



®The Institute of Electrical and Electronics Engineers, Inc.

NATIONAL CAPITAL AREA COUNCIL

# SCANNER

April/May 1996

Volume 11, No.2

**Join Us for the Election of Next Year's Officers  
Council and Sections**

**No Caucuses, no Bribes, no Ballots!**

*(See "Your Local Reporter" for the Candidates: page 10)*

**Take a Field Trip to the David Taylor Research Center**

Join the EMC Chapter, but don't forget your walking shoes!

*(See Calendar of Events and ♦ Story for Apr 11)*

**We (NCAC) Run the Region 2 Library!**

Video and Audio Tapes on Professional and Technical Subjects

*(See Article on page 10)*

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**SCANNER**

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## 1995/96 Season

### National Capital Area Council

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### Calendar of Events

**Attendance at IEEE Meetings.** IEEE meetings are open to members and guests. When meetings are combined with meal functions, it is not mandatory — although desirable — to attend the meal functions. Please make timely reservations for all meetings (cancel early, if necessary). Any IEEE member may attend Council and Section Administrative Committee (ADCOM) meetings.

**Announcements.** Calendar information should follow the format used in this Calendar of Events. The calendar item listing includes the abbreviation for the managing section after each society chapter listing. In the case of joint chapters, the managing section is listed first. A diamond (◆) preceding the event in a calendar item indicates that further information on that event is provided in the

"Diamond Stories" Department of that issue. Articles for the "Diamond Stories" Department should be limited to 150 words, and include a synopsis of the talk or event, and a biosketch of the speaker which lists, if available, his or her academic background, current position, and IEEE as well as other professional societies memberships, if any.

All announcements, diamond stories, and other material to be printed in an issue of the SCANNER must be sent or faxed to the Editor-in-Chief in time to arrive on or before the 25th of the second month preceding the month of desired publication. The deadline for camera-ready material (e.g., ads) is the first workday of the month preceding the month of desired publication.

### APRIL 1996

#### Mon Apr 1 Meetings of the NCAC Steering Committee and Northern Virginia Section ADCOMs

**Place:** Tysons-Pimmit Library, 7584 Leesburg Pike, Falls Church, VA  
**Time:** 7:00 pm  
**Contact:** NCAC Office 703/803-8701, or Rex Klopfenstein, 703/610-2478

#### Thu Apr 4 ◆ Overview of EOS-MODIS Science Products

**Sponsor:** Geoscience and Remote Sensing Society (W/NV)  
**Speaker:** Dr. Vincent Salomonson, NASA/GSFC  
**Place:** NASA Goddard Space Flight Center, Greenbelt, MD Bldg 28, Room E210  
**Time:** 3:00 to 4:30 pm  
**Contact:** Dr. Eric Vermote, 301/286-6232, or Dr. Nazmi

El Saleous, 301/286-0758 Foreign nationals, and for directions and seating arrangements, contact Dawn Witczak, 301/286-7568

#### Thu Apr 4 Digital Holographic Data Storage

**Sponsor:** Lasers and Electro-Optics Society (W/NV)  
**Speaker:** L. Hesselink, Stanford University  
**Place:** A.V. Williams Bldg, Room 2460, U of MD, College Park; Dinner at Calvert House Inn, 6211 Baltimore Ave, Riverdale, MD, follows the talk.  
**Time:** Hors d'Oeuvres 5:30 pm; Talk 6:00; Dinner 7:30  
**Contact:** For more information and to make dinner reservations, call Hal Heaton, 301/953-5025, or Li Yan, 410/455-3558

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**Tue Apr 9 ◆ Topics in Advanced Antenna Technology**  
**Sponsors:** Microwave Theory and Techniques Society (W/NV) and Antennas and Propagation Society (W/NV)

**Speakers:** Dr. David T. Auckland, and Andy Humen, Atlantic Aerospace, Greenbelt, MD  
**Place:** U. of Md. Adult Education Center, University Blvd and Adelphi Road, Adelphi, MD  
**Time:** Cocktails 5:30 pm; Meal 6:30; Meeting 7:30  
**Contact:** Ron Hooker, 301/286-3216; e-mail ronald.j.hooker.1@gssc.nasa.gov

#### Tue Apr 9 Washington Section EXCOM Meeting

**Place:** Allee's Pantry Restaurant, Bethesda Marriott Hotel. From Beltway take Wisconsin Ave (Rockville Pike) north to Exit 34. Stay in right lane to Route 355 South, Bethesda. Follow the U-turn to go south on Wisconsin Ave for about 1/4 mile to first tlc light: Pooks Hill Road. Bethesda Marriott Hotel is at 5151 Pooks Hill Road.  
**Time:** Dinner 6:00 pm; Meeting 7:00 to 9:00  
**Contact:** Nino Ingegneri, 301/279-4217, or Jackie Hunter, 703/803-8701

#### Thu Apr 11 ◆ Field Trip to David Taylor Research Center

**Sponsor:** Electromagnetic Compatibility Society (W/NV)  
**Place:** Carderock, MD  
**Time:** 9:00 am to 11:30 (Lunch afterwards on-site)  
**Contact:** Call Joann Dorsey, 301/417-0220, to register and for directions to the site. Only limited space available; US citizens only. See Diamond Story for further details to the site

#### Thu Apr 11 ◆ Characterization and Calibration of the MODIS Sensor

**Speaker:** Dr. Bruce Genther, NASA/GSFC  
**Time:** 1:30 to 3:00 pm (For further details, see GRRS entry for April 4)

#### Wed Apr 17 ◆ Underwater Acoustic Modeling

**Sponsor:** Oceanic Engineering Society (W/NV)  
**Speaker:** Paul Etter, Consultant, Author  
**Place:** VAIL Research and Technology, 4301 N Fairfax Dr, Suite 630, Arlington, VA  
**Time:** 11:30 am to 12:30 pm; (Lunch is not included; there are several close-by eating places)  
**Contact:** For reservations and further information: Jim Barber, 703/527-9202

#### Sat Apr 20 ◆ Low Data Rate Vocoders

**Sponsor:** Communications Society (W/NV)  
**Speaker:** Roderick Ragland, Department Manager of COMSAT Laboratories' Voiceband Processing Department  
**Place:** George Washington University, Academic Center (22nd & I Streets, NW) Room T-640, EE Dept. One block from GWU/Foggy Bottom Metro Station; Parking across from Academic Center  
**Time:** Brown bag lunch (bring your own) 11:45 am; Registration 12:00 noon; Presentation 12:15 pm to 1:00

**Contact:** Everyone is welcome; for information call Bob Hollingshead, 301/794-2056 (W)

#### Thu Apr 25 ◆ Remote Sensing of Cloud, Aerosol and Water Vapor Properties from MODIS

**Speaker:** Dr. Michael King, NASA/GSFC (For further details, see GRRS entry for April 4)

#### Sat Apr 27 Annual Awards Banquet

**Place:** Bolling Air Force Base, Officers Club (For further details, see ad on page 4)

### MAY 1996

#### Thu May 2 ◆ The Generalized Entire Domain (GED) Technique

**Sponsor:** Antennas and Propagation Society, (W/NV)  
**Speaker:** Terry L. Krohn, Comsat Corporation  
**Place:** Comsat Corporation Multi-Purpose Room, 6560 Rock Spring Drive, Bethesda, MD  
**Time:** 6:30 pm  
**Contact:** David T. Auckland, 301/982-5285

#### Tue May 7 Pulsed Squeezing in Optical Fibers

**Sponsor:** Lasers and Electro-Optics Society (W/NV)  
**Speaker:** K. Bergman, Princeton University  
**Place:** A.V. Williams Bldg, Room 2460, U of MD, College Park; Dinner at Calvert House Inn, 6211 Baltimore Ave, Riverdale, MD, follows the talk.  
**Time:** Hors d'Oeuvres 5:30 pm; Talk 6:00; Dinner 7:30  
**Contact:** For more information and to make dinner reservations, call Hal Heaton, 301/953-5025, or Li Yan, 410/455-3558

#### Tue May 7 ◆ Lighting and the National Energy Policy Act

**Sponsor:** Industry Applications Society (W/NV)  
**Speakers:** Li Huang and G.E. Lighting  
**Place:** Anchor Inn, Georgia Ave & University Blvd, Wheaton, MD (Near Wheaton Metro Station)  
**Time:** Social 6:30 - 7:00 pm; Dinner (optional, \$20.00) 7:00; Presentation 7:30  
**Contact:** Ron Aasen, 703/516-1928, or Bill Regotti, 202/789-4453; Reservations are requested by May 6

#### Thu May 9 Election Meeting for the NCAC Steering Committee and the Washington and Northern Virginia Section ADCOMs

**Place:** Patrick Henry Library, 101 Maple Avenue East, Vienna, VA

#### Tue May 14 Washington Section EXCOM Meeting

**Place:** Allee's Pantry Restaurant, Bethesda Marriott Hotel. From Beltway take Wisconsin Ave (Rockville Pike) north to Exit 34. Stay in right lane to Route 355 South, Bethesda. Follow the U-turn to go south on Wisconsin Ave for about 1/4 mile to first tlc light: Pooks Hill Road. Bethesda Marriott Hotel is at 5151 Pooks Hill Road.  
**Time:** Dinner 6:00 pm; Meeting 7:00 to 9:00  
**Contact:** Nino Ingegneri, 301/279-4217, or Jackie Hunter, 703/803-8701



**Thu May 16 ♦ Spectrum Utilization in Technical Security Countermeasures**

**Sponsor:** Electromagnetic Compatibility Society (W/NV)  
**Speaker:** James Ross, President, Ross Engineering, Inc.  
**Place:** Fred's Place Restaurant, 2d Floor, Holiday Inn Crystal City; two blocks north of Crystal City Metro stop; Some free parking in garage; stop at front desk for parking permit.  
**Time:** Registration/cash bar: 11:30 am; Lunch (optional, but encouraged) 12:00 noon; Meeting 12:30 pm  
**Contact:** For information: P.J. Mondin, 301/460-5864 for lunch reservations (required): Joann at 301/417-0220

**Thu May 16 ♦ Odyssey Low Earth Orbit Satellite System**

**Sponsor:** Communications Society (W/NV)  
**Speaker:** Peter Hadinger  
**Place:** George Washington University Faculty Club, Marvin Center, 21st and H Street NW; 2 blocks from Foggy Bottom/GWU Metro Station; parking under Marvin Center; access on H Street  
**Time:** Registration 11:30 am; buffet (optional; \$15.00 cash or check; no credit cards); presentation 12:00 noon to 1:00 pm  
**Contact:** Bob Hollingshead, tel 301/794-2056

**Thu May 16 ♦ An Overview of the MODIS Ocean Product Algorithms**

**Time:** 1:30 to 3:00 pm (For further details, see GRRS entry for April 4)

**Mon May 20- Wed May 22 "Hysteresis Modeling and Micromagnetism" Conference**

**Sponsor:** Institute for Magnetism Research, George Washington University, Virginia Campus  
**Place:** Ashburn, VA; 12 miles west of Tyson's Corner at intersection of Routes 7 and 28  
**Time:** 9:00 am to 5:00 pm  
**Contact:** Judy Shern, 703/478-8980 x8268, or e-mail imr@seas.gwu.edu

**Thu May 23 ♦ An Overview of the MODLAND Product Algorithms**

**Speaker:** Dr. Christopher Justice, UMD and NASA/GSFC (For further details, see GRRS entry for April 4)

**Thu May 30 ♦ An Overview of MODIS Data Processing System**

**Speaker:** Edward Masuoka, NASA GSFC  
**Time:** 1:30 to 3:00 pm (For further details, see GRRS entry for April 4)

IEEE National Capital Area Council

# Annual Awards Banquet

6:30 PM to 9:30 PM  
 Saturday 27 April 1996

Bolling Air Force Base Officers Club  
 Foot of Portland Street SE, Washington, DC

Cash Bar 6:30 PM                      Dinner 7:30 PM                      Awards Ceremony 8:30 PM

===== Ticket Order Form =====

Type	Number	Cost	Total
Table of Ten**	_____	\$300	_____
Member or Guest	_____	\$30	_____
Student	_____	\$20	_____

Total Amount Submitted \$\_\_\_\_\_

Name: \_\_\_\_\_  
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Make checks payable to "IEEE NCAC Banquet" and mail to

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Mail your reservation form as soon as possible, but no later than 19 April 1996

Telephone: \_\_\_\_\_  
 Group Name:\*\* \_\_\_\_\_

Please attach a list of attendees with IEEE affiliation (\*\* for tables include group name, e.g. Computer Society)



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  - HP OpenView
  - Computer security development
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  - Windows 3.1 SDK
  - Tuxedo
  - HPUX
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  - Software Quality Assurance
  - Configuration management (UNIX)

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  - UNIX systems administration, software development, Windows
  - Site surveys/engineering activities
  - Travel required

- Network/Systems Engineers**
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  - UNIX, Oracle, GUI configurations
  - Client/server, network router, X.25
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## ◆ DIAMOND STORIES ◆

*This Department of the SCANNER provides short abstracts and biosketches to accompany those calendar items which show a diamond (◆) before the item's subject or event.*

### Topics in Advanced Antenna Technology

*(See Calendar of Events, Tue Apr 9)*

David Auckland and Andy Human, Atlantic Aerospace, will describe unique antenna designs for use in communication systems from UHF through MMW frequencies. Antennas to be described include: a UHFSATCOM antenna (8 inches square and 2 inches deep) with the gain performance of a conventional antenna with 36 times the volume; an L-band antenna for a video link, incorporating GPS and an electronic compass to allow autonomous antenna beam steering for multipath suppression on a ground vehicle; and a quasi-optical phased array antenna offering the potential for phase shifter-less electronic beam scanning suitable for data link applications.

Mr. Humen, an IEEE member, is a Senior Staff Engineer at Atlantic Aerospace, responsible for developing advanced antenna products. Dr. Auckland, a senior member in the IEEE, is an Engineering Manager at Atlantic Aerospace.

This is the last lecture in the "Microwave Systems for the 21st Century" Course sponsored by the local MTTs Chapter. A new course will be initiated in September. Suggestions for topics and speakers are encouraged. Pls contact Ronald Hooker, 301/286-3216.

### Field Trip to David Taylor Research Center

*(See Calendar of Events, Thursday, April 11)*

The IEEE Washington/Northern Virginia Chapter of the Electromagnetic Compatibility Society is sponsoring an outing to the David Taylor Research Center in Carderock, MD. The Center conducts state-of-the-art research on surface and underwater ships.

This unclassified visit will provide an overview of activities at the Research Center, along with a tour of the facilities. The Center houses the longest indoor tow tank, along with a collection of miniature harbors used to test various scenarios and perform scale-model simulations. Current research supports the development of top-level (radio frequency) and underwater (acoustic) "Stealth" technologies to be used in the next generation of combatant and support ships.

A high level of contractor support is used at the Center; this visit might provide opportunities for qualified individuals interested in contracting possibilities.

The tour requires a bit of walking up and down stairs, and there are areas where no wheelchair access is provided. No cameras are allowed, and only U.S. citizens may attend. Parking space is somewhat limited, so carpooling is encouraged.

### Underwater Acoustic Modeling

*(See Calendar of Events, Wednesday, Apr 17)*

Our speaker has divided the subject into three basic areas:

(1) the physical principles use to formulate the models; (2) the mathematical techniques used to translate these principles into computer modes; and (3) the applications of the models in sonar technology and oceanographic research. Paul teaches a course in the application of modeling principles and is well versed in their development and application. He will discuss new developments in shallow water acoustics and inverse acoustic sensing of the ocean.

This meeting should be especially appealing to both tyros and experienced practitioners involved in basic and applied research in sonar technology.

### Low Data Rate Vocoders

*(See Calendar of Events, Saturday, Apr 20)*

Narrow-band communications mediums, such as mobile satellite, HF radio or cellular systems, rely on voice coders, or vocoders, to digitize and compress speech for efficient transmission. Today's typical vocoder operates at a fixed rate of 4,800 bits per second. Reducing the data rate needed for vocoders, while maintaining intelligibility, increases the number of channels available for a given bandwidth.

Our speaker, an IEEE member, will describe the current status at COMSAT Laboratories of an on-going research and development effort whose objective is a 1,200 bits/s vocoder with a high degree of speech intelligibility and natural voice quality. The 1,200 bits/s vocoder is based on a tenth-order linear prediction analysis using improved split vector quantization of line spectral frequencies, differential pitch and gain quantization, and adaptive post-filtering. These voice coding technologies are especially applicable in satellite or cellular based mobile and portable communication systems, HF radio and voice paging systems which all have the need to add more subscribers to a fixed bandwidth.

### The Generalized Entire Domain (GED) Technique

*(See Calendar of Events, Thursday, May 2)*

The General Entire Domain (GED) technique for solving electromagnetic problems will be presented and a software package utilizing the technique will be discussed. The GED technique represents a method of reducing the number of unknowns, and thereby extending the frequency capability, in Method of Moments (MoM) solutions to EM scattering problems. The nomenclature GED is indicative of the fact that the domain of the basis set is the entire patch, and the polynomials are expanded over the general CAD patches.

Because the GED current basis elements are smooth and orthogonal, fewer unknowns per square wavelength of surface are required to accurately model the current.

The GED software interfaces with CAD packages by accepting patch input data of type Hermitian, Bezier, or Point format of orders one through four. An automatic topology generator then supplies the connectivity information. The GED IBC software retains the magnetic currents in a magnetic/resistive sheet formulation. This formulation enables the analysis of patches having different impedance assignments on each side of the patch, together with the analysis of open bodies. Thus, RAM coated metal is easily modeled with a single patch. The software has been benchmarked on machines ranging from high-end UNIX work stations, to Pentium and 486-based PCs running FORTRAN compilers such as Lahey, Watcom, and Microsoft.

Our speaker Mr. Terry L. Krohn, an IEEE member, has an MS degree in theoretical mathematics, and currently runs the SDC consulting company in Fairfax, VA. He has been working in applied physics since 1984, and is the originator of the GED modeling technique. Mr. Krohn won the 1990 IEEE R.W.P. King award for his paper entitled "Scattering from Composite Materials: A First Order Model."

### Lighting and the National Energy Policy Act

*(See Calendar of Events, Tuesday, May 7)*

The May meeting of the W/NV IAS Chapter will be of interest to consultants, design engineers, and facility managers involved in new developments in lighting design based on the National Energy Policy Act. The speaker, Li Huang, Specification Area Manager for GER Lighting in King of Prussia, PA, is a graduate of Penn State University's Architectural Engineering program. She has been a lighting application specialist focusing on energy efficient lighting systems and retrofit lighting applications. Ms Huang is presently on the Board of Managers of the Philadelphia Section of the IES.

### Spectrum Utilization in Technical Security Countermeasures

*(See Calendar of Events, Thursday, May 16)*

Modern technology continues to advance, with concurrent floods of economic stimuli and geopolitical effects. This often results in extreme measures by adverse forces to acquire and exploit hard-earned products, services, and accompanying business strategies. As technology advances further into the Information Age, high-tech spectrum usage in actions of surveillance, espionage, and other covert acquisition continue to emerge and flourish. Actions against such activity are known as technical security countermeasures (TSCM). Industry must keep pace with such covert activities. However, limitations such as FCC spectrum utilization rules, munitions acts, Title III of the Safe Streets Act and other constraints must be respected.

Our speaker, a renowned expert in the TSCM field Engineering, will discuss various concepts and methods involved TSCM, including topical subjects ranging from cellular toll fraud, surreptitious intercept, countermeasures, etc., as well as technical, legislative and strategic aspects.

Demonstrations of typical surveillance techniques and methods/instruments to detect and correct intercepts will be provided as part of the presentation.

James Ross, an IEEE member, is President of Ross Engineering. He is a well-known TSCM engineer with a B.S. degree from the U.S. Military Academy at West Point, and an MSEE from the University of Illinois. He has worked in radio, wire, ad cryptology with the US 7th Army, taught electronics at West Point, and was a project officer on Army and Navy missile and space programs at Cape Canaveral. He has held senior management positions at RCA, Lockheed, and TRW, and publishes two newsletters, "Jim Ross' COMMUNICATOR," and "Privacy and Security 2001."

### Odyssey Low Earth Satellite System

*(See Calendar of Events, Thursday, May 16)*

Worldwide hand-held satellite communications is well on its way to becoming a reality. With several "Big-LEO" Personal Communication Satellite Systems (PCSS) in development, an array of new services is expected before the year 2000. TRW has developed Odyssey — the first PCSS to use Medium Earth Orbits (MEO). TRW's choice of MEO allows Odyssey to have the simplicity of geostationary mobile satellite systems while providing worldwide coverage with much greater capacity and ability to support hand-held cellular phones. Odyssey will offer voice, data, fax and other services through a constellation of 12 satellites with service to begin in 1999.

Our speaker will discuss the Odyssey system approach, ground and handset designs, and prospects for the MSS market.

Mr. Peter Hadinger, an IEEE member, is Manager of Odyssey Washington Operations for TRW Space and Electronics Group. He has fifteen years of experience at TRW, primarily in designing and managing complex satellite payload programs and developing company policies on international satellite communications matters. He holds a BSEE from California Polytechnic University, performed graduate studies in EE at UCLA and USC, and is presently completing his MBA at George Mason University.

SCANNER is read by about 15,000 of the most influential engineers and managers in the capital area electronics industry. Half work primarily for the government, and the typical reader is 43 years old and earns \$70,000. If you want to showcase your high tech product or service before the people who need it most, call the Advertising Manager, Charlie True at 703/448-7622



## LETTERS TO THE EDITOR

### SCANNER on the World Wide Web?

Dear Tom:

I agree with Al Reiner that your column constitutes a useful forum for local IEEE members to express their views on controversial subjects that affect many of our members. But I also believe that the current SCANNER can be supplemented significantly by the use of modern technology that was made possible in large part by the technical achievements of our colleagues, namely the World Wide Web (WWW). I suggest to you publically what I have been suggesting to you privately: Put the SCANNER on the WWW.

I look forward to your reply. Meanwhile, keep your December/January editorials provocative of thought on real gut issues that affect our membership, and start gearing up for "digital ink" (note the lower case.)

Your friend,  
George Hagn  
Senior Staff Advisor  
SRI International  
Hagn@erg.sri.com

### Metric — or Ball-and-Chain?

*(Editor's Note: In the Dec'93/Jan'94 and the Feb/Mar'94 issues of the SCANNER, the subject of "Metrics" and the U.S.'s continued reluctance to adopt the metric system nationally, were discussed. The following editorial was published in a recent issue of the IEEE Antennas and Propagation Magazine. The author of the editorial, Dr. John Kraus, is a consulting engineer and Professor Emeritus of Electrical Engineering of the Ohio State University, Columbus. He is also a member of the National Academy of Engineering, a Life Fellow in the IEEE, and an IEEE Edison and Heinrich Hertz Gold Medalist. He graciously consented for us to print excerpts from his editorial.)*

"The reasons for going metric all add up to one thing. It will help the U.S. economy. That will bring more prosperity and jobs."

"In 1975 when President Gerald Ford signed the Metric Conversion Act, he deplored the U.S. lethargy in going metric. He said that as a result the U.S. had become "an island in the metric sea." Many plans to go metric were announced in both public and private sectors. A metric U.S. seemed imminent. But a vocal few did not want a new system. The metric movement stalled and now, nearly 20 years later, the U.S. is drowning in a metric sea."

"The English system is cumbersome and outmoded. It's a ball-and-chain on the U.S. economy. It imposes a trade

barrier which erodes the U.S. standard of living. Over ninety-nine percent of the people in the rest of the world live in countries where metric is mandated. They demand metric products. Many countries now actually bar entry of non-metric goods. ..."

"Many industries report that going metric was easier than anticipated. Also, costs of conversion were soon balanced by savings through increased efficiency, and through profits from increased sales. In addition, they reported fewer errors using metrics, saving dollars. They achieved a new prosperity by going metric. ..."

"U.S. metrication is now said to be in a "transition" period which, at the present snail's pace, could go on forever. In countries of the British Commonwealth, one could buy Imperial one day, but only metric the next. Yes, there was grumbling by some senior citizens. But with conversion, the countries required that metric be taught exclusively in schools. Youth became the new metric generation, which soon prevailed. Metric is beautiful in its simplicity and easily learned. All it takes is a few minutes and an open mind."

"The U.S. is already half metric: many industries have converted to better compete in a world market; autos are metric, the Army is metric, doctors and dentists use metric, pharmaceuticals are in grams and milligrams, soft drinks, wines, and liquors are in liters, food ingredients are in grams and calories; films and lenses are in millimeters; wavelengths

are in meters; all scientific measurements are metric; modern engineering is metric; and the labels on most products are in both metric and English units. But a half-metric, half-English U.S. is inefficient and wasteful."

"In 1991, President Bush signed an executive order to expedite metric usage by federal agencies for their procurement, grants and other business-related activities. This was a step in the right direction, but it is not enough. Until the U.S. sheds its stone-age mind-set and metric is mandated for the whole country, the U.S. will not achieve the full productivity it needs for leadership in a metric world. Progressive organizations regard metric as necessary, beneficial and inevitable, but many are waiting for a mandatory requirement to convert."

"The countries of the rest of the world have converted to metric to their great benefit. The U.S. needs to convert without delay, and gain metric's benefits, too. The issue at stake is the economic survival of the U.S. in a fiercely competitive world market. To meet the crisis, the U.S. must go metric soon!"

## TECHNICAL CAREER FAIR

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**Monday & Tuesday**  
**April 15 & 16**  
**3pm - 7pm**

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(On Route 7 West off I-495)



Sponsored by: IEEE

Companies interested in participating call 1-800-288-2890

- NO Cost • NO Obligation
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- Bring plenty of resumés

See our ad in the *Washington Post* employment section on Sunday, April 14 for further information.

For more information call the 24-Hour Infoline: 1-800-765-HIRE (4473) x9112 after 4/8/96.  
If it is impossible for you to attend, mail or fax your resumé, Attn: 4DCT-IEEE, to the address below.

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Networking for Administrators .....	March 27, 28, 29	Fundamentals of Fiber Optic Technology .....	May 1, 2
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Telecommunications .....	April 15, 16	Packet Switching Fundamentals ..	May 13
Technical Writing .....	April 15, 16	Intro. to UNIX .....	May 15, 16
Accessing the Internet .....	April 17	ATM: A Technical Overview .....	May 20
The World Wide Web .....	April 18	Windows/Visual Basic .....	May 22, 23
C++ .....	April 24, 25	Technical Project Management ....	May 29, 30, 31
TCP/IP .....	April 24, 25	...	and many more!
Networking for Admin./Adv. Lab ...	May 1, 2, 3		

### FREE Seminars in Systems Engineering

April 10 — On-Line Training

Third in a series, this free seminar will expose participants to new paradigms in distance learning. Seating is limited for this half-day session and reservations are required. Capitol College is an Authorized Academic Training Program Site.

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## YOUR LOCAL REPORTER

### Can't Remember!

Just a line to say I'm living; that I'm not among the dead,  
But I'm getting more forgetful, and am mixed up in my head.  
I got used to my arthritis; to my dentures I'm resigned  
I can manage my bifocals, but, dear God, I miss my mind!  
For sometimes I can't remember when I'm at the foot of stairs  
If I must go up for something, or have just come down from there.  
And before the fridge so often my poor mind is filled with doubt:  
Have I just put food away, or have I come to take some out?  
There are times when I am standing with my nightcap on my head  
And don't know if I'm retiring, or just getting out of bed.  
If it's not my turn to write you, there's no need of getting sore;  
I may think that I have written, but don't want to be a bore!  
So, remember that I love you, and I wish that you were near,  
But by now it's nearly mail time; I must say good bye, my dear.  
Here I stand beside the mailbox, with my face so very red,  
I had meant to mail this letter, but had opened it instead.  
Now I'm back at my own desk here, and my head is bowed in  
shame:  
I do want to mail this letter... but I just forgot your name!

*(Submitted by a very alert former SCANNER business manager)*

### Region 2 Library

#### An Opportunity to Keep Up with Latest Technical Information

The Region 2 Library is now available, and right in our back yard. All you have to do to take advantage of the wide choice of video tapes, audio tapes, and books on professional and technical topics, or obtain a copy of the library accession list, contact Ms Jackie Hunter, the administrator of the library, tel 703/803-8701 or fax 703/222-3208.

Here are some of the topics:

"Helping Engineers through Intellectual Property Strategy"  
"Immigration Issues"  
"Career Development"  
"Fuzzy Logic"

and many others. Just call Jackie.

Credit for this achievement is due to many, but primarily our Jim Strother, Herb Heller of Region 2, the Region 2 Director Dan Benigni, and many others.

If you have any questions on the latest information on this subject, contact our Dr. Gideon Kantor, Chairman of the Region 2 Professional Educational Activities Committee Chairman, tel 301/443-3840, or e-mail gkantor@aol.com.

### Annual Election of Officers

This year, Thursday, May 9 will be Election Day for your officers. The elections will be held at the Patrick Henry Library, 101 Maple Avenue, Vienna, Virginia, at 7:30 pm.

The Nominating Committees of the National Capital Area Council, as well as those of the Washington and Northern Virginia Sections, have submitted the following slates of officers for the IEEE year July 1, 1996 to June 30, 1997.

#### National Capital Area Council

Office of Chairman: Jorome T. Gibbon (M'80)  
Office of Vice Chairman: Antonino J. Ingegneri (M'81)  
Office of Treasurer: Lalit Batra (M'87)  
Office of Secretary: David Kriegman (M'84)

#### Washington Section

Office of Chairman: Ronald C. Aasen (SM'91)  
Office of Vice Chairman: David C. Straw (M'92)  
Office of the Treasurer: William G. Regotti (M'92)  
Office of the Secretary: Donald M. Rickerson (LS'90)

Directors:

Theodore Gordon (1995-1997)  
William Ostaff (1995-1997)  
James Comas (1995-1997)

#### Northern Virginia Section

Office of the Chairman: Steven Rebovich  
Office of the Vice Chairman: Kimberly N. Faunce (M'91)  
Office of the Treasurer: John J. Campanella (M'93)  
Office of the Secretary: (TBA)

Directors:

Brent Snyder (1995-1997)  
William Johnson (1996-1998)  
Peter Sypher (1996-1998)  
Angelo Toutsis (1996-1998)  
Brian Krasner (1996-1998)

### Eleven of our Members Elected to Fellow Grade!

We congratulate eleven IEEE members in the Washington and Northern Virginia on their election to the coveted grade of Fellow in the IEEE, effective January 1 of this year. Only one tenth of one percent of active IEEE members are bestowed this honor every year. They and their families and friends have been invited to our annual Awards Banquet on April 28, and we hope that many of you will be able to attend the Banquet to congratulate them in person. Here, listed alphabetically, are their names and their respective fellow citations:

#### Aubrey M. Bush

For contributions in communications theory and engineering education, and for the promotion of fundamental and applied research in communications

#### William M. Carey

For international leadership in the modeling and analysis of acoustic signal fields and noise in the ocean

#### Harry K. Charles, Jr

For leadership in electronics packaging technology for space, marine and biomedical electronic systems

#### Steven H. Gold

For research on high power, coherent radiation sources including millimeter-wave free-electron lasers, gyrotrons, cyclotron auto-resonance masers, and the magnicon

#### Robert J. Harrington

For contributions to transient power system analysis and for leadership in power engineering education

#### Joseph Farid Ja Ja

For contributions to parallel computing, combinatorial algorithms, algebraic complexity, and digital signal processing architectures

#### Robert N. McDonough

For contributions to radar and sonar signal processing and for leadership in engineering education

#### Nelson Simon Saks

For contributions to the understanding of the basic mechanisms of radiation damage in metal-oxide-semiconductor devices

#### Chalmer F. Sechrist, Jr.

For contributions to engineering education

#### James A. Smith

For development of optical and thermal canopy signature models, basic terrain feature measurements, and application to remote sensing

#### Mona E. Zaghloul

For leadership in education and research in integrated circuit design and their application to neural networks

## CHAIRMAN'S CORNER

The long snow-filled winter is now a memory; the relatively quiet summer months will soon be upon us. In the interim, IEEE members will continue to exchange information at the many technical meetings listed in the Calendar of Events.

We will start the wrap-up of the 1995/96 year by honoring local members at our Annual Awards Banquet, which will be held at the Bolling Air Force Base Officers Club on Saturday, April 27 (see the reservation form on page 4). Awards will be made by the Washington and Northern Virginia Section, as well as the National Capital Area Council. Among the honorees will be the eleven new fellows listed on this page. Take a moment to read and reflect upon their accomplishments, then make a note to join them and the rest of our members on April 27.

On May 9 (see Calendar of Events for details) we will prepare for the 1996/97 IEEE year by electing new officers and directors for the NCAC and its two sections. The slate of nominees is listed on page 10. Nominations from the floor will be accepted at the Election. Come and cast your vote!

**Rex C. Klopfenstein**

Chairman, National Capital Area Council

## PACE CORNER

### Coordinating Committee of the Alliance of IEEE Consultants' Networks

This committee met in February to discuss various issues of interest to the consultants' networks. IEEE-USA's Bill Anderson discussed the status of the budget and current directory. Bill specifically stated that single copies of the current directory are available free by request to him at tel 202/785-0017, or fax 202/785-0835, or e-mail b.anderson@ieee.org

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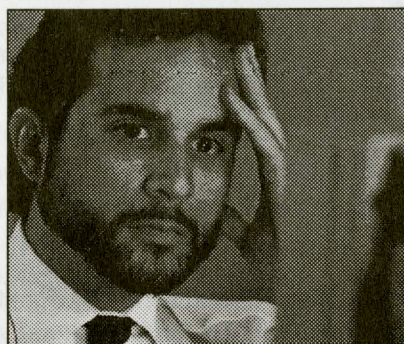
Contact Charlie at (703) 448-7622



I E E E - U S A

# Since everyone else is looking out for #1, we're looking out for you.

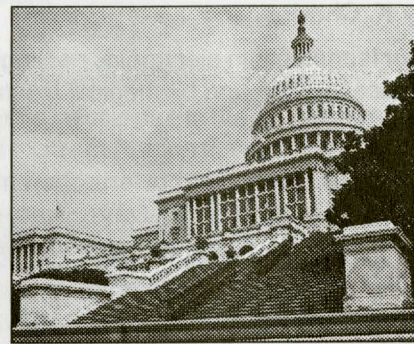
Through years of record layoffs and bleak employment prospects for U.S. engineers, one organization has been there helping to protect and create jobs for the IEEE's 230,000 U.S. members and all U.S. electrical, electronics and computer engineers. IEEE-USA is working three jobs to make your job better.



Your individual resource to establish a solid, lasting career in a chaotic world.



Your advocate to create a stable and productive work environment for all engineers.



Your voice in Washington and throughout the nation to build a strong and competitive U.S. market.

## WORKING TO SUPPORT YOUR CAREER

IEEE-USA bolsters the professional standing and careers of U.S. engineers in many ways.

We spearhead local job fairs, career workshops and a biennial careers conference to help engineers develop resilience in a changing job market. We oversee consultants' networks and national on-line resume and job listing services. We publish employment assistance guides and a biennial salary survey.

## WORKING TO ENHANCE OUR PROFESSION

IEEE-USA endorses and promotes public policies that nurture the professional environments of U.S. engineers and scientists.

Through our government outreach program, we are working to correct imbalances in engineering work-force demand, reform immigration policy, ensure tax incentives for continuing education, protect inventors' rights, provide incentives for innovation, and combat employment discrimination.

## WORKING TO SHAPE U.S. TECHNOLOGY POLICY

From our Washington, D.C. headquarters, IEEE-USA helps develop and communicate technology policy to Congress, the executive branch, the media and other opinion-makers.

Key IEEE-USA positions include support of a strong U.S. research and development program, effective commercialization of technology, creation of alternate energy sources, unimpeded development of the information superhighway, and sound medical-technology policy.

What are your most pressing professional concerns? Contact us at IEEE-USA, and we'll send you detailed information on how you can become involved in bolstering your career and profession.



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## ELSEWHERE IN OUR PROFESSION

[The following items are excerpted from IEEE, National Institute of Standards and Technology (NIST), and the Aerospace Technology Committee of the National Air and Space Museum, Smithsonian Institution]

### Help to Write an Engineering Examination

(This is a sequel to the article "Become a Professional Engineer" by Mr. William Gandler on page 13 of the Feb/Mar issue of the SCANNER).

The National Council of Examiners for Engineering and Surveying (NCEES) is looking for volunteers to help write the Fundamentals of Engineering (FE) Examination and the Principles and Practice of Engineering (PE) Examination. Only Professional Engineers are eligible. Once you contact the NCEES, you will be sent a packet of information including the item writers guide, and be informed of future workshops. If you become an item writer, the NCEES will pay all travel, lodging, and food expenses for workshops that you attend. In addition, a small honorarium will be paid to

item writers for each accepted problem. The points of contact are:

F.E. Roger Hadley, P.E. ext 231, or

Tom King, P.E. ext 220

National Council of Examiners for Engineering and Surveying

280 Seneca Creek Road

P.O. Box 1686,

Clemson, South Carolina 29633-1686.

Tel: (803) 654-6824; Fax: (803) 654-6033

Submitted by William Gandler,

118 Monroe Street #1203

Rockville, Maryland 20850;

Tel: 301/496-9345 (W); 301/762-4965 (H);

Fax: 301/402-2867; e-mail: [gandler@helix.nih.gov](mailto:gandler@helix.nih.gov)

### New Survey Shows Electrical Engineering Salaries Slightly Up, Unemployment Down

Income for electrical, electronics and computer engineers increased 5.9 percent during the past two years, outpacing the rate of inflation.

Those working in their primary specialty in 1995 had total incomes averaging \$71,900, according to a biennial survey of U.S. members conducted by the U.S. Activities division of the IEEE. Two years ago, average income was \$67,900. Between 1993 and 1995, the consumer price index rose 5.6 percent. Highest incomes were recorded in the Northeast; the lowest in the Midwest.

According to Robert S. Duggan, Jr., chairman of the IEEE-USA Survey Committee: "After the major economic disruptions of the past several years, the results of this survey should prove encouraging to the beleaguered engineering workforce. We find that the income pie is getting a little bit larger, and there are also more slices to go around."

The IEEE-USA survey shows more retired electrical engineers and fewer EEs working full-time. Part-time employment registered 4 percent, and retirement accounted for 15.4 percent of respondents. Nearly 70 percent were employed full-time in their primary specialty, and another 7.5 percent were working full-time outside their fields. Among the remaining, 2.3 percent were involuntarily unemployed, down from a record high of 2.7 percent in 1993.

The poll provides extensive statistical data regarding engineering income by industry sector. The highest median incomes were reported by engineers in communications (\$70,138), computers (69,929), and aerospace (\$69,500), while the lowest were reported in the automotive industry (\$62,000) and transportation (\$60,000). By job function, engineers in general management have the highest income, those in manufacturing and production the lowest.

A minority of respondents, 20.1 percent, are registered professional engineers. Another 13.3 percent qualify for Engineer-in-Training status. The most commonly held degrees are the Bachelor of Science in electrical engineering, or in electrical and computer engineering.

Almost all (94.9 percent) respondents were men, and 88.2 percent identified themselves as non-Hispanic white. Asian-Americans represented the largest minority group with 7.6 percent.

### Electrical Engineers Would Save More With Expanded IRAs

According to a poll conducted by IEEE-USA, electrical engineers would increase their personal retirement-savings rates if Congress enacts pending savings-incentive legislation. "The poll reveals an overwhelming consensus that engineers will do their part to rebuild the collapsing national savings rate — if Congress gives them the tools," stated IEEE-USA Board Chair Joel P. Snyder, "Engineers are telling us that they're worried about retirement security, but they simply can't afford to increase their savings and their tax bite at the same time," he said.

The poll results come as Congress considers ways to encourage personal savings. The American Dream Restoration Act, passed by the House as part of the "Contract with America" Tax Relief Act, permits individuals to make taxable contributions of up to \$2,000 a year to new "American Dream Savings Accounts" (ADSAs) irrespective of income or pension-plan participation. The distributions from these accounts would not be subject to additional tax or penalty if used for retirement, a first-time home, educational expenses or major medical costs. The Individual Retirement Account (IRA) Equity Act, also passed by the House, raises the dollar amount that a non-working spouse can contribute to a conventional tax-deductible IRA from \$250 to \$2,000.

Critics of the current proposals claim that tax incentives to use savings instruments would lead Americans merely to



redistribute their investments, not actually increase their savings. "Our survey data suggest that new savings incentives will result in more investment—increased savings to ensure Americans' retirement security, and more private capital to boost U.S. economic competitiveness," said James V. Leonard, chair of IEEE-USA's Engineering Employment Benefits Committee. "As members of the nation's second-largest profession — and a major portion of its middle-class savers — electrical engineers are a bellwether on this issue," he added...

The survey group was virtually united in its commitment to save more with additional tax incentives. Of those reporting they would participate in the new plans, nearly four of five said their contributions would constitute an increase in their overall level of savings. Only 22 percent indicated they would merely shift their investments to gain the tax advantages.

### Space Radios

Litton's Amecom Division, College Park, MD, has been awarded a \$3.3 million contract by NASA to co-develop and produce advanced radio communication sets for astronauts who build and maintain NASA's space station. The UHF equipment will provide high resolution voice communication among and aboard an attending shuttle vehicle. The time division multiple access technology will minimize interference among the astronaut radios. The firm is slated to deliver the first 27 fully operational flight units to NASA in 1997.

### IEEE Government Fellows Have begun Assignments in Congress, Commerce Department

The Congressional Fellowships Program places qualified volunteers in one-year terms on staffs of interested Members of Congress or congressional committees.

Robert Duane Shelton, Donald M. Wiberg, and Paul B. Crilly have begun assignments as 1995 IEEE-USA Congressional Fellows; and James C. Denisson has embarked on an Executive Fellowship with current U.S. Commerce Department Under Secretary Mary L. Good.

IEEE-USA's Executive Fellowship Program assists the U.S. Commerce Department's new Technology Administration in advancing U.S. competitiveness in electronics, manufacturing and technology.

Robert Shelton accepted his Fellowship with Rep. Lloyd Doggett, D-Texas, a member of the House Science Committee and its Subcommittee on Basic Research. Working as a legislative assistant for environment, science and technology issues, Shelton will also serve as liaison to high-technology industry and educational institutions within Doggett's Austin-area district.

Concentrating on energy and defense policy, Donald Wiberg is conducting his Fellowship in the office of Senator Tom Harkin, D-Iowa. He will be advising Harkin on Appropriations Committee science and technology funding issues and the Senate version of the hydrogen research bill.

IEEE-USA has extended Paul Crilly's 1994 Congressional Fellowship for one year at the request of Rep. Dana Rohrbacher, R-Calif., the newly appointed chair of the House Science Subcommittee on Energy and the Environment. Crilly will continue to advise Rohrbacher on general science and technology issues.

For more information on the Government Fellowship programs, contact Chris Brantley at the IEEE-USA Office, 202/785-0017, x303, or c.brantley@ieee.org (e-mail).

### Communication Satellites for Russia!

Loral Corp. announced a joint venture to build, launch and operate communication satellites to serve the Russian market. The new partnership will manufacture and sell geosynchronous and highly elliptical satellites. Space Systems Loral will build the communications payloads, and Russia's RSC Energia will supply the buses for the spacecraft.

### Canadian Marconi, Honeywell to Develop GPS Receivers

Canadian Marconi said it has signed an agreement with Honeywell to cooperate in the development of airborne and ground-based Global Positioning System receivers for Honeywell's Integrated Satellite Landing System. Receivers will provide airborne differential Global Navigation Satellite Sensor Units designed to Arinc-743 standards that are compatible with Honeywell's new differential landing system. The Marconi units use differential corrections from the Honeywell Satellite Landing Station to calculate and direct the flight controls.

### A Frequency Allocation Struggle

The Department of Transportation is aiming to decide how it will allocate vacant U.S.-South Africa frequencies, formerly USAfrica's. DOT will either go forward with its show-cause order allocating the frequencies to World Airways and Southern Air Transport, or re-open the proceeding, allowing additional parties to apply for them.

### IEEE Employment Assistance Committee Survey Studies Members' Unemployment

In June 1995, the IEEE-USA Employment Assistance Committee

gathered valuable information about unemployed members through a survey sent to the more than 3,000 US members who had renewed their membership at the half-price rate. The 22-question survey was part of a package of information on IEEE employment assistance services.

Within two months, 28% (nearly) 900 questionnaires had been completed and returned. A statistical analysis of the responses and a regression analysis of the duration of unemployment produced informative results that will be used by the Committee to direct future programs.

At the time of the survey, six months after their membership renewal, 46% of the respondents reported being employed in some capacity -- 20% were employed full-time as engineers, 15% were employed full-time as other than an engineer, and 11% are either self-employed or employed part-time. Of the remaining 54%, 5% were retired and 48% are still unemployed.

The typical respondent to the employment survey is 51 years of age, has 24 years of experience, holds a graduate degree (57%), and was unemployed an average of 84 weeks. In comparison, the typical respondent of the Salary and Fringe Benefits Survey 1995 was 48 years old, has 21 years of experience and holds a graduate degree (53%). Those Salary Survey respondents who reported being out of work at some time averaged 31 weeks of joblessness. Those who reported being re-employed (in some capacity) were slightly younger -- 47 years of age and 20 years of experience.

Although, at first glance, the age of the unemployed member might seem to indicate some degree of discrimination, the comparison with the 1995 Survey shows that age is not out of line with the average US member. The average employment survey respondent has been out of work for slightly more than 1.5 years; however, the range for this variable is large (from 1 to 1,100 weeks) and the median is closer to 1 year (57 weeks). Ninety-five percent of the respondents were out of work 200 weeks or less. Most reported finding it "very difficult" to get a job.

Most of the respondents (60%) are aware of some portion of IEEE's employment assistance services, but more than 500 requested a packet of more detailed information. And, it is gratifying to know that when asked what IEEE could be doing to help members, 14% said that we were doing a good

job. This was the second most frequent response after "facilitate networking," 19%.

An analysis of industry of previous employment shows that, overall, more respondents worked in the defense and aerospace industries. Following these are computers and electrical/electronics services. And, most of those who remain unemployed were previously in aerospace and defense. Respondents employed in education were more than twice as likely to be working part-time.

Respondents were also asked what they considered to be barriers to re-employment. Overwhelmingly they said age (75%), followed by area of technical competence, decrease in government spending, and the economy.

And, finally, to a question of particular interest to the Committee, more than 40% of the respondents have access to the Internet, and hence to the National Job Listing Service. Even when adjusting for current employment status, 39% of the currently involuntarily unemployed have Internet access.

What affects length of unemployment? A multiple regression analysis of the data on duration of unemployment partially explains why some respondents have been out of work longer than others. This analysis examines what effect a variable such as age has on weeks of joblessness when all other variables are held constant. Age, in particular, has a significant and independent effect on joblessness: for each additional year of age, joblessness increases by two weeks. Having advanced degrees also increases joblessness. For each increase in degree (AA to BA to MA/MBA to MSEE to PhD) duration of unemployment increases six weeks.

On the other hand, respondents with access to the Internet experience 19 fewer weeks of unemployment than those without. The regression analysis also examined the effectiveness of the various job search techniques. Respondents who indicated "networking" as their most effective job search technique experienced 24 fewer weeks of unemployment. And, those who had success with outplacement experienced 22 fewer weeks. Sending out resumes, answering ads, using a headhunter, hiring a private consultant, going to job fairs and using Internet job listings have no independent effect on duration of unemployment.

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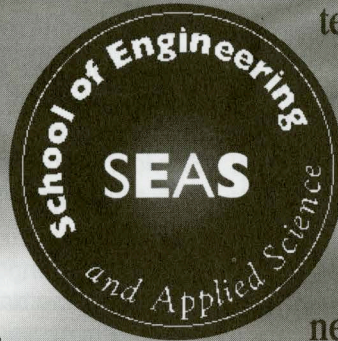
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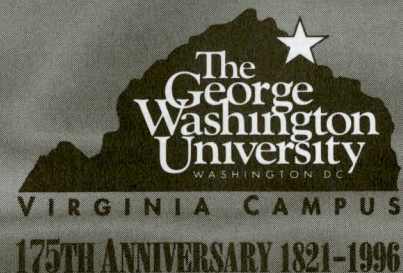
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