ▶ Maintenance Technicians
- ▶ Plant Operators
- ▶ Radiation Protection Technicians
- ▶ Software Developers
- ▶ Plus More ...



## Why Choose Nuclear

- ▶ Great Salary
- ▶ Excellent Benefits
- ▶ Growing Workforce
- ▶ New Technologies
- ▶ Important Work
- ▶ Make a Difference



## Programs Offered at SIX Area Educational Partners

- ▶ Aiken Technical College
- ▶ Augusta Technical College
- ▶ Augusta University
- ▶ Claflin University
- ▶ UofSC Aiken
- ▶ University of South Carolina Salkehatchie



## WORC Scholarship Opportunities

**Workforce Opportunities in Regional Careers (WORC) scholarships** are available, in varying amounts, at six area educational institutions. Scholarships focus on programs that align with long-term workforce needs that support Department of Energy's Office of Environmental Management and National Nuclear Security Administration nuclear missions.



Visit [www.srscro.org](http://www.srscro.org) for more information.



# Hiring trends at SRS



**T**he Savannah River Site (SRS) continues to be one of the biggest employers in the Central Savannah River Area. Due to attrition and upcoming new missions, hiring is expected to continue at a fast pace at SRS.

Over the next five years, the managing and operating contractor of SRS, Savannah River Nuclear Solutions (SRNS), anticipates hiring approximately 3,100 people.

Additional hiring is projected for National Nuclear Security Administration Capital Projects, including the Savannah River Plutonium Processing Facility, Surplus Plutonium Disposition, and the Tritium Finishing Facility.

Hiring in these areas is expected to reach approximately 5,000 positions by 2030. As with all SRS positions, the hires will include engineers, scientists, and a myriad of administrative support personnel.

In the near term, SRNS recently committed to creating 100 apprenticeship opportunities on-site and has hired 51 positions as of the beginning of July 2021. This includes 22 facility or production operator positions, six maintenance mechanics, five systems engineers, 16 software engineers and computer systems support positions, and two are in radiation protection and records management.

Also, in the near term, the SRS liquid waste contractor, Savannah River Remediation (SRR), will be hiring 15 radiation technologist positions. SRR expects to hire about 150 people a year.

Savannah River National Lab (SRNL) has hired about 400 people over the last three years. With the new contract (led

by Battelle Savannah River Alliance), the lab is looking for significant growth beyond the current 1,000 person staff.

Over the next five years, the lab is planning to hire

over 1,000 employees. This will include replacement of staff (due to retirement or attrition) and new positions, as the lab expands into new technical areas.



**Top:** Savannah River Nuclear Solutions former intern and newly-hired employee Cassie Sistare evaluates a training session utilizing a dynamic learning activity she developed during her internship. Dynamic learning activities raise employee safety awareness at EM's Savannah River Site.

**Bottom:** Radiation technology workers are among the positions at Savannah River Remediation.

## 5 FACTS ABOUT NUCLEAR TECHNOLOGY IN INSECT CONTROL

10%

DESPITE WIDESPREAD USE OF INSECTICIDES, LOSSES ARE LIKELY TO BE OF THE ORDER OF 10% GLOBALLY AND OFTEN NOTABLY HIGHER IN DEVELOPING COUNTRIES.



RADIATION IS USED TO CONTROL INSECT POPULATIONS THROUGH THE STERILE INSECT TECHNIQUE, WHICH IS THE REARING OF BUGS THAT ARE STERILIZED VIA IRRADIATION, AND ADDING THEM TO NATURAL POPULATIONS.

60 YRS

S.I.T WAS FIRST DEVELOPED IN THE USA AND HAS BEEN USED SUCCESSFULLY FOR MORE THAN 60 YEARS.



CURRENTLY, S.I.T. IS APPLIED ACROSS SIX CONTINENTS.



RECENTLY, ONE APPLICATION OF S.I.T. HAS BEEN IN THE FIGHT AGAINST THE ZIKA VIRUS IN BRAZIL AND THE LATIN AMERICAN AND CARIBBEAN REGION.





# WORCshop@AU develops local talent

**M**ost people learn technical information best when they can apply it toward a real problem. That is what makes the new WORCshop at Augusta University so valuable.

Called WORCshop@AU, the program connects middle and high school teachers with engineers from the Savannah River Site's (SRS) managing and operating contractor, Savannah River Nuclear Solutions (SRNS). Engineers join WORCshop sessions to convey real-world technical challenges.

Then, under the direction of Dr. Ashley Gess, assistant professor for STEAM Education at Augusta University, the teachers learn ways these scenarios can be used to teach scientific principles.

The WORCshop@AU is a pilot program developed as part of the Workforce Opportunities in Regional Careers (WORC) program that is administered by the Savannah River Site Community Reuse Organization (SRSCRO).

Ten teachers are participating in the inaugural WORCshop@AU. Each teacher was nominated by school leaders from Georgia and South Carolina school districts in the SRSCRO region.

When teachers return to their classrooms this fall, they will be using new techniques to educate their students,

“My hope is that WORCshop@AU helps local teachers spark student interest in science and math. It would be fantastic to see these students learn about nuclear science and the important ways this technology is used for energy, medicine, security, and other ways in our community and nation.”

**Dr. Joe Newton, assistant professor for Nuclear Science at Augusta University and co-developer of the program with Dr. Ashley Gess**

and they will have continued support from SRNS mentors and WORCshop educators.

For example, teachers are learning how the Arduino® provides an easy-to-use hardware and software platform for teaching their students to solve real problems.

“We are so fortunate to have Dr. Gess involved in this program because she understands how to link the teaching standards of both states to principles that address real-world applications. My hope is that WORCshop@AU helps local teachers spark student interest in science and math,” said Dr. Joe Newton, Assistant Professor for

Nuclear Science at Augusta University and co-developer, with Dr. Gess, of the program. “It would be fantastic to see these students learn about nuclear science and the important ways this technology is used for energy, medicine, security, and other ways in our community and nation.”

Augusta University is a recipient of the WORC grant program aimed at developing the workforce needed in the Georgia and South Carolina region that supports SRS.

This aspect of the WORC program is funded by the National Nuclear Security Administration to help build the future workforce.



# SREL celebrates 70 years

BY OLIN "GENE" RHODES  
*University of Georgia's Savannah River  
 Ecology Laboratory director*

National Nuclear Science Week is a great time to reflect on the future of research at the University of Georgia's Savannah River Ecology Laboratory (SREL) and the endless potential that the coming years will present.



Rhodes

In June 2021, SREL celebrated its 70th anniversary. This milestone was marked with the release of a great anniversary video, produced with the assistance of the

Department of Energy – Savannah River (DOE-SR) and Savannah River Nuclear Solutions (SRNS). The video is on our website.

In addition, this month, the University of Georgia (UGA) enters into its next five-year cooperative agreement with the Department of Energy to operate the SREL through 2026.

With the advent of the new cooperative agreement with DOE-SR and the recently formed partnership of the Battelle Savannah River Alliance (made up of the University of Georgia, Georgia Tech University, Clemson University, the University of South Carolina, and South Carolina State University) to operate the Savannah River National Laboratory, it is an especially exciting time to be on the Savannah River Site (SRS).

We at SREL have high hopes for collaborative research opportunities with Savannah River National Laboratory under its new management and vision for the Department of Energy.

Excitedly, we also look forward to potential collaborations with our colleagues at UGA and other universities.

Faculty and students at SREL are conducting research on a variety of critical environmental issues on and off SRS, with a large emphasis on evaluation of the fate and effects of contaminants in soil, water, wildlife and plants.

Additionally, our faculty and students are developing new strategies for remediation and restoration of SRS habitats; conducting studies of the biological effects of contaminants; contributing to the management of wildlife and forests; evaluating the trophic transfer of contaminants within food webs and quantifying the effects of exposure to low-dose radiation on wildlife; and searching for evidence of zoonotic diseases, those that can be transferred from animals to humans.

While our faculty currently advise over 55 graduate students, we are particularly

We at SREL have high hopes for collaborative research opportunities with Savannah River National Laboratory under its new management and vision for the Department of Energy. Excitedly, we also look forward to potential collaborations with our colleagues at UGA and other universities.

**Olin "Gene" Rhodes,  
 Savannah River Ecology Lab  
 director**

delighted that SREL will soon embark on a new program in collaboration with DOE-SR and SRNS.

This new program will create a cohort of five graduate students at the master's level to strategically collect data to address state and federal regulatory requirements for DOE remediation activities at SRS.

Additionally, we are incredibly pleased that we have been able to partner with the College of Veterinary Medicine and the Franklin College of Arts and Sciences at UGA to expand our faculty, leveraging federal funding with UGA funding from these units to support four new tenure-track faculty members at SREL in the fall of 2022.

We are thrilled about the potential to expand our research over the next coming years in a number of emerging areas: transferring successful techniques used to study the effects of low-dose radiation on fish models to mammals; increasing emphasis on understanding the effects of metal exposure on the health of fish, insects, and microbial communities; enhancing understanding of the movement of heavy metals and radionuclides through food webs; developing new strategies for detecting and preventing zoonotic disease in wildlife populations; as well as the development of protocols and strategies for whole-body radiological monitoring of birds and small mammals in their natural environments.

We look forward to extending research in all these areas as opportunities arise, and we are committed to training the next generation of scientists as we take this journey.

# Calculating your annual radiation exposure

BY JIM MARRA  
*CNTA executive director*

Believe it or not, we are all radioactive! We live in a radioactive world and are exposed to natural and man-made radiation every day. But, it is perfectly safe. We understand the radiation exposure and know how to manage it.



Marra

Radioactivity is a measure of ionizing radiation being emitted from a material. A common unit of measure for radioactivity is the Curie (Ci), named after Marie Curie. The amount of radiation traveling through the air is quantified using the term Roentgen (R). The dose that an object or person receives when radiation is absorbed by the object or person is known as the radiation absorbed dose (rad). The effective dose is a combination of the absorbed radiation and the medical effects of the

radiation quantified as roentgen equivalent man (rem). Usually, it is this effective dose that is presented when assessing the impact of radiation in our lives.

The U.S. government has specified that the occupational whole-body dose allowed for a U.S. worker is 5 rem or 5,000 millirem (mrem). This means that a worker can be exposed to 5,000 mrem of radiation to their body on the job and not suffer any ill effects.

The average U.S. resident receives an effective dose of 620 mrem/year. About half of the radiation exposure is due to natural sources – radon in the air, cosmic rays, and natural radioactive materials in the earth. The other half is man-made radiation from medical, commercial, and industrial sources.

Some of us receive a little more radiation than others due to where we live and how we live. For instance, if you live in Aiken you receive 28 mrem/year due to atmospheric radiation associated with an elevation of about 500 ft. But, if you live in Denver, Colorado, you receive about double the amount of radiation at an elevation of over 5,000 ft. Moreover, if you live in an area with rocky or mountainous terrain you receive a higher radiation dose due to radon gas exposure than in a sandy area. Radon gas is a product of the natural decay of uranium and thorium in the earth.

Here are some other sources of radiation due to our everyday living and lifestyle:

- Living in a house made of brick or stone – add 7 mrem/yr
- Smoking a pack of cigarettes every day – add 36 mrem/yr
- Flying on a jet plane – add 0.5 mrem for every hour of air travel
- Getting a chest X-ray – add 10 mrem
- Getting a dental X-ray – add 0.5 mrem
- Getting a lumbar spine X-ray – add 150 mrem
- Getting a CT head scan – add 200 mrem
- Getting a CT whole body scan – add 1,000 mrem

Some medical procedures have higher radiation exposure than others. Rest assured, however, that medical professionals understand these exposures and will carefully prescribe diagnostic tests and treatments with this in mind.

## Curious about your radiation exposure?

There are tools available online that you can use to figure it out. These include:

- **EPA** – <https://www.epa.gov/radiation/calculate-your-radiation-dose>
- **American Nuclear Society** – <https://www.ans.org/nuclear/dosechart/>
- **SC DHEC** – <https://scdhec.gov/sites/default/files/media/document/2020-Most-Common-Exposures-of-Radiation-Fact-Sheet.pdf>



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