JUNE 2013

SAVANNAH RIVER NUCLEAR SOLUTIONS

# SRNS Today


## IN THIS ISSUE



# Welcome
to the June 2013 edition of
# SRNS Today

**Dwayne Wilson**
SRNS President and CEO

One of the best parts of my job is having opportunities to let the community know about all the good work being done by our company, Savannah River Nuclear Solutions. And this month, there's a lot to tell.

I was pleased to be the guest speaker at an Aiken Rotary Club meeting in June. It was a great opportunity to outline the missions of the Savannah River Site, to talk about all the strengths our company has to offer to the nation and to the area, and to thank the community for its continuing support. It was also a great time to share our 2012 SRNS Annual Report. It's on our website at www.savannahrivernuclearsolutions.com. Dr. Terry Michalske, Savannah River National Laboratory Director and SRNS Executive Vice President, also had the opportunity this month to address the Citizens for Nuclear Technology Awareness about the strategic vision for the national laboratory. Please see Page 4 for the stories and photos.

Speaking of SRNL, Dr. Robert Sindelar has returned from his three-month assignment as an Embassy Science Fellow to support the Government of Japan's cleanup of the Fukushima Daiichi Nuclear Power Station. His work there is detailed in the story on Pages 6 and 7.

In this edition of SRNS Today, we're also featuring stories about our success with transuranic waste shipments (Page 3), a life-saving action by SRNS employee Tony Smiley (Page 5), and SRNS assistance with the Barnwell, S.C., Emergency Drill (Page 5).

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

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## 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. For additional information about SRNS,*

Please visit our website at www.savannahrivernuclearsolutions.com.

## SRNS Radioactive Waste Certification and Packaging Program passes milestones, sets two new shipping records

**Recently, SRNS set two new milestone records towards analyzing, preparing, packaging and shipping radioactive transuranic (TRU) waste bound for a disposal site in New Mexico.**

The SRNS Solid Waste organization completed 32 TRU waste shipments during April, nine within one week, breaking a 12-year record at SRS.

"I've managed this program for several years now," said John Gilmour, SRNS Director, Solid Waste and F Area Operations. "The teamwork, dedication and extraordinary work ethic displayed by these employees was truly amazing."

According to Gilmour, this is an outstanding achievement, particularly when you consider that SRNS is now processing the most difficult Cold War TRU waste. This waste required the design, manufacture and certification of specialized shipping casks that could hold much larger shipping containers.

Since SRNS became the management and operations contractor at SRS in August of 2008, over 4,000 cubic meters of TRU waste has crossed the South Carolina border and is now buried in a natural salt formation at the Department of Energy's Waste Isolation Pilot Project (WIPP) in Carlsbad, NM.

"Only about 700 cubic meters of legacy TRU waste remains here for certification and shipment to WIPP," said Gilmour.

***The term transuranic means those elements with an atomic number greater than that of uranium (92). TRU waste is defined as waste contaminated with alpha-emitting TRU radioisotopes that have a half-life greater than 20 years and a concentration level above 100 nanocuries per gram. At SRS, TRU waste is solid waste, consisting of clothing, tools, rags, residues, debris and other items contaminated with trace amounts of plutonium.***

**Photo:** Transuranic waste is shipped from the Savannah River Site to the Waste Isolation Pilot Plant in New Mexico.

# Wilson outlines SRNS missions for Aiken Rotary Club


SRNS President and CEO Dwayne Wilson outlined the strengths of the Savannah River Site and SRNS in a speech at the Aiken Rotary Club's June 17 meeting.

Safety and security topped the presentation. " Today, we've surpassed 17 million safe hours. Our employees take pride in working safely. We ensure the safe and secure handling and interim storage of our nation's excess plutonium and other special nuclear materials. It's a team effort. And SRNS is a strong team."

Wilson went on to describe recent SRNL innovations in technology and the lab's role in the Fukushima cleanup effort in Japan. He cited the SRNS Continuous Improvement program's successes, and the commitment of employees and the company to community involvement. " Whatever the task, we get it done safely, securely and successfully. SRNS delivers results and our results are strong," Wilson said.

Wilson expressed his appreciation for the ongoing support of SRNS by area leaders and the community. "It takes a critical mass of forward-leaning leaders, supportive businesses, industry and people who want to make a difference and to be part of the solution to establish a community like Aiken. That doesn't happen overnight. Our partnership with this community runs deep and we truly appreciate your support."

# Michalske addresses CNTA on SRNL's strategic vision



Dr. Terry Michalske, SRNL Director and SRNS Executive Vice President, was the featured speaker in June at the Citizens for Technology Awareness (CNTA) "Up and Atom" breakfast, talking about SRNL's strategic vision and emerging role within the Department of Energy complex.

Dr. Michalske (photo, top) pointed to the lab's niche in nuclear chemical engineering as a competency that will enable SRNL to address national challenges "for many, many years." That skill, he said, is key not only to nuclear materials processing and disposition, but also to continued activity in environmental remediation and risk reduction, nuclear detection, characterization and assessments, and gas processing, storage and transfer systems. With the right emphasis, he said, SRNL can continue to grow as an economic engine for SRS and the region, and to expand its reach beyond SRS.

Also at the meeting, SRNS President and CEO Dwayne Wilson (bottom photo, left) presented a $33,000 check from SRNS to Clint Wolfe of the CNTA, in support of the organization's activities.



# SRNS firefighter and EMT saves life at Family Y in Augusta through training, quick thinking

**Recently, a typical workout turned into anything but routine for SRNS' Tony Smiley.**

The SRNS firefighter and Emergency Medical Technician (EMT) was interrupted in the middle of his workout at the Family Y in Augusta, Ga., by members in a near-by spin class, who took him to a woman who had collapsed on the floor, unresponsive.

“In a situation like that, it is critical to make every attempt to identify what the problem is,” said Smiley. “When a patient is conscious, it is much easier to assess the problem and treat them. When they are unresponsive, the situation becomes much more challenging.”

Smiley instructed onlookers to elevate the woman's feet, while he checked for breathing and a pulse. Although the woman had a pulse, she was not breathing. Smiley tilted her head back to open her airway, which resulted in a very faint cough. He turned the woman on her side allowing her to cough harder, dislodging the chewing gum that was trapped in her throat.

“After she was able to get the object dislodged, she began to regain strength very quickly. After a few breaths, she was able to tell me that she was diabetic and an asthmatic and was feeling chest pain,” said Smiley.

Smiley checked her blood pressure, which was normal. However, he suspected that her blood sugar was likely low and obtained some jelly beans for her to eat. After paramedics arrived, they confirmed her blood sugar was at dangerously low levels.

Luckily, the woman made a fast and full recovery and Smiley spoke with her husband the following day. “He thanked me for helping his wife and told me that her blood sugar was the cause of her problems the day before,” said Smiley. “This is an example of why it is so important to consider your health and discuss your physical activity with your doctor. Although this woman was diabetic, she was also asthmatic and both conditions can put people at increased risk during strenuous physical activity. Also, patients should inform the people around them if they begin to feel signs of distress and communicate their diagnoses that could be contributing to the problem.”

As for Smiley, he attributes the quick response from the other members in the spin class as the number one reason the woman was able to recover so quickly, but he is thankful he was able to assist when it was needed most.

# SRNS, WSI support Barnwell emergency preparedness drill

The damaging impact of major storms is an undeniable threat regardless of location.

Employees from SRNS Emergency Management, the SRNS Fire Department and Wackenhut Services Inc. (WSI) joined Barnwell County in an emergency preparedness drill on May 20 to evaluate the County's response coordination during a mock exercise that simulated a disastrous hurricane hitting the Gulf and Atlantic coasts.

“The assistance of SRNS and WSI during Barnwell County's participation in Ardent Sentry 13 was invaluable. Barnwell County, SRNS and WSI have always had a good working relationship and this exercise just further cemented that relationship,” said Roger Riley, Director, Barnwell County Emergency Management. “I have every confidence that if our county ever needs emergency assistance, SRNS and WSI will willingly respond and provide that assistance.”

One of the simulated events included a mock-accident involving a tanker truck carrying contaminated material in Barnwell County. Activities at the drill included mass decontamination and care of patients, cleanup efforts and a review of emergency communications and logistics during a large-scale emergency.

# Impressions of Fukushima

## Savannah River National Laboratory's Dr. Robert Sindelar returns from Embassy Science Fellow assignment in Japan


Dr. Robert Sindelar interviewing staff at the Fukushima City Decontamination Plaza

Savannah River National Laboratory Senior Advisory Engineer, Dr. Robert Sindelar, has returned from his three-month assignment as an Embassy Science Fellow to support the Government of Japan's clean up of the Fukushima Daiichi Nuclear Power Station, which was devastated by the 2011 earthquake and tsunami. Sindelar was one of three scientists selected for the appointment through the U.S. State Department Office of Science and Technology Cooperation.

Sindelar said he had two major impressions upon entering the exclusion zone in Japan where decontamination activities were under way. “The in-place abandonment of stores, cars and homes in the townships gave me a fear that Rod Serling was just around the corner,” said Sindelar. “We did see severe tsunami damage to a local rail station far from the present shore, but a town otherwise in place, but without people, was unsettling.

"The in-place abandonment of stores, cars and homes in the townships gave me a fear that Rod Serling was just around the corner."

"The second impression was observing the industriousness of the Japanese agencies and people in achieving a measure of decontamination. The model project work to demonstrate decontamination of many surfaces over large tracts of land, each about 50 acres, and the progress being made in full-scale decontamination showed that remediation can be done quickly.”

The Embassy Science Fellow Program places U.S. government scientists at posts to provide expertise, advice, and assistance with science and technology-related issues, as in the case with the Fukushima Daiichi disaster. The program facilitates collaboration with the host government and local entities to meet broad U.S. objectives in science policy, diplomacy, bilateral cooperative science and technology activities, and capabilities of U.S. departments and agencies.

The Director of the Department of Energy Japan office solicited the U.S. State Department to provide Embassy Science Fellows to support the Government of Japan's Ministry of the Environment with its lead for the decontamination of lands surrounding the Fukushima site. Sindelar, Mark Triplett of Pacific Northwest National Laboratory (PNNL), and Sang Don Lee of the Environmental Protection Agency were also selected for the assignment.

Sindelar’s background includes 28 years of work in nuclear materials systems and international projects with spent nuclear fuel management. He also served a lead role in an International Atomic Energy Agency initiative for clean up of a highly-contaminated spent fuel storage basin. These credentials were strengthened through the vast SRS/SRNL knowledge and experience base in remediation topics. “The legacy of over 50 years of environmental studies and remediation activities at SRS, and the ready reach-back to SRNL staff were key discriminators,” said Sindelar.

**On March 11, 2011,** a major earthquake and subsequent tsunami disabled the power supply and cooling system of three reactors at Fukushima Daiichi. All three reactor cores later melted to some degree. The main releases from the disaster were the radionuclides cesium-134 and cesium-137. Cesium-134 (half-life of approximately 2 years) and cesium-137 (half-life of approximately 30 years) can easily be transmitted in a plume, leading to increased risk for contamination of fields and crops. Iodine-131 was also produced and released.

**Photos (from left):** SRNL/PNNL team in the lower level of Fukushima Reactor #4; debris at Reactor #4; and underwater camera view of Reactor 3 spent fuel pool

In spite of his many years of experience, Sindelar said the obstacles facing Japan in its cleanup efforts are remarkable. “There is a learning curve to understand the breadth of the challenges faced in the decontamination of the lands surrounding the Fukushima site. The contaminated regions include population centers with businesses, homes, schools, and community centers; farmlands; and forests with a total area about the size of the state of Connecticut. The radioactive contamination is surface contamination with cesium-134/137 at levels to cause high air dose rates.”

"The contaminated regions include population centers with businesses, homes, schools, and community centers; farmlands; and forests with a total area about the size of Connecticut."

“The remediation is daunting in terms of the level of effort to achieve decontamination, and the management of the large volumes of soil waste,” said Sindelar. “We were brought into the inner workings of the Government of Japan's Ministry of the Environment management team and staff to discuss the progress they made, relevant experience of the U.S., and further work needed for off-site remediation of the environment.”

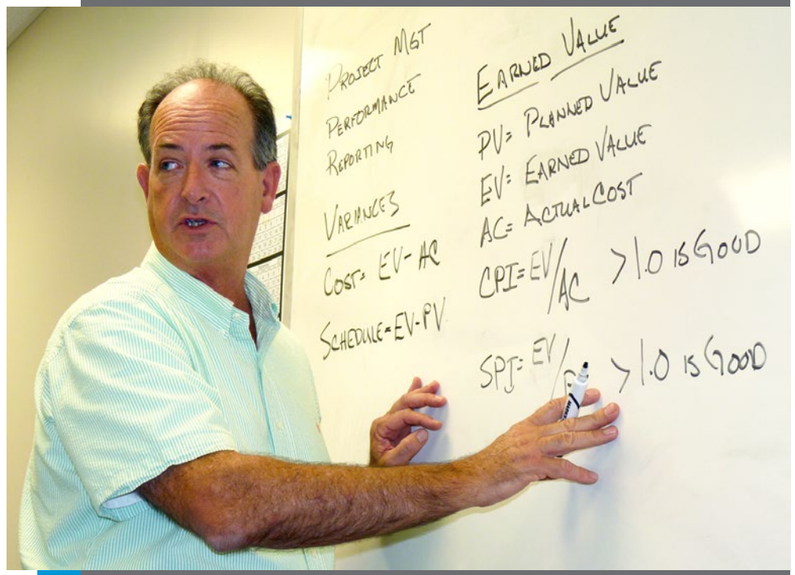
According to Sindelar, work at SRNL goes hand in hand with cleanup efforts. “One key core area for SRNL support is in advanced technologies to accelerate attenuation of radioactive cesium in soils and forest regions. SRNL environmental restoration staff, in conjunction with the Savannah River Ecology Laboratory and Japanese partner research organizations, has the outside large-scale facilities, remediation experience base, and sound research plans to investigate remediation systems that could be attractive solutions to facilitate the re-use of large land tracts that would otherwise be left unused for long periods of time. Other technology areas that could leverage the case studies and work at SRS would include transport and fate modeling of cesium in the environment, and advanced waste treatment and stabilization technologies.”

“The present and expected future work in recovery and remediation of the Fukushima facilities and lands will put SRNL at the forefront in radiological event recovery.”

Sindelar said there are two parts to the remediation effort in Japan: the work for the Fukushima site through the management firm TEPCO (Toyko Electric Power Company) and sponsoring agencies within Japanese government, and the off-site work coordinated and sponsored through Japan's Ministry of the Environment. “SRNL is the Environmental Management lead laboratory providing technology integration for the DOE complex," Sindelar said. "We are in partnership with PNNL for the TEPCO work. We reached out to the Government of Japan through the DOE Environmental Management program offices to offer our broad set of technologies and expertise in soil and groundwater clean up, site remediation/restoration, and supporting technologies. The SRNL/PNNL team has successfully established a strong relationship with TEPCO and is executing contract work for on-site clean up and recovery tasks.”

“The support to the Ministry of the Environment through the Embassy Science Fellow appointment established a foundation for an enduring relationship in which SRNL and SRS will have direct impact on future work and future collaboration,” he said. “The synergy of activities in the on-site and prospective new off-site work is expected to strengthen our recognition and business prospects as a laboratory that can quickly identify needs, conceptualize and develop solution paths for those needs.

“SRNL has an established history of quick response and project execution in emergency/urgent situations for both U.S. and international clients for radiological clean up and non-radiological accident resolution,” added Sindelar. “The present and expected future work in recovery and remediation of the on-site and off-site Fukushima facilities and lands will put SRNL at the forefront in radiological event recovery.”




# SRNS engineer's love of teaching to benefit students at USC-Salkehatchie

"While teaching classes at GRU, I was surprised at how many students graduate and hit the job market without networking or obtaining experience and key certifications. I want to share my knowledge and experience to help these students wisely plan all aspects of their college careers."

**Roger Duke**
SRNS engineer and college professor

**SRNS engineer Roger Duke is using his passion for teaching to help fill a growing need for an introduction to engineering course at the University of South Carolina-Salkehatchie (USC-S) campus in Allendale, S.C.**

The USC-S administration recognizes a growing need for engineers not only nationally, but locally as well, especially at the Savannah River Site. With the decision made to create an introductory program for potential engineering students, all that was needed was to hire a qualified professor.

"My manager approached me recently to help determine who may be interested in this outreach opportunity," said Duke. "I told him, 'look no further, I'll do it.' "

Duke readily acknowledges his love of teaching and his passion to help college students graduate on time with minimum debt, which helped lead to his quick decision. He is also an adjunct professor in the Georgia Regents University Hull School of Business and teaches Introduction to Project Management where his students' class project is to "Graduate and Get a Job."

Duke's class is patterned after the one taught at the University of South Carolina's main campus. Those USC-S students who successfully complete this three-hour credit class and the other prerequisite core classes will be eligible to transfer into the engineering program at the main campus in Columbia, S.C.

Beginning with the fall semester, Duke's class will be much more than an overview of the field of engineering. For example, he will place a high value on the importance of career planning and committing early to a specific degree program.

"While teaching classes at GRU, I was surprised at how many students graduate and hit the job market without networking or obtaining experience and key certifications," said Duke. "I want to share my knowledge and experience to help these students wisely plan all aspects of their college careers."

"We appreciate all of the support we have received from SRNS," said Dr. Ann Carmichael, Regional Campus Dean, USC-S. "With Roger's proven teaching skills and extensive real-world engineering experience obtained at SRS, we are confident that this new program will greatly benefit our students as well as area industry."

**Photo:** SRNL's Roger Duke to launch new engineering course at Allendale campus



# Savannah River Tritium Enterprise continues proud tradition of supplying tritium for national defense

**Photo:** Employees in the Tritium Extraction Facility

As the nation's center for providing tritium to meet national defense needs, one of the ways the Savannah River Tritium Enterprise (SRTE) can supply this vital gas is by extracting it from rods received from the Tennessee Valley Authority.

SRTE's Tritium Extraction Facility (TEF) recently completed this year's extraction.

"We are extremely proud of our role serving the nation as the only provider of tritium in support of our nuclear stockpile," said Dennis Donati, SRNS Senior Vice President for National Nuclear Security Administration Operations and Programs. "Our military relies on the product we provide. It's a great feeling to know that we continue to meet that need, and to do it safely, securely and cost-effectively."

Tritium, an isotope of hydrogen, must be continually replenished because it radioactively decays each year. SRTE recycles gas from unloaded reservoirs to provide the needed supply. In 2007, the TEF began operations, providing the capability to also extract tritium from Tritium-Producing Burnable Absorber Rods (TPBARs) that have been irradiated in TVA's commercial light water reactors.

In addition to recycling and extracting tritium, SRTE helps to maintain the U.S. nuclear stockpile by replenishing gas transfer systems, which ensure the performance of nuclear weapons, and performs function testing and other evaluations that certify the reliability of U.S. weapons in the absence of nuclear weapons testing.

# Donati, Tadlock of SRNS honored by SRS Leadership Association

Dennis Donati and Bill Tadlock were both honored in June by the Savannah River Site Leadership Association (SRSLA).

Named as the SRSLA Executive of the Year, Donati is the SRNS Senior Vice President for NNSA Operations and Programs. Named as the SRSLA Leader of the Year, Tadlock is the F Area Complex Facility Manager.

Donati's nominator wrote that he is "both a results-oriented leader and an exceptional communicator. He emphasizes success through partnership with customers, colleagues, and employees." The nomination went on to say that "under his leadership, the multiple components of SRNS' NNSA business (Tritium, Nonproliferation Projects and Programs) have been integrated into a more cohesive organization. Although they still serve separate NNSA customers, they now operate under a single Strategic Performance Evaluation Plan and work together as appropriate. Under his leadership, Savannah River Tritium Enterprise received 'Excellent' overall ratings from NNSA on consecutive year-end performance evaluations."

Tadlock was praised by his nominator as "a proven performer and leader at SRS for many years," and was cited for "his ability to successfully lead complex tasks being accomplished by multi-skilled organizations." The nominator went on to write that during the American Recovery and Reinvestment Act transuranic waste project, Tadlock led the F Drum Line initiative and "he implemented strong disciplined operations, empowered his people, exhibited tireless support of their efforts, and set a standard that brought pride to the workforce."


Dennis Donati (left), and Bill Tadlock


## SRNS funding keeps on M'Aiken Magic for Aiken County robotics teams

Not long after winning the World Championship, the Aiken County Robotics Team, also known as M'Aiken Magic, lost nearly half their funding due to the loss of multiple sponsors. The program was put back on its feet last year and again this year with $10,000 donations from SRNS, now the program's only major sponsor.

"The management team at SRNS believes the investment made towards the educational enrichment of this highly successful robotics program may one day result in engineers, technicians and scientists that will benefit area industry and, hopefully, the Savannah River Site as well," said Dwayne Wilson, SRNS President and CEO.

Longtime mentor and former SRS engineer Clyde Ward explained that the Aiken County Robotics Team initially had one team in the FIRST Robotic Competition (big robots) and has since added three teams in a new division, the FIRST Tech Challenge, (little robots). This program has attracted more than 100 students over the years to build amazingly clever and complex robots to compete against other teams to overcome one specified challenge in each division, each year.

Each round of the competitions held at the state, regional, and world levels, require cooperative teamwork with a robotics team from one or two other schools while competing against the robots of two or three opposing teams. Both offensive and defensive strategies are required using the highly versatile, agile and innovative robots.

"Though the competitions are exciting and certainly rewarding for the students," said Dr. Beth Everitt, Superintendent, Aiken County Public School District. "I greatly appreciate the robotics team's ability to appeal to those students who may not naturally gravitate to an after-school program that strongly supports development in the areas of science, technology, engineering and math."

Ward described the donation of funding by SRNS as breathing new life into the Aiken County Robotics Team. "SRNS literally came to our rescue," said Ward. "These middle and high school students take an initial interest in robotics and quickly come to love the program. Whether designing, building, programming, or driving our three small robots or the large robot, the hands-on, teamwork approach attracts and helps to educate many of our future scientists and engineers."

> "SRNS literally came to our rescue. These students take an initial interest in robotics and quickly come to love the program. Whether designing, building, programming, or driving our three small robots or the large robot, the hands-on, teamwork approach attracts and helps to educate many of our future scientists and engineers."
>
> **Clyde Ward**
> **M'Aiken Magic mentor**

**Photo:** Clyde Ward (left) assists a member of the robotics team

## Site Services Golf Tournament raises $20,000 for United Way

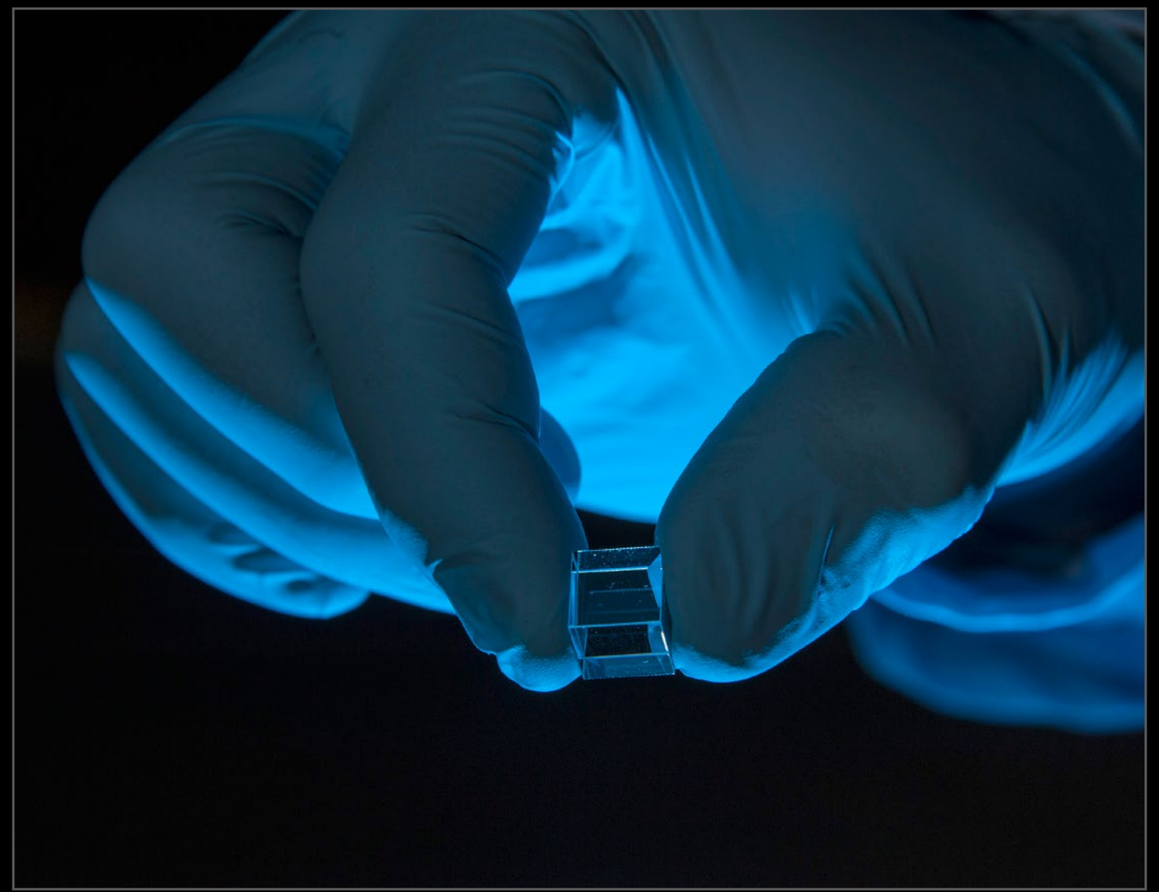
SRNS Site Services' Ninth Annual United Way Golf Tournament recently raised $21,340 in donations for local United Way agencies. Held at Houndslake Country Club in Aiken, South Carolina, the 2013 tournament and putting contest drew 32 teams to compete in the 18-hole, captain's choice tournament. One of the largest fundraisers at SRS, this annual golf tournament has raised over $80,000 in the past four years.

## Mark your calendars now for annual College Night

It's not too early to mark your calendars for the 2013 Central Savannah River Area (CSRA) College Night, slated for Sept. 5 at the James Brown Arena in Augusta, Ga. Last year, more than 6,000 high school students attended CSRA College Night, and 12 scholarships, each worth $1,000, were awarded. For more information, visit the SRS web site at http://www.srs.gov, click on Outreach, then Educational Outreach Programs, then CSRA College Night.

## SRNS holds Healthy Heart Fair to promote employee wellness

Nearly 200 SRNS employees took advantage of a Healthy Heart Fair in May, sponsored by SRNS and Augusta's University Hospital. Free lab work and screenings were offered to promote heart attack and stroke prevention. In addition, 153 carotid plaque scans, which can identify early signs of cardiac risk, were performed, with 28 percent identified as positive for plaque lesions. This information can enable employees' personal physicians to determine intervention measures to prevent possible heart attacks or strokes.



# SRNS Scenes

*Researchers at the Savannah River National Laboratory are developing photonic crystals for enhanced radiation detectors. The innovative process uses nanoporous anodized aluminum oxide masks to pattern the surfaces of bismuth germanate scintillator crystals (pictured). This new concept in radiation detection aims to increase detector sensitivity by enhancing light extraction from the scintillating surfaces. (Photograph by Steve Ashe)*

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