



# VIRGINIA MOUNTAIN SECTION NEWSLETTER

IEEE Region 3, Council 09, Section 65

May 2000

## May Meeting

## Plant Tour

## AEP Cloverdale Station

Thursday May 18, 2000

The AEP power station at Cloverdale has been at the center of much controversy recently. Here is an opportunity to see and hear exactly what the station is, what it does, and ask questions.

Ted Arron has arranged a tour of the facility for our May meeting – jointly with the Power Engineering Chapter.

### Directions

I-81 North to Exit 150A  
Turn Right at exit.  
At first traffic light, turn right.  
Approximately 1/2 mile.  
Station is visible for some distance.

### Reservations

**Meet:** 6:00 PM  
**Cost:** No Charge

Call before 5:00 PM, Monday, May 15

**Roanoke:**  
Dan Jackson (540) 774-0484  
**Blacksburg:**  
Ira Jacobs (540) 231-5620  
**Lexington:**  
David Livingston (540)464-7545  
**Radford and Christiansburg:**  
Russell Churchill (540) 731-0655

### E-Newsletter Page 2

#### VMS Activities

##### Meeting Report

About 25 people attended the annual student paper contest held this year at VMI.

The guests heard informative presentations from four participants. Two of these departed somewhat from the usual purely technical topics at IEEE meetings but were well received.

**Christopher Abbott's** paper, "Development of a Planning Document for Problem Definition and the Design Process for a Robotics Competition", one of the less technical, emphasized the management aspects of conception, design and implementation of a robotic vehicle for entry in the IEEE SouthEastCon student competition.

**Todd Fisher** kept to the classical subject

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matter with "Multiuser Detection of Code Division Multiple Access (CDMA) Signals". He described trade-offs in the use of various CDMA implementations in cellular phone applications and a simulation directed at the optimization of a maximum likelihood version.

**Christopher Lowrance** addressed a topic many in IEEE just talk about – education. In "A New Way to Use the Internet to Improve the Quality of Education for Young Americans", he detailed a business plan to use the internet to implement one-on-one learning sessions between students and volunteer teachers via the "C-Tutor.com" Web Site.

**John Wells** kept the balance between technical and not-so-technical papers with "Overview of Mobile AdHoc Networks (MANETs)" in which he talked of the advantages of mobile network nodes in otherwise hard to implement network services such as disaster relief and scientific expeditions and discussed a network implementation algorithm.

Chris Abbott, awarded first place, received a \$250.00 prize. Runner up Chris Lowrance was awarded \$200.00. Todd Fisher took third place and a check for \$150.00. Fourth place money, \$100.00, went John Wells.

...*Editor*

## CHAIR'S COMMENTS

by Dan Jackson

May 18 will be the last Virginia Mountain Section meeting of this academic year. This will be your last opportunity until next September to attend a Section meeting. The program will be a tour of the AEP Cloverdale Station. This is the station to which AEP wishes to run the new 765 kV line. Ted Aaron of AEP Christiansburg is in charge of this program.

If you have been thinking of getting more active in the IEEE by greater participation now is the time to do something about it. David Livingston, [d.livingston@ieee.org](mailto:d.livingston@ieee.org), would be glad to hear from you. David is the chair of the Nominations Committee and he is always looking for individuals who wish to volunteer for committees or society chapter officers or section officers. During the summer he will be looking for nominees for the various positions to be elected in the fall. Our new bylaws call for fall elections for new officers to take over on January 1.

Over Labor Day weekend IEEE-USA will be holding the annual Professional Development Conference at the Comeback Inn and Resort in Scottsdale, AZ. This is an outstanding opportunity for any engineer, but particularly younger engineers, to improve those non-technical skills which are so important for career advancement. There will be several plenary sessions and break-out sessions aimed specifically for GOLD members, Graduates of the Last Decade. The IEEE Life Member Committee is providing grants up to \$500 to assist Gold members to attend. Any section member who received his or her bachelor's degree within the last ten years is eligible. If you are interested contact me

[d.jackson@ieee.org](mailto:d.jackson@ieee.org), or 540-774-0484.

### Attention Chapter Chairs

#### Need help with Meetings?

Meetings help to achieve the goals of education and professional advancement

basic to all IEEE Technical Societies and provide a way to manage Chapter business. For some pointers on the basic components of holding successful meetings, go to the Section/Chapter Support web page at

[www.ieee.org/ra/scs](http://www.ieee.org/ra/scs)

Select the link for Resources for Officers, then "How to hold a Successful Chapter Meeting."

...*editor*

### Electronic Newsletter Please Sign On

#### Update

We are still requesting and receiving permissions to switch your Newsletter delivery from hard copy mailed to you, to the electronic version. We strongly encourage more of you to sign up.

Please note: the Newsletter is now available on the Web Site at

[www.ewh.ieee.org/r3/virginia-mountain](http://www.ewh.ieee.org/r3/virginia-mountain)

in a very readable, pdf format. If you did not like the e-mail version (some find it inconvenient or difficult to read) try this.

A reminder note will be sent to all e-mail subscribers with the updated URL for the current issue.

As noted previously, the Newsletter is the largest single expense in the Section's budget. The total cost is about \$0.50 per copy. That's a small number but we send out about 500 copies each month. We are trying to trim the mailing to free funds for other uses.

Please send your name to the editor ([j.fennick@ieee.org](mailto:j.fennick@ieee.org)) with a short note requesting sign-on. We will see that you are placed on the distribution list.

...*editor*



## Computer / Control / Industrial Electronics Chapter

### Meeting Report

#### Dr. Midkiff describes Mobile Internet Technologies

A small but lively audience enjoyed Scott Midkiff's presentation on mobile Internet access on April 4 at GE Industrial Systems. The small group allowed plenty of interaction, and many good questions were asked and answered.

Dr. Midkiff covered link level protocols, such as Bluetooth and IEEE 802.11, as well as network and application level technologies, like Mobile Internet Protocol and Wireless Application Protocol (WAP).

Both Bluetooth and IEEE 802.11 use the unlicensed 2.4 GHz band, the same band that is used by household microwave ovens!

Bluetooth:

<http://www.bluetooth.com>

initiated by a consortium including Ericsson, Nokia Intel, IBM, and Microsoft, is intended for low cost, short range (< 10m) ad hoc "piconets" of 8 or fewer nodes. Data rates are 64 kbps symmetric synchronous (for voice) and up to 721 kbps asymmetric for asynchronous data.

IEEE 802.11 networks, which have been shipping for the last two years, are wireless LANs for office, factory, and similar environments. Distances and data rates are higher, (100m, 1 - 11 Mbps) but so is power consumption. 802.11 also supports infrared links.

Ad hoc nets allow direct peer to peer communication without additional equipment. This enables immediate deployment without waiting for infrastructure to be built. Infrastructure based nets require access points which serve as

intermediaries between wireless nodes. This simplifies the wireless node, and allows access to the wired network. Quality of service guarantees can be provided with this approach.

Mobile networks require security & privacy. They must deal with bursty async and time bound sync traffic, time synchronization between nodes, sleeping nodes and roaming nodes. Dr. Midkiff discussed how the various layers of the 802.11 and Mobile IP specs address these issues.

Ericsson, Nokia, Motorola and others established the Wireless Access Protocol (WAP) in 1997 to provide a standard for Internet content over mobile phones and other portables devices. It provides enhancements to the various protocol layers from transport up through application layer to serve this purpose.

Dr. Midkiff concluded his talk with a list of references, including a copy of the slides for his presentation at:

[http://fiddle.visc.vt.edu/ieeevms\\_2000.pdf](http://fiddle.visc.vt.edu/ieeevms_2000.pdf)

I am frequently disappointed by the small attendance at Chapter meetings. This time fully half of the advanced reservations did not show up (including your Chairman). This was compensated by several walk-ins. Thanks to Mark Shepard for stepping in at the last minute to chair the meeting.

It is time to begin planning for next year. Please contact me with your suggestions for speakers and topics. Every one is welcome. You don't have to be an IEEE member to attend, or to speak.

See you at the next meeting!

...*Dave Geer, d.geer@ieee.org.*

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## College – Industry Open House

Virginia Tech's College of Engineering is having an Industry Opportunities Open House (IOOH) on June 7 and 8. The program consists of a Smart Road Tour on the afternoon of June 7, a reception early that evening, talks on the morning of June 8 (largely state and national government

speakers) on opportunities for joint University-Industry programs, and afternoon clinics (one-on-one discussions between faculty/industry) and tours of university laboratory facilities.

Registration fee (including reception and lunch) is a nominal \$25.

More information is available at

[www.esm.vt.edu/openhouse2000](http://www.esm.vt.edu/openhouse2000)

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## Green Wiggle

If it's green or wiggles, it's biology  
If it stinks, it's chemistry  
If it doesn't work, it's physics  
If it's useful, it's engineering.

This is one of well over a thousand quotes from a neat little book recently published by one of our members, Carol Lewis of Eagle Rock.

**Speaking of Science** is a delightful collection of scraps of wit and wisdom by and about scientists (and engineers) from Aristotle to Bugs Bunny.

I am enjoying it immensely, I believe you will too. It is available at the popular Book Web Sites.

...*editor*

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## PET Grand Opening

Explore the newly inaugurated IEEE/EAB Pre-College Engineer Training (PET) website. PET is dedicated to the alliance of engineers and educators for the promotion of science and technology education. PET offers specific plans and step by step procedures to prepare engineers to serve as resources to pre-college educators, both in and out of the classroom. Access this site through the Educational Activities Home Page or at

[www.ieee.org/organizations/eab/pet](http://www.ieee.org/organizations/eab/pet)

Though open, this site remains under construction. For the next six months expect to see additional information and periodic updates. The IEEE Region 1 Worcester

County, Massachusetts Section has volunteered to field-test PET in September 2000. Members will be following the modular step by step plan and contacting educators in their communities.

A sampling of the site includes:

- The Process - details various ways of contributing and how to go about it.
- Success Stories - first person stories by engineers who have helped in schools.
- Initial contact - where to start in the school and preparation tips for your first day.
- Other ways to help - ways to contribute other than in the classroom.
- Basic tools - helpful advice; learn about teachers and what they need.
- Links - teaching kits, other valuable sites.

PET enables IEEE members to have a positive impact on and a mutually valuable experience with students, teachers, and school boards. 2000 Educational Activities Board Vice President Lyle Feisel has said, "PET addresses the growing world wide problem of technological illiteracy and enables engineers to contribute to its solution."

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## How IEEE-USA Benefits the U.S. Member

**George F. McClure**, Editor  
IEEE-USA Technology Policy Activities

Some members belong to IEEE primarily to receive publications from the world's largest producer of literature on electrotechnology and, perhaps, to attend technical meetings sponsored by their technical society or its local chapters. Some members belong to take advantage of the insurance program or other aspects of the Financial Advantage program. Some, as has been pointed out in earlier columns, find their chief attraction in the Engineering Management Society or the Professional Communication Society. Perceptive members may realize the opportunities available to them to develop organizational skills through running local sections, tutorials, or working on technical conferences. A small number belong to participate in standards development.

Many members may not realize the ways in which IEEE-USA advances the professional and career interests of the IEEE U.S. member. Following are just some of those ways:

Technology policy can have a strong influence on future engineering careers. IEEE-USA has five such committees respected in government offices, and sought out for their expertise: Aerospace Policy, Communications and Information Policy, Energy Policy, Medical Technology Policy, and Research and Development. Technical societies are encouraged to send a representative to technology policy committee meetings and participate on the development of policy positions for use in advocating to legislators.

With members having to assume more responsibility today for their careers, committees with a focus on career activities assume more importance.

IEEE-USA has five such committees: Career Maintenance and Development, Engineering Employment Benefits, Intellectual Property, Licensure and Registration, and Workforce. Among their many important activities, these committees work to aid in career vitality, promote continuing education, protect employee benefits, and to promote engineering registration and acquaint members with the steps involved.

The IEEE-USA PACE Network, a grass-roots linkage to U.S. regions, areas/councils, sections and interested members, provides timely alerts on legislative issues, so that members can communicate their own views to congressional representatives.

Congressional Fellows and Executive Fellows, drawn from member volunteers, spend a year aiding congressional offices or executive departmental offices on technology issues under the sponsorship of IEEE-USA.

IEEE-USA also sponsors the Washington Internships for Students of Engineering (WISE) program, which supports research on public policy issues; and underwrites a Mass Media Science and Engineering Fellow to report on sci-tech issues at a broadcast or publication news outlet.

Outreach to the public at large takes two paths: pre-college education -- promoting technological literacy among the students; and through media communications -- familiarizing the public with engineers, their role and the benefits we all enjoy as a result of engineering. National Engineers' Week is one such observance.

Clearly, not all U.S. members find all IEEE-USA projects of equal interest, but just as a rising tide lifts all boats, our careers and professional image all benefit from the work IEEE-USA does. For more information on IEEE-USA activities, visit

[www.ieeeusa.org](http://www.ieeeusa.org).

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