

The Voice

NOVEMBER 2007

Voice

ACEC
AMERICAN COUNCIL OF ENGINEERING
COMPANIES OF TENNESSEE

THE VOICE OF TENNESSEE'S ENGINEERING COMPANIES

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Tennessee: Home of World-Leading Science Facility

by Bill Cabage, Oak Ridge National Laboratory Communications

Tennessee is now home to one of the world's most powerful microscopes. Building it required one of the largest design, engineering and construction projects in the state's history.

The \$1.4 billion Spallation Neutron Source (SNS) sprang from a wooded ridge top overlooking Oak Ridge National Laboratory. Completed last year following a six-year construction, scientists are already using its neutron beams to learn about the molecular makeup and properties of advanced materials.

Because these materials lead to products ranging from lifesaving pharmaceuticals to more fuel-efficient vehicles, some of the most economically important science of the coming years will be performed at the SNS.

How It Works

The SNS is a very complex system. Simply described, a proton beam is sent down a lin-

ear accelerator, or linac, to an accumulator ring. From there, pulses of protons zap a target, knocking neutrons off mercury circulating inside the target. The neutrons are channeled to state-of-the-art instruments—eventually 24 of them—each designed for a particular type of analysis.

That sounds simple enough. However, getting the performance scientists wanted, which is from 10 to 100 times better than other existing neutron source, required doing some things for the first time.

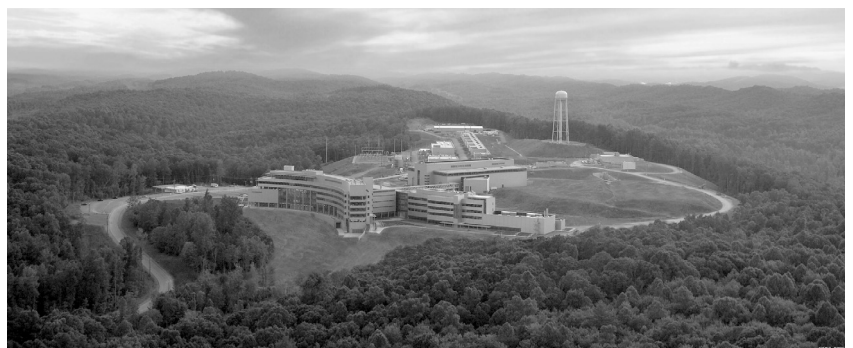


Stuart Henderson

“The superconducting section of the linear accelerator is an engineering feat in itself,” says Stuart Henderson, who leads the SNS's Research Accelerator Division. “It's a unique feature; there is only one other superconducting linac in the United States, at the Jefferson Lab in Virginia.”

(continued on page 2)

The \$1.4 billion Spallation Neutron Source (SNS) sprang from a wooded ridge top overlooking Oak Ridge National Laboratory.



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Services

B plus 30: An Important Issue

by James D. Morinec, PE
President, ACEC of Tennessee

In late September, I attended the ACEC National Fall Meeting. While any excuse to go to Maui, Hawaii, is good, the quality of the educational programs, the speakers, and the opportunity to network with other firms was outstanding. If you haven't had the opportunity to attend a national meeting, I strongly encourage you to consider adding one of these events to your calendar.



James D. Morinec

One of the issues discussed at the fall meeting was "B plus 30." ASCE and NCEES are advocating changing the educational requirements to obtain registration as a Professional Engineer. They believe the minimum requirements should be a Bachelor of Science Degree plus 30 credit hours of advanced college education in engineering courses. This would effectively raise the educational requirement to a Masters Degree in Engineering. If successful, this requirement would become effective in 2015.

At a time when finding qualified staff is impacting many of our member firms, it's appropriate that ACEC of Tennessee weigh in on the discussion. One side of the issue argues the educational institutions are under pressure to graduate students in four years. The other side argues that the engineering curricula has eroded and does not produce the same level of understanding of broad engineering principles that it once did. There is concern, however, that if students entering engineering programs don't understand this change, they may not get the education necessary to get licensed; or worse, the prospect of a five-year program might cause them to look at other professions.

The "B plus 30" change will have to be adopted by each state. If only a few states approve the change, it will impact our ability to work in multiple states and to obtain licensure through comity. This issue is scheduled to be discussed at an upcoming meeting of the Tennessee State Board of Architectural and Engineering Examiners. ACEC of Tennessee will track the debate. I encourage everyone to become familiar with this important issue.

Science Facility continued from page 1

Designers added the superconducting linac late to the project when they determined the technology had advanced to the point where it was feasible.

"The linac is a 1,000-foot structure that we must cool to two degrees above absolute zero," Henderson says. "That required us to build our own cryogenic facility to cool the liquid helium we use."

The addition of the superconducting linac, which is paired with a more conventional "warm" linac, gave the SNS a tremendous advantage in power. That muscle originates in radiofrequency (RF) technology similar to television broadcasting.

"The proton beam is generated by RF, similar to how a TV transmitter works, except instead of 'broadcasting,' the beam is channeled through waveguides, feeding the linac. Again, we're speaking in orders of magnitude: The SNS's linac is powered by the equivalent of 100 TV transmitters," Henderson says.

The Tennessee Valley Authority provided a substation to the project, supplying the SNS with enough electrical power to light up a good-sized town of 35,000 homes.

Unrivaled Research Tool

The linac's receiving end is its first-of-its-kind target. The neutron-rich mercury must be pumped through the unit, requiring the design of a hydraulic system to pump the heavy liquid.

The target's building is supported on a foundation containing 937 concrete pilings, reinforced with steel pipe, ranging from 35 to 181 feet deep in the earth and seated 10 feet into bedrock. There are nearly 20 miles of pilings under the target station alone.

The target service bay can never be entered by humans. Servicing the target required the development of a complex remote-handling system. Engineers anticipated, planned and rehearsed every task required inside the bay for the minimum 40-year-life of the facility.

The boundary-breaking efforts behind the SNS have produced an unrivaled research tool. In the coming decades, many of the new technologies that create jobs and improve our quality of life will likely have their beginnings in basic research done in Tennessee, at the SNS.

EEA Judges Named as 2008 Entries Arrive

At the end of October, as *Engineering Excellence Awards* (EEA) entries began arriving prior to the November 2 deadline, the panel of EEA judges was confirmed.

"Seven people have agreed to serve as judges for the 2008 EEA program. They have distinguished backgrounds in engineering, planning and development, and public projects," said David Harrell, PE, chair of the awards program and Vice President of Vaughn and Melton, Knoxville. Serving as judges in 2008 will be: **Susan Duvenhage**, President/CEO, Adventure Science Center; **Wain Gaskins, PE**, Director of the Engineering Department, City of Memphis; **David Huddleston**, Dean of the College of Engineering, Tennessee Tech University; **Marilyn Lewis**, Assistant Chief of the Engineering Division, Louisville

District, US Army Corps of Engineers; **Kimberly McClurkin**, Training, Public Relations and Education Coordinator, Engineering Division, the Department of Public Works, City of Chattanooga; **Diane Neighbors**, Vice Mayor, Metro Government of Nashville & Davidson County; and **Greg Reed, PhD, PE**, Associate Vice Chancellor for Research, University of Tennessee.

Paula Harris, EEA co-chair and Vice President of corporate business development at Barge Waggoner Sumner and Cannon, Nashville, added, "Awareness of the EEA program is increasing among city, county, state, and growth and development officials. I think that was one of the reasons that we have been able to recruit such an outstanding group of judges for the 2008 competition."

Environment Committee Works with TDEC & Legislature

by *Bob Borneman, Chair
ACEC of Tennessee Environment Committee*

The Environment Committee has worked behind the scenes during the past several months on a variety of issues and in a variety of ways.

Saya Qualls (TDEC) requested that the Committee meet to hear TDEC's proposed modifications to the existing decentralized treatment and irrigation disposal rules. ACEC developed and submitted some comments on the proposed rules for consideration. The early involvement of ACEC in the rules process gives TDEC valuable information from engineering professionals who are typically the ones who have to interpret and apply the rules, while also providing TDEC with a statewide perspective that may not otherwise be available. We hope that this dialogue can continue.

The list of proposed bills that impact the environment seems to grow each year. The State House

Conservation and Environment Committee met in a rare mid-session, two-day meeting to receive public comment on several proposed bills that will be on the Committee's agenda during the upcoming legislative session. ACEC was represented at the meeting and prepared to be a resource to the Committee and offer comments, if requested. The presence of ACEC's representatives was appreciated by Committee members. During the meeting, there were many opportunities to interact with elected officials. No votes or straw polls were taken, but the comments of the majority of the Committee members were pro environment, but not at the expense of state agriculture and business development activities. The Committee's conversation was generally that TDEC needs to resolve the majority of issues with enforcement of existing rules and regulations and not with new legislative actions.

Several notifications of public hearings have been issued recently by TDEC, mostly addressing local issues. Copies of the notifications are available <http://www.state.tn.us/environment>

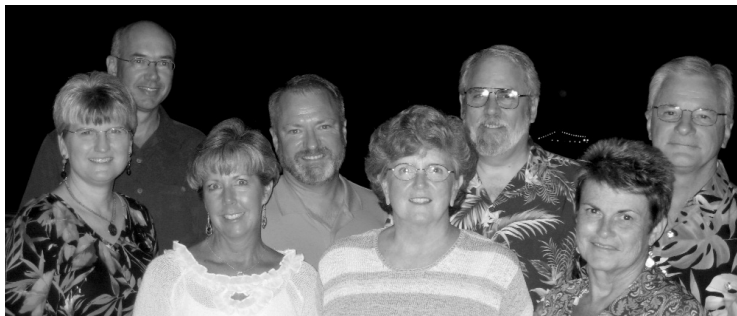
Bob Borneman, PE, is Southeast Water Resources Business Practice Manager with Arcadis, Chattanooga.



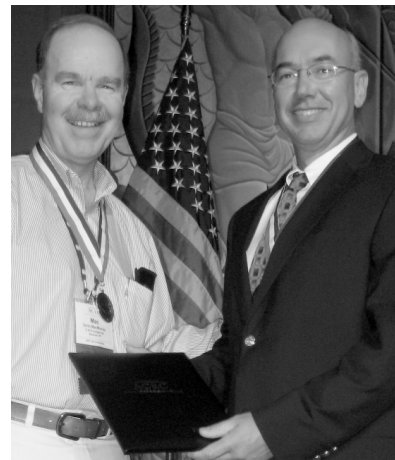
Bob Borneman

Aloha to All from Hawaii

ACEC of Tennessee was well represented at the ACEC Fall Conference in Maui, Hawaii, in late September. Looking ahead: The ACEC 2008 Annual Convention will be held April 27 - 30, 2008, in Washington, D.C. Make your plans to attend now.



The couples representing ACEC of Tennessee in Hawaii were, left to right, Robin and Jerry Stump, Angie and Harold Cannon, Candy Toler and Bob Day, and Mary and Jim Morinec.



Orrin B. MacMurray, Chairman of ACEC, left, congratulates Jerry Stump, PE, Wilbur Smith Associates, who was named a Fellow of the American Council of Engineering Companies (ACEC).

CALENDAR

DECEMBER

5

Professional Liability Seminar, Knoxville

Information:
ctoler@tnec.org

DECEMBER

6

Professional Liability Seminar, Nashville

Information:
ctoler@tnec.org

DECEMBER

7

Professional Liability Seminar, Memphis

Information:
ctoler@tnec.org

JANUARY

18

Deadline to submit EEA Notebooks and Panels

FEBRUARY

17-23

Engineers' Week

Member News

- Askew Hargraves Harcourt & Associates (A2H) welcomed Bob Watson as Senior Project Coordinator in the structural department, at its Memphis headquarters office. In addition, Matthew Singleton, EIT, joined A2H in Memphis as an entry-level Mechanical Designer in the mechanical, plumbing and electrical engineering department.
- David T. Branham, PE, executive vice president of Branham & Lloyd, LLC, Memphis, was recently elected president-elect of the Memphis Chapter of the American Society of Heating Refrigeration and Air Conditioning Engineers for 2007-2008.

ACEC

AMERICAN COUNCIL OF ENGINEERING COMPANIES
of Tennessee

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Welcome, NEW MEMBER

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FROM THE EXECUTIVE DIRECTOR

Report from Hawaii & Closer to Home

by Candy Toler
Executive Director, ACEC of Tennessee

Who knew that so many people would *want to travel to Maui* on business? ACEC's recent Conference on the Built Environment, which was held in Hawaii, was one of the largest fall conferences in many years with more than 1,000 people attending. Congratulations to Jerry Stump, who was recognized as a "Fellow" of ACEC at the meeting. There was a lively discussion during the ACEC Board meeting on the "Bachelor's plus 30" issue, which would require an



Candy Toler

additional 30 hours of education prior to licensure as a PE. The National Council of Examiners for Engineering and Surveying has added the requirement for licensure to the model law, effective in 2015. ACEC has not taken a position on the issue yet, but you will hear more about it in the next few months.

Be in the Know with ACEC

Want to know who is on the state ACEC

Board? Whether a firm is a member? Who won the 2007 Engineering Excellence Grand Award? The answers to all of these questions and much more are on our redesigned website:

www.acectn.org. The address is the same, but the look is new, including a flash presentation of the 2007 EEA Grand and Honor Award winners. We have included several links to our national organization for such things as firm specialties. I hope that you will use the website as a resource.

In early December, an ACEC of Tennessee-sponsored seminar will be offered in Knoxville, Nashville, and Memphis (the schedule is on the calendar on page 3 of this newsletter). The topics for the four-hour program, presented by Crow Friedman Group and XL Design Professionals, are: *Escaping the Wal-Marting of Design Services and Real World Resolution of Claims against Architects and Engineers*. You will find the seminar registration form on the ACEC of Tennessee web site under What's New/Current Events (<http://www.acectn.org>). Don't wait to sign up for this seminar; last year, there was standing room only. Need more information? Please contact me at ctoler@tnc.org.