



®The Institute of Electrical and Electronics Engineers, Inc.

NATIONAL CAPITAL AREA COUNCIL

SCANNER

September 1996

Volume 11, No. 4

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ISSN 0894-0452

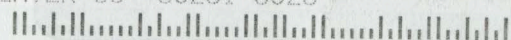
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SCANNER

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SCANNER EDITORIAL STAFF

Editor-in-Chief Tom Doepner 8323 Orange Court Alexandria, VA 22309 703/780-3983 Fax: 703/799-9084	Associate Editor Jim Strother P.O. Box 3296 Alexandria, VA 22302 703/751-6186 Fax: 703/751-6869	Advertising Manager Charles W. True III TruTech Labs Corp 8200 Greensboro Dr, Suite 130 McLean, VA 22102 Tel: 703/448-7622 Fax: 703/448-9680	Business Manager Jackie Hunter 703/803-8701 Fax 703/222-3208 Chantilly, VA 20153 PO Box 220521
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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—though 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 of 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, which follows the Calendar of Events. Articles for the Diamond Stories should be limited to 200 words; they should include a synopsis of the talk or event, and a biosketch of the speaker(s), which lists, if available, academic background, current position, and IEEE as well as other professional societies membership(s), if any.

All announcements, diamond stories, and other material to be printed in an issue of the SCANNER must be sent, faxed, or e-mailed 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.

Tue Sep 3 ♦ Brochure Design for your Consulting Business

Sponsor: NCAC PACE Consulting Network (W/NV)
Place: Dinner: Sir Walter Raleigh Restaurant, Falls Church, VA; Meeting: Virginia Tech @ Falls Church, I-495 to Rte 50 West. 1st exit to Gallows Rd/Rte 650. 2nd t/c light right onto Gatehouse Rd. Restaurant is on left; VA Tech is down the road—first left onto Telearstar Ct.
Time: Dinner 5:30 pm; Meeting 8:00
Contact: For further details and/or reservations call 301/464-4693 or 301/924-2610 by noon Mon Sep 2

Tue Sep 10 Joint Meeting, NCAC CSC and Washington Section EXCOM

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 Wis-

consin 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 pm; Meeting 7:00 to 9:00
Contact: NCA Office, 780/803-8701

Tue Sep 17 Procurement Status of MARC Bi-Level Passenger Cars

Sponsor: Vehicular Technology Chapter, Land Transportation Committee
Place: University Club, George Washington University, Marvin Center, 3d Floor, 800 21st Street, NW Washington, DC
Time: Lunch (\$17.00) 11:30 am; Meeting 12:30 pm
Contact: For luncheon reservations: Lou Sanders, 202/898-4086 or Tom Guins, 202/639-2259

IEEE National Capital Area Council SCANNER is published six (6) times a year: bi-monthly Feb/Mar, Apr/May, Oct/Nov, Dec/Jan; monthly in Sep, and tri-monthly Jun/Jul/Aug by The Institute of Electrical and Electronics Engineers, Inc. Headquarters: 345 East 47th Street, New York, NY 10017. Sent automatically at a cost of \$1.00 per member per year (included in annual dues) to each member of the Washington and Northern Virginia Sections. Second class postage paid at New York, NY and at additional mailing offices. Postmaster: Send address changes to IEEE National Capital Area Council, SCANNER, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331. (ISSN 0894-0452)

Tue Sep 17 ♦ Negotiating with the Elephant in the Bathtub

Sponsor: NCAC PACE Consulting Network (W/NV)
Place: Seven Seasons Restaurant (College Park, MD) Meeting: Univ of MD, College Park Campus, AV Williams Eng Bldg, Room 2460—Rte 1 South from I-495; right onto Campus Drive and immediate right onto Stadium Drive; 1-1/2 blocks To Eng Bldg on right; park on left in Lot G or 301/924-2610 by noon, Monday Sep 16
Contact: For further details and/or reservations, call 301/464-4693 or 301/924-2610 by noon Mon Sep 16

Thu Sep 19 ♦ European EMC Standards—an Update

Sponsor: Electromagnetic Compatibility Society (W/NV)
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: Stewart Kron, 301/937-8888; for lunch reservations (required): Stewart Kron, or IEEE NCA Office (703/8701) by Wednesday, Sep 18

Thu Sep 19 ♦ Iridium Low Earth Orbit Satellite System

Sponsor: IEEE Communications Society (W/NV)
Speaker: Robert K. Smith, Director, Ground Segment Engineering for Iridium, Inc.
Place: George Washington University, Academic Center (22nd & I St. NW), Room T-640, EE Dept. One block from the Foggy Bottom Metro Station. Parking across from Academic Center
Time: 11:45 am Lunch: Bring your own brown bag; 12:00 noon Registration 12:15 pm; Presentation 1:00
Contact: Bob Collingshead, tel 301/794-2056

Thu Sep 19 NV Computer Society Organizational Meeting

Sponsor: Computer Society (NV). (For details, see entry with same title in YOUR LOCAL REPORTER Department, p. 8)
Contact: Dave Pierce, 703/404-9293

Sun Sep 22- Eleventh Annual Workshop on Computer Wed Sep 25 Communications

Sponsor: Communications Society (W/NV) Technical Committee on Computer Communications (See ad on page 7)
Place: Hyatt Regency Hotel, 1800 President Street, Reston Town Center, VA
Time: 8:30 am to 5:00 pm
Cost: For IEEE members: \$100
Contact: Guy Omidyar, 301/918-1191

Tue Sep 24 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 7:30
Contact: For reservations, call NCAC Admin Office, 703/803-8701

Wed Sep 25 ♦ Software for Generating Shaped Antenna Beams for Satellite Coverage

Sponsor: Antennas and Propagation Society (W/NV)
Place: COMSAT Corporation, Multi-Purpose Room, 6560 Rock Spring Drive, Bethesda, MD. (From Beltway, north on Fernwood Road. Right into COMSAT campus; park near lobby and see guard for admittance)
Time: Refreshments 6:15 pm; Presentation 6:30
Contact: David T. Auckland, 301/982-5285

OCTOBER 1996

Fri Oct 4 - ♦ 7th AICN Conference: Growing Your

Sun Oct 6: Consulting Business
Sponsor: NCAC PACE Consulting Network (W/NV)
Place: Sheraton National Hotel, 1800 Jefferson Davis Hwy, Arlington, VA
Times: Friday Registration 5:45 pm, Sessions 7:00 Saturday Registration 7:00 am, Sessions 8:00 am - 5:45 pm; Sunday: Sessions 8:00 am to 1:00 pm
Contact: (1) Peter Soltesz, 301/924-2610, e-mail pasoltes@capaccess.org; (2) Dave Perlmutter, 301/921-9712, e-mail perltech@ix.netcom.com; (3) Bob Miller, 301/262-0300, e-mail pcpxp95@prodigy.com

Tue Oct 8 Joint MEETING, NCAC CSC and Washington Section EXCOM

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: NCAC Administrative Office, 703/803-8701

Tue Oct 15 German Federal Railways, Status of the Capital Improvement Plan

Sponsor: Vehicular Technology Chapter, Land Transportation Committee
Place: University Club, George Washington University, Marvin Center, 3d Floor, 800 21st Street, NW Washington, DC
Time: Lunch (\$17.00) 11:30 am; Meeting 12:30 pm
Contact: For luncheon reservations: Lou Sanders, 202/898-4086 or Tom Guins, 202/639-2259

Sun Oct 20 Workshop on Computer-Aided Modeling, Analysis and design of Communication Links and Networks

Sponsor: IEEE Technical Committee on Communications Systems Integration and Modeling
Place: McLean Hilton Hotel, 7920 Jones Branch Drive, McLean, VA
Time: 8:30 am to 5:00 pm
Cost: For IEEE members: \$100
Contact: Guy Omidyar, 301/918-1191

Thu Oct 24 Reengineering with Object Technology

Sponsor: Industry Applications Society (W/NV)
Speaker: Alan Perkins, Information Engineering Systems Corporation

Place: Anchor Inn, University Blvd & Georgia Ave, Wheaton, MD (near Wheaton Metro Station)
Time: Social 6:30 pm to 7:00; Dinner (optional, \$20.00) 7:00; Presentation 7:30
Contact: Annette Allender, 202/267-1207, or Ron Aasen, 703/516-1928; Reservations are requested by Oct 20. (A "diamond story" will be published in the Oct/Nov issue of the SCANNER)

Mon Oct 28- ♦ Antennas for Communication and Radar
Wed Oct 30
Sponsors: Electromagnetic Compatibility Society (W/NV) and George Washington University Continuing Engineering Education Program (for more details, see ad on page 12)
Instructors: Helmut Ernst Schrank, and Thomas Milligan
Place: GWU Continuing Engineering Education Program (CEEP) Center, 2020 K Street, NW, Washington, DC

Time: 8:30 am to 4:30 pm
Contact: Monique Wilson, 202/994-0726

Thu Oct 31- ♦ Wireless Communication Antennas
Fri Nov 1

Sponsors: Electromagnetic Compatibility Society (W/NV) and George Washington University Continuing Engineering Education Program (for more details, see ad on page 12)

Instructors: Helmut Ernst Schrank, and Thomas Milligan
Place: GWU Continuing Engineering Education Program (CEEP) Center, 2020 K Street, NW, Washington, DC
Time: 8:30 am to 4:30 pm
Contact: Monique Wilson, 202/994-0726, or PJ Mondin, 301/460-5864

◆ DIAMOND STORIES ◆

[This Department of the SCANNER provides short abstracts and biosketches to accompany those calendar items which show a diamond (♦) before the name of the Subject or Event]

Brochure Design for your Consulting Business

(See Calendar of Events, Tue, Sep 3)

When you're in business for yourself, you must remember that it's much more effective to market as a business, rather than as an individual person. That means (for the most part) that resumes are OUT and capability statements are IN.

So, how DO you make a good brochure, anyway?—We'll talk about all the important ingredients: content, composition, style, graphics, colors, papers, and low-cost ways of doing it yourself. You'll also hear about the pros and cons of doing your own brochure versus having it done by a professional.

If you have a brochure, be sure to bring several copies of it to the meeting. After the formal talk, we'll break up into small groups and go over each other's brochures. Don't be shy, or you'll miss a priceless opportunity to get some expert feedback on your brochure.

Negotiating with the Elephant in the Bathtub

(See Calendar of Events, Tuesday, Sep 17)

"Be careful what you wish for," the proverb says, "it just might come true..." For months now, you've been tracking down that big client (the Elephant), and now you've got him—Surprise!—right where he wants you!

Sometimes in your business, you find yourself feeling like you don't have much room to maneuver. Well, take heart: help is on the way. At our Sep 17 meeting, Valerie E. Looper, an attorney who specializes in intellectual property, will show you how to deal with the "Elephant in the Bathtub" without getting flushed down the drain.

By the way, could you please pass the soap?

European EMC Standards—An Update

(See Calendar of Events, Thursday, Sep 19)

The presentation will provide the latest status of the IEC Immunity Standards in use (or proposed) for compliance with the EMC Direc-

tive as "EURONORMS." Many of these standards are mandatory test requirements for manufacturers of various types of electrical and electronic equipment, who wish to sell their products to the European Union (EU). The presentation will include a look at the basic, generic, and some product standards, as well as what changes may affect them. Activities regarding IEC TC 65, 77, and CENELEC TC210, (TC110) will also be discussed.

Leo Makowski's background includes experience with commercial and nuclear safety grade equipment in the power distribution industry, and in electronic systems for the US Navy. An Associate Member of the IEEE, he received a business degree from Pennsylvania State University. He has written and presented technical papers and seminars on EMC immunity testing and standardization.

Iridium Low Earth Satellite System

(See Calendar of Events, Thursday, Sep 19)

Iridium, the first Low Earth Orbit (LEO) satellite system proposed, will have 66 satellites and features inter-satellite links to provide true global coverage. Iridium will be launching its first satellites in late 1996, in preparation for its full constellation in 1998 and customer service by late 1998. The Iridium system will change the way the world communicates as the first truly global, personal, satellite-based telecommunications system providing communications via hand-held wireless telephones and pagers.

Mr. Smith's presentation will include a short video presentation which covers the status of IRIDIUM development, and includes a demonstration of the effects of link margin on call quality.

Robert K. Smith, Director of Ground Segment Engineering for Iridium, Inc. is responsible for technical development and implementation of Gateways and the System Control Segment. Prior to joining IRIDIUM, he held various technical management positions at COMSAT, and with the U.S. Coast Guard. He has a Master's degree in Engineering Administration from George Washington University, and a BSEE from the University of Virginia. He is an IEEE member.

If you have specific questions to be answered during the meeting, please fax them to Mr. Smith at 202-842-0006.

NINETEENNINETY-SIX



1996 IEEE Military Communications Conference

Communications Technology— Providing the Edge

Sponsored by: Institute of Electrical and Electronics Engineers, Inc. • IEEE Communications Society • AFCEA

MILCOM '96 features a comprehensive technical program of both unclassified and classified sessions.

Unclassified Program

Sessions will cover:

Communications Systems, including Satellite Communications and Global Grid • Mobile Communications, including Teleconferencing and Wireless Communications • Networks, including Broadband/Tactical Communication Networks, Network Management and Control • Multimedia Networks • Communication Techniques, including Spread Spectrum and Modulation Techniques • Interoperability and Performance, including Fiber Optic Communications and Performance Modeling and Simulation • Signal Protocols, including ATM Architectures and Dynamic Routing • Implications of the Telecommunications Act for DoD • Much More!

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Banquet Speaker:

The Honorable William J. Perry
Secretary of Defense

Luncheon Speaker:

Mr. C. Michael Armstrong
Chairman and CEO
Hughes Electronics Corporation

Plenary Speakers:

VADM Arthur K. Cebrowski, USN
Director for Command, Control,
Communications, and Computers
Joint Staff

Lt Gen Albert J. Edmonds, USAF

Director
Defense Information Systems Agency

McLean, Virginia October 21-24, 1996

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Exhibit Information: (800) 336-4583, ext. 6200, or (703) 631-6200. For more information, call (410) 252-0121 or (703) 883-6222.

Software for Generating Shaped Antenna Beams for Satellite Coverage

(See Calendar of Events, Wednesday, Sep 25)

The use of CAD software to design antenna coverage footprints for communications satellites is discussed. An overview of the coverage design process is presented, along with a survey of optimization methods for shaped beam synthesis. Several metrics are presented for assessing antenna performance, with tips and tricks for optimizing patterns and developing pattern design software. A live demonstration of shaped beam design using CPLAN Satellite Coverage Design Software will also be given.

Mr. Ken Sherman is president of Cybercom Systems, which he founded in 1986 to provide technical consulting services to organizations developing satellite and radar antennas. He is the author of CPLAN, a CAE program for satellite antennas coverage design and planning. An IEEE member, he holds BS and MS degrees in Electrical Engineering from George Washington University and UCLA, respectively.

The Seventh Conference of the Alliance of IEEE Consulting Networks: Growing Your Consulting Business

(See Calendar of Events, Friday, Oct 4)

Whether you have been in the consulting business for a few years now, or starting out, or are just thinking you might (or might HAVE to) get into the consulting business, this weekend conference is for you!

From the innovative Friday evening opening session that helps us all to get to know each other while at the same time teaching us new tricks in how to network, through the Saturday sessions on getting the most out of your consulting business, to the closing session at noon on Sunday, you'll hear fresh ideas and proven techniques from experienced consultants. You'll get a chance to make great contacts and find out "how the other guy does it." You'll find an ideal informal atmosphere in which to compare notes with others, to find out what works and what doesn't, from people who KNOW.

We'll have sessions on:

- Marketing effective ways to get and keep more business
- Running your business: setting your fees, contract issues, finances
- International consulting: how to benefit, how to get started
- Pros and Cons of Government Contracting
- Using your Left-Brain and your Right-Brain: in your writing, and in your consulting practice as a whole

The conference will be held at the Sheraton National Hotel in Arlington, VA from Oct 4 - 6. Conference fee will be \$175 for non-IEEE members, \$150 for IEEE members, and \$125 for members of an affiliated IEEE Network. An additional \$25 discount is available for pre-registration before September 15.

For details, contact the Consulting Network officers listed in the Calendar of Events for Friday, Oct 4.

Antennas for Communication and Radar

(See Calendar of Events, Monday, Oct 28 to Wednesday, Oct 30)

Antennas are critical components in communications and radar systems; they significantly affect system size, weight, cost, and performance. To effectively conceive, design, specify, and evaluate antennas, technical managers and systems and component engineers must understand their theoretical and practical aspects.

This course presents the basic concepts and formulas for selecting, analyzing, and testing antennas and antenna systems. It begins with a quantitative definition of the general characteristics of all antennas. Next, the different antenna types are categorized by relating the specific performance of each type to general antenna characteristics and describing the system applications for which each antenna type is best suited.

The course covers the concepts used in analyzing antenna response and applies these concepts to fundamental antenna geometries. Modal theory and introduction to numerical methods applicable to more complex configurations are also discussed. The course demonstrates how the design progresses from a set of electrical and mechanical requirements to an application to a preliminary design, and then to a more detailed design. Finally, procedures for testing the experimental model and relating the results to the requirements are described.

Helmut Ernst Schrank is a lecturer and consultant for George Washington University and an Antenna Series editor for Artech House, Inc. He teaches antenna short courses for both GWU and the Carl Cranz Gesellschaft in Oberpfaffenhofen, Germany. His career in microwave antennas and components began at the Bell Telephone Labs in Whippany, N.J., where he helped design radar system components. Next he was a research scientist at the Johns Hopkins University Radiation Lab under Dr. D.D. King. Mr. Schrank went on to Bendix Radio, where he supervised an antenna design section as Principal Engineer. He then joined the Westinghouse Electric Corporation, where he worked on various electronic system programs. He is a Life Fellow in the IEEE, a charter member of the IEEE Microwave Theory and Techniques Society, and President of the IEEE Antennas and Propagation Society. He received his MSEE from the Stevens Institute of Technology in 1950.

(Mr. Milligan's biosketch is provided in the next diamond story).

Text: Antenna Engineering Handbook, 3rd Edition, by Richard C. Johnson (McGraw-Hill, 1993). Course 2077, CEUs 2.16, Fee \$975; (a discount will be given to those who take this and the following course consecutively).

Wireless Communication Antennas

(See Calendar of Events, Thu, Oct 31 to Fri, Nov 1)

Wireless Communications represent a huge market with ever-expanding opportunities, especially since the recent expansion of frequency bands. Although new chip sets provide good building blocks, communication systems still depend on antennas and signal propagation. Good antennas and proper placement can make or break a system. Accordingly, to conceive, design, specify, and construct wireless communication systems effectively, technical managers and systems and component engineers must understand the fundamental and practical aspects of the antennas used for wireless communication.

This course presents the basic concepts and formulas of the wireless communication propagation link, beginning with a description of various services and a qualitative discussion of the unique problems associated with each frequency band. Signal propagation requires different approaches in different wireless communication bands, depending on the operating frequency and the local environment; this is covered in depth in this course to enable students to solve future problems.

Both the antennas used for base stations and those carried on a person or vehicle are addressed, and the best methods for mounting fixed antennas are discussed. The size and mounting of per-

sonal antennas is necessarily limited; however, safety issues and the effects of the body on the pattern are covered.

The course also looks at the expanding field of communication within buildings. The unique propagation problems of the newly available high-frequency bands are addressed, with emphasis on the importance of going beyond a straight extension of the techniques used at the normal cellular frequency bands.

Thomas Milligan works for the Astronautics Division of Lockheed Martin in Denver, where he designs and develops hardware, and works as an internal consultant to advanced development projects. His antenna designs have been on spacecraft for missions to both Venus and Mars. He is the chief engineer of Milligan & Associates and has over 28 years of industrial experience, commencing with the development of microwave circuits at the Airborne Radar Division of Westinghouse Electric in Baltimore. He has published several articles in periodicals and is the author of "Modern Antenna Design" (McGraw Hill 1985) and coauthor of "Antenna Engineering Using Physical Optics" (Artech 1996). Mr. Milligan has taught antenna and phased array short courses for Technology Services Corporation and Praxis International. He has served as an associate editor of the IEEE Transactions, and as an editor of the Antenna Designer's Notebook column in the Antenna Magazine. He received his MSEE in electrical engineering from Johns Hopkins University.

Text: Mobile Antenna Systems Handbook, K. Fujimoto and J.R. James, eds. (Artech, 1994). Course 2078, CEUs 1.44; Fee: \$790 (a discount will be given to those who take this and the previous course consecutively)

Eleventh Annual IEEE Workshop on Computer Communications Hyatt Regency, Reston, Virginia Reston Town Center September 22 - 25, 1996

Sponsored by the IEEE Communications Society
General Chair: **Prof. Raymond Pickholtz**, GWU
Technical Program Co-chairs: **Dr. Guy Omidyar**

Illinois Institute of Technology Research Institute and **Prof. Hermann Helgert**, GWU

All the inquiries should be sent to:

Dr. Guy Omidyar, Illinois Institute of Technology RI, Tel: 301 918 - 1191

Email : gomidyar@tsmi.IITRI.com

For registration Contact:

Lisa Gates Madlin, lgates@seasva.gwu.edu
Tel- (703) 729-8266, Fax- (703) 729-8251

Topics to be covered but are not limited to:
Wireless ATM, Wireless and Mobile Networks
Video codecs and mobile computing, HFC
Residential Networks, Resource Management in ATM Networks, Real-time multicast, Internet, Security, Wireless Networks Optical Networks, Multimedia Networking, LANs and MANs, Modeling, Analysis and Simulation.

CHAIRMAN'S CORNER

National Capital Area Council Chairman's Message

As your incoming Council Chairman, I would like to thank all those members who helped to make this past IEEE year a great success for the local sections and chapters in the Washington and Northern Virginia Area. We have plans to keep our 23 local society chapters vibrant with good ideas, programs, and activities.

The 1996/97 program year is off to a good start with meetings of the NCAC Council's Steering Committee (CSC) planned each month alternatively with the two sections in Tyson's Corner and Bethesda. With this arrangement you should be able to get an understanding of the problems and successes of both sections. (All Council meetings are open to all IEEE members!)

The officers who will be participating in the September PACE Conference and Workshop in Arizona will return loaded with good, challenging information on how to make the IEEE a state-of-the-art functional organization better able to serve its membership. They will present plans to keep our 23 local society chapters vibrant with good ideas, programs, and activities.

The NCAC CSC is ready to serve you, its customers. To do that, we have established the NCAC Administrative Office, to help section and chapter officers plan and conduct meetings and other program activities. The office, headed by Jackie Hunter provides telephone service, fax and e-mail, can assist you in scheduling and in taking reservations for your chapter meetings. Jackie also acts as business manager for the NCAC and the SCANNER.

In summary, the NCAC is here to help you make the most of your IEEE membership. Take full advantage of it!

Jerry Gibbon

Chairman, National Capital Area Council

Washington Section Chairman's Message

I look forward to serving you as Chairman of the Washington Section this coming program year. Along with our new Vice-Chairman David Straw, Treasurer Bill Regotti, and Secretary Don Rickerson, we invite you to participate in the many varied activities that the local IEEE chapters sponsor throughout the year. The Washington metropolitan area has one of the largest concentrations of IEEE members in the country, approximately 15,000. In the Washington Section we have always tried to provide leadership, guidance and financial support to all chapter activities, and will continue to do so in the coming program year.

I would like to personally thank all of our section and chapter officers for their dedicated work in carrying out a large number of well-run technical and social activities this past year. We try to acknowledge these accomplishments at our annual Awards Banquet in April, but not everyone can be recognized.

Along with our technical activities this fall, we will be having a social at the Army Navy Country Club in Arlington on October 12th. This event will provide an opportunity for IEEE volunteers and guests to get to know one another on a more personal level than is possible at technical and administrative meetings.

Not all of our activities are advertised in the Scanner due to difficulties in getting speaker commitments months in advance. One of our goals this year is to establish a web site for all local IEEE activities on the Internet that can be modified daily to allow all of our activities to be publicized.

I look forward to your participation in the form of meeting attendance and volunteer activities this program year! Feel free to contact me by telephone at (703) 516-1928 or by e-mail, R.Aasen@ieee.org if you have any questions, suggestions, or if you would like to get involved in IEEE activities.

Ronald Aasen

Chairman, Washington Section

YOUR LOCAL REPORTER

Organizational Meeting of Northern Virginia Computer Society Chapter

A meeting will be held Sep 19 from 6-8 pm at the "Reliability Software Technologies Corporation" (RST) in Sterling, VA, to discuss the organization of the chapter. The goal of the chapter will be to enhance the skills and opportunities for NV hardware and software engineers by providing a forum for technical exchange, networking, and technical skill enhancement. Anyone interested in either participating or taking an active role in the chapter is encouraged to attend. The meeting will be chaired by Mr. Jeffrey E. Payne, President and CEO of the Reliable Software Technologies Corporation. For more information, or for directions to RST, contact Dave Peirce of RST at 703/404-9293. Refreshments will be served.

In addition to our Consultants Network, two of our chapters have already held their elections:

Communications Society (W/NV)

Chair: Howard Luterman, 301/948-5204
e-mail hluterman@telogy.com

Vice Chair for Programs: Don Rickerson, 202/651-3912
e-mail Don@wdc.mmc.com

Vice Chair for University Relations: Brana Vojcic, 202/994-4874
e-mail vojic@seas.gwu.edu

Treasurer Lee Golliday, 703/845-2352
e-mail lgollida@ida.org

Secretary: Alex Roytblat, 301/464-8900
e-mail roytblat@stel.gsfc.nasa.gov

Control Systems Society (W/NV)

Chair: Ronald R. Edmonds
Vice Chair: Kuo Chu Chang
Treasurer: Katsumi Onishi
Secretary: Katish C. Mohleji

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IEEE-USA Testimony Urges Creation of Useful-Article Protection

Congress should enact a new type of intellectual-property right that would protect the innovators of fast moving technologies, according to IEEE-USA testimony on June 6 before the House Subcommittee on Technology. "IEEE-USA would like to propose new intellectual property registration protection that would prevent others from copying the useful aspects of original articles," testified IEEE-USA Vice Chair David M. Ostfeld at a hearing on "The Patent System and Modern Technology Needs: Meeting the Challenges of the 21st Century."

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Ostfeld maintained that the current patent system cannot respond quickly enough to adequately protect innovators of many new and rapidly changing technologies, such as circuit technology, artificial intelligence, databases, the exchange of information through high-speed global networks, and adaptive manufacturing. According to Ostfeld, these technologies typically have a useful life of 18-60 months, and are currently unprotected by the slower-moving patent process. As a result, research and development investments—often by very small companies—are open to exploitation by predatory copiers throughout the world, he said.

“Useful-article registration would give inventors a base market here in the United States for three years,” according to Ostfeld, “during which they could recoup their initial development costs.” This protection, he said, would prevent others from copying the useful aspects of original articles that are not copyrightable but may be patentable. Registrants could also apply for a patent, but the registration would expire immediately when patent protection takes effect.

Ostfeld asserted that useful-article registration would also reduce the cost and complexity of obtaining intellectual-property protection for small innovators. He proposed that prospective registrants would file a simple, copyright-type application that would reduce or eliminate the need for professional legal assistance. Registration would be awarded if the application appeared to comply with the information required—with no need to search prior art, and would take effect at the filing date. Initial enforcement of article-protection rights would be provided by an administrative tribunal jointly appointed by the Commissioner of the U.S. Patent and Trademark Office, the Register of Copyrights, and the Court of Claims.

Noting that IEEE-USA has prepared model legislation on useful-article protection, Ostfeld told the subcommittee that “we look forward to working with you to provide innovators the type of timely intellectual-property protection that they seriously need, and (that would) improve the well-being of innovation in America while competing in a world market.” Joining in the favorable response to the IEEE-USA proposal by the members present, Subcommittee Chair Rep. Connie Morella, R-Md., promised Ostfeld, “We will explore it in the subcommittee.”

For a copy of the IEEE-USA testimony, contact Marilyn Sumpter at 202-785-0017, ext. 336, or download the document from IEEE-USA's Web site at URL <www.ieee.org/sab/DOCUMENTS/FORUM/LIBRARY/PAPERS/patent.html> (case-sensitive).

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.

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).

IEEE-USA IMPACT Receives Publication Excellence Award

IMPACT, IEEE-USA's newsletter for volunteer leaders, received an annual award for publication excellence (APEX) in a nationwide competition sponsored this month by WRITING CONCEPTS: THE BUSINESS COMMUNICATIONS REPORT. IMPACT was one of 834 newsletters competing in eight different categories and one of 3 letters recognized with an award of excellence in the “most-improved” category. APEX '96 drew nearly 4,100 entries. Judges included WRITING CONCEPTS' editor and publisher, consulting editor, and senior evaluator.

IEEE-USA's newsletter is overseen by Robert T. Nash and William W. Middleton, volunteer editors, with staff support by Managing Editor Georgia C. Stelluto and Associate Editor Deborah M. Williams. IMPACT is celebrating its 20th year of publication, with Frank E. Lord—IEEE-USA's current Communications Committee chair—its founding editor in 1976.

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. Sources are provided where available.]

GPS Policy

President Clinton has approved a national policy for management and use of the satellite-based Global Positioning System (GPS) aimed at balancing military and civil needs for the system. An interagency executive board chaired jointly by the Defense Dept. and the Transportation Dept. would manage the system, but overall control would be retained by the Pentagon. The policy also calls for discontinuing use of the Selective Availability (SA) feature, which intentionally degrades GPS accuracy for military reasons, within 10 years. Beginning in the year 2000, however, the President would make an annual assessment on whether SA should be continued. The Defense Dept. also would develop measures to prevent hostile use of GPS to ensure that US military forces retain system accuracy without adversely affecting civilian users.

(Aviation Week & Space Technology, 1 Apr '96, pg 24-25)

Smart Antenna Tracks Missiles

Lockheed Martin scientists have developed a new smart antenna to monitor the performance of U.S. Navy Trident II missiles. The autonomous, compact shipboard antenna array features 24 helicones in a 34-inch-diameter assembly that weighs 90 pounds. Automatic missile tracking is accomplished by combining the output of all 24 antennas. This process allows the system to receive transmitted information without the need for mechanical pointing or scanning. It replaces older configurations that used 6-ft.-diameter dish antennas that required a dedicated ship for missile tracking. The size and weight of the new antenna allows it to be placed on the deck, mast or any convenient location on virtually any kind of ship. A prototype system has demonstrated the capability to monitor the performance of the two missiles in flight at the same time.

(Popular Science, Apr '96, pg. 28)

GPS Trials in Europe

Honeywell recently began a six-week demonstration of the new Honeywell/Polaris GPS-based SLS-2000 precision approach system in Eastern and Western Europe. The trip, flown in a company-owned Cessna Citation 3, included system set-up, calibration, performance of autopilot-coupled precision approaches, and breakdown at seven destinations.

The SLS-2000 uses three portable “Remote Satellite Measurement Unit” (RSMU) antennas and a ground reference station to receive and correct GPS navigation satellite information for atmospheric and other conditions. Signal enhancement plus approach points are broadcast to the incoming aircraft via data link. The resulting navigation guidance is accurate to within 5-ft horizontally and little more than 6-ft vertically.

The Citation will transport the three RSMUs, ground station and a small team of SLS-2000 technicians and marketing personnel between the demonstration sites. Each step will last from three to four days. Specific destinations are not being released for competitive reasons, Honeywell said.

(Aviation Week & Space Technology, 1 Apr 96, p.32)

Fiber Links Monitor Satellite Fleet

Ortel Corporation (Alhambra, CA) has won a half-million dollar contract to supply a fiber-optic-based monitoring system for the Hughes Communications Inc. (HCI) Satellite Network. The use of fiber-optic links will allow HCI to see the actual signal spectra just as its customers across

the country do—by eliminating the need for up-and-down-converters that could impair signal fidelity.

Because of the distances involved, the use of conventional waveguide and coaxial cable would have proved cumbersome and complicated. Ortel says that the network illustrates fiber's ability to solve complex problems. The company says that its linear fiber-optic links are also being used by Hughes' DIRECTV uplink site in Colorado...

(Photonics Spectra, Apr '96, pg 50)

Automatic Design Software

Knowledge-based engineering (KBE) software continues to proliferate through the aerospace industry. The programs are used to automate and optimize the design of components after input of initial design rules, manufacturing criteria and stress analyses. Textron Aerostructures reports its use of Burlington, Massachusetts-based Concentra's ICAD software reduced by 90% the time to generate three-dimensional wireframe models of progressively sized V-22 graphic composite ribs after a redesign. Bond tooling wireframe model creation time was cut by 82%. Other KBE advantages include design standardization, increased part commonality and automatic update of related parts and interfaces.

(Aviation Week & Space Technology, Apr 8 '96, pg 13)

Hot Transistors

Transistors capable of operating at temperatures of up to at least 535 degrees C have been developed by Astralux Inc., of Boulder, CO. The high-temperature electronics, to be available by year-end, will allow aerospace designers to eliminate heavy and bulky cooling systems and place electronic control systems closer to heat sources. Conventional silicon transistors will not function above 150 degrees C. The new transistor uses gallium nitride and silicon carbide materials to achieve its high-temperature performance, according to Jacques Pankove, Astralux VP for research and technology.

(Aviation Week & Space Technology, Apr 8 '96, pg 13)



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Inmarsat Communications Satellite

Ground controllers are checking out the first of a new generation of Inmarsat communications satellites and preparing to move it to its geosynchronous orbital station. The Inmarsat 3 F1 spacecraft was launched April 3 from Cape Canaveral. It is the first of five third-generation spacecraft being launched by the global Inmarsat telecommunications consortium as part of a \$850-million project. Inmarsat operates a constellation of eight spacecraft providing telephone services to air, sea and land customers around the world.

(Aviation Week & Space Technology, Apr 8 '96, pg 16)

Active Antenna Developed for Multiple JAST Use

Radar, electronic warfare, and communication systems will share a common, stealthy antenna in the design being developed for the new US Joint Advanced Strike Technology (JAST) aircraft. Mounted on the nose of the JAST aircraft, the active, electronically scanned array will transmit and receive T/R high-gain X-band signals. Additional antennas will be needed to operate in other frequency bands or from different locations. These might include UHF/VHF radios and millimeter-wave radars, satellite communications, and navigation antennas. Still, sharing a multifunction array would save 30% in cost and 50% in antenna weight, compared with individual antennas.

(Aviation Week & Space Technology, Apr 8 '96, pg 46-47)

Filter Center

Rockwell Collins is developing a new digital, frequency-hopping communication system for the Swedish Defense Material Administration. The Ra 90 will transmit voice and data between aircraft and to tactical air command centers, and is intended to become part of the Swedish air force's TARAS future tactical radio communication system. The Ra 90 is based on Collins' modular avionics technology. Swedish installations could total up to 450 aircraft, including the JAS 39 multi-role fighter, JA 37 Viggen fighter and the S100B radar reconnaissance aircraft. The \$30.5-million development contract should be completed in late 1998, when a production option could be exercised.

(Aviation Week & Space Technology, 8 Apr '96, pg 47)

NASA to Start Small Commercial Satellite Program

NASA Administrator Daniel S. Goldin said his agency plans on starting a small commercial Earth remote sensing radar satellite program in about two years, based on technology developed by the Jet Propulsion Laboratory. Goldin said he aims to reduce the cost of radar satellites, which can run \$500 million each, by a factor of 5-10 to spur commercial applications. Goldin said he wants industry to commercialize government-developed technologies and sell data from new radarsats to NASA.

(Aviation Week & Space Technology, Apr 8 '96, pg 57)

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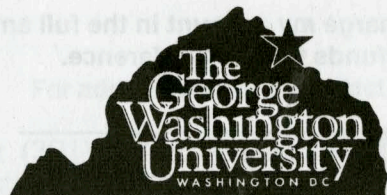
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