CNTAware

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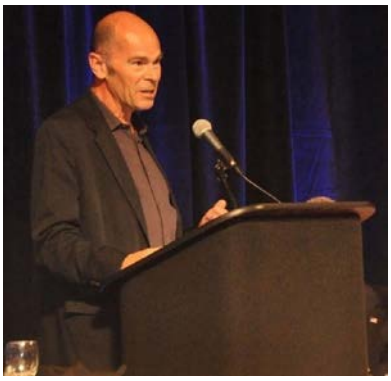
23rd Annual Edward Teller Lecture



The 23rd Annual Edward Teller Lecture/Banquet was held October 20 at the USCA Convocation Center. This year's guest speaker was Robert Stone, Director of the documentary, "Pandora's Promise". Mr. Stone talked about being both an environmentalist and pro-nuclear supporter as he shared the inside story of his award winning film and thoughts about our nation's future energy needs.

Nuclear Science Week

The Teller Lecture was held during Nuclear Science Week (NSW), a widely celebrated event held the week of October 20-24. Nuclear Science Week events included Education Days at Ruth Patrick Science Education Center (RPSEC) and Georgia Regents University (GRU), and site visits to Plant Vogtle, the Savannah River Site and the V.C. Summer Nuclear Station. The focus was to inform educators and students of the career opportunities in the nuclear industry. Thank you to the SRS Community Reuse Organization Nuclear Workforce Initiative for coordinating the events and making the Nuclear Science Week a huge success!

CNTA Board of Directors for 2015

The CNTA Board of Directors welcomes five new members for 2015: Byron Bush, Wyatt Clark, James Curtiss, Jill O'Donnell and Joe Ortaldo. Brief bios of the new board members will be posted in the next newsletter.

We also thank the following people for their service as past board members: Mark Bolton, Paul Hunt, Derrick McLane, Ron Schroder, Tom Sanders and Art Stackpole.

Byron Bush

Wyatt Clark

James Curtiss

Jill O'Donnell

Joe Ortaldo

Distinguished Scientist Award Recipient

Dr. Zheng Chang is the recipient of the 2014 Fred C. Davidson Distinguished Scientist Award. Dr. Zheng Chang is an Associate Professor of Nuclear Engineering and Radiochemistry at South Carolina State University in Orangeburg, SC. A native of China, Dr. Chang received his BS and MS degrees from Lanzhou University in China; his PhD in Engineering from the Tokyo Institute of Technology in Japan; and did postdoctoral work at Notre Dame University. He taught at his alma mater prior to obtaining his PhD. Since coming to the United States, he has done research and taught at a number of different universities and laboratories, including Adjunct positions at Virginia Polytechnic Institute and Clemson University. He also worked as a Research Associate at Brookhaven National Laboratory for several years. He started teaching at SCSU in 2006. He started the Radiochemistry program in the Nuclear Engineering that same year. He collaborated with SRNL and Clemson University in developing the Radiochemistry program. He arranged for some radiochemistry students to work at SRNL for a week in the Analytical Department to provide them with real job conditions. He has taught radiochemistry courses and stresses hands-on research by students with his supervision. An example of research with students occurred after the Fukushima accident; he helped students set up and measure radiation atop the tallest campus building. The measurements showed that not only the gaseous fission products, but also solid particles were measured, with the study being published in the journal, Health Physics. The program has been the most successful STEM program introduced at SCSU. The program has graduated 13 students who either have gotten jobs or pursued graduate degrees in radiochemistry. Three of those students have finished their PhD studies. Others have obtained MS degrees. He has brought students to SRNL for tours. He has ongoing joint research with Dr. Miller in the Nuclear Engineering Department at the University of Tennessee on development of borated polymers for neutron measurement in mixed gamma-neutron fields as well as other collaborations. Dr. Chang has a real interest in the students and helps them to be successful in school and work thereafter. His work provides training needed by the nuclear industry locally as well nationwide.

Up & Atom Update: Focus on the SWPF Project

PARSONS

Dr. Thomas D. Burns, Jr., Parsons Vice President and Director of Engineering for the Salt Waste Processing Facility (SWPF), was the guest speaker at CNTA's November Up & Atom breakfast.

Burns reviewed the status of this multi-billion dollar facility and lessons learned from his experience on the project.

Once operational, the SWPF will process 97 million gallons of prepared feed at 6.4M Na concentration from SRS tank farms at a nominal capacity of 6 to 8 million gallons per year. With mature technology and no open DNFSB issues, the facility will play a crucial role in reducing the Site's legacy waste.

Employing over 800 personnel, the Construction phase is 77 percent complete and the Commissioning phase is 10 percent complete. Against the revised project baseline, Construction is forecasted to come in six months early and $35 million under budget.

The Schedule Performance and Cost Performance Indices are both positive, at 1.03 and 1.04, respectively. The SWPF is targeted to commence operations in the fall of 2018.

Burns highlighted the success of the project's extensive test program. This program, with subcontract support from EnergySolutions and General Atomics, demonstrated that the facility's Alpha Strike and Caustic-Side Solvent Extraction (CSSX) processes will meet or exceed 100 percent of the design capacity.

In addition, full-scale CSSX system testing with Next Generation Solvent (NGS) was successfully conducted at the Parsons Technology Center. Parsons worked with DOE, SRNL, and SRR to support NGS implementation at the MCU hot-pilot facility. NGS throughput enhancements in SWPF could significantly accelerate salt waste processing and facilitate large life cycle cost savings.

The SWPF enjoys a high degree of technical confidence, and once completed it will be integrated with the SR Liquid Waste Program to bring the liquid waste tanks to closure.

In his discussion of lessons learned, Burns emphasized that the two keys to a successful effort are strong and experienced leadership and good personnel. Projects without these are doomed to failure.

According to Burns, the right acquisition strategy for a first-of-a-kind nuclear facility is essential. The traditional design-bid-build model can lead to misaligned incentives and resources wasted on "blame and claim" issues. Integrated engineering-procurement-construction strategies, however, can minimize costly contractual friction points and focus on solutions.

Once a project is underway, establishing the right engineering organization is critical. Burns found success in aligning all engineering in one organization with a single accountable leader, using conservatism and design margin to reduce uncertainties and risks, and engaging the customer early and proactively to document agreements.

Full scale system testing and pilot testing is worth the time and investment. Likewise, design maturity should be maximized prior to procurement and construction activities. "Design to Build" should be kept in mind, and a focus on continuous improvement will pay dividends.

Burns recommended that "best value" procurements should be the rule in these kinds of projects and noted that "firm fixed price" contracts come with risks that need to be understood and managed. Specifically, nuclear requirements aren't always fully
appreciated, suppliers are skillful at extracting change orders, and they may default if cost growth is too large. Other procurement tips included investing in thorough pre-award supplier evaluations, committing to significant in-

Up & Atom Update: Focus on the SWPF Project—continued

shop engineering and quality assurance oversight, and conducting a robust commercial grade dedication program. Procurement strategies should be tailored to the project's design maturity and equipment complexity.

Construction can benefit from a standing constructability review team. Burns cited numerous examples where this benefited the SWPF project. Furthermore, nuclear qualified welders should be screened with a rigorous qualification program.

Quality Assurance is another function that needs to be carefully managed. The establishment of a constructive oversight culture, one with clear expectations among relevant stakeholders and a reasonable graded approach, is important. Such a culture is "pragmatic not dogmatic," is "firm but fair," and "doesn't major in the minor."

Engaging QA/QC early in inspection development helps, as is aligning M&TE choices with the relevant tolerances. Real-time documentation and work package closure is recommended in order to avoid paperwork "bow waves."

"Success is possible on complex DOE nuclear capital projects!" Burns declared. With teamwork and good planning, succeeding in the most difficult and complicated tasks becomes possible.

CNTA Executive Director Clint Wolfe praised Burns' presentation for highlighting this critical project that will help close the Site's liquid waste tanks.

"Our membership highly values updates on important projects at SRS," said Wolfe. "This talk certainly helped satisfy that need."

CNTA Education Committee – Summary of Activities in 2014; Plans for 2015 —

Mel Buckner, Chair

A full schedule of teacher workshops was completed in 2014 with 74 teachers participating. Forty SRS interns participated in mini-workshops during the summer. Numerous presentations of "Journey to the Center of the Atom" were provided during Nuclear Science Week and other times to high school students interested in STEM careers. More than a 1,000 volunteer-hours were invested in these activities during the year by the members of the Education Committee, which is a very dedicated and supportive group of people.

Plans for 2015 are coming together. Dual session workshops will be conducted at the Ruth Patrick Science Education Center (RPSEC) on March 6, 2015 and in October. We estimate 30-40 teachers at each dual session. A workshop for the lower counties (Allendale, Barnwell, Hampton, Bamberg, and Orangeburg) is scheduled for May 15, 2015. We estimate 15 teachers for this session. Additional workshops are under consideration in Richmond and Columbia counties (GA). SRS intern workshops will also be conducted if requested by SRNS and SRR.

The list of CNTA outreach educational partners has grown. We welcome the addition of URS Corporation to our list of education partners. These partners include American Nuclear Society – Savannah River Section (ANS-SR), Energy*Solutions*, Savannah River Site Community Reuse Organization (SRSCRO), and the Ruth Patrice Science Education Center (RPSEC). CNTA has received another Community Service award from the Aiken Rotary Club to help pay for materials provided to teachers for use in preparing for classroom activities. In addition, a nuclear technology kit has been provided to the RPSEC for use in the Traveling Science Demonstrations Program. The kit includes most of the hands-on activities that are used in the teacher workshops.

Dr. Susan Wood has again agreed to serve as interim chair for the 2015 CNTA high school essay contest. We are still looking to find a permanent chair to work alongside Susan that would take over as the committee chair starting in 2016.

We will continue to work with the SC Department of Education and local school boards in the application and support of SC science standards to advance STEM topics in the local school systems.

ATC Receives $195,000 Nuclear Regulatory Commission Grant to Develop Nuclear Welding Program

A $195,000 grant from the U.S. Nuclear Regulatory Commission will allow Aiken Technical College to design and implement a Nuclear Welding Systems program on campus to meet the critical demand for qualified nuclear welders in the CSRA.

The Nuclear Welding program will be a one-year, intensive pipe welding technology program that will serve as a stand-alone program for experienced welders or an add-on certificate for students who plan to continue their education in nuclear welding.

“Aiken Technical College is appreciative of the NRC grant that will allow the College to address a critical need for highly qualified, well-trained nuclear welders in our region,” said ATC Dean of Technical Education Dr. Joy Watson. “ATC sits at the center of significant nuclear construction, and the nuclear welding program will provide the needed workforce training to support these projects, offering highly skilled employment opportunities to area citizens.”

In 2009, the Nuclear Energy Institute’s Workforce Report cited both a short-term and long-term need for craft workers due to nuclear construction projects underway at the Department of Energy’s Savannah River Site, as well as commercial sites in both South Carolina and Georgia.

The NEI study projected that 1,146 craft workers trained in nuclear welding systems would be needed by 2020 in the CSRA.

The demand for nuclear welders is especially significant to meet the workforce needs of the Mixed Oxide Fuel Fabrication Facility (MOX) and the Salt Waste Professing Facility (SWPF) at the Savannah River Site, as well as the construction of new nuclear reactors operated by Southern Company at Plant Vogtle in Waynesboro, Ga. and by
SCANA Corporation at V.C. Summer Nuclear Power Station near Columbia.

The Nuclear Welding Systems program will be designed to meet the welding standards of the industry, and will be supported with equipment, a mock up industrial welding setting, and online modules that cover nuclear welding specific topics.

Once developed, ATC’s Nuclear Welding program will join other advanced manufacturing and nuclear related programs to be taught in ATC’s state-of-the-art Center for Energy & Advanced Manufacturing currently under construction on campus.

The $8.5 million, 36,000-square-foot facility will house the College’s welding, mechatronics, radiation protection technology and nuclear quality systems programs.

The new facility is expected to open for classes in Fall 2015.

An ATC student practices his welding skills in a welding lab at Aiken Technical College.

Operation Palmetto Employment Recognizes Three Palmetto Military Employers and

Columbia, S.C. — Three South Carolina employers were recently recognized for their ongoing commitment to hire and retain military employees: Savannah River Remediation, Verizon Wireless and CB&I.

Operation Palmetto Employment (OPE), South Carolina's statewide military employment initiative, now offers employers a chance to become certified as a Palmetto Military Employer (PME). Details on the credentialing process were presented to a select group of employers on Wednesday, October 22, along with informative briefings on the Uniformed Services Employment and Reemployment Rights Act (USERRA), Veteran On the Job Training, VetSuccess on Campus, and workforce development through readySC™ and Apprenticeship Carolina™.

"This credentialing piece adds some teeth to our program, and provides the metrics and data needed to grow and sustain it," says Paul Prince, member of the OPE Credentialing Committee and the Volunteer Management Director for S.C. Employer Support of the Guard and Reserve (ESGR). "We look forward to connecting with employers statewide who want to hire veterans and service members — not necessarily because they served, but because they bring a wealth of knowledge, leadership experience and highly transferrable technical skills to the civilian workforce."

"About 10 percent of our workforce, 196 veterans, are part of our team," said Schmitz. "I'm proud SRR has helped set the bar in hiring those who have faithfully and bravely protected our nation. We will continue to find ways to tap this important talent pool." Verizon Wireless has hired 112 service members this year alone in South Carolina, while CB&I currently employs over 900 service members and veterans at five different project sites statewide.

To find OPE resources or representatives in your area, visit OperationPalmettoEmployment@sc.gov.

Pictured L-R: Mike Rolfe of CB&I, Project Staffing Supervisor for the V-C Summer Project; Charles Kearse and Kevin Owens, Talent Connectors for Verizon Wireless; Mark Schmitz, Deputy Project Manager and Scott Brown, Veterans Liaison, both of Savannah River Remediation (SRR).

MOX surpasses 20 million safe work hours

CB&I AREVA MOX Services confirmed another safety record late Tuesday when the project surpassed 20 million consecutive work hours without an injury resulting in a lost workday. The milestone was achieved during the construction of the Mixed Oxide Fuel Fabrication Facility at the Savannah River Site.

The construction work during the record safe period includes installation of structural concrete and installation of pipe, ductwork, electrical and engineered equipment.

According to the U.S. Bureau of Labor Statistics, a typical site in the U.S. experiences one lost workday for every 125,000 hours worked. Based on these statistics, in the span of 20 million hours worked, a typical construction site would have experienced 160 lost workday cases.

In addition, the most recent annual data for the MOX Project reflects an Occupational Safety and Health Administration recordable injury rate of 0.65 injuries per 200,000 work hours, which is far below the industry average of 3.2 injuries per 200,000 work hours.

“This is a remarkable achievement, and we are proud of our employees for meeting this goal,” said David Del Vecchio, the president of CB&I AREVA MOX Services. “Safety is a core value here at the MOX Project, and our employees show that commitment every single day.”

Nuclear Regulatory Commission grants extension for MOX construction deadline

A 10-year extension for construction of the mixed-oxide fuel fabrication facility at Savannah River Site has been approved by the Nuclear Regulatory Commission.

According to a news release, the NRC signed an order Thursday extending the completion deadline until March 30, 2025. CB&I Areva MOX Services, the facility’s contractor, asked for the extension in May after numerous construction delays, some caused by lower-than-projected annual funding from Congress and delivery delays for components.

“The NRC published an environmental assessment Oct. 23 that found no significant environmental impact would result from extending the authorization. NRC staff also found that MOX Services has shown good cause to extend the deadline for completion,” according to the release.

The MOX facility is intended to convert 34 metric tons of U.S. weapons-grade plutonium to commercial nuclear fuel.

Don’t minimize the U.S. nuclear future

By CLINT WOLFE Columnist
Dec 9 2014 12:01 am

It is entirely appropriate of the Environmental Protection Agency. or EPA, to propose carbon mitigation goals with respect to generation of electricity in the U.S. However, it is both perverse and irrational of the agency to impose a carbon mitigation rule that downplays the value of nuclear power in the battle against climate change.

The U.S. fleet of 100 nuclear plants accounts for nearly two-thirds of the nation’s carbon-free energy production. So you might think that an agency so concerned about climate change would applaud the use of zero-carbon nuclear power. Or at the very least would give nuclear power equal consideration with renewable energy sources in its carbon emissions rule. But the proposed rule – which requires South Carolina to curb carbon emissions by 51.4 percent by 2030 – is rigged against nuclear power, only counting 6 percent of existing nuclear-generated power toward the state’s carbon-reduction target.

What’s more, EPA’s formula is even worse for nuclear reactors under construction. It assumes they are complete, which means that South Carolina won’t be able to count the additional twin units at the Virgil C. Summer nuclear plant near Jenkinsville, which are slated to go online by 2018. For South Carolina, losing those 2,200 megawatts, on top of more than 90 percent of its existing nuclear-generating capacity, will make it extremely difficult if not impossible to meet the EPA target – unless the rule is changed.

Georgia and Tennessee – two other states with nuclear plants under construction – also face tough carbon-reduction goals. But South Carolina has the third most stringent target, after Arizona and Washington. South Carolina obtains 53 percent of its electricity from nuclear power, with another 29.5 percent from coal, 14.6 percent from natural gas, and 0.5 percent from hydro.

The EPA has ascended to new heights of hypocrisy on this matter. On the one hand, the agency has called for greater use of nuclear power, along with other low-carbon energy sources, but then penalizes states with a lot of nuclear power. In fact, a state with no nuclear power will benefit, because its formula will not include nuclear generation, resulting in an emission goal that is easier to achieve. But states like South Carolina and Georgia have carbon-reduction targets that will be significantly harder to meet.

This is not the first time that the EPA has wandered into inappropriate territory on the exclusion of nuclear in the “green” mix. During the first term of President Barack Obama’s administration, energy mandates were on the front burner, but the sponsors preferred not to include “nuclear” among those energy sources categorized as “renewable.” Setting reasonable goals based on some measurable criteria such as carbon emissions per megawatt seems to be a very appropriate role for the EPA – defining what technology may be used to get there is not. EPA risks being perceived as an economic stimulus organization for chosen industries.

The rule is scheduled to be promulgated in final form next June. Let’s hope the new Congress tells the EPA either to change the rule or start over with a new rule that is strong on goals, but light on prescription.

Buckner: Election results could revive Yucca Mountain nuclear waste repository

COLUMBIA, SC — More than four years after President Obama took the Yucca Mountain project off the table, the prospects for its revival are in the news again, but with an important difference. This time, Nevada Sen. Harry Reid's days as Senate majority leader might be numbered.

If control of the Senate changes hands, Republicans will be in the driver's seat, with the votes needed to a ppropriate funds to complete the waste repository at Yucca Mountain.

S.C. voters are angered by the large amount of high-level waste from the defense program stored at the Savannah River Site. South Carolina agreed years ago to take the waste, but with the understanding that it would be shipped to the Nevada repository for permanent disposal. Also awaiting shipment is more than 4,000 metric tons of spent fuel at S.C. nuclear plants. Consumers of nuclear-generated electricity — and that's practically everyone in South Carolina — have paid $1.3 billion to the Nuclear Waste Fund but have yet to see a single waste canister removed.

If nothing else, a recent report by the Nuclear Regulatory Commission has made one thing clear: The notion that it would be unsafe to store nuclear waste at Yucca Mountain was a sham. The report found that the repository design met its requirements to hold the waste for one million years.

Despite the hiatus in construction, development of the underground repository is well along. A five-mile tunnel has been built through Yucca Mountain. Metal containers have been buried in the rock, and heated to simulate nuclear waste, so that scientists can gauge the effect on water and rock.

The path forward begins with state governments agreeing that nuclear power needs to grow no matter how many years it takes to complete the repository's construction. A dozen states — including California, Illinois and Massachusetts — have bans on the construction of new nuclear plants until the waste problem is resolved. That does not make sense when the risk of radiation exposure from nuclear waste is compared to the reality of rising sea levels, extreme storms and devastating forest fires from climate change. The consequences of ignoring the need for zero-carbon nuclear power would be drastic.

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