

# **IEEE** *The Open Channel*

Newsletter for the Hampton Roads Section of the IEEE  
The Institute of Electrical and Electronics Engineers, Inc.

[http://www.ewh.ieee.org/r3/hampton\\_roads/](http://www.ewh.ieee.org/r3/hampton_roads/)

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March 2004

## "Overview of numerical methods for computational electromagnetics"

**Speaker: Dr. Manohar D. Deshpande**

Electromagnetic Research Branch,  
NASA Langley Research Center,

**Date/Time:** Thursday, March 18, 2004 at 6:30 PM

**Location:** Holiday Inn Hampton – Coliseum **757.896.3340**

1815 W. Mercury Blvd., Hampton, VA 23666

**Cost:** Members and guests \$20; Students \$10

Dr. Deshpande, in this talk, will discuss about various computational methods used for solving present electromagnetic problems faced by electrical engineers in Radar Cross Section (RCS) estimation, antenna radiation pattern prediction, electromagnetic interference estimation encountered in the aviation electronics. He will also discuss application of these computational methods to synthesize smart materials for electromagnetic applications.

**Biographical sketch:** Dr. Deshpande [[m.d.deshpande@larc.nasa.gov](mailto:m.d.deshpande@larc.nasa.gov)] is a computational electromagnetics researcher in the Electromagnetic Research Branch (ERB) of NASA Langley Research Center. He has been with NASA Langley since 1987. Before joining NASA Langley he was an Associate Professor at Indian Institute of Technology (IIT), India where he taught basic and advanced electrical engineering courses. Dr. Deshpande received his Bachelor of Engineering (1970), Master of Technology (1972), and Ph. D. (1980) all in Electrical Engineering from IIT, India. After his Ph. D., he worked as a Postdoctoral Fellow at the George Washington University where he developed original full wave techniques to design printed antennas. During his long association with the ERB, Dr. Deshpande developed numerous computational electromagnetic tools based on the Method of Moments, Finite Element, and Hybrid Approaches. He currently leads NASA's Creativity and Innovation efforts to develop meta material, material with negative permittivity and permeability. Dr. Deshpande also serves as a mentor for NASA's Faculty Fellowship Program (NFFP), Graduate Student Researchers Program (GSRP), and Langley Aerospace Research Summer Scholarship (LARSS) programs. He currently lives in Yorktown, VA.

**Directions to Holiday Inn Hampton - Coliseum: Please see page 4**

**Reservations:** None required however we need to get an accounting of how many meals to order. Meal choices are beef, chicken, or dietary. Please contact Dr. Robert Dawes [757-621-6284 or [dawes@ieee.org](mailto:dawes@ieee.org)] early with your meal choice or if you have questions about the meeting.

**Checks:** Checks should be made out to IEEE and brought to the meeting.

### Future meetings

April  
15

May 20

Social Meeting

### Inside this Open Channel

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## 2004 IEEE Executive Committee Hampton Roads Section

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All materials for THE OPEN CHANNEL are due by the 25<sup>th</sup> day of the month preceding the issue month. Address all correspondence to:

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## From the Chair

Dear Colleagues,

Last month was a positive step in meeting attendance for the section. I was very happy to see a number of new faces at the meeting.

I would like to thank Mr. John O. Clark for providing us a very interesting presentation. John is a very intelligent person and knows his subject matter extremely well. It was truly a privilege to have an expert in Systems Engineering like John share some of his knowledge with us. I also must apologize to John for the late start that we provided as it detracted from the wealth of information that he was able to present. Nonetheless, the presentation was very effective and it opened my eyes to breadth and depth of Systems Engineering. It also gave me insight to the source of the processes and procedures that I use on a daily basis and always took for granted.

As I stated in last month's letter my goal is to increase meeting attendance. Last month's meeting was an improvement but there is still much to be desired. Hopefully a change of venue for this month's meeting will be what is needed. The section is extending itself significantly more financially for this change and I would like to have as many people there as possible. Also, for this meeting, we would like to get a preliminary count in order to make the final reservations. Interested members can email Bob Dawes or me.

Also, last month I mentioned that the section was considering changing to lunchtime meetings. I have received a number of comments on this change and some members feel that it may be too intrusive to their workday and with travel time could turn their one-hour lunch into three hours. I would like to hear what other members have to say about this and other topics so that the officers can make the best decisions to serve the members.

Manohar Deshpande from the NASA Langley Research Center will give this month's meeting presentation.

*Tim Gavin*

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## Letter from the Editor

During the month of February Hampton Roads celebrated engineers across the region. We bestowed special honors at banquets upon individuals and organizations for their service to the community and profession. Engineers reached out and touched our youngest to give them a sense of how we as engineers affect their lives and instill in them a desire to become engineers themselves.

The Peninsula Engineers Council honored two outstanding engineers from the Hampton Roads during their 2004 Engineer of the Year Banquet. Mr. Richard Kitterman was recognized as their 2004 Engineer of the Year and Dr. Jeffery D. Jordan received the PEC's 2004 Doug Ensor Award Young Engineer of the Year. The IEEE Hampton Roads section would like to congratulate both award recipients.

*William LaBelle*

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## PEC 2004 Engineer of the Year Banquet Honors

The Peninsula Engineers Council held their 2004 Engineer of the Year Banquet on February 28, 2004. The IEEE Hampton Roads Section would like to congratulate Mr. Richard W. Kitterman, 2004 Engineer of the Year, and Dr. Jeffrey D. Jordan, 2004 Doug Ensor Award.

### *ENGINEER OF THE YEAR*

Mr. Richard W. Kitterman received the 2004 Virginia Peninsula Engineer of the Year award presented by the Peninsula Engineers Council. Mr. Kitterman was nominated by the Hampton Roads Area Chapter of the International Council on Systems Engineering (INCOSE). He is the first Systems Engineer to receive this award.

Mr. Kitterman's contributions to engineering societies are extensive. He is Co-chair of the INCOSE Risk Management Working Group, past Co-chair of the INCOSE Chapters Committee, and the HRA-INCOSE Membership Director. He is a past and designated reviewer for ISO/IEC Standard 15288 Application Guide and a recurring reviewer of tutorials and papers for INCOSE International Symposiums.

In his career, Dick has worked in the commercial arena for Motorola and StorageTek, while his equally lengthy career in government contracting includes working for Lockheed Martin and Raytheon. He has focused on program management from individual components through nationwide systems of systems.

Dick is founder and President of Kitterman Consulting Corporation in Yorktown, Virginia and is currently providing Aircraft Carrier Risk technical support for Northrop Grumman Newport News.

Dick was born in Chicago and holds a BS in Physics, an MBA, an MS in Systems Engineering, and has completed 39 hours coursework toward a PhD in Information Technology.



### *DOUG ENSOR AWARD*

Dr. Jeffrey D. Jordan received the 2004 Doug Ensor Award for the Young Engineer of the Year by the Peninsula Engineers Council. The Hampton Roads Chapter of the American Institute of Aeronautics and Astronautics (AIAA) nominated Dr. Jordan for this award. Dr. Jordan is employed by NASA Langley Research Center in the Advanced Sensing and Optical Measurement Branch. He is an internationally recognized expert in the area of advanced measurement diagnostics for aerospace applications, with particular emphasis on advanced pressure-sensitive paint (PSP) formulations.

Dr. Jordan leads a team whose efforts have produced a suite of advanced PSP formulations coupled with measurement strategies that provide quantitative surface pressure distributions under conditions that range from cryogenic to hypersonic. He also led the development of sensors and actuators using the unique properties of carbon nanotubes, including imaging and optical sensing devices.

Dr. Jordan is active in multiple professional societies and is often asked to develop special sessions for conferences. He has authored 25 formal publications and 46 papers for National and International Conferences. He is the winner of the 2004 AIAA Lawrence Sperry Award, which is a National award recognizing outstanding contributions to the field of aeronautics or astronautics by an engineer under 35 years of age.

Dr. Jordan earned a Bachelor of Science in Chemistry from the University of Buffalo in 1993 and a Ph.D. in Analytical Chemistry from the University of Buffalo in 1997.



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## **Old Dominion University Student Chapter of IEEE – Genevieve Hankins**

The student chapter at ODU has started an active spring semester. In January, ODU IEEE sponsored the first *IEEE Student-Faculty Face-Off*. In this event, teams of faculty and students battled it out in an engineering version of Jeopardy. The categories ranged from mathematics and electrical engineering to movies and colleagues. Both the faculty and students thoroughly enjoyed the competition.

Beginning in January ODU IEEE members have been heavily involved in the College of Engineering and Technology's (CoET) Open House. During the Open House tours on Friday, February 20, we had an information table and a display of the battery properties of potatoes and lemons for interested students. IEEE also helped sponsor two of the Open House Contests, the Electromagnetic Launcher and the Water Hauling Derby, which took place on Saturday, February 21. The Water Hauling Derby involves building an autonomous vehicle which carries water to the end of a track, deposits it in a trough and returns to the start position. The winner is determined based on how much water was transferred to the trough and whether or not the electrical circuitry worked properly.

Eleven teams competed in the Derby; two middle school teams and nine high school teams. The first place prize was \$200 and was rewarded to the "Wave Rider" team at Cox High School and to a middle school student, Benjamin Baesler, for his "Toa Water" vehicle. IEEE members assisted the contestants by traveling to local high schools and homes to help teams build the circuit which

controlled the car. IEEE members also ran and judged the Water Hauling Derby competition on Saturday. For the Electromagnetic Launcher competition we helped Boy Scout Troop 259 build four electromagnetic launchers. The goal of this competition was to launch a paperclip as far as possible with an electromagnetic coil. Two of the Boy Scout teams placed in their respected categories. Additionally, we will be helping the troop in March to complete their Electronics Merit Badge.

We would like to thank Bill LaBelle, Victor Aponte and Jennifer Ammentorp for judging the Water Hauling Derby competition.

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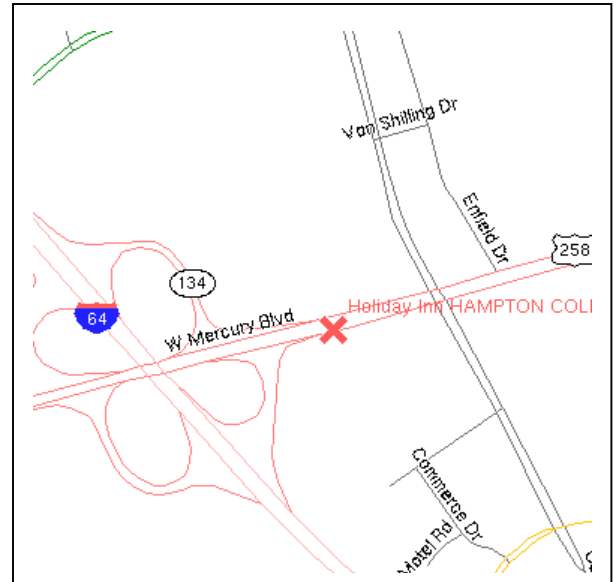
## Directions to Holiday Inn Hampton - Coliseum

### Directions from the Peninsula:

- I-64 towards I-64E / Hampton / Norfolk
- At exit 263B, take Ramp (RIGHT) onto US-258 [SR-134] towards US-258 / VA-134 / Mercury Blvd / Hampton Coliseum
- Arrive 1815 W Mercury Blvd, Hampton, VA 23666

### Directions from the South Side:

- I-64 towards I-64W / Williamsburg / Richmond
- At exit 263B, take Ramp (RIGHT) onto US-258 [SR-134] towards US-258 / VA-134 / Mercury Blvd / Hampton Coliseum
- Arrive 1815 W Mercury Blvd, Hampton, VA 23666



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## Nominations for the Virginia Engineering Awards Committee Crozet and Pletta Awards are due by 15 April.

**The Crozet Award** recognizes a Virginia state or local government engineer who has exhibited outstanding leadership in technical and non-technical fields as well as public service in the Commonwealth. The award honors Colonel Claudius Crozet who was Principal Engineer of Virginia from 1823 to 1842.

### WHO IS ELIGIBLE

- Any engineer licensed in Virginia who, on the date of his or her nomination, is an employee of the Commonwealth or one of its political subdivisions (cities, counties, towns, authorities) is eligible.
- The nominee need not be a Virginia resident and may be in a technical or managerial position.
- Employees of educational institutions are not eligible for the Award.

**The Pletta Award** recognizes a Virginia engineering educator who has exhibited outstanding teaching and public service in the Commonwealth. The award honors Professor Dan H. Pletta, P.E., who taught Engineering Mechanics at Virginia Polytechnic Institute and State University from 1932 through 1972, and continues to be nationally recognized as an authority on engineering ethics and professionalism.

### WHO IS ELIGIBLE

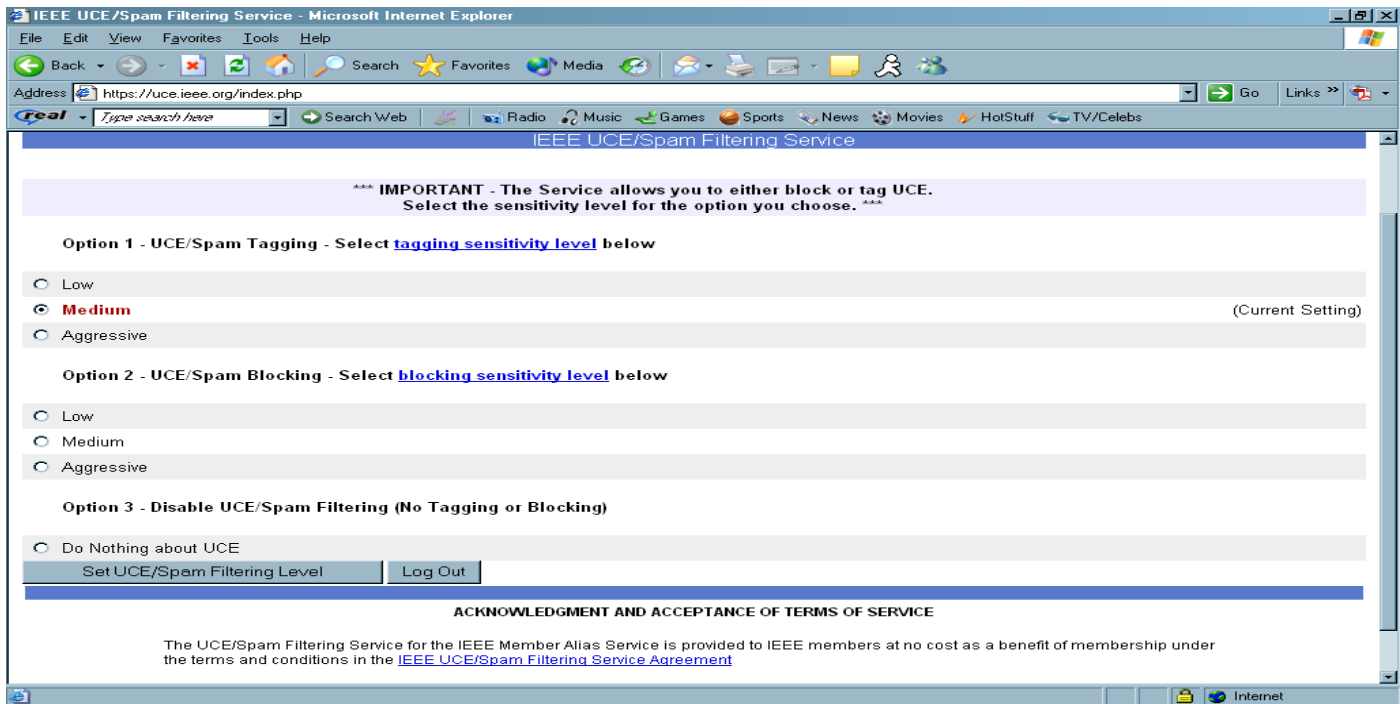
- Any engineering educator in Virginia who, on the date of his or her nomination, is employed by an institution of higher education in Virginia that has one or more programs accredited by ABET-EAC.
- The nominee need not be a Virginia resident and may be in a teaching or administrative position.

Complete details and award nomination forms are available in the Awards section of our web site,  
[http://ewh.ieee.org/r3/hampton\\_roads](http://ewh.ieee.org/r3/hampton_roads).

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## Stop Spam Now

There is now another reason to sign up for an IEEE email alias. You can filter Unsolicited Commercial Email ("UCE"), known by many as Spam. Simply go to <http://uce.ieee.org> and sign in with your IEEE Web account. The UCE/Spam Filtering Service for the IEEE Member Email Alias Service provides a mechanism to manage the amount of Unsolicited Commercial Email ("UCE") sent to your IEEE Email Alias for so long as you retain your IEEE membership. This service is offered free of charge. Need an IEEE Email Alias or Web Account? Links to activate both options are available on this site.



When the IEEE UCE/Spam Filtering Service determines that a message can be considered “UCE”, depending on the option selected by the IEEE member when signing up for the Service, the email message will be either TAGGED” or “BLOCKED”.

If the option selected is “tagging the messages considered by the Service to be UCE, a prefix (\*\*\*[Possible UCE]\*\*\*) will be added to the “Subject” header of the message. The tagged message will be delivered to the recipient (the IEEE Member Alias User). You can then take advantage of the email filtering capabilities of your email client software to determine how the tagged messages will be handled. It will be the responsibility of the recipient to review any tagged messages.

If the option selected is “blocking any email messages considered by the system to be UCE”, any email messages that the UCE/Spam Filtering Service considers to be UCE will be blocked and the recipient (the IEEE Member Alias User) will not receive these messages.

You have the option to either tag or block Spam. Start with tagging to see what will be filtered. When you are comfortable with the false alarm rate, choose the blocking option and kiss your SPAM goodbye. Enjoy!

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## IEEE Events and Announcements

### **SoutheastCon 2004**

SOUTHEASTCON brings together electrical, electronics, and computer engineering professionals, faculty and students to share the latest information through technical sessions, tutorials and exhibits. It is the most influential conference in the southeast for promoting awareness of the technical contributions made by the electrical and computer engineering profession to the advancement of engineering and science, education, and to the community.

This annual Region 3 conference will be held in Greensboro, North Carolina March 26 - 28, 2004. For more information visit the conference web site at:

<http://www.ewh.ieee.org/cmte/secon04/>

### **SIEDS 2004**

The 2004 IEEE Systems and Information Engineering Design Symposium will be held on Friday, April 16th, 2004 in downtown Charlottesville at The Omni Hotel.

Professor K. Preston White (SIEDS '04 Committee Chair) has mentioned that there is still a window of opportunity for those interested in presenting papers to submit one. The SIEDS 04 Conference is currently accepting submission of one-page abstracts for expanded presentation in a 30-minute format at the Symposium.

Those requesting further information on the 2004 IEEE Systems and Information Engineering Design Symposium are encouraged to visit our website at:

<http://www.sys.virginia.edu/sieds04>

Consider this a unique opportunity. Please don't hesitate to contact us should you have questions or concerns about your paper abstract and participation in the Symposium.

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## Local Engineering Announcements

**SOLE:** 6<sup>th</sup> Annual Mid-Atlantic Logistics Conference & Professional Development Workshop Woodlands Conference Center/Woodlands Hotel & Suites, Williamsburg, Virginia USA. April 1-3, 2004. For Additional Information, Please Visit Us On Our Web Page <http://www.mid-atlantic-log.net>.

- ◆ Mr. Louis Kratz, Assistant Deputy Under Secretary of Defense (Logistics Plans and Programs) is our Keynote Speaker.
- ◆ PD Workshop on April 1 conducted by Accenture, "Aligning Customer Relationship Management (CRM) With Supplier Relationship Management (SRM): Focusing on Customers and Suppliers Without Stovepipes."
- ◆ Two Conference days - Friday, April 2<sup>nd</sup> and Saturday, April 3<sup>rd</sup> - Technical and Education Tracks both Days.
- ◆ Logistics Seminar Series presentations on "Maintenance Excellence" and "Math for Logisticians" on April 2-3
- ◆ "Hands On" training/demonstration of logistics software tool kits in our "Discovery Zone" and Exhibit areas
- ◆ Friday, April 2<sup>nd</sup> Conference Social Sponsored by BearingPoint
- ◆ Continuing Education Units (CEU's) available for Workshop and Logistics Seminar Series programs.

**ASM:** As part of ASM International's commitment to continuing education, the Eastern Virginia Chapter of ASM is presenting a seminar on Wear and Wear Prevention. This seminar is a daylong event at Jefferson Lab in Newport News which covers various wear related topics such as thermal spray coatings, laboratory characterization, and laser surface processing for wear. The \$75 registration includes course materials, instruction, continental breakfast, and lunch. Proceeds benefit the chapter's scholarship fund. Applications will be accepted through March 12. Sign up at [asmeasternvirginia.tripod.com](http://asmeasternvirginia.tripod.com) or contact Don Geisler ([drgeisler@compuserve.com](mailto:drgeisler@compuserve.com), 804-748-6622) to register or for more information.

### Local Engineering Events inputs

Are you are organizing or sponsoring a local event of interest to the engineering community? Do you know of one? Let us know! Send your event announcement to me, William LaBelle ([w.labelle@ieee.org](mailto:w.labelle@ieee.org)), for publishing in the next edition(s) of *The Open Channel*. Additionally, your event can be announced, or a link established, on the section web site. The section newsletter reaches about 1000 local IEEE members each month. It is a free resource that you can't ignore.

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## Brain Teaser Challenge Column - Butch Shadwell

February 2004

Several readers have already sent in answers to the last BTC, all were correct. The West Indian robotic problem went like this, "a little machine that was driven by two large wheels on either side, and a third idler wheel in the back that kept it stable. Each wheel could be advanced one thousandth of a turn for each pulse it was fed, and the drive wheels were 5 inches in diameter and mounted 10 inches apart. ...the count totalizer for each wheel showed the right wheel had been fed 1,000,000 counts and the left wheel had been fed 638,000 counts, all in the forward direction. If the robot was facing north (0 degrees on the compass) when it started these maneuvers, what direction was it facing when they ended? Assume there was no slippage of the drive wheels and that they had very small contact surfaces with the ground." Nigel wasn't his real name.

The simplest solution is to determine the difference and direction of the pulse count and then advance the higher count wheel alone to that degree. So we determine that the right has moved forward 362,000 counts. At 1000 counts per revolution, that means that the right wheel has advanced 362 turns more than the left one. Since the wheel spacing is 10", the circumference of a full turn ( $2\pi$  radians) is  $\pi \cdot 20$ ". One full turn of a wheel covers  $\pi \cdot 5$ ". From this we know that 4 revolutions of one wheel, more than the opposite wheel, will take the robot full circle. Dividing 362 by 4, we get 90.5 complete circles by our machine. The last half circle means that the robot must be facing South at the end of the course. But I bet you already knew that.

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March 2004


One of the most fun things I have ever done is design some robotic control systems for an amusement park in northern England. In the mid 80's I spent some time there installing these systems, and the robotic characters, at Alton Towers, located near Stafford, England. I got to install "Henry the Hound of the Towers" at the entrance promenade. Henry was a hound dog that stood about seven feet tall. It was very interesting to watch them building this world class amusement park from scratch.

While working there, I stayed at a B&B that was owned by a professional chef. The food was great, and I always enjoyed a little conversation with the other guests and owners in the evening. My wife and I have really enjoyed traveling around Great Britain and staying at B&Bs. We've once stayed at a Scottish castle, and in some beautiful farm country too. But I digress.

Henry was a pneumatically actuated character. That is, all of his joints were operated by air pistons. The elbow used a 1" cylinder to move his forelimb out and in again. This cylinder had a  $\frac{1}{4}$ " piston rod. Henry's arm extended just fine but would hesitate while retracting. The arm retraction was powered by the cylinder's retraction motion, as opposed to the extension motion. With a 90 pound air supply, how much force was the cylinder applying to the retraction function?

Reply to Butch Shadwell at [b.shadwell@ieee.org](mailto:b.shadwell@ieee.org) (email), 904-223-4510 (fax), 904-223-4465 (v), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (<http://www.shadtechserv.com>) The names of correct respondents may be mentioned in the solution column.

### March 2004 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17 	18 <i>IEEE Section Meeting</i>	19	20
21	22	23	24	25	26 <i>SouthEastCon 2004</i>	27
28 <i>SouthEastCon 2004</i>	29	30	31			

### April 2004 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 <i>SOLE Conference</i>	2	3
4	5	6	7	8	9	10
11	12	13	14	15 <i>IEEE Section Meeting</i>	16 <i>SIEDS 2004</i>	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

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## **IEEE-USA Today's Engineer (February 2004)**

### **Backscatter: Ephemera for Engineers and Scientists**

The Internet has revolutionized publishing, making it easier than ever before to access and publish articles, papers and even books. Of course, as with any change, there are some growing pains. Many technical articles now include references to Internet addresses, as opposed to hard-copy resources. In one study, 108 of 184 Internet addresses became inactive within four years. Don Christiansen looks at e-references—and their penchant for disappearing:

<http://www.todaysengineer.org/feb04/backscatter.asp>

### **One IEEE Volunteer's Efforts to Establish an IEEE Section in Iraq**

Long-time IEEE member Bob Krause, who is currently on a consulting assignment in Baghdad, Iraq, has taken on a personal project on behalf of the global engineering profession. Krause is helping Iraqi electrical and electronics engineers—repressed for decades under Saddam Hussein's regime—to join or rejoin IEEE and form their own national section:

<http://www.todaysengineer.org/feb04/profile.asp>

### **Satisfying a Hunger for Knowledge Through Experiential Learning**

You've heard the expression, "If you give a man a fish, he will have a single meal; if you teach him how to fish, he will eat for the rest of his life." The natural progression of maturity involves moving from dependency on others toward increasing self-reliance. In this edition, Vern Johnson explains how engineers can progress from focusing on survival to focusing on endurance—becoming what he calls "self-reliant learners":

<http://www.todaysengineer.org/feb04/learning.asp>

### **In My View: The Realities of Age Discrimination**

It wasn't until 1967 that the Age Discrimination in Employment Act (ADEA) made age discrimination in the U.S. workplace illegal. ADEA was intended to protect workers aged 40 and older, but the growing body of age discrimination cases indicates that it has not served its purpose. IEEE-USA's Jim Gover and George McClure look at the facts, myths and proposed solutions to this mounting problem:

<http://www.todaysengineer.org/feb04/age-discrimination.asp>

### **Government Support Could Put U.S. Nanotechnology Sector Out Front**

Nanotechnology is an exciting and promising field that has the potential to alter society as dramatically as electronics and powered flight have. Nanotechnology is expected to play a major role in electronics, medicine and energy, among other areas, and international governments are taking aggressive steps to make sure their companies can compete. Late last year, President Bush signed into law the 21st Century Nanotechnology Research and Development Act, allocating \$3.7 billion in federal funding for molecular-level R&D over the next four years—and giving the United States an apparent edge over international competitors:

<http://www.todaysengineer.org/feb04/nanotech.asp>

### **Intelligent Transportation Systems**

As the nation's population continues to grow, increased traffic density on our roads and highways is contributing to longer travel times, increased pollution and more accidents. In addition to mass transit systems, one possible solution that is quickly gaining attention is Intelligent Transport Systems (ITS), which integrates users, transportation systems and vehicles through state-of-the-art synergistic information and communications systems:

<http://www.todaysengineer.org/feb04/intel-transport.asp>

To read TE, go to: <http://www.todaysengineer.org>