IEEE

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TIME SENSITIVE MATERIAL

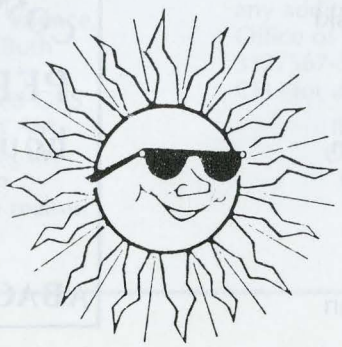
CALENDAR OF EVENTS

For reservations call the IEEE office 236-4609
(unless otherwise indicated)

Copy Deadline for Sept. Scanfax is July 28, 1986

MAY 28	"The Integrated Services Digital Network"	Fox Valley Sub.	Wilton Manor 2200 Main St. Wheaton, IL	Social Dinner Meeting	6:00 PM 7:00 PM 8:00 PM
JUNE 4-6	International Conference on Consumer Electronics	(Conference Chmn., Michael Ross, 609: 734-2975)	Westin Hotel O'Hare 6100 River Rd. Rosemont, IL	(Program Chmn., Dave Lewis, 716: 477-7558)	
9	"Advanced Develop. in Waveguide Components & Networks"	Antennas & Prop./ Microwave Theory & Techniques Soc.	Louis Restaurant 351 E. Lake St. Addison, IL	Social Dinner Meeting	5:30 PM 6:30 PM 7:30 PM
10	Monthly Meeting ALL WELCOME	IEEE Executive Cte.	Allen-Bradely Company 910 Pasquinelli Dr. Westmont, IL	Meeting	7:30 PM
JULY 8	Monthly Meeting	IEEE Executive Cte.	To be announced	Meeting	7:00 PM
	Call 236-4609 for information.				
AUG. 12	Monthly Meeting ALL WELCOME	IEEE Executive Cte.	Allen-Bradley Company 910 Pasquinelli Dr. Westmont, IL	Meeting	7:30 PM

HAVE A NICE SUMMER



LOOK FOR US IN SEPTEMBER

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Unless otherwise specified, Chicago Section IEEE neither endorses nor sanctions any positions or actions espoused in SCANFAX.

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Change of Address

Send change of address to Roseann Schultz. Member Services, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. Include your SPECTRUM mailing label if possible. We cannot forward this information for you, so please do not send it to the local office.

Deadlines

Sept. Issue	July 28	Mailed Aug. 15
Oct. Issue	Aug. 25	Mailed Sept. 15
Nov. Issue	Sept. 29	Mailed Oct. 15
Dec. Issue	Oct. 27	Mailed Nov. 15

ELECTION OF OFFICERS

The results of the 1986/1987 election of officers are complete. The following individuals have been voted by the membership with terms commencing in July. Voting was by ballot printed in the April issue of Scanfax.

The Executive Committee also includes the chairmen of both the Fox Valley and Northwest Subsections and the chairmen of each of the active group or society chapters. According to the Chicago Section Bylaws, they are automatically members of the Executive Committee and do not have to be voted upon by the membership.

Chairman:	Norbert Orszula
Vice Chairman:	Ed Barrett
Treasurer:	Terence Sumner
Secretary:	Andy Gasiorowski
Executive Committee:	Len Cohen
	Cara Lindell
	Robert Hofmann
	Robert Schrage
	Henry Dwyer
	George Stout
	John Waters
	Howard Wolfman

JOINT CHICAGO CHAPTER OF
IEEE ANTENNAS & PROPAGATION SOCIETY AND MICROWAVE THEORY & TECHNIQUES SOCIETY

IEEE THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

JUNE 1986 MEETING NOTICE

ADVANCED DEVELOPMENTS IN WAVEGUIDE COMPONENTS AND NETWORKS

BY: DR. SAAD MICHAEL SAAD

Date: Monday, June 9, 1986 Time:

Place: Louis Restaurant, 351 E. Lake Street
Addison, Illinois
(First traffic light west of Route 83)

Social - 5:30 p.m.
Dinner - 6:30 p.m.
Meeting - 7:30 p.m.

ABSTRACT

The last decade has witnessed an unprecedented rise in the demands on communication channels. This demand has so far been adequately met by evolving the terrestrial microwave-relay and satellite communication systems into frequency reuse and multiband operation. This presentation will discuss some of the technological challenges of such an evolution with emphasis on the development of necessary waveguide components and networks. Recent inventions from the United States, Japan and Europe in specific devices such as combining networks, circularly-polarized networks, and waveguide transitions will also be reviewed.

SPEAKER

Dr. Saad M. Saad was born in Alexandria, Egypt in 1945. He received the B.Sc. and M.Sc. degrees from Alexandria University, Egypt in 1965 and 1969, respectively, and the Ph.D. degree from the University of London, England in 1974, all degrees being in Electrical Engineering. From 1965 to 1977, he was with the National Research Center, Cairo, Egypt. During 1977-78, he was a Research Associate at the Remote Sensing Laboratory of the University of Kansas. Since 1978 he has been with Andrew Corporation, as Section Leader - Waveguide Components. He has also held adjunct faculty positions in Egypt, and is now an Adjunct Associate Professor at the University of Illinois at Chicago. Dr. Saad has held various officer positions (1981-84) in the IEEE Joint Chicago Chapter of AP/MTT-S, and is a Senior Member of IEEE.

The dinner is optional. A reservation is helpful even if you plan to attend the talk only. Reservations may be made by calling 236-4609 before noon on Friday, June 6, 1986. Non-IEEE members are welcome.

IEEE CHICAGO SECTION MEMBER SALARY AND FRINGE BENEFIT SURVEY

Please mark all of your responses on the Enclosed Survey Reply Card. Your response must be received by June 30, 1986 to be tabulated. Please respond only if you are working or seeking employment in an engineering or engineering management position on a full-time basis.

1. TOTAL COMPENSATION - What was your annualized salary as of MAY (a) 86 (b) 85 (c) 84. DO NOT include overtime or bonus income and DO NOT include income from secondary employment (such as part-time teaching, part-time consulting, etc.) Enter integer dollars.

   EXAMPLE: 1a $ | 0 | 6 | 7 | 0 | 0 | 0 |.00

2. ENGINEERING EXPERIENCE - How many years of experience have you had in electrical/electronic engineering and/or related fields?

   EXAMPLES: | 0 | 1 | or | 2 | 2 |
   Years Years

3. LEVEL OF PROFESSIONAL RESPONSIBILITY - Which one professional level of responsibility best describes your present level of responsibility?

1. Eng 1	GS-5	Asst. Eng (entry level) ±1 yrs. Exp.
2. Eng 2	GS-7	Assoc. Eng (routine work) ±2 yrs. Exp.
3. Eng 3	GS-9	Engineer (works independently) ±4 yrs. Exp.
4. Eng 4	GS-11	Sr. Eng (fully competent) ±10 yrs. Exp. Supervises 0-2
5. Eng 5	GS-12	Sr. Staff Engineer (Principal Eng.) ±15 yrs. Exp. Supervises 0-3
6. Eng 6	GS-13	Supervisor (research section Hd) ±18 yrs. Exp. Supervises 0-8
7. Eng 7	GS-14	Dept. Head (research authority) ±22 yrs. Exp. Supervises 0-25
8. Eng 8	GS-15	Project Manager, Eng. Director ±26 yrs. Exp. Supervises 0-100
9. Senior Corporate/Agency Management or Staff		
0. Other, not covered by above.		

NOTE: Grades 1 through 8 are described in IEEE national salary surveys and in the U.S. Department of Labor Professional Administrative, Technical and Clerical (PATC) Survey. GS numbers are General Services ratings used by Federal Government and correlated to the grades survey in accordance with the Department of Labor determinations.

4. DEGREE/LICENSE
   (Enter up to 3 codes as applicable).

   0. Less than Bachelor's Degree
   1. Bachelor of Arts Degree
   2. Bachelor of Engineering Technology Degree
   3. Bachelor of Science or Engineering Degree
   4. Master's Degree (not MSEE or MBA)
   5. MBA Degree
   6. MSEE Degree
   7. Doctorate
   8. PE

5. YOUR PRINCIPAL JOB FUNCTION

   1. General Corporate Management
   2. Design & Development Engineering (circuits, components, equipment systems)
   3. Engineering Services (evaluation quality control, reliability, standards, test)
   4. Basic Research
   5. Manufacturing & Production
   6. Engineering Assistants (draftsman, lab assistant, technician)
   7. Field Engineering, Customer Service
   8. Purchasing & Procurement
   9. Marketing including Sales
   10. Advertising, Media or Public Relations
   11. Personnel, Human Relations, etc.
   12. Other

6. TECHNICAL SPECIALTY - Describe in a few words.

   EXAMPLE: Antenna Design, Computer Repair, CS, etc.

7. EMPLOYER PROFILE -
   Enter most applicable number.

   0. Industry, R&D
   1. Industry, Manufacturing
   2. Industry, Data Processing
   3. Industry, Engineering Services
   4. Self Employed
   5. Federal Government, Department of Defense
   7. Other Government
   8. University, Non-Profit Associations
   9. Other (describe on card)

8. EMPLOYER SIZE

   A. Enter number of all employees at your facility.
   B. Enter number of all engineers, scientists at your facility.
   C. Enter number of all employees, of your employer in U.S.

BENEFITS RECEIVED

9. HOLIDAYS - How many scheduled holidays and paid days off will you be eligible to take in calendar year 1986?

   EXAMPLE: | 0 | 9 | or | 1 | 1 |

10. VACATION - How many vacation days can you take in 1986?

11. OTHER LEAVE - How many days of other leave did you take in 1985?

12. OVERTIME - Do you receive compensation for overtime?

    1. Yes in Cash
    2. Yes in Comp Time Off
    3. No but get significant bonus
    4. Rarely or never

PERSONAL PROFILE QUESTIONS - OPTIONAL
(These assist IEEE in analyzing problems)

13. YEARS WITH PRESENT EMPLOYER - How many years have you been with your present employer as of MAY, 1986 (use your prior employer if you are currently unemployed).

    EXAMPLES: | 0 | 1 | or | 2 | 5 |

14. AGE - Insert your age in years (round off) as of JAN, 1986, in the two boxes provided on the Survey Reply Card.

15. ORIGIN - (EEO Classification)

    1. White (not of Hispanic origin)
    2. Black
    3. Hispanic
    4. Asian or Pacific Islander
    5. American Indian or Alaskan Native
    6. Other
    7. Prefer not to answer question

16. SEX

    1. Male 2. Female

17. CITIZENSHIP

    1. USA Citizen 2. Permanent Resident 3. Other Visitor

18. DURATION OF UNEMPLOYMENT - During the past 12 months, how long were you unemployed (in weeks)?

    EXAMPLES: | 0 | 7 | or | 1 | 2 |

19. Are you currently unemployed involuntarily and seeking a full-time engineering related job?

    1. Yes 2. No

IEEE CHICAGO SECTION MEMBER OPINION SURVEY

Please mark all of your responses on the Enclosed Survey Reply Card. Your response must be received by June 30, 1986 to be tabulated. Please respond only if you are working or seeking employment in an engineering or engineering management position on a full-time basis.

A. ORGANIZATION

A.1 Do you think that engineers should have an organization to coordinate their common interests? Response: Yes-Y, No-N, Undecided-U.

A.2 In your opinion, is there a role for the American Association of Engineering Societies (AAES) as an effective voice for engineers? Response: Yes-Y, No-N, Not enough knowledge to judge-K, Not sure-U.

A.3 The United States Activities Board (USAB) has numerous programs which are managed through the IEEE Chicago Office. How aware are you of these activities? Response: Very aware-1, Somewhat aware-2, Not aware-3.

A.4 USAB Programs are managed by five councils. Indicate which of these are of interest to you. Response: Career Activities-C, Government Activities-G, Member Activities-M, Professional Activities-P, Technology Activities-T. Answer one or more.

A.5 The IEEE has Professional Activities for Engineers (PACE) that are active in the local IEEE Sections. How aware are you of these activities? Response: Very aware-1, Somewhat aware-2, Not aware-3, the PACE in my local section is not active-4.

A.6 How involved are you with PACE activities? Response: I attend PACE meetings-1, I read PACE material-2, I respond to PACE legislative alerts-3.

A.7 Would you like to become involved in USAB and PACE programs? Response: Yes-Y, No-N, Undecided-U. If you are interested, enter your home telephone on the reply card.

B. COMMUNICATIONS

B.1 How effective are each of the following as a source of information about IEEE/USAB activities? (1-5 rating scale with 1 highest and not sure as 6).
a. Section meetings
b. Section newsletter "SCANFAX"
c. Society meetings
d. Society newsletters
e. Communications from Region 4
f. Panels at IEEE general or Society meetings
g. "Electronic Engineering Times"
h. The professional column of other trade journals
i. "IEEE Spectrum"
j. "The Institute"
k. "Professional Perspectives"
l. "Impact"
m. Committee of Concerned EE's Newsletter

B.2 How do you feel about the amount of coverage given to USAB and PACE programs in SCANFAX? Response: Too much-1, About right-2, Undecided-3, Too little-4.

B.3 When is your "SCANFAX" normally received? Response: Prior to first of month-1, Between first and fifth-2, Between Sixth and tenth-3, After tenth of month-4. Enter your ZIP Code on survey card.

C. SECTION AND CHAPTER MEETINGS

C.1 What types of section meetings do you prefer? Response: (1-3 scale with 1 highest)
a. Technical subjects of general interest
b. Technical meetings of specific interest
c. Facility tours
d. Joint Section meetings
e. Separate Section meetings
f. Joint Section and Chapter meetings

C.2 What locations and facilities for Section meetings do you prefer? Only evening meetings are considered to be feasible. Response: (1-3 scale with 1 highest)
a. Downtown Chicago
b. Northern Suburbs
c. Western Suburbs
d. Southern Suburbs
e. Near O'Hare
f. Dinner and meeting at same location
g. Dinner and meeting at different locations
h. Meeting only

C.3 What types of Chapter meetings do you prefer? Response: (1-3 scale with 1 highest)
a. Technical subjects of general interest
b. Technical meetings of specific interest
c. Facility tours
d. Joint Chapter meetings
e. Separate Chapter meetings
f. Joint Section and Chapter meetings

C.4 What locations and facilities for Chapter meetings do you prefer? Response: (1-3 scale with 1 highest)
a. Downtown Chicago
b. Northern Suburbs
c. Western Suburbs
d. Southern Subburbs
e. Near O'Hare
f. Luncheon and meeting at same location
g. Luncheon and meeting at different locations
h. Dinner and meeting at same location
i. Dinner and meeting at different locations
j. Meeting only

D. ELEMENTARY AND SECONDARY EDUCATION

D.1 Do you think that IEEE should have a role in trying to improve mathematics and science education in our nation's elementary and secondary schools? Response: Yes-Y, No-N, Not sure-U.

D.2 In your opinion, what is the quality of mathematics and science education in our nations' public elementary and secondary schools to meet our nation's needs? Response: More than adequate-1, Adequate-2, Less than adequate-3, Not sure-4.

D.3 Are you interested in helping to improve mathematics and science education in the elementary and secondary schools in the Chicago metropolitan area? Response: Yes-Y, No-N, Undecided-U, Send me more information-I. If interested, enter home telephone on card.

E. CONTINUING EDUCATION

E.1 How interested would you be in pursuing a continuing education program if it were any of the following types of service? (1-5 rating scale with 1 highest and 5 not interested.)
a. A live seminar or short course on site with an instructor.
b. An individual learning package with textbook, study guide, audio or video tape, optional formal examination and permanent record of achievement.
c. Live video conferences or seminars, via satellite (live TV broadcast with 2-way interactive telephone link).
d. Video tapes of seminars, with local tutors.
e. Short courses run in conjunction with shows, conventions, or conferences.
f. Rental video tapes for viewing on own time.

F. PUBLIC POLICIES

F.1 Which one of the following statement best expresses your opinion about how the federal government should allocate its science and engineering Research and Development (R&D) dollars?
a. The federal government should spend more on engineering R&D than on scientific R&D. Response: A.
b. The federal government should spend equal amounts on both engineering and scientific R&D. Response: B.
c. The federal government should spend more on scientific R&D than on engineering R&D. Response: C.
d. The federal government should not spend anything on scientific and engineering R&D. Response: D.
e. Not sure. Response: E.

F.2 Which government program listed do you feel as most important to the future of American science and technology?
a. NSF engineering and science education programs. Response: A.
b. NSF programs for university engineering and science laboratory equipment. Response: B.
c. NASA programs for space exploration. Response: C.
d. DoE programs for new sources of energy. Response: D.
e. DoD research and development programs. Response: E.
f. DoD weapons procurement programs. Response: F.
g. Government programs for basic research. Response: G.

F.3 The current level of U. S. government regulations concerning national security unnecessarily hampers the free flow of scientific and technical communications. To what extent do you agree or disagree with this statement? Response: Strongly agree-1, Agree-2, Not sure-3, Disagree-4, Strongly disagree-5.

F.4 The federal government currently sponsors consortia to promote cooperation among government, industry and universities. To what extent do you agree or disagree with this effort? Response: Strongly agree-1, Agree-2, Not sure-3, Disagree-4, Strongly disagree-5.

1986 CHICAGO SECTION SURVEY REPLY CARD

1.a. Salary — MAY 1986 $ [ ][ ][ ][ ][ ][ ] .00

1.b. Salary — MAY 1985 $ [ ][ ][ ][ ][ ][ ] .00

1.c. Salary — MAY 1984 $ [ ][ ][ ][ ][ ][ ] .00

2. Exper - Years [ ][ ] 3. Level Code [ ] 4. Degrees [ ][ ][ ] 5. Job [ ][ ]

6. Technical Specialty ---------- 7. Employer Code [ ]

8. Employer Size: a. Your Facility [ ][ ][ ][ ][ ] b. Engineers Only [ ][ ][ ][ ][ ]

8.c. All USA [ ][ ][ ][ ][ ][ ] 9. Holiday 86 [ ][ ] 10. Vacation 86 [ ][ ]

11. Other Leave 85 [ ][ ] 12. O. T. Code [ ] 13. Service Years W/Employer [ ][ ]

14. Age Years [ ][ ] 15. Origin Code [ ] 16. Sex Code [ ] 17. Citizen Code [ ]

18. Unemployment Weeks 1985 [ ][ ] 19. Unemployment Status [ ]

Comments: (Salary/Benefits/IEEE Goals, etc.)

1986 CHICAGO SECTION SURVEY REPLY CARD

A.1. Common Organization [ ] A.2. AAES [ ] A.3. USAB [ ] A.4. Prog [ ][ ][ ][ ][ ]

A.5. PACE Awareness [ ] A.6.PACE Involvement [ ] A.7 PACE Interest [ ]

B.1 Info Sources a. [ ] b. [ ] c. [ ] d. [ ] e. [ ] f. [ ] g. [ ] h. [ ]
i. [ ] j. [ ] k. [ ] l. [ ] m. [ ] B.2. USAB [ ] B.3. SCANNER [ ]

C.1. Section Meeting Types a. [ ] b. [ ] c. [ ] d. [ ] e. [ ] f. [ ]

C.2. Section Mtg Loc/Fac a. [ ] b. [ ] c. [ ] d. [ ] e. [ ] f. [ ] g. [ ] h. [ ]

C.3. Chapter Meeting Types a. [ ] b. [ ] c. [ ] d. [ ] e. [ ] f. [ ]

C.4. Ch Mtg Loc/Fac a. [ ] b. [ ] c. [ ] d. [ ] e. [ ] f. [ ] g. [ ] h. [ ] i. [ ] j. [ ]

D.1. IEEE Education Role [ ] D.2. Education Quality [ ] D.3 Education Interest [ ]

E.1. Continuing Education a. [ ] b. [ ] c. [ ] d. [ ] e. [ ] f. [ ]

F.1. Fed R&D Fund [ ] F.2 Gov't Prog [ ] F.3. Gov't Reg [ ] F.4. Gov't Spon [ ]

ZIP Code [ ][ ][ ][ ][ ] Home Telephone [ ][ ][ ] [ ][ ][ ] - [ ][ ][ ][ ]

Comments: ----------

RETURN ADDRESS (OPTIONAL)

Place 22¢ stamp here

IEEE CHICAGO SECTION OFFICE

125 SOUTH CLARK STREET, SUITE 1545

CHICAGO, IL 60603

FROM THE EDITOR

This June issue of SCANFAX brings us to the end of the SCANFAX yearly cycle. Our new officers have been announced and take office effective July first. This issue also marks the completion of one publishing cycle of SCANFAX using our new printer. It has been a time of learning for me as your new SCANFAX editor, and for our printer, PROSURE, of Downers Grove.

The past year has meant accepting last-minute advertising and meeting announcements, and figuring out ways to get copy from Eleanore Burda at our Chicago office to me in minus two days. That is something we weren't able to do although we came close. It has meant trying to understand the vagaries of second vs. third class postage. It has also meant figuring how to compres the copy to fit onto 12 pages, or stretching it to fill 16 pages. It has meant paying attention to advertising so that two competing advertisers don't end up on the same or adjacent pages.

I have had to placate unhappy chapters and subsections when SCANFAX arrived too late for a meeting, and tried to explain why two succesive monthly issues of SCANFAX reached a member only 6 days apart.

Despite these problems, working on SCANFAX for the past year has been great, because of the great people I have had the opportunity to work with.

I would like to take this opportunity to thank all the Section, Subsection and Chapter chairpersons and publicity directors, the Section executive committee, the photographers who furnished the photos we used, Bert Orszula who ferried most of the copy between Chicago and Lombard where I picked it up, and especially Eleanore Burda of our Chicago office, for her patience in teaching me the right way to put SCANFAX together, and for her willingness to make the many changes necessary when we switched to a new printer. Hopefully we will be able to continue to bring you high-quality publication in the coming year.

Bob Hofmann

PLACEMENT SERVICE

The Chicago Section is now offering a Placement Service for its members free of charge. The program is intended for those who are Member Grade and above and is a positive step to help our members who are unemployed. If interested in any of the applicants listed below, call the IEEE office (236-4609) for their name and phone number. If marked "confidential," the applicant will be contacted by the IEEE office so that he/she may contact the prospective employer.

B23 — Sr. Electl. Proj. Engr. - industrial and commercial pwr. distr. and lgt. systems.
B24 — Senior programmer analyst - telecommunications, real-time, machine control.
B25 — Entry level posi. - exp. in electl. matl's., hybrid circuits - thick and thin.
B26 — Entry level in control systems and related areas for EET.
B27 — BSEET GPA 3.95/4.00 - looking for field engrng.-electronics engrng. position.
B28 — Elec. & Telecom. - experienced in basic PABX & Training Program Devel.
B29 — MBA, BSEE, exp. in finance, planning, market analysis, engineering operations.
B30 — 10+ years exp. in a wide variety of UP based electromech. products, MSEE.
B31 — Software engineer - research, teaching, databases, microprogramming, OS, AI.
B32 — BSEET entry level pos. exp. in field service/telecom equipment.
B33 — Proven engr. mkt. mgr. biomedical & innovative products, MSEE, MBA, prod. mgt.
B34 — BSEET DeVry AA graduate (female) congenial - very dependable - seeks top co.
B35 — BSEET entry level posi. in field service engr. exp. in digital-sperry, eqmnt.
B36 — Engineering executive - hi tech inst. mfr. proven productivity imprvmt.

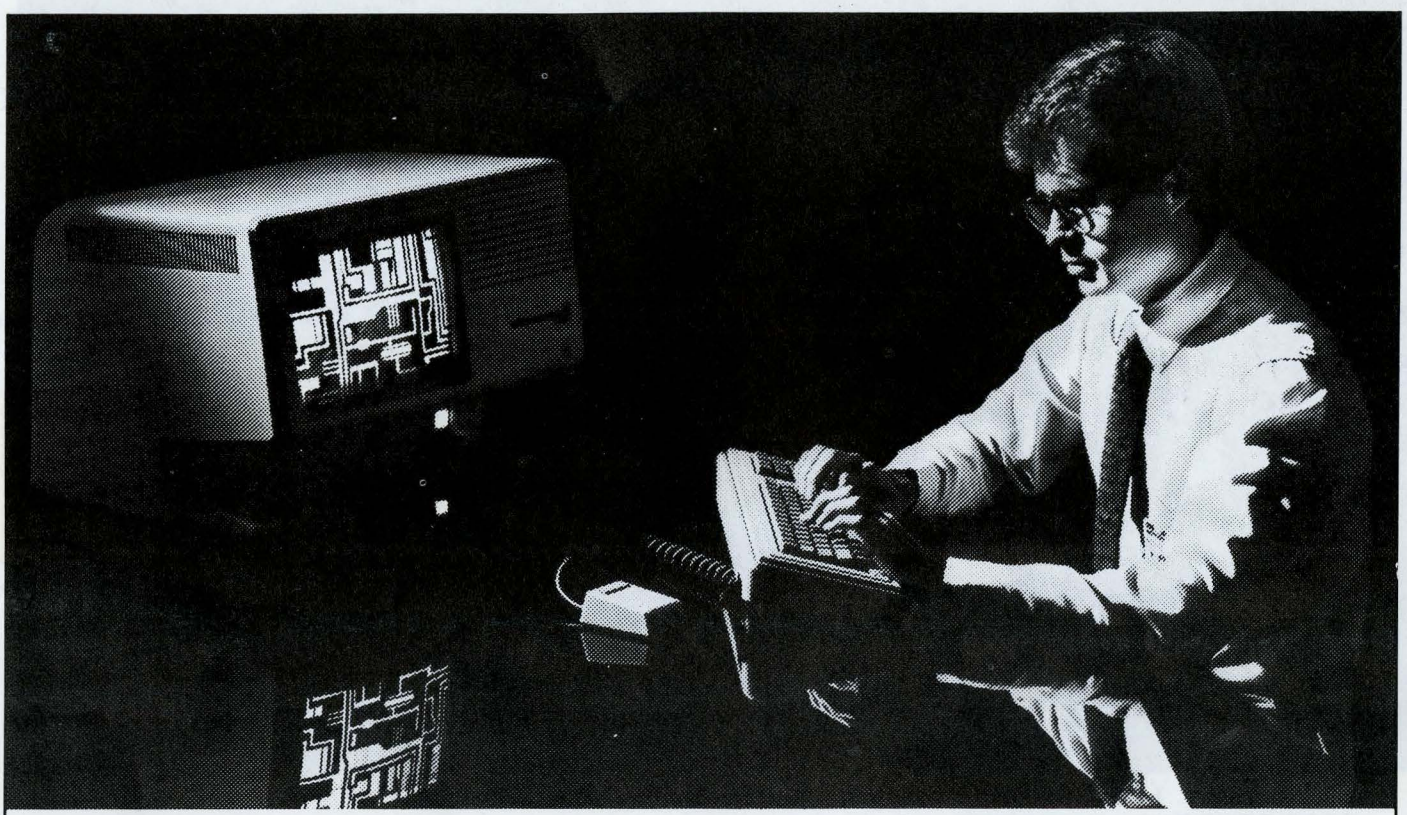
If your are an IEEE member and unemployed, call or write for the necessary form. Direct your request to: IEEE Placement Service • 125 S. Clark Street - Room 1545 • Chicago, Illinois 60603.

1986 FELLOW AWARDEES

1986 Fellow Awardees, left to right, Dr. Shi-Kuo Chang, Dr. Frank G. Splitt, Mr. Warren H. Cook, and Professor Gyan Chand Agarwal, pose at the April 12 IEEE recognition dinner with Section Chairman Henry Korman, center. Professor Agarwal, of the University of Illinois at Chicago, was recognized for contributions to understanding and modeling of the human motor system. Dr. Chang, of the Illinois Institute of Technology, was honored for contributions to pictorial information processing techniques and leadership in computer engineering research and education. Mr. Cook, retired from the Western Electric Company, was recognized for leadership in the development of IEEE and NFPA electrical standards. Dr. Splitt, of Northern Telecom, was honored for leadership in and contributions to the protection of communications systems from the effects of electrical interference. Not pictured is Professor James Chih-I Lin, of the University of Illinois at Chicago, who was made a Fellow for contributions to understanding the biological effects of pulsed microwaves in the inner ear of humans.

1986 STUDENT AWARDEES

Andrew Gasiorowski, left, and Henry Korman, fifth from left, pose with Chicago IEEE Section Student awardees at the annual IEEE recognition dinner. The students are, left to right, Steve Brucato and Mary Sambol-Finlayson of the University of Illinois at Chicago, Vanessa Allen and Richard Rausch of the DeVry Institute of Technology, Ed Powers and Christopher Paul Maret of the Illinois Institute of Technology, and Derek Steelberg and Kent Anderson of Northwestern University. Brucato, Powers, Rausch and Steelberg were honored for their scholarship, and Sambol-Finlayson, Maret, Allen, and Anderson were recognized for their service. Each student received $500.



Reach Beyond All Logic

"Imagination can be more important than knowledge."
Albert Einstein

Today's technological challenges are tomorrow's breakthroughs. A problem is merely progress in the incubation stage. But bridging the gap between a proposed solution and its practical application often requires more than logic. If you are an individual who can generate the ideas upon which scientific and technical achievements are built, you should consider a career at Northrop DSD.

Antenna Design Engineers

BSEE or Physics or equivalent, MS desirable. Requires knowledge of phased arrays, monopulse D.F. systems and millimeter wave techniques.

Power Supply Design Engineers

BSEE or equivalent, MS desirable. Perform IR & D activities involving new techniques development in high voltage microwave/millimeter wave transmission, nanosecond control of high DC voltages and modulation of microwave tube devices.

Electronic Development Engineers

BSEE or equivalent, and experience in digital (microprocessor, logic design), analog (power supply, A/D, D/A conversion, video processing), and RF (500 MHz-mm wave).

Advanced Technology Engineers

MICROWAVE: Active and/or passive microwave and millimeter wave integrated circuit design to include components such as oscillators, amplifiers, mixers, detectors and filters as well as integrated subsystems. Prior computer-aided design experience required.

RECEIVERS: Conceptual design, fabrication, and test of state-of-the-art receiver systems for ECM/Elint applications. Familiarity with systems architecture, signal processing, and channelized, set-on, and micro-scan techniques is desirable.

ANALOG: Specialist in videoamplifiers, filters, A/D and D/A conversion; background should include feedback theory analysis and computer-aided circuit analysis.

DIGITAL: Design/develop high speed signal processing and control systems; microprocessor controlled hardware, D/A and A/D conversion, digital signal processing utilizing very high speed logic, TTL, ECL, CMOS, GaAs, Gate Arrays and Pal's.

Transmitter Engineers

Responsibilities will include the specification, design and integration of high power microwave transmitter subsystems from first development models through production start-up. Background in analog and digital is desirable.

Project Engineers: Digital Processing Subsystems

BSEE or equivalent. Background in semi-custom LSI devices and CAE design tools. Manage entire engineering development of digital processing subsystem for advanced airborne electronics system.

Qualified candidates are invited to submit resume with salary requirements to: **Supervisor Staffing, NORTHROP CORPORATION, DEFENSE SYSTEMS DIVISION, 600 Hicks Road, Rolling Meadows, IL 60008.** We are an equal opportunity employer M/F/V/H. All positions require U.S. Citizenship.

NORTHROP

Defense Systems Division
Electronics Systems Group

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-ADV-