



®The Institute of Electrical and Electronics Engineers, Inc.

NATIONAL CAPITAL AREA COUNCIL

SCANNER

February/March 1996

Volume 11, No.1

National Engineers' Week 1996

Plan to attend the presentations,
as well as the luncheon and the banquet this year!

For details see Calendar of Events on page 3,
Diamond Story and Reservation Form on page 6, 15

Special IEEE License Plates for Maryland IEEE Members!

See "Your Local Reporter," page 12

Responses to the "Controversial" Dec '95/Jan '96 Issue

See "Letters-to-the-Editor," page 8

NCAC Annual Awards Banquet

See Ad on page 4

ISSN 0894-0452

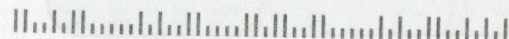
A Joint Publication of the Northern Virginia and Washington Sections

SCANNER

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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.

FEBRUARY 1996

Thu Feb 8 Meetings of NCAC Steering Committee and Northern Virginia Section ADCOMs

Place: Patrick Henry Library, 101 Maple Ave East (Rt 123), Vienna, VA
Time: 7:00 pm
Contact: NCAC Office 703/803-8701, or Rex Klopfenstein, tel 703/883-6862 (O), or 703/323-5789 (H)

Sat Feb 10 Annual Valentine Dinner Party and Meeting

Sponsor: Electromagnetic Compatibility Society (W/NV)
Place: Fort Belvoir Officers Club
Time: 6:30 pm to ?
Contact: Mike Violette 301/417-0220, or Tom Doeppner 703/780-3983, for reservations; cost: \$30 per person

Tue Feb 13 Washington Section ADCOM Meeting

Place: Allee's Pantry Restaurant, Bethesda Marriott Hotel, 5151 Pooks Hill Road, Bethesda, MD. From Beltway take Wisconsin Ave (Rockville Pike) north to Exit 34. Stay in right lane to Rt 355 South, Bethesda. Follow the U-turn to go south on Wisconsin Ave for about 1/4 mile to first t/c 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 NCAC Office, 703/803-8701

Tue Feb 13 ◆ CAD of Microstrip Components Using Electromagnetics

Sponsor: Microwave Theory and Techniques Society (W/NV)
Speaker: Daniel G. Swanson, Jr., Watkins-Johnson Co.

Place: Univ of MD Adult Education Center, University Blvd and Adelphi Road, Adelphi, MD
Time: Cocktails 5:30 pm; Dinner 6:30; Talk 7:30
Contact: For further details and dinner reservations: Ron Hooker, e-mail ronald.j.hooker.1@gssc.nasa.gov, tel 301/286-3216

Thu Feb 15 ◆ Cellular Digital Packet Data (CDPD) System

Sponsor: Communications Society (W/NV)
Speaker: David A. Andersen, Bell Atlantic NYNEX
Place: George Washington University, Academic Center (22nd & I Street NW, Room T-640, EE Dept; one block from GWU/Foggy Bottom METRO Station; Parking across from Academic Center
Time: Lunch (Bring your own brown bag lunch) 11:45 am; Registration 12:00 noon; Presentation 12:15 pm to 1:00
Contact: Bob Hollingshead, 301/464-8900 x238

Wed Feb 21 ◆ National Engineers' Week Luncheon

Sponsor: The District of Columbia Council of Engineering and Architectural Societies (DCEAS)
Speaker: The Honorable Joe Barton, P.E., Representative of Texas, 6th District
Place: Hogate's Restaurant, 800 Water Street SW, Washington DC
Time: Luncheon Buffet/Cash Bar 11:30 am; \$20.00 per person, or \$160 per table of eight.
Contact: Make check out to DCCEAS-NEW'96 and mail with attached registration form to J. Vicente Pedraza, JVP Engineers, 4435 Wisconsin Ave NW, Suite 401, Washington, DC 20016, tel 202/362-3001. RSVP by Feb 12. Parking in garage at discount price.

Sat Feb 24 ◆ National Engineers' Week Banquet

Sponsor: The District of Columbia Council of Engineering and Architectural Societies (DCCEAS)
Speaker: Dr. Joseph Bordogna, Director of Engineering, National Science Foundation, and a Fellow in the IEEE.
Place: Crystal City Marriott Hotel, 1999 Jefferson Davis Highway, Arlington, VA
Time: 6:30 pm; cost \$30.00 per person, or \$300 per table.
Contact: Make check out to DCCEAS-NEW'96 and mail with attached registration form to J. Vicente Pedraza, JVP Engineers, 4435 Wisconsin Ave NW, Suite 401, Washington, DC 20016, tel 202/362-3001. RSVP by Feb 19. Free parking available

MARCH 1996

Tue Mar 5 Washington Section EXCOM Meeting

Place: Allee's Pantry Restaurant, Bethesda Marriott Hotel, 5151 Pooks Hill Road, Bethesda, MD. 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 traffic 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 Mar 7 Meetings of NCAC Steering Committee and Northern Virginia Section ADCOMs

Place: Patrick Henry Library, 101 Maple Ave East (Rt 123), Vienna, VA
Time: 7:00 pm
Contact: NCAC Office 703/803-8701, or Rex Klopfenstein, tel 03\883-6862 (O), or 703/323-5789 (H)

Tue Mar 12 CDMA and the Wireless Local Loop

Sponsor: Microwave Theory and Techniques Society (W/NV)
Place: Univ of MD Adult Education Center, University Blvd and Adelphi Road, Adelphi, MD
Time: Cocktails 5:30 pm; Dinner 6:30; Meeting 7:30
Contact: Ron Hooker, e-mail ronald.j.hooker.1@gssc.nasa.gov or tel 301/286-3216

Tue Mar 12 Washington Section EXCOM Meeting

Place: Allee's Pantry Restaurant, Bethesda Marriott Hotel, 5151 Pooks Hill Road, Bethesda, MD. 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 traffic 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

Sat Mar 16 ◆ Tour of the Electrical Systems in the International Trade Center

Sponsor: Industry Applications Society (W/NV)
Speaker: Bill Regotti, Perini Corporation
Place: International Trade Center, 1300 Pennsylvania Ave, NW Washington, DC (Near Federal Triangle Metro Station)
Contact: Bill Regotti, 202/789-4453, or Ron Aasen, 703//516-1928; Reservations are requested by March 15

Thu Mar 21 ◆ Small Aperture IFF Antenna Array Performance

Sponsor: Antennas and Propagation Society (W/NV)
Place: Comsat Corporation, Multi-Purpose Room, 6560 Rock Spring Drive, Bethesda, MD 20815
Time: 6:30 pm

Thu Mar 21 ◆ Personal Communications Systems

Sponsor: Communications Society (W/NV)
Speaker: Agnes Young, Corporate Representative for Industry Standards at Bell Atlantic
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: Lunch (Bring your own brown-bag) 11:45 am; Registration 12:00 noon; Presentation 12:15 pm to 1:00
Contact: Bob Hollingshead, 301/464-8900 x238

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Thu Mar 21 ♦ European EMC Testing Methods and Requirements

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; \$14) 12:00 noon; Meeting 12:30 pm

Contact: For information and lunch reservations (required), Mike Violette 301/417-0220, or IEEE NCA Office, 703/8701 by COB Mar 20

Sat Mar 23 Wireless Communications Workshop

Sponsor: Microwave Theory and Techniques Society (W/NV)

Place: Electronics Museum, Linthicum, MD

Time: Workshop will start at 9:00 am

Contact: For directions, reservations, and other information, e-mail ronald.j.hooker.1@gssc.nasa.gov or call 301/286-3216.

APRIL 1996

Mon Apr 1- ♦ Defense Systems Integration: Methodology and Effects Analysis

Sponsor: George Washington University Continuing Education Program (See also ad on back page)

Instructors: (See Diamond Story)

Place: Washington, DC Metropolitan Area

Time: 8:30 am to 4:15 pm
Contact: Monique Wilson, 202/994-9367

Tue Apr 9 Advanced Antenna Technology

Sponsor: Microwave Theory and Techniques Society (W/NV)

Speakers: Dr. K.V.S. Rao, IBM, and Dr. P. Wahi, Antenna Research Association

Place: Univ of MD Adult Education Center, University Blvd & Adelphi Road, Adelphi, MD

Time: Cocktails 5:30 pm; Meal 6:30; Meeting 7:30

Contact: E-mail ronald.j.hooker.1@gssc.nasa.gov or tel 301/286-3216

MAY 1996

Mon May 6- ♦ ATM-Based Enterprise Networking and

Wed May 8 Inter-networking
(For further details, see GWU entry for Apr 1-5)

Mon May 20- "Hysteresis Modeling and Micromagnetism"

Wed May 22 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

IEEE National Capital Area Council

Annual Awards Banquet

6:30 pm to 9:30 pm
Saturday April 28, 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		\$_____	

Make checks payable to "IEEE NCAC Banquet" and mail to
Rex Klopfenstein, Banquet Chairman
4224 Worcester Drive
FAIRFAX VA 22032-1140

Mail your reservation form as soon as possible, but no later than **April 20, 1996**

For table reservations, please attach a list of attendees and your Group Name (e.g. Computer Society) if applicable.

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The next cohort begins in September and meets one day a week on alternating Fridays and Saturdays through mid-May, 1997. Class size is limited, so please don't delay. Application deadline: June 1, 1996.

ATTEND A BRIEFING

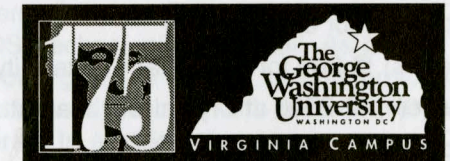
Accelerated Telecommunications & Computers
Wednesday, February 28, 1996 6-8 pm

OR

Graduate Engineering, Computer Science, and Engineering Management Programs
Wednesday, March 27, 1996 6-8 pm

To RSVP or get more information contact

Kathy Sauer at:
(703) 729-8250 (VA)
(703) 478-8980 ext. 8250 (Metro)
(703) 729-8251 (Fax)



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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.

CAD of Microstrip Components Using Electromagnetics

(See Calendar of Events, Tuesday, Feb 13)

The talk will begin with a survey of the available electromagnetic solvers and guidelines for choosing the "best" tool. Simple microstrip structures will be used to introduce basic field solver, visualization concepts, and discontinuity problems. Several filter design case histories will show the use of the tools. The talk will conclude with a discussion of future CAD tool developments.

Mr. Swanson is a staff scientist at Watkins-Johnson Co, Palo Alto, CA, where he is designing thin-film filters and other microwave components using electromagnetic field solvers. He is a graduate of the Univ. of Illinois and the Univ. of Michigan. He is a Senior Member of the IEEE, where he is currently Treasurer of the MTT-S ADCOM.

This is the fifth lecture in the MTT Course entitled "Microwave Systems for the 21st Century." All interested parties are invited to attend.

Cellular Digital Packet Data (CDPD) System

(See Calendar of Events, Thursday, Feb 15)

Cellular telephone service has been the fastest-growing segment of the mobile communications industry, and a leading technology for mobile data growth. To date, cellular carriers are offering primarily two methods of sending data over the cellular airwaves: circuit-switched cellular data over analog networks, and Cellular Digital Packet Data (CDPD).

CDPD is the airlink protocol that assures that packet data sent from a Mobile Unit is reliably transported to a landline network. In its most basic form, CDPD can be used as a wireless extension of any existing TCP/IP network. This presentation will describe the overall architecture from the

remote unit to the host, discuss several promising applications, and display some CDPD user equipment.

David Anderson has over 15 years experience in RF communications. He spent 20 years in communications with the United States Coast Guard. Before coming to Bell Atlantic NYNEX Mobile in 1993, David was Presidential Communications Officer at the White House Communications Agency. He holds a BS degree from the US Coast Guard Academy, and an MSEE from the US Naval Postgraduate School.

National Engineers Week Luncheon and Banquet

(See Calendar of Events, Feb 21 & 24, respectively)

Join DCCEAS and the IEEE in celebrating National Engineers Week, a time to reflect upon our contributions towards making the world a better place to live. Through our practices and application of engineering, all of us have played an important part in the development of our community — and for this we should feel proud. The intent of NEW'96, in addition to honoring outstanding engineers and engineering students for their achievements, is to dedicate time for the promotion of engineering among pre-college students and adults who want to embrace one of the most rewarding and satisfying professions.

As citizens we are appalled by the problems that face our communities; as engineers we are compelled to solve them. Whether it is cleaning the environment, developing alternative sources of energy, or protecting mankind from hazardous conditions, all of us have a moral obligation to improve our communities. The dedication of skilled and well-trained engineers to achieve these goals is recognized and appreciated during National Engineers Week.

Our banquet speaker will be Dr. Joseph Bordogna, an IEEE Fellow.

Tour of the Electrical Systems in the International Trade Center

(See Calendar of Events, Saturday, Mar 16)

The Ronald Reagan International Trade Center is the largest federal office building in Washington. It consists of 3 million square feet of office space on an 11-acre site. Construction started in 1989, and the project is scheduled for completion in 1997. This building, designed by I.M. Pei, is the last property to be developed by the Pennsylvania Avenue Development Corporation.

The Center has state-of-the-art electrical systems, including 9 substations, 4 standby generators, 85 elevators, 8 escalators, as well as climate control and emergency monitoring systems.

DCCEAS National Engineers' Week 1996

Please reserve:

___ luncheon seat(s) @ \$20 for Feb 21 at Hogate's \$ _____
 ___ luncheon table(s) for eight at \$160 \$ _____
 ___ banquet seat(s) @ \$30 for Feb 24 at Crystal City M \$ _____
 ___ banquet table(s) @ \$300 at Crystal City Marriott \$ _____
 Total Enclosed \$ _____

Name _____ Society Affiliation _____

Address _____

Tel Work _____ Home _____

(Please print name of each person for whom a reservation is being made; use additional sheets if needed)

Bill Regotti has a BSEE from the University of Maryland, and is a registered P.E. in DC, NJ, and MD. He is an Electrical Engineer with Perini Corporation, the Construction Manager of this project since the project's start.

Small Aperture IFF Antenna Array Performance A Technical Seminar

(See Calendar of Events, Thursday, Mar 21)

COMSAT RSI (CRSI) has over a decade of experience in providing reliable, high-performance Air Traffic Control antennas to the FAA and other customers throughout the world. This talk will summarize the performance of some of the existing antennas currently in production used for Air Traffic Control and as navigation aids. In addition, the use of new weatherproof encapsulation technology on the new small-aperture IFF antenna and a recently designed high-gain version will be addressed. The improved performance of the new small-aperture IFF antenna over similar existing antennas will be described, and a comparison to measured data will be given.

Personal Communications Systems

(See Calendar of Events, Thursday, Mar 21)

Since the completion of the air-interface standards, all major PCS providers have made their selections as to the technology they will utilize. The talk will summarize all the PCS standards recently completed in Committees T1 and T1A and address future work for the PCS standards industry. It will also cover all major PCS providers in the United States, their chosen technologies, and vendor selections.

European EMC Testing Methods and Requirements

(See Calendar of Events, Thursday, Mar 21)

The European Union has adopted widely-reaching EMC requirements for all electrical apparatus to be placed on the European Market. The ensuing EMC Directive, as it is called, affects manufacturers of everything from toasters to satellite earth station equipment. The new requirements mandate stringent emissions and immunity (susceptibility) performance requirements of electrical and electronics equipment, forcing many equipment designers to rethink their approach to EMC design.

This meeting of the EMC Chapter will focus on the tools and techniques required to meet the demands of the regulation. The presentation will cover open field radiated emissions testing, conducted emissions testing, and radiated, transient and surge immunity testing.

Michael F. Violette, a PE, IEEE member, and vice chairman of the W/NV EMC Chapter, manages Washington Laboratories, Ltd., a compliance testing and engineering laboratory in Gaithersburg, MD. Washington Laboratories has been performing EMC testing to FCC and international specifications for the past six years, and has tested over 3,000 products during that time.

Defense Systems Integration: Methodology and Effects Analysis

(See Calendar of Events, Monday, Apr 1 to Friday, Apr 5)

Methods for systems integration and systems effectiveness must keep current with the demands for system performance, design complexity, and affordability. Systems integration and evaluation may be performed at any particular level; therefore systems designers, integrators, and managers must improve systems performance, while working within the constraints of limited resources, schedules, and often inadequate test data.

This course draws from a number of technical and managerial disciplines to synthesize the ideas and techniques needed to develop effective hardware and organizational systems. Three principal applications of systems effectiveness are highlighted. For both hardware and software systems, their reliability, adequacy of design, and readiness provide the framework for measuring effectiveness. Guided weapons systems illustrate methods for measuring system effectiveness. The course examines measures of adequacy (MOA), and uses measures of performance (MOP) to examine each subsystem. The trade-offs between developing new systems and improving existing ones are explored. Measures of organizational effectiveness, such as technical, interactional, and managerial (TIM) activities, are also examined. A workshop allows participants to apply system integration, partitioning, and analysis tools to the design of a complex system.

Instructor: Abdul Habayeb, Ph.D.; Course 1535; Fee \$1,295

ATM-Based Enterprise Networking and Internetworking

(See Calendar of Events, Monday, May 6 to Wed, May 8)

Designing and implementing enterprise-wide networks that support the entire organization are critical to business success in the 90s. Asynchronous transfer mode (ATM) is a central protocol in corporate network environments. ATM at local and wide-area levels is revolutionizing the telecommunications infrastructure by transmitting integrated voice, data, and video at very high speed.

This course provides an in-depth look at the technical and business aspects of ATM-based networking and internetworking technologies for local and wide-area networks (LANs and WANs). The course also focuses on ATM inter-networking, i.e., how ATM works with existing LAN (Ethernet, Token Ring, FDDI) and WAN (frame, relay, SMDS) technologies, in detail. As part of the ATM inter-networking the running of multiple protocols over ATM in general, and inter-network protocol (IP) in particular, is covered. In addition, the course covers ATM congestion control mechanisms, ATM signaling and routing protocols, network management, network security, and tariff trends and issues as they apply to ATM. The steps necessary in migrating from an existing LAN/WAN to an ATM-based networking environment are discussed.

Instructor: Abbas Masnavi, Ph.D. Course 1911; Fee \$975

LETTERS TO THE EDITOR

(All "Letters to the Editor" in this issue refer to the "Editor's Corner" in the Dec '95/Jan '96 Issue of the SCANNER. They are listed here in the order in which they were received)

Dear Tom:

How refreshing it was to pick up the Dec/Jan issue of the SCANNER and find the thought-provoking article by Editor-in-Chief Tom Doeppner, supplementing the dry (but necessary) calendar-of-events, diamond stories, chairmen's messages, etc., which is the usual fare. Hopefully this article may prove to be the spark that will ignite a long overdue process: IEEE engineers looking beyond their narrow disciplines at the world around them, and the long-term effects of others' actions on the public in general and on us in particular.

Hopefully, future issues of the SCANNER may have a "FORUM" section where our members can set forth and discuss their views, much like a "town meeting," and, again hopefully, come up with suggestions leading to workable solutions to our common problems. Among these problems are:

- A drastic reduction in our investments in basic applied research and technology; education; health & welfare (especially for veterans and the aged); the environment (water, air, chemicals, trees, etc.).

- The resulting loss of world leadership, respect, admiration and esteem in which other nations hold us.

- The loss of well-paying manufacturing jobs, know-how, and manufacturing capacity (245,000 from Mar to Dec '95 alone) to the service sector (flipping hamburgers for \$5.00 an hour).

- A tax cut of any size to any one at a time when 14 cents of every dollar goes to paying interest on our national debt.

- A repeat of the horrendous mistakes of the early 1980s, when in four short years we quadrupled our national debt and went from the world's biggest creditor nation to the world's biggest debtor nation.

There are over 16,000 IEEE members who receive the SCANNER; Let's start thinking and discussing our views in its pages!

Alvin Reiner

IEEE Life Senior Member

Washington Section Chairman 1974-1976

To the Editor, IEEE National Capital Area Scanner

Since you decided on political propaganda for the December/January Scanner theme, a response is in order. Let us hope the IEEE is not under contract to the Democratic National Committee. Your concept of government, let alone a single legislator, acting as "Scrooge" or "Santa Claus" to everyone's

personal welfare program is an idea long past its prime. Even if I benefit, government can't "give" me anything it didn't take from me or someone else to begin with. Americans at all income levels have spent a number of decades learning how to vote themselves a living from each other's paychecks, and for a while it seemed to work. Now, to paraphrase Pogo Possum, we have met the payroll department, and he is us, and we are broke. What will it take for people to realize this? By 2012, 100% of every federal tax dollar will go for debt service and entitlements.

I am not worried about Speaker Gingrich's fate. He didn't get to be Speaker by being stupid, and the voters of his district can render their own verdict next election. If needed, there are plenty of replacements: across America, 162 Democratic politicians have switched to the GOP since 1992, and zero Republicans have gone the other way, so the Contract With America is not going away anytime soon. As to the "Scrooge" role, the Clinton administration points with pride to the extensive government downsizing they've accomplished. Government intervention led by Vice President Gore has clobbered plenty of jobs held by IEEE members, almost exclusively in the defense area. I don't recall any Scanner editorials singling out President Clinton for these one-sided cutbacks since 1992.

Some final points: a budget "cut" in Beltway-speak is rarely a true cut, but a reduction in future increases relative to someone's wish-list number. At the minimum, obsolete and redundant government agencies need to get reinvented out

of existence; they don't dissolve themselves out of a sense of civic duty. In the private sector, job turmoil and downsizing are currently the norm, and this is the sector that pays the bills for government jobs. Tax rate cuts have led to tax revenue increases, coming largely from the wealthiest taxpayers who get less incentive to shelter their income (it worked for JFK and RWR, maybe WJC should give it a try). And with all due respect to Tang, Teflon, and GoreTex, which may or may not have been invented without defense and space program inputs, there is nothing sacred about the size and configuration of government agencies that merits their protection from financial realities familiar to us all.

David Lucas

Manassas VA

Dear Tom:

With regard to the editorial in the Dec/Jan SCANNER issue concerning support of R&D activities with Government funds, let me try to present another position.

As I understand the period between the two World Wars: until the rise of authoritarian governments, research in Europe was supported mainly within institutions of higher learning and funded by monies made available to specific individuals. In the U.S., individuals at many universities were also funded through their own departments. Vannevar Bush, and others who later formed the cadre of technologists

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working on defense issues during the war did not begin to receive government funding until there was clear vision by the government that war was probably inevitable and it was time to turn the accumulated technical knowledge held within universities and by individuals to applications which served the war effort...

At the same time, product R&D and product improvement activities were financed privately...

During the period between the end of the first World War and the rearmament activities which started with the rise of Hitler in Germany and Mussolini in Italy, government funding for R&D was provided mainly to government laboratories, arsenals, and factories...

When World War II ended, there were strenuous efforts to return to private support for R&D with government support only when the need for large production quantities of war material could be clearly foreseen that the paradigm shifted to permit provision of government monies to establish, equip, and operate facilities for war production. Instead, a new paradigm was developed which essentially continued the practice of World War II -- government direct funding of R&D and product improvements through private organizations...

If one believes that today's capability to reach large numbers of citizens with reports of the latest issues and problems in expending government funds makes it more difficult to hide "fraud, waste, and abuse" in performance of government contracts, it may also be alleged that the same capability encourages a very short-time view of progress and worth of work performed. It is not only the expense of large scale undertakings (such as the Super-Collider) which is daunting, it is also the requirement that there be long-term commitment to the project (e.g., the Space Station) during a period when many other national economic problems arise which are said to need immediate address.

Therefore, I believe the current paradigm is in great need of change. One potential substitute for providing government funding directly is to encourage private provision of funds through government tax incentives and by changing the accounting models which apply to investment in a technology development program. While I do not recommend adopting any other nation's model, I do think there may be inherent useful ideas in the continued off-shore successes of U.S. companies finding "patient capital" -- money provided by investors who are less concerned with the short-term prospects than with technology which provides future product lines which can create and capture new markets. Today, funds expended for increasing knowledge are considered to be lost and the knowledge itself has no recognized value. Such accounting models and tax practices which treat everything in the short term rarely provide incentive for investment in "state-of-the-art" activities which may pay off in five to ten years.

I do not know whether the Speaker of the House of Representatives can be characterized as either of the two "characters" you cited in your editorial. I believe he is trying

to change the current paradigm (for whatever purposes.) Clearly, I believe it is time for a paradigm change; and regardless of the motives which drive the effort, I think the result of the current debate will be positive. The inventions which change the world, and which provide economic health to nations, are not necessarily those which provide spectacular results in the short term!

Dr. Henry C. Alberts

(Editor's Note: Because of space constraints, Dr. Alberts' article has been abridged. IEEE readers interested in reading the complete article should call me for a copy. TWD)

Mr. Tom Doepfner, Editor
Scanner Magazine
Dear Mr. Doepfner:

I have received the Scanner for a number of years and found it to be enjoyable and informative. My view of the magazine enhanced my reaction to your editorial in the December issue.

I feel that it is a great disservice to The Scanner and to the members of the IEEE to make this magazine into a partisan political propaganda outlet. The editorial could have easily been written with much the same content, but without the political comment. The cover is hopeless.

As a final comment, although cuts are deplorable, it is far from clear whether or not they are necessary and what the ultimate impact will be of making or not making them.

Sincerely,
Dr. Clarence I. Jones
Consulting Engineer

Dear Tom:

Thank you for your note and the copy of your latest NATIONAL CAPITAL AREA COUNCIL SCANNER. It is a first-rate publication!

Especially, I like your Editor's Corner "The Impact of 'Newt' on our Institute." You certainly lay out all the facts and give your members a lot to think about. I hope your editorial finds its way to be brought to the attention of our Congressional leaders...

John H. Morrison, Jr.
Brig. Gen., USA-Ret.

The cover story on Newt Gingrich was very informative and provides an insight that brings a new dimension to what is understood as the intent of the GOP Congress, that is to conceivably undermine the Government efforts in technology. While the records speak for themselves and it does give some reason to believe that the Congress is downplaying the research and development investments of the Government in technology, this also seems to be at large the result from indiscriminate cuts in all sectors of Government spending. As you noted this has the effect of direct impact on the number of engineers employed in the

US Government. In one respect the Government has long been a large employer of engineers and has competed with private industry for engineers graduating from colleges. Industry projections for hiring engineers has been light for the past several years. The number of engineers graduating from U.S. colleges is at a ten-year low.

Hopefully, the Government will continue to be an important partner with industry and colleges in the research and development of technology, and the creation of engineering and employment opportunities will not totally disappear. Those at all levels of their engineering careers can expect to have to keep their skills sharp if they want to stay in a competitive position. The IEEE continuing education programs can be an important factor in that decision.

Jerry Gibbon
U.S. Dept of Commerce

Editor's Note: I am delighted with the breadth of responses received to my editorial in the Dec/Jan issue. Al Reiner suggested in his letter that the SCANNER provide a "Forum" for IEEE members to express their views on controversial subjects (such as this one) affecting our members. I submit that this "Letters-to-the-Editor" department constitutes such a forum, as evidenced by the published responses.

Please continue to use this forum to voice your approvals and/or disapprovals with the contents of the SCANNER. TWD.)

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Special License Plates for IEEE Members!

The Baltimore Section of the IEEE has negotiated an arrangement with the Maryland Department of Motor Vehicles to create a special license plate with the IEEE name and logo. This license plate may be displayed on passenger cars, multi-purpose vehicles motor homes, sport utility vehicles and trucks up to 10,000 pounds gross vehicle weight.

If you are a resident of Maryland and interested in obtaining one of these plates, please do the following:

1. Send a check for \$20.00 to "IEEE, Baltimore Section;" include your IEEE member number on the check.
2. Provide your current Maryland plate number and the name or names as they appear on the registration.
3. Send this information to Tom Patton, 10508 Long Branch Road, Cockeysville, MD 21030.

(This information was provided to us by Ron Aasen, Vice Chairman of the IEEE Washington Section.)

IEEE-USA Announces 1996 Government Fellows

IEEE members Ivan Kaminow, Subrata Ghoshroy and James Dennison have accepted 1996 IEEE-USA Government Fellowships. IEEE-USA's Government Fellows program places senior-level engineers on congressional and federal staffs and brings technical and industry expertise into the policy-making process. The American Society of Association Executives (ASAE) recently awarded the program its "Associations Advance America Award for Excellence."

Kaminow and Ghoshroy are participating in IEEE-USA's Congressional Fellowship Program, founded in 1973 to place qualified volunteers for one-year terms on the staff of interested Members of Congress or congressional committees. Kaminow will work with Rep. George E. Brown, D-Calif., and the House Science Committee. Ghoshroy will handle arms control and defense technology issues for Rep. Lee Hamilton, D-Ind., and the House International Relations Committee.

With more than 40 years of experience at AT&T Bell Laboratories, Kaminow has headed the Labs' broadband networks research department since 1984. He is an IEEE Life Fellow, and has been active on many of the Institute's boards and committees and associated with its periodicals. Kaminow has published more than 210 papers and holds 42 patents. He resides in Holmdel, N.J.

Subrata Ghoshroy, a resident of Jamaica Plain, Mass., is a senior engineer at Textron Defense Systems in Wilmington, Mass. Since 1990, he has been responsible for developing lasers for remote sensing. Ghoshroy has more than 20 years of experience at two national laboratories and in industry. His articles on defense conversion in New England

and U.S. science and technology policy in the post-cold war period have recently appeared in THE INSTITUTE.

1996 IEEE-USA Executive Fellow James Dennison, a resident of Assaquah, Wash., was vice president of engineering for Information Optics Corporation and a career engineer and manager with IBM. He will work with Under Secretary of Commerce for Technology Mary Good at the Department's Technology Administration on U.S. manufacturing-technology policy.

IEEE-USA is seeking applicants for two Congressional Fellowships for the 1997 term. Further information and application kits can be obtained by contacting IEEE-USA's Chris J. Brantley at (202) 785-0017, ext. 303 (phone); (202) 785-0835 (fax); or <c.brantley@ieee.org> (e-mail). Applications must be postmarked no later than March 31, 1996. Fellowship materials are also available via the Internet by sending an e-mail request (no subject line or

text required) to <info.ieeeusa.congfel@ieee.org>. An information file will be automatically returned to your Internet address.

1996 Member-Get-A-Member Campaign

There is no denying it -- the best person to recruit a new member to the IEEE is YOU! To encourage your active participation, the IEEE has launched its 1996 Member-Get-A-Member campaign. Follow a few simple rules (see below) and not only will you strengthen the IEEE, but your Section will benefit from new, vital membership while increasing your Section Rebate at the same time. (Each new member recruited before December 31, 1996 increases your Section's 1996 Rebate by \$3).

What are the rules? It's simple: Have your "recruit" fill out an application, fill in the "Member Recruiter" box. (On the regular application, this appears on the back.) You may also wish to endorse your colleague's application. The campaign extends through the 1996 dues year. (August 31, 1996). Full payment must accompany the application. (No "bill-me's" or two-part payments). Only first-time applications qualify. (No renewals, reinstatements, existing members or student members, and only an active IEEE member can be a recruiter.) Your name must be on the application form when it is received at Headquarters.

When the application and payment arrive here in Piscataway, several things will happen: Your colleague's application will be acknowledged and member service will have begun. You'll get a "thank you" from us. A record of your recruiting activity will be maintained to ensure your eligibility for incentive prizes.

What's in it for you? Well, of course, there's the satisfaction of knowing you are a partner in the future health of the IEEE and the electrotechnology profession. In addition, you are sharing with a colleague the opportunity to be part of the

world's largest professional, technical society. Want something more concrete? Done. On August 31, 1996, we will automatically add up the number of members recruited and you will get a special thank you!

Recruit one or two members and you'll get an IEEE logo pen. Boost the membership by three or four new members and we'll send you an IEEE logo pocket knife. But, for service above and beyond the call of duty (5 or more new members), a gorgeous IEEE logo golf umbrella will be winging its way to you -- to shelter you from the rain in the same way IEEE's member benefits shelter you from the cold, hard professional world.

Give it a try!! You're doing yourself, your Section and your profession (not to mention that new member) a favor! For more information about the MGM program, including "Six Great Reasons to Join the IEEE" and "Ten Tips for Recruiting New Members," contact Steve Wolfe, Director of Membership.

(Prepared by Gail Leeman, email gleeman@rab.ieee.org 1996 MEMBER-GET-A-MEMBER CAMPAIGN)

IEEE Offers Free Technical Source Guide

The IEEE now provides multi-disciplinary scientific and engineering sources on a wide range of technical topics.

Designed as a handy resource for journalists, the IEEE 1996 Technical Experts Guide includes more than 500 topics related to electrical and electronics engineering and computer science.

The 40-page guide has an alphabetized list of entries and contact information for IEEE experts and others in industry, government

and academia who are qualified to answer questions or make referrals for a particular subject area.

For a complimentary copy of the IEEE 1996 Technical Experts Guide contact Marsha Longshore at 908-562-6824 (voice), 908-981-9511 (fax) or m.longshore@ieee.org (e-mail).

Become a Professional Engineer

You, yes you, should become a Professional Engineer. Becoming a P.E. will enhance your professional reputation among your peers and aid your advancement at work.

Many state laws require that you be registered as a Professional Engineer in order to advertise your services as an engineer. The P.E. is essential for becoming a consultant and serving as an expert witness in court. Many power utilities require their engineers to be P.E.s.

Engineering registration within a state is handled by each state's board of registration. These independent licensing boards comprise the National Council of Examiners for Engineering and Surveying (NCEES). The exact registration rules vary from state to state. However, 4 steps are generally

required:

1. Graduation from an ABET accredited four-year engineering program. Often, states will accept candidates with no engineering degree, but with more years of professional experience required than from candidates with an ABET degree.
2. Passing the "Engineer-in-Training" (EIT) exam.
3. Completion of four years of acceptable engineering experience.
4. Passing the "Principles and Practice of Engineering (PE)" examination.

In 1996 the F.E. will be given on Saturday April 20 and Saturday October 26, while the P.E. will be given on Friday April 19 and Friday October 25.

To begin the registration process contact your local registration board. The 3 local registration boards are:

District of Columbia:

Board of Registration for Professional Engineers, 614 H Street, N.W., Room 92, Washington, D.C. 20001, Tel: (202) 727-7454, Fax: (202) 727-8030

Maryland:

State Board of Registration for Professional Engineers 501 St. Paul Place, Room 902, Baltimore, Maryland 21202 Tel: (410) 333-6322, Fax: (410) 333-6314

Virginia:

Board of Architects, Professional Engineers, Land Surveyors, and Landscape Architects, Department of Professional & Occupational Regulation, 3600 West Broad Street, Richmond, Virginia 23230-4917, Tel: (804) 367-8514, Fax: (804) 367-2475

For exam study guides contact: National Council of Examiners for Engineering and Surveying, 280 Seneca Creek Road, Attn: Publications Department, P.O. Box 1686, Clemson, South Carolina 29633-1686, Tel: (803) 654-6824 ext. 233, Fax: (803) 654-6966

For further information contact William Gandler, 118 Monroe Street #1203, Rockville, Maryland 20850 tel: W: 301-496-9345; H: 301-762-4965; FAX: 301-402-2867

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

PACE CORNER

[This Department provides information on the activities of the Sections' or Council's "Professional Activities for Engineers" (PACE) Committees]

Precollege Education in the National Capital Area

Numerous recent surveys and studies have indicated that the most urgent problem facing the public is the need for improving the quality of precollege education, with emphasis on science, mathematics and technology education. There is now an increased awareness by the public that business and industry require a technologically literate workforce. This need has been recognized at the federal, state and local levels by the establishment of new programs and increased funding in support of this goal.

Last year, the American Association of Engineering Societies (AAES) recognized the need for the engineering profession to become involved by establishing the Engineers' Precollege Education Council (EPEC). As a coordinating body representing more than 800,000 engineers, EPEC supports K-12 science, mathematics and technology education in the United States. The EPEC seeks to enhance literacy in these areas and increase awareness of the engineering profession.

AAES is a multi-disciplinary organization of engineering societies dedicated to advancing the knowledge, understanding and practice of engineering in the public interest. AAES member societies represent the mainstream of U.S. engineering, with members in industry, government and education. The IEEE, with over 230,000 U.S. members, provides significant support to the AAES.

Locally, since 1955 the IEEE Washington Section, and later also the Northern Virginia Section, have participated in programs in support of precollege science and mathematics education in the Washington DC Metropolitan area. The programs have been established and implemented by the Joint Board on Science and Engineering Education (JBSEE), which was established by the Washington Academy of Sciences (WAS) and the District of Columbia Council of Engineering and Architectural Societies (DCCEAS). The local IEEE sections, with their 15,000 members, are members of both the WAS and the DCCEAS, which jointly include over 70 societies with a combined membership of over 60,000 engineers, scientists, and architects. The DCCEAS is also a regional society member of the AAES, and is represented on the EPEC.

The JBSEE includes 18 delegates appointed by the WAS and the DCCEAS from their member societies to three-year rotating terms. The major programs of the JBSEE have been in support of science and mathematics education in public, private and parochial secondary schools. These include over 400 secondary schools in 17 school districts in the National Capital Area. Over the years, the JBSEE and member society programs have included:

1. Preparing and distributing an annual directory listing key educators in the 17 school systems, the JBSEE members, and JBSEE contacts with each of the secondary schools.
2. Providing members to act as judges for school system and regional science and engineering fairs.
3. Conducting an annual awards banquet to recognize outstanding science and mathematics student winners, local

winners in the national science talent search competition, and outstanding local science and mathematics teachers.

4. Conducting training programs for teachers, such as the Science Educators Day sponsored by the IEEE Washington Section, the IEEE Lasers and Electro-Optics Society Chapter, the Prince George's County School System, the Army Material Laboratory, and the University of Maryland.
5. Conducting post-calculus seminars for selected high school students in Virginia, sponsored by the IEEE Northern Virginia Section.
6. Participating in conferences sponsored by the Virginia Department of Education and state science and mathematics teacher organizations to promote engineer involvement in their programs, and to provide information on precollege programs supported by engineering organizations.
7. Conducting the local MATHCOUNTS competition of the National Society of Professional Engineers (NSPE).
8. Promoting the Junior Engineering Technical Society (JETS) program supported by the NSPE and member societies of the AAES.
9. Participating in the "Discover E" program which is a part of the annual observance of National Engineers Week and includes visits by engineers to local schools where they make presentations on engineering topics.

The goals of EPEC include many of the programs which are already being accomplished in the National Capital Area. One program is to recognize the 24 local alliances which are currently operating nationally, including the JBSEE which was the first such alliance to be established. Other programs and activities include:

- a. Established the organization of EPEC, which currently includes over 50 members representing the member societies of AAES, other scientific and engineering societies, educational organizations, and national alliances.
- b. Participated in a review of the National Research Council's draft National Science Education Standards.
- c. Produced a "Volunteers Guide for Engineers in Support of Educators" which includes valuable resource material for engineers interested in supporting precollege education programs.
- d. Produced an Education Bulletin for distribution to EPEC member organizations containing information regarding accomplishments and future plans of EPEC and other organizations in support of EPEC's objectives.

In the National Capital Area, IEEE members have a unique capability and responsibility for participating in this new program and build on past successes. The primary new effort will be to expand activities into the 1,200 elementary schools in the area.

Your involvement in any of these activities is important! For further information, please contact me at the following address: James F. (Jim) Strother, P.O. Box 3296, Alexandria, VA 22302, or by telephone: 703/751-6186, fax 703/741-6869, or e-mail j.strother@ieee.org.

Jim Strother
Chairman, NCAC Professional Activities Committee

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]

"On-Line" Possible for Airline Passengers

Recent trials have demonstrated the ability to transmit personal computer data over satellite links using the Inmarsat satellite system. Results are being supplied to Inmarsat for further analysis. The effort included transferring files from one personal computer to another and sending e-mail over the satellite link to CompuServe, a commercial on-line information service. A team from Honeywell/Racal SATCOM routed the messages via an Inmarsat satellite to the British Telecom ground station in Goonhilly, England, simulating a typical operational scenario.

This capability opens up a long-awaited area of satellite communications benefits, including the potential for passengers onboard aircraft to carry out most of the functions of a typical business office.

Bloodhound of Chemical Warfare

Alerting our troops to chemical-weapon attacks, an ultrasensitive toxin detector may soon fly aboard an unmanned air vehicle. No bigger than a shoebox, the "Surface Acoustic Wave Chemical Agent Detector" (SAWCAT) can sniff out particles numbering only a few parts per trillion. The Naval Research Laboratory led in the development of the device.

SAWCAT features an array of piezoelectric surfaces thinly coated

with different polymers, each engineered to bond with a particular chemical agent. When a toxic agent contacts the coating, it disrupts an acoustic wave that is constantly beamed across the surface. The disruption has a characteristic signature that reveals the type and amount of toxic encountered.

Rockets on a Four-Poster

It's been a rough year for new rockets. Lockheed's LLV-1 failed in August. The Pegasus XL failed — for the second time — last June. Last August, the Conestoga never even made it off the launch pad. All were billed as key steps toward inexpensive access to space.

Nevertheless, Kistler Aerospace Corp. hopes to buck the trend with a radical plan to build a fully reusable 2-stage launch system. The company has tapped Bert Rutan's Scaled Composites to fabricate a proof-of-concept demonstrator called the K-O.

The Kistler design calls for a rocket-powered launch-assist platform — a "flying bedstead" — to hoist the overall system to a medium altitude. A conical delivery vehicle would then blast from the platform, complete the trip to orbit and release its payload — a satellite weighing up to 5,000 pounds. Subsequently, both platform and delivery vehicle would fire rocket engines to make separate powered touchdowns, the latter coming down on a soft landing pad.

Kistler hopes to loft the K-O in early 1996, staging test flights in Mojave, California.

DCCEAS

National Engineers' Week 1996

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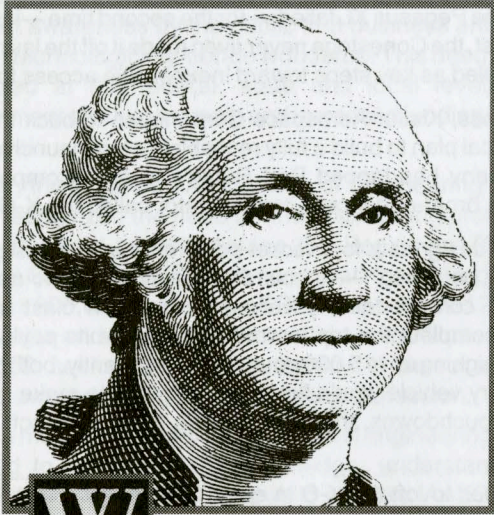
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