



National Nuclear Science Week

National Nuclear Science Week is a national, broadly observed week-long celebration to focus local, regional and national interest on all aspects of nuclear science. Students learned about the contributions, innovations and opportunities that can be found by exploring nuclear science.

During the week, educators, students, employers and the community participated in a national recognition of how nuclear science plays

a vital role in the lives of Americans...and the world. Activities during the week were intended to build awareness of the contributions of the nuclear science industry and those who work in it every day.

The SRS Community Reuse Organization and its affiliated Nuclear Workforce Initiative collaborated with national and regional organizations to host activities in South Carolina and Georgia that

were featured for this year's observance of National Nuclear Science Week.

From advances in nuclear power and nuclear medicine to the vast nuclear technology in use at Savannah River Site, this region has a great deal to celebrate. Programs for the week were designed to encourage education and awareness of these nuclear technologies and the many careers available within the nuclear industry.



22nd Annual Edward Teller Lecture



CNTA hosted the 22nd Annual Edward Teller Lecture

on October 21 as part of National Nuclear Science Week. The guest lecturer was Marv Fertel, President, Nuclear Energy Institute (NEI). Mr. Fertel spoke about nuclear industry challenges on a global

basis, nuclear energy expansion, job creation, and the responsibility to be the appropriate steward of nuclear technology. He also talked about the Yucca Mountain issue, public support for nuclear energy, and recognition of the clean air benefits of nuclear energy. "The merging of the SRS mission and the values of the nuclear energy industry are critical to our nation and to all

Americans. They have been built upon the legacy of Edward Teller and others who pioneered nuclear technology and fostered by many of the leaders who have provided the Teller lecture in previous years."



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Students Discuss Nuclear Programs with Marv Fertel

Nuclear Uniform Curriculum students from Aiken Technical College and Augusta Technical College met with Marv Fertel prior to the Teller Lecture on October 21, 2013. Current and past students in the programs presented and discussed how being in the

programs have benefited them, while corporate representatives from SCANA, Southern Company and SRS discussed how they benefit from the programs. Our region's strength in nuclear workforce development was also highlighted.



Workforce Development Day

As part of National Nuclear Science Week, Workforce Development Day was held on October 22 at the Kroc Center in Augusta. Students had the opportunity to interact with current nuclear professionals; viewed interesting exhibits and learned about "hot" career topics in the world of nuclear technology – from nuclear medicine to emerging energy technology.

Simona De Silvestro, driver of the No. 78 Nuclear Clean Air Energy IndyCar discussed the bases of IndyCar racing and nuclear technology with students.

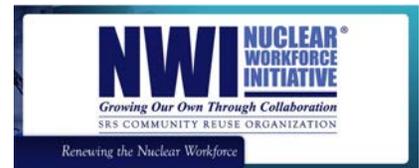


Suzy Hobbs Baker presented "Diary of a Nuclear Tourist" to the students where she discussed her experience while traveling Europe as a nuclear tourist.



Exhibitors included Aiken Technical College, American Nuclear Society, AREVA, Augusta Technical College, The Babcock & Wilcox Company, CNTA, Georgia Regents University – Medical Center, Georgia Regents University – Summerville Campus, Microburst Learning, North American Young Generation in Nuclear, Nuclear

Clean Air Energy Car Display, Nuclear Literacy Project, Nuclear Workforce Initiative, Paine College, Parsons, PopAtomic Studio, Savannah River National Laboratory, Savannah River Remediation, SRS Community Reuse Organization, Savannah River Site Leadership Association, SCANA Corporation, Shaw AREVA MOX Services, South Carolina State University and Southern Company.



Pandora's Promise Viewed in Aiken



The Robert Stone film, "Pandora's Promise", aired at the Etheredge Center on the USC Aiken campus on October 23. This film

was first premiered at the Sundance Film Festival earlier this year. The film tells the intensely personal stories of environmentalists and energy experts who have undergone a radical conversion from being fiercely anti to strongly pro-

nuclear energy, risking their careers and reputations in the process. Tom Coleman, VP of AREVA Federal Services welcomed everyone and introduced Jim Walther, Director of the National Museum of Nuclear Science and History. A panel consisting of Karen Patterson, Chair of Governor's Nuclear Advisory Council; Kelly Trice, President of Shaw AREVA MOX Services, LLC (MOX); Robert Eble, Outreach Chairperson for American Nuclear Society (ANS); J.

Gordon Quillin, Director of Radiological Protection for DOE-EM; Clint Wolfe, Executive Director CNTA; and Gary Senn, Director, Ruth Patrice Science Education Center, USCA answered questions from the audience at the conclusion of the film. Thank you to Janelle Karchaske, Shirley Von Beck and Rodney Whitley for their hard work in arranging the event.

“Celebrate Our Community’s Nuclear Industry” Forum

CNTA sponsored a nuclear forum, “Celebrate Our Community’s Nuclear Industry” at the Etheredge Center on October 24. Three panels of professionals spoke on how the Savannah River Site impacts the local nuclear industry in various ways, including SRS projects, education and community/economic development.

SRS Projects

The Savannah River Site, and its many impacts, was a major topic at the nuclear forum. The Site’s Department of Energy Manager David Moody spoke on several Site objectives for the upcoming year, including the continued closing of liquid waste tanks, the construction of the salt waste processing facility, and continued efforts to bring small modular reactors – or SMRs – to the site.

“We happen to believe that Savannah River Site is a very good location (for SMRs),” Moody said. “We believe that there is a tremendous future for small modular reactors. We believe the Site is well-poised with its infrastructure to contribute to growth in that area.”

Hadron Technologies, a microwave technology and systems development and manufacturing company, was also present at the forum.

Chief Technology Officer Stan Morrow discussed the business’s partnership with Savannah River National Laboratory.

Morrow said the two groups signed an agreement with the lab to create hybrid microwave equipment.

“Having the lab as a partner to commercialize technology is essential,” Morrow said. “Our goal is to create jobs and continue research, so this area with all of its nuclear expertise is a great place to do that.”

Education

The nuclear industry has also had a major impact on education in the local community, said local panelists. According to Aiken Technical College President Susan Winsor, the school had no nuclear programs or expertise as early as six years ago. However, the school has had a major turnaround thanks to local efforts.

“Our friends at URS approached us and helped with funding to get a radiation program along with a partnership with SRNS,” Winsor said. “Now, our students work at sites across the nation, and we have 60 graduates working coast to coast in the nuclear industry.”

Thomas Hallman, former USC Aiken chancellor, was also present at the forum and spoke about SRS’s impact on the Ruth Patrick Science Education Center. The Science and Technology Enrichment Program offers educational opportunities for grades K-12 and is a collaborative effort between SRNL and the education center, among others.

“Many of the program’s classes are taught at SRS and their influence helped the education center gain over 92,000 visitors in 2012,” Hallman said. “So the partnership has been essential in our progression.”

Community/Economic Development

Former SRNS CEO Chuck Munns highlighted one of the most glaring economic facts for the Aiken County: Every one job at SRS represents 2.5 jobs in Aiken County. Because of that, the Site’s progression is an important part of the county.

Munns highlighted the Site’s cleanup efforts and how land use and air quality also impact the community.

“Community leadership, closing down tanks and environmental cleanup are all essential to our community,” Munns said. “The nuclear industry is one of the largest employers in our region and provides high-quality jobs, local procurement and tax revenue.”

According to facts presented at the forum, SRS’s 2010 economic output equaled \$2.5 billion. The facts also show that SRS has an impact on one in every five jobs in the county, one in every four homes, and relates to about 25 percent of the county revenue.

Greater Aiken Chamber of Commerce President and CEO J. David Jameson internalized the information and reflected on the importance of the SRS’s community impact.

“Of particular interest is the many dimensions the nuclear industry touches – not only in this community but the entire country,” Jameson said. “So many people related to what’s happening around the country and really around the world are related to what’s happening right here at Savannah River Site. So it’s a moment of pride that reinforced why we live in this community.”

Q&A’s from the forum can be found on page 6.



“Journey to the Center of the Atom”

Bill Wabbersen spends his workdays with the Savannah River Tritium Enterprise. Many of his off-work hours are used to encourage 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 developed by Wabbersen to experience hands-on classroom activities. The kit—which consists of an interactive periodic table and chart of the nuclides, along with

plastic 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 national teacher workshops. “The kit has traveled to San Diego for workshops and spent a whole summer at Penn State University supporting teacher workshops there,” he says. ANS is now producing kits for teachers around the country.

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 SRNS Education Outreach Program, 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.”



CNTA Education Committee

The Ruth Patrick Science Education Center (RPSEC) recently received a grant funded by the SC Department of Education for STEM workshops. The grant is a 3-year grant that allows 100 teachers to attend these workshops each year. Grant funds cover books, materials, and CNTA consulting. The “Bringing Nuclear into the Classroom” teacher workshop held October 18 was covered under this grant, and required two parallel

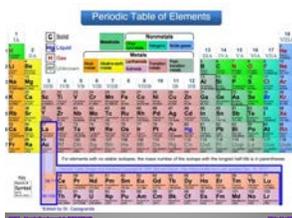
sessions to be run to accommodate 25 teachers. Other grant covered teacher workshops are planned for January 31, 2014 and April 18, 2014. Workshops are also being planned for Columbia County and Allendale County in 2014.

At the request of several teachers who have attended “Bringing Nuclear into the Classroom”, an advanced workshop on nuclear technology is being developed

and is targeted for first presentation in the summer of 2014. Ken Stephens is leading a team in the development of this new project.

The Education Committee assisted with “Journey to the Center of the Atom”, developed by Bill Wabbersen using the Interactive Chart of Nuclides.

Bringing Nuclear into the Classroom



Who uses the Energy?



Distinguished Scientist Award Winner



Dr. David T. Hobbs was the recipient of the 2013 Fred C. Davison Distinguished Scientist Award. Dr. Hobbs is

a Senior Advisory Scientist with the Savannah River National Laboratory's (SRNL) Environmental and Actinide Section. Prior to joining SRNL in 1984, he worked at the Research Triangle Institute, Englehard Corporation, and Pfizer. He has made significant contributions to the treatment and chemistry of high level nuclear wastes from operations at the Savannah River Site (SRS) and Hanford. He has done extensive work to improve the material used for removal of strontium and actinides from the high level wastes. His work has involved extensive collaboration with other national laboratories, industrial

companies, a chemical supplier, and universities. The work 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 Research Award. The materials he developed are presently used in a pilot facility at SRS that has converted more than 2 million gallons of high level nuclear waste solutions to low level waste which has been safely converted to a solid waste for safe permanent storage on site.

Dr. 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 the area of hydrogen production.

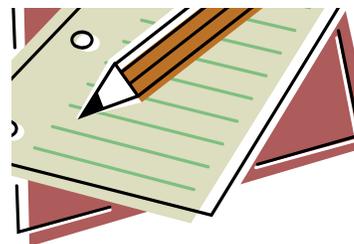
Dr. Hobbs has done extensive mentoring of other scientists, engineers, post-doctoral students and managers. His research has funded numerous post-doctoral students and junior staff members. Several of these have become permanent staff members at SRNL.

Dr. Hobbs has won numerous awards in the past, both locally and nationally, 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. This group advises the Assistant Secretary on all aspects of nuclear waste processing across DOE as well as technical consultation for each site and for the Japanese after the disaster at Fukushima caused damage to several nuclear reactors.

High School Essay Contest

The CNTA High School Essay Contest is currently underway. The contest is open to high school juniors and seniors in Aiken, Allendale, Barnwell, Columbia or Richmond County. CNTA family members who are a junior or senior in high school, regardless of where they go to school, are also eligible. The winner of

the contest receives a \$1,000 award and their school receives a \$500 award. Contest information has been forwarded to the high schools, and can also be found on our website, www.c-n-t-a.com. The contest deadline is February 28, 2014.



Golf Tournament



MARK YOUR CALENDAR!!

The 2014 CNTA Annual Golf Tournament will be held on Friday, May 9 at Houndslake Country Club.

We are always looking for volunteers, door prizes, giveaways, etc. Contact the CNTA office if you're interested in helping with the tournament.



Q&A's from the "Celebrate our Community's Nuclear Industry" Forum

Question: Could you explain the basic difference between the decades old reactor at "Yankee Rowe" in Vermont and those under construction in SC? Keep it simple; I'm a layman.

Answer: "Yankee Rowe was one of the very first commercial nuclear reactors constructed in the United States. Since then, nuclear reactor designs have evolved, making improvements with each new generation. The AP1000® nuclear reactors under construction in SC are a Generation III+ plant design. Rather than relying on active components such as diesel generators and pumps. The AP1000 relies on the natural forces of gravity, natural circulation and compressed gases to prevent overheating in the highly unlikely event of an accident. Even with no operator action and a complete loss of all on-site and off-site AC power, the AP1000 will safely shut down and remain cool. Due to its passive safety design, the AP1000 has a smaller footprint (it needs less land) and significantly less components than typical nuclear power plants, which also helps to reduce maintenance costs. If you'd like to read more about the AP1000, visit: <http://www.ap1000.westinghousenuclear.com/>."

Question: Up until the 1980's, wear-resistant bearings in reactor cooling pumps, check valve bushings, etc., were made of Stellite. It's been replaced by Norem Manna – what is it and will it last as long as Stellite? Is the AP1000 Stellite free?

Answer: NOREM is an alloy developed for this purpose you indicated and to avoid issues of activation of the cobalt in earlier materials (i.e. reduce the radiation dose to personnel). The AP1000 reactor coolant pumps currently use Stellite-12 hard facing on the bearing thrust runners and rotor journals.

Question: What are the education requires for hourly employees at Westinghouse? Training requirements?

Answer: "Hourly candidates are required to have at least a high school diploma or a GED, and there are a series of tests that

candidates must pass to demonstrate required skills before they would be hires at the Westinghouse Columbia Fuel Fabrication Facility. Two years of previous manufacturing experience is preferred, but no pre-requisites apply for training. Relevant classroom and on-the-job training is supplied to make hourly employees successful."

Question: What are the education requirements for hourly employees for various hospital technologists? Training Requirements?

Answer: Entry-level Radiation Safety Technologists are required to have an associate's degree in radiation protection technology or a closely related degree, such as nuclear engineering technology; or a bachelor's degree in a related science with equivalent coursework, training, or experience in radiation protection technology. We (GRU) provide on-the-job training and continuous professional development training for our technologists. Aiken Technical College has an associate's degree program in radiation protection technology.

Depending on the employer, Nuclear Medicine Technologists (NMTs) hold a bachelor's degree in nuclear medicine technology; a bachelor's degree in another scientific discipline with a nuclear medicine certificate or master's degree; or an associate's degree in nuclear medicine technology. Most employers and an increasing number of states require certification for NMTs. GRU has a bachelor's degree program in nuclear medicine technology.

Radiation Therapist (RT) requirements are analogous to NMT requirements. Many states require licensure for RTs. GRU has a bachelor's degree program in RT.

Question: You have made a clear case for the value of SRNL to the quality of our environment here in the CSRA. What other ways could you see the State of South Carolina better utilizing the talent and resources at SRNL?

Answer: Having already mentioned the

value of innovative cleanup strategies and new technology business spin offs, another potential synergy would be in the area of renewable energy, energy saving or recycling advancements. The SC DHEC assists its customers in these areas, when requested. Making connections for technology transfer in these areas could be very beneficial for the environment and economy in SC.

Question: Do you see DOE responding to the suggestions for a lawsuit because of missed clean up goals?

Answer: Although DHEC and DOE have a long history of general cooperation and success, we currently see an increase in high level waste funding being directed to sites with a history of litigation. DHEC does not seek to be in an enforcement mode with DOE; however, we will not ignore the tools that we have to bring attention to the need for risk reduction from high level waste in aging, degrading tanks.

Panel 1: Impacts within the CSRA

Chair – Dr. Clint Wolfe

Jeff Archie, Senior VP & Chief Nuclear Office – SCE&G

Tom Tynan, VP of Southern Company, Plant Vogtle

Dr. David Moody, Manager DOE-SRS

Andrew Atwood, Manager of Materials & Fuel Rod Design, Westinghouse Electric Co.

Walt Loring, MS, CHP Diplomate, American Board of Health Physics, GRU

Panel 2: Scientific Contributions to the Economic Engine

Chair – Dr. Terry Michalske, Director of SRNL

Dr. Michele Harmon, Associate Professor of Biology, USCA

Stan Morrow, Founder & Chief Technology Officer, Hadron Technologies

Sarah Dickerson, Director of Former Soviet Union & Asian Treat Reduction for NNSA

Shelly Wilson, Federal Facilities Liaison for SC DHEC

Panel 3: Education & the Nuclear Industry

Chair – Dr. Tom Hallman, Distinguished Chancellor Emeritus, USCA

Dr. Sandra Jordan, Chancellor, USCA

Dr. Susan Winsor, President, Aiken Technical College

Dr. Ann Carmichael, Dean, USC Salkehatchie

Dr. Travis Knight, Acting Program Director, Nuclear Engineering, USC

Membership Renewal

Membership renewals are now being accepted for 2014! If you're not sure of your renewal date, please contact

the CNTA office at (803) 649-3456 or cnta@bellsouth.net. You can also pay your membership by phone.

We accept Discover, MasterCard and Visa. A \$1.00 service fee will be added to all credit card charges.

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