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SAVANNAH RIVER NUCLEAR SOLUTIONS

SRNS Today



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Welcome

to the November 2013 edition of

SRNS Today



Dwayne Wilson
SRNS President and CEO

"Thank you."

Two simple but powerful words.

And at this time of year, I'd like to say "thank you" to all the people who make SRNS a success.

A huge "thank you" goes out to our employees. Their accomplishments and achievements could fill volumes.

For tangible evidence, please take a look at this month's stories about two new facilities: the Wind Turbine Drivetrain Testing Facility and Electrical Grid Laboratory on the next page, and the Energy Materials Research Laboratory (EMRL) on Page 6. Our SRNL team worked hard to partner with Clemson University on the Wind Turbine Drivetrain facility, and with the Aiken-Edgefield Economic Development Partnership on EMRL. The results of their efforts will advance innovations in technology for our nation and for our world.

Our employees also shine in their accomplishments for the community. This month's edition features their contributions to the Golden Harvest Food Bank and Toys for Tots. Also, please see Page 5 to read about one of our nuclear engineers, Bill Wabberson, who dedicates much of his free time to encouraging teachers of today and their students, the scientists of tomorrow.

Another huge "thank you" goes out to you, our stakeholders. You are vital and integral to our success, and we appreciate all your efforts on our behalf. SRNS continually strives for a performance level of safety, security and operational excellence to merit your continued support.

I hope you enjoy this edition of SRNS Today.

About Savannah River Nuclear Solutions, LLC...

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

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Innovative technology for the nation

SRNL, Clemson join forces in facility for testing of next-generation wind turbine and electrical grid technology



The Savannah River National Laboratory (SRNL) has partnered with Clemson University in a new Wind Turbine Drivetrain Testing Facility and Electrical Grid Laboratory in Charleston, S.C. This public-private collaboration in electrical energy research, education and testing will be capable of full-scale, highly accelerated testing of next-generation wind turbine technology.

The Electrical Grid Lab's 15 megawatt (MW) Hardware-in-the-Loop simulator will allow manufacturers to test the mechanical and electrical characteristics of their machines in a controlled and calibrated environment. The grid simulator will be the highest power experimental utility-scale facility in the world.

In 2009, the U.S. Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy awarded a \$45 million grant to Clemson to design, build and operate a facility capable of full-scale, highly accelerated testing of next-generation wind turbine drivetrain technology. In evaluating this new concept, the proposal was taken one step further by creating the Electrical Grid Laboratory Simulator that would not only serve wind power, but the entire electrical industry.

SRNL researcher and advisory engineer Joe Cordaro was part of the original Clemson-led team that developed the proposal for the Drive Train Test Facility and was integral to the effort that subsequently added the 15MW Electrical Grid Lab. "To see these facilities be built from the ground up has been amazing. The scale of the test rigs, power amplifiers and switch gear is inspiring," said Cordaro.

In parallel with the design of the Electrical Grid Lab, SRNL initiated a DOE Laboratory Directed Research and Development Project to implement Hardware-in-the-Loop technology with a real time digital simulation system for the U.S. High Current Laboratory at the Savannah River Site. It then collaborated with Clemson in the initial concept of the Electrical Grid Lab and was responsible for the design of the data acquisition and control system. SRNL designed the hardware and software to be compatible with the Drivetrain Testing Facility systems and with the ability to link systems together. SRNL also designed the grid monitoring systems.

The Electrical Grid Laboratory allows systems testing for novel energy designs and approaches, such as using ultra-secure wireless sensors to monitor the nation's electrical grid, and facilitates development and testing of the next generation cyber security systems. With the Electrical Grid Simulator, companies can reduce risk by testing and demonstrating new technology under a controlled laboratory environment at utility scale power levels.

Photo, top: U.S. Deputy Secretary of Energy Daniel Poneman (from left), SRNL Advisory Engineer Joe Cordaro, and SRNS Executive Vice President and SRNL Laboratory Director Dr. Terry Michalske at the new Clemson University Wind Turbine Drivetrain Testing Facility and Electrical Grid Simulator

Photo, bottom: Speakers at the opening ceremonies of the Wind Turbine Drivetrain Testing Facility and Electrical Grid Simulator





SRNS provides funding for USC Aiken scholarships

SRNS President and CEO Dwayne Wilson (left) and members of the SRNS executive team met this year's USC Aiken recipients of the SRNS Scholars Awards at a reception at the university. SRNS provided \$50,000 as a donation to fund the scholarships.



SRNS nuclear engineer Bill Wabbersen teaches teachers and their students that science is fun

The sign in Bill Wabbersen's office reads "Never trust an atom. They make up everything." He brings that light touch to initiatives designed to pique young people's interest in science.

"Our industry needs people to replace us" in the coming years, says Wabbersen, a nuclear engineer at SRNS who spends his workdays with the Savannah River Tritium Enterprise, and many of his off-work hours encouraging students to follow him into the nuclear field.

Among his efforts is "Journey to the Center of the Atom," a hands-on learning program he developed and presents to middle and high school students. "The 'Journey' is about understanding how stable and radioactive atoms work together to make the universe," he explains.

In connection with the American Nuclear Society (ANS) national winter meeting in November, he taught a class for teachers, including one participant who travelled all the way from Japan, at the ANS Teachers Workshop. There, the teachers used the Isotope Discovery Kit, which Wabbersen had developed for ANS, to experience hands-on classroom activities. The kit—which consists of an interactive periodic table and chart of the nuclides, along with tiles representing various isotopes—allows students to learn by sorting and grouping the tiles.

Wabbersen has also taken the Isotope Discovery Kit to Chicago and Atlanta for other ANS national meeting teacher workshops. "The kit has traveled to San Diego for workshops and spent a whole summer at Penn State supporting teacher workshops there," he says. ANS is now producing kits for teachers around the country. The first two ANS kits were given as door prizes to two teachers at the teachers workshop in Washington DC.

Since creating the kit in early 2012, Wabbersen has used it to lead the "Journey to the Center of the Atom" many times at the University of South Carolina-Aiken's Ruth Patrick Science Education Center and at other events sponsored by the local ANS chapter and the Citizens for Nuclear Technology Awareness. In connection with October's National Nuclear Science Week, he and several colleagues led multiple sessions of the "Journey" for area high school students. The chairman of the event's National Steering Committee observed one of Wabbersen's sessions at the Ruth Patrick Center and wrote in response, "Bill is indeed a gifted and patient teacher.... SRS and the Aiken community are so lucky to have a partner such as Bill in the community."

Photo: SRNS nuclear engineer Bill Wabbersen (top left) uses his Isotope Discovery Kit to lead students on a "Journey to the Center of the Atom" at USC-Aiken's Ruth Patrick Science Education Center.

SRNS employees donate to Golden Harvest Food Bank

SRNS recently donated \$20,500 in cash and more than 8,000 pounds of food during its annual food drive for the Golden Harvest Food Bank (GHFB). The SRNS food drive is one of the food bank's largest, local fund raisers.

"We're pleased to support Golden Harvest as they strive to end hunger throughout the Central Savannah River Area. With this donation, the employees at SRNS have demonstrated yet again their desire to continue to provide relief for those in need," Dwayne Wilson, SRNS President and CEO.

Wilson added that a significant percentage of the company's large workforce also volunteers time and effort to support many United Way member agencies throughout the greater Aiken-Augusta area.

Travis McNeal, Executive Director, Golden Harvest Food Bank, was pleased to receive the checks and food. "The poor economy has added an extra burden to our organization's goal to feed those in need," said McNeal. "SRNS's contributions greatly help us and always exceed our expectations. We appreciate the generosity of our friends at SRS."



SRNS President and CEO Dwayne Wilson (left) presents the SRNS campaign check to Cathy Jones, GHFB Special Events Manager, and Mike Gibbons, GHFB Chief Development Officer for Aiken County, while Tim Bolen (far right), SRNS executive sponsor for the campaign, assists.

Aiken County, SRNS collaboration expands national laboratory space



EMRL

Energy Materials Research Laboratory

SRNL researchers are now occupying 6,435 square feet of new, modern laboratory and support space at Aiken County's Applied Research Center, located in the Savannah River Research Campus adjacent to the Savannah River Site (SRS).

The new space is an expansion of the facility, which houses SRNL's 24,000 square-foot Hydrogen Technology Research Laboratory, which is used primarily for unclassified research into new gas processing, storage and transfer applications. The county-owned facility, which opened in 2006, also hosts USC-Aiken research and small technology companies.

The expansion was funded by a \$3 million contribution from the Board of Directors of SRNS. SRNL is leasing the space under an initial 10-year lease.

The expansion added six new laboratories with flexible configurations to support SRNL research on advanced materials to support areas such as nuclear energy, energy storage materials and systems, solar energy materials, materials for wind and marine energy systems and carbon dioxide capture.

"This development further strengthens the good working relationship between SRNS, the national laboratory and Aiken County," said Dwayne Wilson, SRNS President and CEO. "All along, the intent of our company and our parent company organizations has been to strategically invest corporate dollars in ways that would enhance the national laboratory's competitive position. This is a concrete example of that commitment."

Dr. Terry Michalske, SRNS Executive Vice President and SRNL Director, said the investment would yield multiple benefits to SRNL.

"This adds to what is already a first-class laboratory complex at the county's facility," said Michalske. "In addition to providing us with new, contemporary research labs, the addition of more off-site research space makes it that much easier for us to partner with universities and private companies. As we continue to grow our programs, we place high priority on opportunities that build research partnerships



and increase economic development for the region. Our focus in this area is consistent with Energy Secretary Moniz' strong interest in increasing public / private partnerships with the national laboratories."

Ronnie Young, Chairman of Aiken County Council, said, "We are appreciative of the partnership that exists between Aiken County and SRNL. Our goals are very similar. We both want to see SRNL technology solve pressing national and global needs. I think with the opening of the Energy Materials Research Lab (EMRL) we have taken a major step towards meeting those needs. Aiken County is proud to partner with the national lab in advancing materials research and application with the ultimate goals of providing opportunities for our citizens."

"As implied in our name, it's all about partnerships," said Will Williams, Director of the Economic Development Partnership.

"The Energy Materials Research Lab is a great example of results that come about when the public sector and the private sector work together for the good of the community," he said. "The advances that will come from EMRL in materials science are virtually unlimited and we look forward to working with them. The efforts of Gary Stooksbury and the EDP Board of Directors to work to create jobs not only now, but jobs for the future, are unparalleled."



SRNS President and CEO Dwayne Wilson, Aiken County Council Chairman Ronnie Young and ADP Director Will Williams officially open EMRL.



SRNS Executive Vice President and SRNL Director Dr. Terry Michalske takes questions from the audience at the opening ceremonies.



Thad Adams (far right) leads a tour that included (from left) Aiken County Councilman Willar Hightower; Ted Felder, Special Assistant to U.S. Congressman Joe Wilson; Aiken County Council Chairman Ronnie Young; DOE-SR Manager Dr. David Moody; S.C. Representative Bill Taylor; Aiken City Councilman Reggie Ebner; and S.C. Senator Tom Young.

Williston-Elko
students take the next

STEP

in science education

Students from Williston-Elko (S.C.) High School recently traded their traditional classroom for the forests and ponds of the Savannah River Site, as they participated in a hands-on environmental science lesson through the Science Technology Enrichment Program (STEP).

With transportation funding provided by SRNS, the Williston-Elko students collected vertebrates and invertebrates, using biodiversity as an indicator of water health in an SRS pond.

STEP is an SRS education outreach program which partners with the Ruth Patrick Science Education Center. In this program, students use some of the techniques pioneered by the late Dr. Patrick, the first scientist to diagnose the health of a river or stream by using plant and animal life.

Offered at SRS and at the Silver Bluff National Audubon Society, STEP provides teachers and students with hands-on opportunities through real-world, issues-oriented investigations that focus on responsible environmental stewardship.

Field trips provide educational experiences focusing on science, technology, engineering and mathematics. By partnering with area teachers, the program enhances the role of science teachers as educational leaders in the schools and community.

Photos (from left):

Suzie Chavis uses a field scope to aid in identification of small organisms.

Brooke Lindell ensures specimens are collected, examined and released back into the pond.

Christian Sapp and Kim Mitchell of Education Outreach Programs use a dip net to collect macro vertebrates and invertebrates at the pond's edge.

Dajohn Broxton and Daniel Smith use magnification to examine pond life.



Hobbs wins 'Distinguished Scientist Award' from Citizens for Nuclear Technology Awareness

SRNL's Dr. David Hobbs has been named as this year's winner of the Fred C. Davison Distinguished Scientist Award, presented annually by Citizens for Nuclear Technology Awareness. The award honors the late Dr. Fred Davison, former president of both the University of Georgia and the National Science Center Foundation, and long-time board chair of CNTA.

Hobbs joined SRNL in 1984, and has made significant contributions to the treatment and chemistry of high-level nuclear wastes resulting from operations at SRS and Hanford. He has done extensive work to improve the materials used to remove strontium and actinides from high-level wastes; his work involves extensive collaboration with other National Laboratories, industrial companies, chemical suppliers and universities.



Dr. David Hobbs

His research resulted in one patent and two patent applications for preparation of nanosized material for strontium and actinides removal from nuclear waste, and led to winning the 2011 Council for Chemical Research's Collaboration Award. Materials he helped develop are presently used in the ARP / MCU facility at SRS that has converted more than two million gallons of high level waste solutions to low level waste for safe, permanent storage on Site.

SRNL Director Dr. Terry Michalske said, "David is the embodiment of SRNL's motto, 'We put science to work.' He is an international leader and has delivered that leadership to important programs from waste treatment to hydrogen. He's a real credit to the lab, and a very worthy recipient of this honor."

Hobbs has made recent contributions in the application of electrochemical processes for treatment of waste solutions to recover chemicals in waste in order to reduce the amount of solid waste which must be treated for permanent storage. He is also investigating several other applications in hydrogen production.

He has won numerous national and local awards, including being named a Fellow of the American Chemical Society. He was chosen in 2010 to be a foundational member of the DOE's Environmental Management Technical Expert Group.



"Dash for Bikes and Trikes" brings joy to those in need this holiday season

SRNS employees have combined zany fun with athletic competition to create a race like no other. The "Dash for Bikes, Walk for Trikes" relay race raises thousands of dollars each year for the Savannah River Site's annual Toys for Tots campaign.

"This is our third annual Bikes and Trikes race, held at an SRS running track," said event founder and SRNS environmental geologist Jeff Ross. "From year to year, you'll see teams with their own costume themes ... Trekkies (Star Trek), Duck Dynasty hunters, misfit toys, eggheads and "tired old men" for example, all racing each other. We typically have four members per team, who use a toy as a relay baton. It's all for a good cause, and we have a lot of fun with it."

Apparently, not only for fun, but profitable enough to raise a significant amount of money used to thrill many local children on Christmas day with a new bike or tricycle.

"Over 100 underprivileged children had a wonderful Christmas last year due to the \$6,000 that was raised through this crazy race. I'm so thankful to all those who have contributed time, money and a lot of energy, to make this event a success," added Ross. This event is one fundraiser of many that SRNS Environmental Compliance and Area Completion Projects sponsor to support the Toys for Tots program.

This year the Dash for Bikes, Walk for Trikes race, with a field of 10 teams, raised \$7,600, enough to buy about 25 additional bikes and trikes over last year's numbers.

The relay race lasts approximately 30 minutes and consists of two heats of teams rounding the one-fifth mile long track numerous times.

"As much as we're out here for a good time and bragging rights, it's really all about the kids. We want to touch their lives in a meaningful way this Christmas," said Ross.

"As much as we're out here for a good time and bragging rights, it's really all about the kids. We want to touch their lives in a meaningful way this Christmas."

Jeff Ross
Bikes and Trikes event founder and SRNS environmental geologist



SRNS Scenes

The Savannah River Tritium Enterprise has begun a year-long test of a prototype wireless tritium air monitoring cart, designed by the Savannah River National Laboratory. The use of wireless technology will improve reliability, reduce complexity and provide deployment flexibility for tritium air monitoring systems. This test is an important step in demonstrating the ability to reap the benefits of wireless technology in a secure environment, with potential for applications across the NNSA and other federal agencies. (Photo by Bruce Boulineau)

In the world of business, our business is

safety and security.



Watching out for ourselves.

Watching out for our coworkers.

Focusing on safe and secure performance
from complex jobs to routine tasks.

A world-class safety and security culture
to support local, regional and national
business opportunities.

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