

Electromagnetic Compatibility Society



Newsletter

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EDITOR: ROBERT D. GOLDBLUM

FCC FINDS COMPUTERS EXCEED RADIATION LEVEL • 8

High levels of RF radiation are being detected by the Federal Communications Commission in its test of some of the most popular personal computers on the market today, according to the July 19, 1979 issue of Electronic News. The source claims that the Commission already has completed most of the radiation tests, which are designed to measure the RF energy that emanates from the CPUs while they are operating.

In these tests, conducted at FCC labs in Maryland, the commission reportedly has found that radiation, in most cases, far exceeds that allowed in Class I TV devices, such as video games. The tests began in March when the FCC asked Atari, Apple, Commodore, Heath, Southwest Technical and Radio Shack to submit samples of their equipment to the commission so that the agency could educate itself in the new products. The FCC has been concerned with these units because the radiation omitted by such products falls under the commission's rule Section 15.7 which covers a broad range of interference.

The commission has been trying to come to grips with the home computer market primarily due to the increasingly available products and also because Texas Instruments has requested the commission to loosen its rules concerning the products. Because the personal computers manufactured by the six do not hook up to the home TV - as other machines are doing - the FCC has no authority under rules governing Class I TV devices. However, the FCC does have jurisdiction under Section 15.7 of its rules, which covers any device that gives off radio frequency signals, but which are not covered by more specific agency provisions. The FCC tests turning

up the high levels of RF interference could create a dilemma within the commission, which soon must decide whether to enforce existing radiation standards - which some charge are outmoded for the current crop of home electronic devices - or to alter its rules to adjust to the existing situation.

The dilemma reportedly has been haunting the FCC for over 2 years. In 1976, the commission began looking into the problem of whether computers could comply with radiation standards specified under Section 15.7. At the time, the FCC was considering a rule change for all computer devices, but the measure died before action could be taken. When the number of personal computers on the market began to increase earlier this year, the FCC revived its interest, but looked at the matter only as it relates to CPUs destined for the home. The commission still has not decided what action it might take regarding the personal CPUs, but industry sources are hopeful that the commission will be flexible on the matter and loosen its radiation rules. It will be at least several months before the FCC would file a notice of proposed rule-making on personal computers and their radiation standards. This rule-making could come with the TV request for a rule change, and a related petition filed more than 2 years ago by RCA.

DEADLINE FOR JANUARY 1980 ISSUE OF
THE NEWSLETTER IS DECEMBER 15, 1979.

IEEE ELECTROMAGNETIC COMPATIBILITY SOCIETY NEWSLETTER is published quarterly by the EMC Group of the Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, New York, NY 10017. Sent automatically and without additional cost to each member of the EMC Group.

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FIRST CLASS MAIL

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EDUCATION COMMITTEE NEWS

The Don White International Training Center will offer seven EMC courses in the near future. The week of October 22-25 will be the time for advanced EMC design (San Diego) and EMC in EDP equipment (Boston). During November, courses in production techniques for maintaining EMC systems will be offered in their center near Washington, D.C. December brings an introductory EMC course (Los Angeles) and a digital coding and signal processing course (Washington). "Grounding and Shielding" will be presented in Toronto, November 13-15 and Honolulu, December 11-13. For in-plant courses or for more specific information, contact DWCI at 703-347-0030.

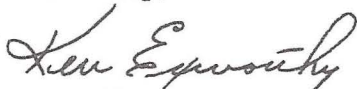
As I mentioned in the last newsletter, a course on "Electronic Enclosures" may be of interest to manufacturing engineers working to package electronic assemblies. This is offered by the Center for Professional Advancement in the spring of 1980. Contact 201-249-1400 for details.

The School of Engineering at George Washington University will sponsor several courses of interest: "Electromagnetic Interference and Control" by Bernhard Keiser on December 3-7; Asher H. Ende will present "Federal Telecommunications Policy" impacts, November 14-6 and trends, October 24-26, and "Lightning Protection" on November 19-20. For further information, contact them at 202-676-6106.

Data security is a very important field and is growing with the ever increasing use of computer links for business purposes. Many of you have worked with the military EMI concerns in this area. Another approach to the problem which is gaining wide acceptance is Encryption. A seminar which may be interesting if you are in the field is given by Martin Hellman of Hellman Associates. Contact him at 415-328-0647.

This will be my last column as Chairman of the EMC Education Committee. I have changed jobs and will no longer be working directly in the EMC field. This has been a very rewarding experience for me. I have enjoyed the many acquaintances I have made while working with the EMC group. I expect to keep active in the IEEE and will look forward to meeting you again in some other area.

Sincerely,



Kenneth W. Exworthy
Chairman, Education Committee
EMCS

SAE PROJECT TO IMPROVE MIL-STD-462

The SAE Committee AE-4 on Electromagnetic Compatibility is presently involved in a project to improve the EMI test methods of MIL-STD-462. The purpose for developing new methods is to increase the accuracy and usability of resulting test data, while not adversely affecting test time and cost.

Committee AE-4 is seeking suggestions from the EMC community for possible test method improvements. Please forward all suggestions, or reasoned criticisms of present test methods, to:

William H. Parker
Consulting Member, SAE AE-4
c/o Genisco Technology Corp.
18435 Susana Rd.
Compton, CA 90221
Tel.: 213-537-4750, Ext. 320

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FCC TO CONSIDER BIOLOGICAL EFFECTS OF
RF RADIATION

FCC GEN DOCKET NO. 79-144
Released June 15, 1979

The following has been excerpted from the FCC Docket:

The Federal Communications Commission is initiating this Inquiry to gather information and views that will assist it in establishing the course it should pursue in fulfilling its regulatory responsibility to promote communications by radio in light of the increased concern about the biological effects of radio frequency radiation. Publicity over the irradiation of the U.S. Embassy in Moscow, Senate Hearings on Radiation, Health and Safety, the recent Canadian proposal to lower the limits of exposure of the general population to non-ionizing radiation and numerous reports on radio frequency radiation appearing in the media, have all combined to increase public awareness and interest in radio frequency radiation. As a result, the Commission is receiving an increasing number of inquiries about the health effects of the facilities and equipment it authorizes. While we believe it is important to gather additional information and views to aid us in meeting our regulatory responsibilities, we want to emphasize that, so far as we are aware, the experimental data does not show that there is danger to the public at large from the thermal effects of radio frequency (RF) radiation. However, there are considerable differences of opinion about the biological effects of low level (i.e., non-thermal) and long term RF radiation.

This Inquiry is, therefore, designed to serve two purposes. We hope to gather information to: 1) assist us in determining whether it is appropriate for us to take any action under existing standards now applied by the health and safety agencies; and 2) provide documentation so that we may adequately participate in any rule making proceedings of these other agencies to ensure that any standard adopted adequately takes into account the impact of any proposal on the licensees and equipment we regulate.

The Commission's interest in the biological effects of non-ionizing radiation flows from two basic areas of statutory responsibility. The Commission has licensed the millions of non-government transmitters now in use throughout the Nation and is granting additional licenses at an accelerating rate. In addition, under Parts 15 and 18 of our Rules, we authorize microwave ovens, industrial heaters and many other types of unintentional radiating equipment. The Commission's actions as a Federal Government

regulatory agency must be consistent with the dictates of our organic statute and the National Environmental Policy Act (NEPA). The Communications Act requires us to promote the use of radio communications service "...for the purpose of promoting safety of life..." and to exercise our power "...as the public convenience, interest or necessity requires." If another agency of the U.S. Government, such as the Environmental Protection Agency (EPA) or Occupational Safety and Health Administration (OSHA), promulgates non-ionizing exposure standards that we thought might be exceeded by an authorized facility, it would be incumbent upon the Commission to consider that agency's determination in our licensing or certification requirements.

The Commission, as well as the affected industries, cannot ignore the possibility that one of the health agencies may promulgate stricter standards for radio frequency energy emission or for RF radiation exposure where excessive power densities could pose a potential biological hazard to people. In that event, the Commission must consider those new standards with the possible result that some of these entities will be required to adjust their operations or equipment accordingly.

FACTUAL INFORMATION NEEDED

Please provide information on the following:

1. Information concerning the typical near-field, and in the case of very powerful radio stations, the far-field power densities at specified distances from the following kinds of stations or devices:
 - A. Hand-held transmitters operating from 25 to 900 MHz with minimum to maximum powers.
 - B. Land mobile transmitting antennas with gains from 0 to 10 dB operating from 25 to 900 MHz with powers of 200 mW to 400 watts antenna input and mounted on vehicles or towers.
 - C. Point-to-point relay transmitting antennas with gains from 20 to 50 dB operating below 300 GHz with typical and maximum radiated powers.
 - D. AM radio broadcast antennas with typical and maximum powers.
 - E. FM radio broadcast antennas with typical and maximum powers.
 - F. Television broadcast antennas with typical and maximum powers.
 - G. Industrial, scientific, and medical units at typical maximum power levels now in use.

H. Radar transmitters (marine, police, airport, military, etc.) with typical and maximum powers.

I. Any other sources of non-ionizing electromagnetic radiation on which experimental or empirical data is available.

2. In discussing Question 1 above, consideration should be given to how the human body close to a transmitting antenna or ISM equipment may distort the near-field radiation pattern causing changes in the Voltage Standing Wave Ratio and, if so, the effects of such changes on the absorption of the electromagnetic radiation by that human body.

3. Statistical studies relating to morbidity of electronic equipment users particularly long-term users of hand held portables, marine radio and industrial heating units. Incidence of cataracts would be of particular interest as compared to that in the general population.

Please provide answers and supporting data to the following questions:

1. Describe the applicability (or lack thereof) of the standard adopted for microwave ovens ($1\text{mW}/\text{cm}^2$ at five centimeters) to other radio equipment with appropriate adjustment for frequency and manner of use. What studies support your conclusion?

2. Describe the pros or cons of adopting the $10\text{ mW}/\text{cm}^2$ ANSI guideline if it were adopted as an interim standard pending completion of definitive studies establishing safe radiation levels?

3. Should measurements of field intensities within the area of FCC authorized facilities be made? By whom?

4. Should the Commission do a study to determine what services use FM and TV towers for mounting their equipment (e.g., point-to-point transmitters, CATV receivers and Land Mobile transceiver antennas)?

5. Should measurements of field intensities on all FM and TV towers be required? If so, how, when, where, how often and by whom?

If field intensity measurements are required, how would the ability of private industry to perform the required measurements be affected by the current availability of measurement equipment?

6. Should the Commission establish procedures for protecting personnel when working on antenna towers?

7. Are there any procedures used by personnel in the operation, testing and maintenance of transmitting equipment that require personnel to be exposed to high field intensities? If so, what measures can be employed to reduce or eliminate such exposure?

8. Can prediction methods be employed to determine absolute power density at locations of interest and would such methods produce sufficiently reliable results? If so, please describe the method and explain how verification was accomplished.

9. If measurement of power densities is necessary, what problem does this pose for licensees?

10. What possible techniques can be employed at broadcasting stations and other RF emitters to limit their contribution to cumulative power densities that may be deemed to constitute a hazard?

11. If the cumulative power density observed at a particular location is above $10\text{ mW}/\text{cm}^2$, how can contributions from individual sources be determined and how should responsibility for reducing contributions be shared?

12. If prediction methods may be employed in determining power densities, what difficulties can be anticipated in determining radiation from antennas at angles toward the base of a tower and up to horizontal?

13. Describe how any standard adopted should differ for the various frequency ranges and state why.

14. If there are places frequented by people where the radiation exceeds $10\text{ mW}/\text{cm}^2$, what action should be taken to reduce this level? Should grants of all radio applications which would tend to raise this level cease? Should a determination be made that a licensee or some radiation source must reduce or terminate its operation, how should such a determination be made?

15. Reduction in output power could have a deleterious economic effect on several of the radio services. It could also cause a reduction in service to the public. Does a health risk, no matter how small, outweigh economic loss or service cutbacks no matter how large? By how much? Quantify your contention.

16. Does a health risk to animals have to be considered? What if the species being threatened is on the endangered species list?

17. The radiation level in the main beam of a microwave antenna will probably be above the level considered safe ($10\text{ mW}/\text{cm}^2$). Should this level be permitted if the chance of a human climbing the antenna structure is small? Should the Commission require fences around such structures?

18. Should licensees be required to warn maintenance people of the radiation hazards involved at each radio site or to post warnings if levels are shown to be above $10\text{ mW}/\text{cm}^2$? Some other specific value? What value?

19. Discuss in detail the impact on Commission licensees in the various radio services we regulate (e.g., broadcasting, mobile, fixed, other) that the various standards mentioned would have (50 uW/cm², 1 mW/cm², and 10 mW/cm²), continuous or short-term occupational or general public.

20. What techniques can be employed by each of the Commission's services to limit their contribution to cumulative power densities? What are the costs of employing these methods?

21. What measures can be employed to reduce exposure to high densities, or to reduce any ill effects?

Comment in response to this Notice of Inquiry will be used to evaluate the issues we have discussed above. It also will assist us to develop comments and information for submission to other Government agencies developing standards in this area. Your comments must clearly show this docket number "General Docket No. 79-144" on the first page. Please label each part of your responses to identify clearly the subject you are addressing. If you have general comments which are not on a specific matter listed above, simply label these comments with the Docket Number. Section 1.419 of the Rules requires that you file the original and five copies of your comments. If you want each Commissioner to receive a personal copy of your comments, you should include 6 additional copies. The FCC will fully consider all comments, even if only the original is filed. Send your comments to: Secretary, Federal Communications Commission, Washington, DC 20554. All comments will be available for public inspection in the FCC Dockets Reference Room, Room 239, 1919 M Street, N.W., Washington, D.C. The FCC is open weekdays between 8:00 A.M. and 5:30 P.M.

For further information, contact: Will McGibbon, Office of Science and Technology, 202-632-7060.

Comments must be received by December 15, 1979.

NBS TEXTS OFFER AID IN MEASURING PRODUCTS FOR ELECTROMAGNETIC INTERFERENCE

Manufacturers in a wide variety of fields will be interested in two new publications from the National Bureau of Standards designed to assist them in testing their products for vulnerability to electromagnetic interference (EMI).

To meet the demands of industry for means and methods of testing their products for vulnerability to EMI or for emissions of unwanted electromagnetic radiation, NBS has designed special chambers called transverse electromagnetic (TEM) cells. The two recent NBS publications provide manufacturers with complete details of how to construct and operate a TEM cell.

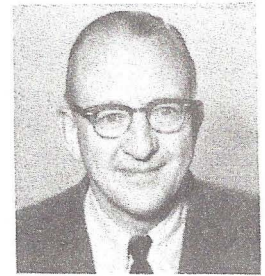
Construction of a Large Transverse Electromagnetic Cell outlines a 50-step procedure involved in constructing a 2.8 meter by 2.8 meter by 2.8 meter, all-aluminum cell. The publication contains photographs and detailed drawings which will enable a firm with proper facilities to construct a similar TEM cell.

The second publication, Using a TEM Cell for EMC Measurements of Electronic Equipment, offers detailed, step-by-step procedures for using a TEM cell to measure either susceptibility of products to EMI or the amount of electromagnetic radiation emitted by the products.

Both publications are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Construction of a Large Transverse Electromagnetic Cell (NBS Technical Note 1011), was authored by W. F. Decker and W. A. Wilson of the NBS Instrument Shops Division and by M. L. Crawford of the Electromagnetic Fields Division in the Bureau's Boulder, Colorado laboratories. Order for \$3.25 by stock number 003-003-02034-6.

Using a TEM Cell for EMC Measurements of Electronic Equipment (NBS Technical Note 1013), by M. L. Crawford and J. L. Workman of the Electromagnetic Fields Division, may be ordered for \$2.40 by stock number 003-033-02053-2. Add 25% for foreign mailing.

Book Reviews



by Jim Hill, EMXX Corporation

by Jim Hill, EMXX Corporation

As promised in the last issue of the Newsletter, we have a review of Don White's latest book, the loose-leaf "EMI Control Methodology & Procedures (Design Synthesis)." The loose leaf format is a departure from previous publications from the Don White organization. In this case, it is explained that the material will be modified and updated on a semi-annual schedule.

The review of "Electromagnetic Interference Control in Medical Electronics" which Jim Toler is doing has not been completed. Jim has been tied up with more pressing business; but, he has promised to have this review ready for the next issue of the Newsletter.

Will the reader from Western Union who called me recently please call back or drop me a line. I have misplaced his name and address. We have several books that need a review and are open for volunteer reviewers. Write or call me at 703-451-4619.

"EMI Control Methodology & Procedures (Design Synthesis)"

BY

Donald R. J. White
Published by Don White Consultants, Inc.
Route 1, Box 450, Gainesville, VA 22065
1979, Loose-leaf in 7-ring binder, 321 pages
Price \$150.00

In the preface, author Don White says that almost all of the material contained in this book is new and does not appear in published literature. Whether or not this is true cannot be important. The main thrust of this book is "methodology." The emphasis is on protecting the victim receptor or system from a hostile ambient electromagnetic environment. The

accomplishment of this objective involves the development of the methodology to accommodate all of the variables that occur any large system. A wide variety of mathematical models are used to describe the phenomena involving noisemaking sources, coupling paths, and victim responses. The author states that several of these models have been validated in varying degrees, but many of the models are new and unvalidated. This does not reduce the power of the methodology which is developed and reported in the book, and as the book is updated, the math models will be updated and replaced with further validation.

NBS PUBLISHES PROCEEDINGS OF
1978 EMI WORKSHOP

The subject material is organized into 12 chapters and 7 appendices. The first two chapters are given over to a discussion of the system problem and definitions of the victim, ambient and input data. The author has set up 9 levels of EMI, ranging from the lowest (chip level) to the most complex (an ensemble of systems level). The mid-level is described as a subsystem or collection of equipments represented by equipment racks or consoles. Much of the book's emphasis is directed to this level. The rationale is that if a methodology handle for a sound engineering EMI approach can be grasped at the mid-level, then one either can move up or down the scale to the other levels of complexity.

The complexity of the EMI problem is illustrated with a two-box equipment EMI situation illustrating the many factors involved in the coupling scheme between the two boxes. There are 29 design features which may be used or omitted, thus 29 "yes" or "no" decisions to be made which are interrelated. Thus, there are 229 combinations, or 500,000 EMI configuration combinations. In the real world, many of the decisions are multiple choice rather than "yes" or "no," resulting in a number of combinations closer to infinity.

The next 7 chapters discuss methodology with reference to the various effects responsible for EMI, including audio-rectification, and the various well known coupling modes. The remaining chapters deal with some illustrative examples, computer solutions, and EMI emission and control. Actually, the book is not complete yet and only a few pages of the last 4 chapters are included. Owners of the book will receive the missing material to complete their book.

Of the 7 appendices, 4 are included currently. These deal with Butterworth and Chebychev response functions, ground-loop coupling, and inductance of conductors. The ground-loop coupling appendix includes an extensive set of graphs for balanced and unbalanced circuits of various impedances, length and wire size. Still to come are appendices on ambients from licensed transmitters, statistical considerations, and field-to-cable coupling.

It is planned that new updating pages to the book will be mailed out semi-annually, starting January 1, 1979. For this updating service, the price is \$27.50 for one year or \$70.00 for a three-year subscription.

In the opinion of this reviewer, the book makes a significant contribution to the complex problem of analyzing the EMI problem and setting up a methodology to attack the problem.

The National Bureau of Standards (NBS) has published the Proceedings of a special two day workshop on electromagnetic interference (EMI) held at its Gaithersburg, MD headquarters in November, 1978. The workshop was held to assess the EMI situation and to explore solutions for this phenomenon, which has become a problem of national dimensions as more and more electronic products come on the market. The potential for sources of electromagnetic radiation to affect these products is significant. In addition, the health consequences of long-term exposure to low levels of electromagnetic (nonionizing) radiation are unknown.

The Proceedings contain the text of five papers delivered at the Workshop covering the definition of major EMI problems, biological effects, Federal Communications Commission activities, pending Congressional legislation, voluntary standards and future technological challenges. Also included are the chairmen's summaries of five working groups on communications, transportation, consumer products, industry and medicine.

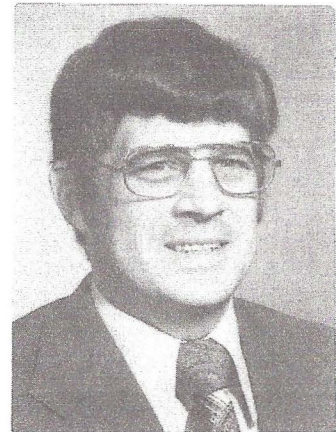
Single copies may be obtained for \$2.50 from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Order by stock number 003-003-020991. Title is Proceedings of the 1978 Electromagnetic Interference Workshop.

ESCOE PROGRESS REPORT

ESCOE (Engineering Society Commission on Energy) is a not-for-profit organization established in 1976 by the engineering founder societies, including the IEEE, to provide a source of professional knowledge and skill to support the Department of Energy (DOE) in its work. ESCOE is staffed by mature professional engineers (from industry and academia) who serve ESCOE for two year periods.

In March, ESCOE presented a one day review of its technical program for an audience of leaders of the engineering community, including representatives from IEEE. ESCOE's work to date has been primarily in areas of mechanical engineering. Some 19 tasks have been completed or are underway. Representatives from DOE indicated that they have found ESCOE's work to be of high quality and great value. An annual report summarizing the tasks undertaken to date is available from the Technical Activities Department in Headquarters.

NOTES FROM SEQUENCY UNION



SESSIONS ON NON-SINUSOIDAL SIGNALS AT EMC '80

The advance call for papers for the 1980 IEEE Symposium on Electromagnetic Compatibility is soliciting papers in the general area of non-sinusoidal functions. The hope is to run 4 to 6 sessions in this area. The papers are to be submitted directly to the Technical Papers/Program Chairman, Dr. Keiser. (His address is given below.) The representative on the Program Committee for the SeQUENCY Union is G. Ferrel Sandy. (His address is MS-W332, MITRE Corp., 1820 Dolly Madison Blvd., McLean, VA 22102, and his telephone number is 703-827-6822.) You may contact Ferrel or myself for any additional information concerning the sessions.

A list of technological areas and system applications in which papers are sought are:

TECHNOLOGICAL AREAS

- SeQUENCY Theory
- Walsh Functions
- Orthogonal Functions
- Transforms
- Switching Theory
- Pattern Classification and Recognition
- Filters
- Logic/Coding
- Radiated Interference

SYSTEM APPLICATIONS

- Digital Signal Processing
- Speech and Image Processing
- Communications
 - Radio
 - Multiplexing
 - Spread Spectrum
- Radar
- Spectroscopy
- Nonlinear Systems
- Generators/Transmitters
- Analyzers/Receivers

BY

G. ROBERT REDINBO



Prospective authors should submit a 50 to 70 word abstract and a 600 to 800 word summary (up to four illustrations) that clearly explain their contribution, its originality, and its relationship to EMC technology.

Upon paper acceptance, authors will receive forms and instructions for the preparation of materials to be printed in the Symposium Record.

AUTHORS' SCHEDULE

Abstract and Summary
(3 copies required) ...Jan. 15, 1980
Notification of
AcceptanceMar. 14, 1980
Camera-Ready Copy.....May 15, 1980

Submit Abstracts and Summaries to:

Dr. Bernhard E. Keiser
Technical Papers Chairman
P. O. Box 1711
Annapolis, MD 21404
703-281-9582

AIRCRAFT and LIGHTNING:

Military
Transport
General/Business Aviation
Rotorcraft

- Characterization of Lightning in the Airborne Environment
- Analytical Models for Natural Lightning Phenomenon and Pressure
- Direct and Indirect Effects
- Tests and Measurement Methods and Equipment
- Design Criteria for Electronic-Electrical Systems Hardening
- Composite Materials
- Electromagnetic Detectors
- Electrostatic Detector
- Avoidance Concepts
- Relationship Between Lightning and Turbulence

VALIDATION/CERTIFICATION:
Protection Application
Test Program/Reports
Criteria/Guidance

CALL FOR PAPERS
LIGHTNING SYMPOSIUM

Papers are invited for the 1980 Lightning Technology Symposium under the co-sponsorship of the Federal Aviation Administration, National Aeronautics & Space Administration and the Florida Institute of Technology. The Symposium will be held April 22-24, 1980 at the NASA Langley Research Center, Hampton, Virginia.

The annual Symposium on Lightning Technology has become a highly successful national and international program in which new developments, problems, accomplishments, and techniques are presented and discussed. Originally, the Symposium/Workshops were centered around grounding, bonding, shielding and lightning protection for electronic facilities, both buildings and the electronic equipment. The Symposium format has now evolved to include the effects of direct strike and induced lightning, protection/hardening, lightning detection and warning systems for aircraft/systems. The Symposium is a forum to present current data and information on ground and in-flight test programs.

Papers are invited in the following areas:

GROUNDING:

- Techniques
- Philosophy
- Ground Facilities
 - Airborne
 - Shipboard
 - Medical

The deadline for submission of abstracts is November 17, 1979. Authors must submit a 250 word, maximum, abstract appropriate to describe a 30-minute paper. The abstract, suitable for publication in an advance program, should be typed on a single sheet and include the title of the presentation, author(s) and affiliation; and complete return address and telephone number for each author. Forward the abstracts to the Technical Program Chairman:

Mr. C. J. Andrasco, ARD-440
Federal Aviation Administration
Washington, DC 20590
Telephone: 202-426-3585

General inquiries or suggestions regarding the scope of the Symposium should be addressed to:

Mr. John E. Reed, AWS-130
Federal Aviation Administration
Washington, DC 20591
Telephone: 202-426-8395

or

Mr. Billy L. Dove - M.S. 477
NASA, Langley Research Center
Hampton, VA 23665
Telephone: 804-827-3681

NTC-79

The National Telecommunications Conference (NTC) will be held for the first time in the Nation's Capitol, November 27-29, 1979, at the Shoreham Americana Hotel.

The conference will highlight the policy, systems and technology that will shape the future of telecommunications. The program features 48 technical sessions, including one on EMC, stimulating panel discussions and exhibits of the latest equipment. This forum will project a picture of a future largely dependent on how well we harness the many faceted, exploding technology that produces new telecommunications services daily while rendering existing ones obsolete. The potential futures for common carrier technologies, markets and regulations, the impact of the 1979 General World Administrative Radio Conference and the impact of emerging technologies such as optical communications will be thoroughly discussed.

The NTC is one of two major telecommunications shows sponsored by the IEEE on a U.S.-wide basis. This show (NTC-79) promises to provide the opportunity to assess the broad-based field of telecommunications from the vantage point of the Nation's Capitol.



THE INSTITUTE OF
ELECTRICAL AND
ELECTRONICS
ENGINEERS, INC.

ELECTROMAGNETIC COMPATIBILITY SOCIETY

PLEASE REPLY TO:
D. N. Heirman
143 Jumping Brook Road
Lincroft, NJ 07738
(201) 949-5535
4 September 1979

To: All Electromagnetic Compatibility Society Members

Subj: Publication of Updated and Revised EMC-S Constitution and Bylaws

1. On 6 August 1979, our revised EMC-S Constitution and Bylaws were approved by the IEEE Technical Activities Board Chairman, Dr. C. Lester Hogan. As per Article IX, Sections 1 and 2 of our Constitution, all proposed amendments and bylaws or changes to those which exist shall be publicized after TAB approval in the Society NEWSLETTER before they take effect.

2. The changes incorporated in the revised Constitution and Bylaws represent the culmination of several years effort by your Administrative Committee to provide a current and streamlined basis for operating our Society. Highlights of our update includes:

Constitution

The Administrative Committee (AdCom) name is changed to the Board of Directors. Election and eligibility for the Society officers are clarified. The present four "Service" Vice-presidents are renamed Technical Directors and the Senior Vice-president is renamed Vice-president. Reference to the maximum number of members of the Board of Directors is removed and inserted in the Bylaws.

Bylaws

Paragraph 2--Membership Several additional grades of membership have been added.

Paragraph 3--Board of Directors Better defines members of the Board and their terms of office as well as the number of Board members with and without vote. Financial support for Board members is spelled out.

Paragraph 4--Nomination and Election of Board of Directors Revises the complete chronological process for nominations and elections as well as the requisite qualifications for nomination.

Paragraph 5--Election of Board Officers Clarifies who is eligible and who can vote for the eight elected positions on the Board. Provides details of the elected officers' duties.

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Paragraph 6--Subsocieties Better identifies the scope of such technical subsocieties.

Paragraph 7--Publications Identifies areas where compensation for editors may be considered.

Paragraph 8--Society Funds Clarifies the handling of Society funds in association with symposia and technical conferences.

Paragraph 9--Society Business--Suggest that symposium be held in the Fall of each year and that an annual meeting be held as the last meeting of the year to close the calendar year Society's business.

Paragraph 10--Technical Committees Adds a technical advisory committee as an overseer of committee activities. Requires an annual meeting to prepare an annual committee report to the Board of Directors.

Paragraph 11--Executive Committee Updates the functions of the committee

Paragraph 12--Standing Committees Updates list of committees. Identifies a new committee to provide IEEE headquarters with nominations for divisional director and candidates for Institute committees and boards.

Paragraph 13--Special Ad Hoc Committees Requires annual status reports to the Board of Directors.

Obvious changes such as Group to Society and dropping all reference to his, her, etc. have been made throughout. These above highlights will streamline our Society operations as well as further inform our membership of the rules the Board of Directors must follow in making decisions and appointments.

3. Especially for our new members, the procedure for being elected a Director-at-Large member of the Board of Directors as specified in Paragraphs 4 and 5 of the Bylaws should be of interest to those wanting to become more involved in the operation of the Society. It should be noted that of the elected officers, only the President and Vice-president must be members of the Board of Directors at the time of their election. The Secretary, Treasurer, and Technical Directors may be elected from among the Society membership at large. Each is elected annually. The Bylaws also provide for Secretary and Treasurer Assistants which are appointed by these office holders. In addition, the President with the consent of the Board, may make appointments for the many standing committees listed in Bylaw Paragraph 12 while the Technical Directors can appoint members to the various technical committees described in Bylaw Paragraph 10. The editors for our TRANSACTIONS and NEWSLETTER can appoint associate editors, special guest editors, and manuscript reviewers as indicated in Bylaw Paragraph 7. In addition, there

is an opportunity for Society members to work on the committee running each EMC Symposium and the committees working on various EMC standards.

In other words there is a wide diversity of exciting and challenging opportunities for Society members who are not necessarily elected to the Board of Directors. We hope that in reviewing our revised Constitution and Bylaws you will see areas where you can contribute. We further hope that you follow through by contacting the appropriate officers or members of the Board of Directors as listed on the inside cover of the TRANSACTIONS and letting them talk with you about these opportunities.

D. N. Heirman, Chairman
EMC-S Constitution and Bylaws Committee

IEEE ELECTROMAGNETIC COMPATIBILITY SOCIETY

(EMCS)

CONSTITUTION

Article I

Name and Objective

Section 1. This organization shall be known as the IEEE Electromagnetic Compatibility Society of the Institute of Electrical and Electronics Engineers, Inc.

Section 2. Its objectives shall be scientific, literary, educational, and professional in character. The Society shall strive for the advancement of the theory and practice of electrical and electronic engineering and of the allied arts and sciences, and the maintenance/advancement of a high professional standing among its members and affiliates, all in consonance with the Constitution and Bylaws of the IEEE and with special attention to such aims within the field of interest of the Society as are hereinafter defined.

Section 3. The Society shall aid in promoting close cooperation and exchange of technical information among its members and other professional societies, and to this end shall hold meetings for the presentation of papers and their discussion, and through its Board of Directors shall study and provide for the technical and professional needs of its members.

Article II

Field of Interest

Section 1. The Field of Interest of the Society shall be the enhancement of Electromagnetic Compatibility (Electromagnetic Compatibility is defined as the capability of systems or equipments to be operated in the intended operational environment at designed levels of efficiency without degradation due to electromagnetic interactions), including, but not necessarily limited to:

1. The generation of engineering standards
2. Measurement techniques and test procedures
3. Measuring instruments
4. Equipment and systems characteristics, such as susceptibility (immunity), vulnerability, related propagation effects, and subjective effects, frequency allocation and assignment
5. Improved (interference reduction or control) techniques

- and components
- 6. Education in electromagnetic compatibility
- 7. Studies of the origins of interference, both man-made and natural, and their classification
- 8. Spectrum conservation
- 9. Spectrum utilization
- 10. Shielding techniques
- 11. Side effects of electromagnetic energy
- 12. Scientific, technical, industrial, professional or other activities that contribute to this field, or utilize the techniques or products of this field, subject as the art develops, to additions, subtractions, or other modifications directed or approved by the IEEE Technical Activities Board.

Section 2. The field of interest of the Society may be enlarged, reduced or shifted moderately as the needs of the occasion indicate with the provision that such revisions shall be processed as an amendment to this Constitution. Editorial changes for clarification shall not require Constitutional amendment.

Article III

Membership

Section 1. Membership in the Society shall be available only to members of the IEEE in any grade, including students, having a professional interest in any phase of the field of interest of the Society, providing payment of dues is current.

Section 2. Affiliates may participate in the Society activities, as provided by the IEEE Bylaws and subject to the applicable IEEE rules and regulations and any additional limitations imposed by the Society Bylaws.

Article IV

Financial Support

Section 1. The Society shall collect from its members an annual assessment or fee, in accordance with the IEEE Bylaws and applicable rules and regulations.

Section 2. The Society may make registration charges at its Society meetings, symposia, conferences, and conventions.

Section 3. The Society may raise revenues by other means, such as publications, advertising, shows, requests for contributions, and charges for sending out notices to non-Society members, provided such means are consistent with applicable IEEE rules and regulations, and do not encroach on revenue fields of prior established Societies or Sections. Any new revenue means not explicitly covered by IEEE rules and regulations must be approved by

the General Manager before being adopted by the Society.

Article V

Administration

Section 1. The Society shall be managed by a Board of Directors whose membership shall consist of:

1. Directors-at-Large: Members of the Society elected by the Society membership at large to the Board of Directors as specified in the Society's Bylaws.
2. Directors: Executive officers of the Society elected by the Board of Directors to designated offices as specified in the Society's Bylaws.
3. Ex-officio Directors: Members appointed or elected to designated positions or offices as specified in the Society's Bylaws. Ex-officio Directors are nonvoting members of the Board of Directors.

At least two-thirds of the voting members of the Board of Directors must be elected by the Society membership at large.

Section 2. The Board of Directors shall annually elect one of its Directors-at-large as President, and another as Vice President whose terms shall be for one year and they may be re-elected for no more than one additional year. A Secretary, Treasurer and Technical Directors shall also be elected or re-elected annually for one year terms. The Secretary, Treasurer and Technical Directors need not be Directors-at-Large.

Section 3. Newly elected President, Vice President, Secretary, Treasurer, Technical Directors and new members of the Board of Directors shall assume office on the first of January of each year.

Section 4. The duties and responsibilities of the officers shall be as defined hereunder and in the Bylaws and as delineated by the Board of Directors.

Section 5. The President, under direction of the Board of Directors, shall have general supervision of the affairs of the Society. The President shall preside at meetings of the Board of Directors, at general meetings of the Society, and at the Annual Meeting of the Society, and have such other powers and perform such other duties as may be provided in the Society Bylaws, or as may be delegated by vote of the Society Board of Directors. In the President's absence or incapacity, the Presidential duties shall be performed by the Vice President.

Section 6. The President shall be an ex-officio member of all Committees of the Society. The President is a member of the IEEE Technical Activities Board, and when notified of a meeting of

said Board, the President shall insure representation of the Society at such a meeting either in person or by an alternate. If an alternate cannot be found, the President shall present the views of the Society by a letter of proxy.

Section 7. The Board of Directors may establish standing or ad hoc committees as prescribed in the Bylaws, including both functional committees (e.g., Awards, Chapters, Membership, Nominations) and technical committees. Technical committees may be established as needed to develop specific areas of the field of interest.

Section 8. The Board of Directors may utilize the services of Headquarters as bursar, for all or part of the Society funds, as provided by the IEEE Bylaws and rules and regulations. If any part of the Society funds are received and deposited separately, the terms and conditions shall be in accordance with IEEE policies and subject to the provisions of the Society Bylaws and to any special limitations imposed by the Board of Directors.

Section 9. Neither the Electromagnetic Compatibility Society, nor any Officer or representative thereof, shall have any authority to contract debts for, pledge the credit of, or in any way bind the Society or IEEE, except in accordance with previously approved budgets.

Article VI

Nomination, Election and Appointment of Board of Directors

Section 1. The nomination and election of Directors-at-Large to the Board of Directors shall be as prescribed in the Bylaws.

Section 2. The nominating procedure for Directors-at-Large positions shall include provision for petition by Society members to place a name on the ballot.

Section 3. Within-term vacancies of elected members of the Board of Directors shall be filled by appointment, for the unexpired term, by the President with the consent of the majority of the voting members of the Board of Directors. The full elective rights and responsibilities associated with the vacated position shall pass to the appointee for the unexpired term.

Article VII

Meetings

Section 1. The Society may hold meetings, conferences, symposia, or conventions either alone or in cooperation with sectional, regional, or national convention committees of the IEEE, or other technical and professional organizations, subject to IEEE rules and regulations. The Society shall sponsor at least one

technical conference of national scope each year.

Section 2. Meetings, conferences or conventions of the Society shall be open on an equal basis to all members of the IEEE. The Society may not sponsor or co-sponsor a meeting which is subject to security clearance.

Section 3. The Board of Directors shall hold at least two meetings each calendar year, one an Annual Meeting at a time specified in the Bylaws. Other meetings of the Board of Directors shall be held at such times as are found necessary and/or convenient. Special meetings of the Board may be called by the President of the Society at the President's discretion or upon request of six other members of the Board of Directors with at least 30 days notice.

Section 4. Over fifty percent of the voting members of the Board of Directors shall constitute a quorum. All voting members shall have an equal vote.

Section 5. A majority vote of the voting members of the Board of Directors attending a meeting shall be necessary for the conduct of its business except as otherwise provided in the Constitution.

Section 6. Business of the Board of Directors may be handled by correspondence, telephone, or other electronic means where, in the opinion of the President, matters requiring action can be adequately handled in that manner. A majority vote of the voting members of the Board is necessary for approval of actions handled in that manner, unless otherwise provided.

Article VIII

Publications

Section 1. Publications undertaken by the Society shall be subject to IEEE policies and to any further guidance or controls prescribed by the Board of Directors or its duly appointed committees. The Society shall be responsible for the financial aspects of its publication program.

Section 2. The President, with the advice and consent of the Board of Directors, shall appoint such editors as may be required to implement the publication program. The duties, authority, and responsibilities of an editor shall be prescribed in the Bylaws.

Article IX

Amendments

Section 1. Amendments to this Constitution may be initiated by petition submitted by at least 25 members of the Society or by the Board of Directors, such petition being submitted to the IEEE

Technical Activities Board, and to the Executive Committee of the IEEE for approval. After such approval, the proposed amendment shall be published in the Society Transactions or Newsletter, or otherwise publicized by direct mailing to the membership, with notice that it goes into effect unless ten percent of the Society members object within 30 days. If such objections are received, a copy of the proposed amendment shall be mailed with a ballot to all members of the Society at least 30 days before the date appointed for return of the ballots, and the ballots shall carry a statement of the time limit for their return to the IEEE office. When a mail vote of the entire Society membership is made necessary, approval of the amendment by at least two-thirds of the ballots returned shall be necessary for its enactment.

Section 2. Suitable Bylaws, and amendments thereto, may be adopted by a two-thirds vote of the Board of Directors present in meeting assembled, provided that notice of the proposed Bylaw or amendment has been sent to each member of the Board of Directors at least 15 days prior to such meeting; or a bylaw or amendment may be adopted by a two-thirds mail vote of the members of the Board of Directors provided a 30-day period is provided for such responses. In either event, the proposed Bylaw or amendment shall be published in the Society Transactions or Newsletter. No Bylaw or amendment shall take effect until it has been published and has been mailed to the Technical Activities Secretary of the IEEE, who must obtain approval of the General Manager.

BYLAWS

IEEE ELECTROMAGNETIC COMPATIBILITY SOCIETY (S-27)

1.0. These Bylaws provide detailed guidance for the supervision and management of the EMCS affairs, in accordance with the Society Constitution. Amendments may be made by means of the procedures described in Article IX, Section 2, of the Constitution.

Suitable Bylaws, and amendments thereto may be adopted by a two-thirds vote of the Board of Directors in meeting assembled, provided that notice of the proposed Bylaw, or amendment, has been sent to each member of the Board of Directors at least three weeks prior to such meeting; or a Bylaw, or amendment, may be adopted by a two-thirds mail vote of the members of the Board of Directors, provided a 30-day period is provided for such responses. In either event, the proposed Bylaw, or amendment, shall be published in the Society Transactions or Newsletter. No Bylaw, or amendment, shall take effect until it has been published and it has been mailed to the Technical Activities Secretary of the IEEE, and he has obtained approval of the General Manager. Editorial changes in the Bylaws which clarify the meaning, structure or operation of the Board of Directors shall require only the approval of the Board of Directors.

2.0. Membership: There shall be only one grade of Society membership available to all IEEE members, based on the payment of the annual fee prescribed in IEEE Bylaw 109.

2.1. Member: Membership shall be based on payment of annual IEEE and Society dues and upon acceptance of formal application by IEEE Headquarters.

2.2. Honorary Life Members: Such membership, exempt of the payment of the annual fee, shall be based on the recommendation of the Society Awards Committee, the endorsement of the Society Board of Directors, and the approval of the General Manager of IEEE.

2.3. Affiliates: Affiliation may be based on membership in other IEEE-approved Societies that have been recognized for affiliate purposes by specific action of the Board of Directors. A list of approved societies will be maintained by the Technical Activities Secretary of the IEEE. Further, affiliates may join in accordance with any other provision that may be incorporated in the IEEE rules and regulations.

A Society Affiliate may not serve in elective office in the Society or in a Chapter or vote for candidates for these offices; however, an Affiliate may serve in any appointive office in the Society or a Chapter of the Society. A Society Affiliate is entitled to receive notices of all meetings sent to Society members, may receive copies of publications of the Society, may attend and participate in any function of the Society by payment of IEEE member charges, and may receive any award bestowed upon him by the Society. A Society Affiliate may not receive any IEEE benefits that are derived through IEEE membership except as approved by the Executive Committee of the IEEE.

2.4. Student Members: An exception to the annual fee shall be made for students, as prescribed by IEEE Bylaws. Transferring to full membership shall be in accordance with the same Bylaw.

2.5. Life Members: Fees are suspended for Life Members as prescribed by IEEE Bylaws.

2.6. Special Memberships: Special reduced fees for retired members, those unemployed due to involuntary termination of employment and are seeking re-employment, and those whose annual income falls below the minimum income level by his region may become a special member as described by IEEE Bylaws.

2.7. Special Provisions: Special members (life, retired, unemployed, or other honorary) and affiliates of the Society on (date of adopting the new Bylaws) may continue even though their respective attainment of such special membership or affiliation was by a means other than as defined above.

3.0. Board of Directors: The Board of Directors shall consist of Directors-at-Large and Executive Directors with vote plus elected and appointed Ex-officio Directors without vote. Over fifty percent of the voting members shall constitute a quorum and all voting members shall have an equal vote.

3.1. Directors-at-Large: There shall be 18 Directors-at-Large elected by the Society membership. Their term of office shall be three years with 6 Directors-at-Large elected each year. No Directors-at-Large can serve for more than 6 consecutive years, partial terms included.

3.2. Executive Directors: The President, Vice President, Secretary, Treasurer, Immediate past President, and the four Technical Directors shall be Executive Directors. These are elective offices by the process contained in Section 5.0.

3.3. Ex-Officio Directors: Chapter chairpersons, standing, technical and ad hoc committee and subcommittee chairpersons, editors of society publications, subsociety officers, symposium officers and other appointed or elective positions as designated

by the President with the consent of the Board of Directors shall be Ex-Officio Directors. Ex-Officio Directors are nonvoting members of the Board of Directors.

3.4. Continuation and Appointment to Board of Directors: In order to ensure a continuously active Board of Directors, elected Board of Director members who in the absence of extenuating circumstances miss three consecutive meetings will be dropped from membership. Vacancies thus or otherwise created (member fails to accept office or is disapproved by IEEE Headquarters) shall be filled by the appointments for the unexpired terms by the President with the consent (simple majority) of the Board of Directors.

3.5. Rules of Order: Roberts Rules of Order (Newly-Revised) shall govern conduct of the Board of Directors meetings on all matters not otherwise specified in these Bylaws or the Constitution.

3.6. Board of Directors Financial Support: The Board of Directors shall be able to provide monetary support for the services of outstanding individuals to serve in advisory or nonelective position for a period to be specified in the appointment. Board of Directors approval by a 2/3 majority is needed.

4.0. Nomination and Election of the Board of Directors: The Nominating Committee shall be reconstituted by the President on or before April 1st of each year. The Nominating Committee shall consist of a chairperson and four or more members of the Society, not more than half of which may be members of the Board of Directors. No member of the Nominating Committee shall be concurrently nominated for election to the Board of Directors.

4.1. The Nominating Committee shall immediately upon being formed, or no later than 15 April mail notices for the solicitation of nominations for membership as Directors-at-Large on the Board of Directors to existing Board of Directors members and to Chapter Chairpersons. There shall also be published in the first Newsletter of the year a call for nominations for the Board of Directors. Such nominating petitions shall be received by the Chairperson of the Nominating Committee by 30 May. Persons nominated and elected to the Board of Directors should possess significant technical and professional stature in Electromagnetic Compatibility and should have adequate resources and/or backing to be able to attend meetings and actively contribute to the Board of Directors, including committee activities, correspondence, telephone calls, etc.

4.2. A nominating petition shall carry a minimum of 15 names of Society members, excluding students, for the nominee to be placed on the slate.

4.3. The Nominating Committee may make nominations for the Board of Directors in addition to those nominated by petition.

4.4. In the preparation of the slate of nominees, consideration shall be given to both geographical representation and technical interests. In the event the 2/3 Board of Directors carry-over members into the following year and the nominations received by petition do not include members and nominees from IEEE regions one through six, the Nominating Committee will contact Society members in these unrepresented regions (who are qualified for Board of Directors membership, and who are willing to serve in that capacity if elected) and submit their names in the slate of nominees on or before 30 June.

4.5. On or before 30 June, the Chairman of the Nominating Committee shall mail to IEEE Headquarters the slate of at least 12 nominees for election to the six offices to be filled on the Board of Directors.

4.6. On or before 1 August, IEEE Headquarters will mail ballots to Society members, with the request that the ballots be returned to IEEE Headquarters by 1 September.

4.7. IEEE Headquarters will have completed ballot count, and by 1 October, will have notified all nominees and the Board of Director officers of the results of the election.

4.8. During the first meeting following election, the newly elected members of the Board of Directors will be introduced to their new duties and to elect the new Board of Directors officers.

5.0. Election of Officers of Board of Directors: At the first meeting following the election of the incoming Directors-at-Large, the Board of Directors comprised of the newly elected members and all current Directors-at-Large and Executive Directors shall nominate and elect from among the Directors-at-Large, a President and Vice President and, from the Society membership, a Secretary, Treasurer and four Technical Directors who will occupy those respective offices for the succeeding year. Election shall be by secret ballot and when a quorum is not present, by mail balloting. The first meeting shall be prior to 1 January if at all possible.

5.1. Terms of Office: The term of office for the President shall be one calendar year with re-election to a second successive term of one year allowed. The President, whether serving one or two years, shall not again be eligible for election to the Presidency until a lapse of three years. The Vice President may hold office for not more than two consecutive one year terms. Vice President eligibility is restored after a lapse of one year. There is no

restriction on the successive terms of office of the Technical Directors, the Secretary, and the Treasurer. It is of benefit to the Society that both the Secretary and the Treasurer be encouraged to serve at the request of the Board of Directors for terms of not less than three years in order that the expertise developed by these officers not be lost to the Society by early replacement. All officers shall continue to serve until their successors take office.

5.2. Secretary and Treasurer Understudies or Assistants: It is recommended that the Secretary and Treasurer each recruit from the Society membership, qualified understudies or assistants who will be in a position to assume the duties of these respective offices upon request of the Board of Directors in the event of the unavailability of either of these elected officers to continue in their positions.

5.3. Presidential Duties: The President shall supervise the affairs of the Society and shall speak for the Society on all matters not specifically delegated to others.

5.4. Vice Presidential Duties: The Vice President shall fulfill the duties of the President if the President is absent, incapacitated or requests a temporary replacement. The Vice President shall also fulfill such other functions as the President of the Board of Directors may from time to time direct.

5.5. Secretarial Duties: The Secretary shall be responsible for keeping the records of the Board of Directors in the areas commonly ascribable to secretarial functions. The Secretary shall prepare and distribute reports, notices or such documents as may be required by the President and the Board of Directors.

5.6. Treasurer's Duties: The Treasurer shall act as liaison with IEEE Headquarters on all financial records of the Society in the areas commonly ascribable to treasurer functions. The Treasurer shall prepare vouchers for withdrawal of Society funds for payment to officers or members of the Society; certify bills to be paid by IEEE Headquarters direct to suppliers; make a report at each Society business meeting covering the current financial status of the Society; prepare the Society budget; and perform such other financial duties as may be assigned by the President.

5.7. Technical Director's Duties: The Technical Directors shall supervise and coordinate the activities of the Standing Committees and Technical Committees assigned to them.

6.0. Subsocieties: Subsocieties are voluntary associations of a significant portion of the total Society membership and hence differ from Standing Committees, which are appointive. The affairs of the subsocieties shall be supervised by the Board of Directors.

6.1. Chapters: Chapters are subsocieties organized on a geographical basis. This subject is fully treated in the IEEE Bylaws and the Society and Section Manuals.

6.2. Technical Subsocieties: a Technical Subsociety may be organized to cover a specific portion of the field of interest of the Society. Each Technical Subsociety may be governed by a Technical Committee. Subsocieties may organize sessions at a Society Symposium or Technical Conference, and may organize separate specialized symposia. Subsocieties may organize special issues of the Transactions or a special section in an issue. Any service for Subsociety members, beyond those provided all Society members, must be paid for by the Subsociety and the amount must be endorsed by the Board of Directors and approved by the General Manager of IEEE. Where possible, the Subsociety shall limit its scope to an area under the cognizance of one technical committee.

7.0. Publications: The Society shall sponsor such publications as are recommended by the Technical Committee for Communications Services and are approved by the Board of Directors. The President, in consultation with the appropriate Technical Directors and with the advice and consent of the Board of Directors, shall appoint an editor for each publication.

7.1. Editors Terms of Office: An Editor may serve indefinitely, subject to mutual agreement with the President and the appropriate Technical Director.

7.2. Editor's Duties: Each Editor shall implement the approved publications program. In accordance with the guidance provided, and general IEEE rules and regulations, the Editor shall designate associate editors, special guest editors and manuscript reviewers.

7.3. Editor's Compensation: Compensation for an Editor may be considered by the President in consultation with the appropriate Technical Director with the advice and consent of the Board of Directors.

7.4. Editorial Expenses: Editorial expenses shall be subject to review and approval of the Board of Directors. The Treasurer shall review the expenses to determine adherence to the Society's budget.

8.0. Society Funds: The Society may raise funds as specified in Article IV of the Constitution and in the IEEE Bylaws and rules and regulations.

8.1. The annual Society fee shall be determined by action of the Board of Directors. Failure of a Society member to pay the annual Society fee will not render him liable to dismissal from

the IEEE, but any Society member who fails to pay such fee before March 31 of each year will be automatically dropped from the Society membership.

8.2. IEEE Headquarters shall act as bursar for all Society funds, except as specified hereunder. Billings and receipt of the annual fee shall be via the IEEE Membership and Fiscal Departments. All other fiscal affairs shall be handled through the office of the Technical Activities Secretary.

8.3. The general committee for a symposium or technical conference may, with the advice and consent of the Board of Directors, authorize the symposium treasurer or fiscal officer to open an account to be used for the deposit and disbursement of funds related to the symposium. In each case, the Board of Directors shall be advised of the name of the bank, the anticipated size of the account, the names of the account signatories, and of arrangements for insurance and bonding by the IEEE. Symposia jointly sponsored with other technical societies are excluded from bank, account size, account signatories and insurance/bonding information if a charter of operations with those societies is approved by the Board of Directors and the IEEE.

8.4. For other special circumstances, such as co-sponsorship of a symposium, the Board of Directors shall make prudent arrangements to safeguard the Society's funds that may be involved.

9.0. Society Business: The President and officers shall conduct the Society's affairs subject to the advice and consent of the Board of Directors, except where other authorization is specified.

9.1. No Board of Directors meetings shall be held for the purpose of transacting business unless each member shall have been sent notice of the time and place of such meeting at least 30 days prior to the scheduled date of the meeting.

If less than a quorum attend a duly called meeting, tentative actions may be taken which will become effective upon subsequent ratification, either at a meeting or by mail, by a sufficient number of members as to constitute a majority. Minutes of such meetings shall be mailed by the Secretary to each Board member who shall register his disapproval of any actions taken at such meetings, within 15 days after receiving said minutes, or he shall be deemed to have ratified.

9.2. The Society shall sponsor at least one symposium each year. The symposium shall be held, when at all possible, in the fall of the year.

9.3. The annual meeting of the Society shall be the last meeting

of the year. The annual meeting, where possible, should coincide with the annual symposium. It is intended that at the annual meeting all Society business for the year shall be brought to a close or formally extended to the following year.

10.0. Technical Committees: A Technical Committee, which may organize a subcommittee if desired, functions in a specific technical area as directed by the appropriate Technical Director with a scope to be approved by the Board of Directors. In carrying out the Committee responsibilities, the Technical Director shall be assisted by the Technical Advisory Committee.

10.1. Appointment: Officers of the Technical Committees shall be appointed by the appropriate Technical Director with approval of the Board of Directors. Members shall be appointed by the officers of the Technical Committee.

10.2. Term of Appointment: Technical Committee officers and membership shall be appointed with the following terms:

- a. Committee membership - three years
- b. Committee officer - two years

The President, with the consent of the Board of Directors, may extend the terms for a longer period.

10.3. Functions: Each Technical Committee shall promote activities in its field and shall provide the expert knowledge and assistance to:

- a. Receive, generate, and review papers within its scope in cooperation with the Transactions Editor and/or the Technical Papers Committee.
- b. Organize and operate sessions at meetings of the IEEE at all levels and at meetings of other organizations with which the Society is desirous of cooperating, in accordance with the rules in effect at such meetings.
- c. Arrange through appropriate editors for publishing pertinent papers in IEEE publications.
- d. Generate and develop appropriate standards in its field for processing by the IEEE Standards Committee, through the Society Standards Committee and otherwise in accordance with Institute policies.
- e. Evaluate "state of the art" in the area of committee interest.

10.4. Operations: The operation of each Technical Committee

shall be in accordance with the Manual for Operation of Technical Committees, or other Board of Directors rules. Minimum requirements shall be one annual meeting to formulate a report to be presented to the Board of Directors indicating the status of committee work.

11.0. Executive Committee: The Executive Committee consists of the President, Immediate past President, Vice President, Technical Directors, Secretary and Treasurer. These officers, who are also identified as Executive Directors, are elected officials in accordance with paragraph 5.0. The functions of the Executive Committee will be to:

- a. Act for the Board of Directors in emergency situations wherein time is not available to call a special meeting of the Board of Directors.
- b. Assist the incumbent President and Vice President as necessary.

12.0. Standing Committees: Standing Committees shall be appointed by the President with the advice and consent of the Board of Directors. It will be discretionary with the President to appoint any part or all of any Standing Committee, or to appoint the chairperson only of a Committee, and request the latter to appoint additional members. Such appointments shall be for a period of one year unless waived by the Board of Directors. Each Standing Committee will be assigned to the appropriate officer for overall supervision.

12.1 Standing Committee's Duties: The specific duties of each Standing Committee shall be as recommended by the President, after consultation with appropriate officers, and approved by the Board of Directors.

12.2. Typical Standing Committees: The Standing Committees may include, but are not limited to, the following:

- a. Administrative Committees
 - (1) Constitution and Bylaws
 - (2) Nominations and Appointments
 - (3) Planning
- b. Technical Service Committees
 - (1) Education
 - (2) Spectrum Studies
 - (3) Standards
 - (4) Technology Forecasting and Assessment
 - (5) Walsh Functions
 - (6) Technical Advisory Committee
- c. Professional Services Committees
 - (1) TAB Committee Participation
 - (2) Public Relations
 - (3) Government Relations
 - (4) Employment Analyses
 - (5) Inter-Society Relations
- d. Member Services Committees
 - (1) Awards and Fellows
 - (2) Chapters
 - (3) International Affairs
 - (4) Membership
 - (5) Student Activities
- e. Communications Services Committees
 - (1) Information Retrieval
 - (2) Meetings
 - (3) Newsletters
 - (4) Symposiums
 - (5) Transactions

12.3. IEEE Nominating Committee: The IEEE Nominating Committee shall be a standing committee formed in accordance with paragraphs 12.0 and 12.1. The duties of the Nominating Committee shall include submission of nominations for the office of Divisional Director to the Divisional Nominating Committee, and the annual solicitation of names of potential candidates to be considered by the IEEE Nominations and Appointments Committee for service on Institute Committees and Boards.

13.0. Special or Ad Hoc Committees: Special or ad hoc committees may be created by the Board of Directors. For each case, the Board of Directors shall specify the number of members the committee shall have and how the members are to be selected, and the

terms of the members if other than for the life of the committee. Special or ad hoc committees shall automatically be dissolved after two years unless the Board of Directors sets an expiration date. Each special or ad hoc committee shall report the status of its work at a Board of Directors meeting within one year of its formation or prior to completion of its activity, whichever is sooner.

CALL FOR PAPERS

1980 INTERNATIONAL CONFERENCE
SECURITY THROUGH SCIENCE and ENGINEERING
23-26 September 1980
West Berlin Technical University
West Berlin, West Germany

The principal emphasis of this conference shall be directed toward the research and development aspects of this field of engineering. A conscientious effort shall be made to communicate the significance of our developments to other interested groups. Liaison shall be maintained with professional societies and information media not specifically related to engineering.

Related papers are solicited which describe recent developments in the following fields:

Police Systems
Command, Control & Communication Systems
Alarm Devices & Systems
Computer Systems Security & Privacy
Automatic Vehicle Monitoring
Automatic Identification &
Authentication of Voice, Handwriting, Fingerprints, &
Other Signatures
Nuclear Facility Security
Entry Control Systems
Searching Aids: X-Ray, Sonic, Magnetic, Microwave
Electromagnetic Spectrum Conservation
Communication Privacy & Security Including Advanced Modulation Techniques
Related Areas of Basic Science & Novel Applications

Deadlines:

Abstract (200 words)	Dec. 14, 1979
Notification of	
Acceptance	Feb. 15, 1980
Paper Deadline	May 16, 1980

Abstracts may be submitted in French, German or English. Papers will be selected by the Executive Committee and the International Advisory Committee. Conference Proceedings will be distributed by the IEEE and the Univ. of Kentucky.

For information, contact Sue McWain, Conference Coordinator, Office of Continuing Education, College of Engineering, Univ. of Kentucky, Lexington, KY 40506; Tel.: 606-257-3971.

CALL FOR PAPERS

ICC '80

COMMUNICATIONS
BRIDGING THE WORLD

The 1980 International Conference on Communications is to be held in Seattle on June 16-18, 1980. Now is the time to begin preparation of an original paper for possible inclusion in the technical program. Disciplines to be represented include, but are not limited to:

- Adaptive Antennas
- Communications Command & Control
- Communication Electronics
- Data Communication Systems
- Electromagnetic Compatibility
- Microwave Theory & Techniques
- Radio Communication
- Space Communication
- Standards Coordination & Liaison
- Transmission Systems

Author's Schedule and Instructions:

Complete manuscript and abstract
received by Nov. 21, 1979

Notification of acceptance
received by Feb. 1, 1980

Camera-ready copies (5 page
maximum) received by . . Feb. 29, 1980

The author's name, complete return address, and telephone number should appear on the abstract, while the remaining pages and illustrations should indicate the author's name and title of the paper. Four double spaced copies, in English, of the one-page abstract and manuscript (3000 word limit) should be sent to one of the addresses below, as determined by your region of residence:

Asia Dr. N. Kuroyanagi
Nippon Telegraph & Telephone
Musashino-Shi, Tokyo
180 Japan
Tel.: (0422) 59-2882

Europe Dr. M. Urien
CNET
Route de Tregastel BP 40
22301 Lannion Cedex, France
Tel.: (96) 38 29 15

South America Dr. J. P. A. Albuquerque
Rua J. Carlos
90/AP. 402
22461 Rio de Janeiro RJ
Brazil

North America Dr. P. R. Metz
ICC '80, P. O. Box 88465
Seattle, WA 98188
and other regions Tel.: 206-773-2760

CALL FOR PAPERS

NORTH AMERICAN RADIO SCIENCE MEETING AND IEEE/AP-S INTERNATIONAL SYMPOSIUM

The 1980 International Symposium sponsored by the IEEE Antennas and Propagation Society (AP-S), and the North American Radio Science Meeting sponsored by the United States and Canadian National Committees of the International Union of Radio Science (URSI) will be held at Laval University, Quebec City, June 2-6, 1980. The technical sessions for the IEEE/AP-S Symposium and the Radio Science Meeting will be coordinated to provide a comprehensive and well balanced program. Authors are invited to submit papers on all topics of interest to the AP-S and URSI. The topics listed below are intended as suggestions. Full consideration will be given to papers on other relevant subjects. Inquiries regarding the technical program may be directed to the Technical Program Committee Chairmen indicated below. Other inquiries should be directed to Professor Jules A. Cummins, Chairman of the Steering Committee, 1980 URSI/AP-S Meeting, Departement de genie electrique, Universite Laval, Cite Universitaire, Quebec, Canada G1K 7P4; Tel.: 418-656-2143.

Suggested Topics for AP-S (Partial)

- Antenna Measurements
- Interaction of Antennas with Complex Bodies
- Theory of Scattering and Diffraction
- Millimeter and Quasi-Optical Waves
- Inverse Scattering
- Remote Sensing
- Geophysical Applications for Antennas and for Propagation Effects
- Biological Applications
- Transients
- Optical Waveguides
- Environmental Effects on Propagation
- Interference Reduction through Antenna Design

Suggested Topics for URSI Comm. (Partial)

Fields and Waves

- Scattering and Diffraction Problems
- Random Media
- Nonlinear Electromagnetics
- Electromagnetic Imaging: inverse scattering and remote sensing with geophysical, biomedical, glaciological and archeological applications
- Optical Waveguides: fiber and guided wave optics
- Analytical and Numerical Techniques
- Electromagnetic Earth Induction from Overhead Conductors

Interference Environment

- Interference and Its Suppression
- The Characterization and Modeling of Noise and Interference
- Natural and Man-Made Noise
- Effects of Noise on System Performance

Ionospheric Radio

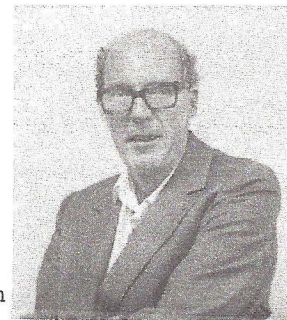
- Incoherent Scatter in the Ionosphere
- Ionospheric Structure, Mapping and Transient Phenomena
- Radio Probing of the Ionosphere
- Ionospheric Modification, Especially Heating Experiments
- Auroral Ionospheric Effects
- High Latitude Ionospheric Radio

DEADLINE: All summaries and abstracts must be received before January 15, 1980, by the appropriate program chairman:

Prof. Gar Lam Yip
Radio Science (URSI)
Technical Program Chairman
Dept. of Electrical Engrg.
McGill University
3480 University St.
Montreal, Canada H3A 2A7
Phone: 514-392-6739

Prof. Keith G. Balmain
IEEE/AP-S Technical
Program Chairman
Dept. of Electrical Engrg.
University of Toronto
Toronto, Canada M5S 1A4
Phone: 416-978-3127

CHAPTER CHATTER



by Charles F. W. Anderson



As is usual for this time of the year, there's not a great deal of news. Most of the Chapters have not started the Fall/Winter meeting season; but, there are a few items to report.

New Jersey Coast

By telephone, Gary Kath (Honeywell Signal Analysis Center) reported that the Chapter has found a Vice Chairman. He is Luke Schimpf of Bell Labs - Holmdel. The Chapter will have its first meeting on October 15th, with the topic being "EMC Problems in Mobile Radio."

Central New England

John Clarke, the Chapter Secretary/Treasurer, reports that their first meeting will take place on Tuesday, October 23rd. The subject will be intermodulation phenomena. Richard H. Brown III and Frank Stites of GTE Sylvania will discuss the following topics: "Receiver Intermodulation Phenomena," "Causes and Fixes," and "Transmitter-Generated Intermodulation." Plans are underway for a tour of the Emerson & Cuming, Inc. facilities in Canton, MA during May of next year. Other meeting topics being planned are: specifications and standards, and railroad electrification signalling and communications problems.

Atlanta

The Chapter has completed its planning for the 1979-80 year. They will hold five meetings during the year. They also hope to increase Chapter visibility and initiate a membership directory. Officers for the new term are: Chairman, Don Clark (Georgia Tech EES); Vice Chairman, Hugh Denny (Georgia Tech EES); Secretary/Treasurer, Bob Hammack (Bell Tel). The Chapter has expressed its thanks to Bob Hammack for the great job he did as last year's Chairman. Bob spearheaded drafting and getting passed the Chapter By-Laws and also was instrumental in arranging some very good meetings.

Chicago

Jim Klouda and Jim Krstansky are continuing their efforts to get the Chicago Chapter moving again. Let's hope they'll succeed and that we'll have some good news to report next time.

Dayton

Dr. Jack Corbin reported by phone that the Dayton Area EMCers have submitted their petition for re-establishment of the Dayton EMCS Chapter.

Los Angeles

A telephone call to Fred Nichols revealed that the Symposium was just about squared away as of Newsletter deadline time. Fred reported over 150 advance registrations.

Chapter Chairmen:

We're hoping to publish a complete list of Chapter Chairmen in the next issue. There are several Chapters for which your column editor does not have any information. Any help would be appreciated.

SCHNEIDER PROPOSES "SKILLS AND JOB AVAILABILITY BANK" FOR IEEE MEMBERS

Burkhard H. Schneider, Board candidate for the IEEE Presidency, proposed that IEEE develop a computerized "Skills and Job Availability Bank" to put prospective employers in touch with IEEE members. A member seeking employment, or better utilization of skills, or a better opportunity would enter an individual record of professional skills and other pertinent data to be matched against similar records of available job openings.

"I don't claim to be the inventor," Mr. Schneider said, "only one who is proposing that this is something IEEE should be getting into now, and such a service will be a valuable member benefit." Even during times of high employment Mr. Schneider observed that many people feel "locked into" their jobs and would welcome new opportunities. "Many members," he continued, "feel that their real skills are ignored, or at best, underutilized." During a recession, many stable employers, such as utilities and heavy industry, seek out engineers in industries suffering layoffs. Mr. Schneider stated that his employer has done so during previous layoffs.

He warned, however, against thinking that only those engineers in less stable industries would find a "Skills and Job Availability Bank" useful. "IEEE needs to be ready to respond to changing job markets for our members, regardless of whether we think that coming economic turn-downs will impact the electronic and electrical industries. We must be ready for any eventuality."

While only IEEE members would be eligible to use the bank to seek employment, job openings would be sought through all sources. Small fees may be necessary to keep the operation cost-effective. The data base would not include information which could be viewed as discriminatory but could conceivably enable IEEE to furnish better data on electrical engineering employment to government agencies. IEEE would become a focal point for data collection and dissemination in a key concern and a vital link between prospective employers and IEEE members.

(Reprinted from IMPACT, August 1979)

LETTER TO THE EDITOR

Dear Editor,

I was disappointed to read in a recent issue of an IEEE publication about Mr. Schneider's proposal to form a "Skills and Job Availability Bank" for IEEE members. This effort will have a major cost impact on IEEE resources. As a minimum, it will require the constant updating of thousands of files, and the maintenance of thousands of others which are incorrect and obsolete. In effect, Mr. Schneider is proposing a master employment agency charging a fee either to the engineer or prospective employer (it is not clear which) or both.

The time for such an enterprising endeavor is not now nor in the foreseeable future. The newspapers and trade magazines are loaded with employment ads for engineers, and employment agencies and "head hunter" activities are at an all time peak. Most personnel recruiters will confirm that the average "life" of an active resume is only two months. The communication and coordination effort associated with the proposal is immense.

The IEEE will not provide a needed service nor fill any void through Mr. Schneider's proposal. In time of recession, the "bank" will not create any new jobs, except for IEEE employees. During the past recession, the IEEE's greatest contribution to its unemployed members was its sponsorship of re-training programs.

Let's spend IEEE money where it will do the most good. Perhaps, Mr. Schneider should concentrate on future needs and skills, and plan retraining programs to help soften the impact of the next recession on IEEE members.

Sincerely yours,

An IEEE Member

Response to Letter to the Editor --

Your letter regarding my proposal to form a Skills and Job Availability Bank has been referred to me. I sincerely appreciate your interest and concern. If the current investigation should show that some of the problems which you predict are real ones, then I will withdraw my suggestion.

But perhaps your judgment is a little premature. It is not my intention that this computerized Bank take the place of an employment agency in the sense that it would maintain master files of resumes. All that the Bank is intended to do is to match interests and skills of those seeking relocation or employment with the skills desired by prospective employers. Having developed a reasonable possible match, prospec-

tive employee and employer would then be left to carry on by themselves. I don't wish this project to draw excessively on the resources of the IEEE, and it is my hope that most of the costs could be covered through modest fees by those using the Bank. Neither is the Bank intended to take the place of other efforts which the IEEE could undertake, ansuch as the retraining which you mentioned.

The whole project is now being investigated for practicality by a Task Force of USAB. I would hope you would reserve final judgment until we hear from them. In the meantime, many rank and file members have told me they are enthusiastic about the possible benefit members might derive from a well-run Skills and Job Availability Bank.

Thank you for sharing your thoughts, I assure you that I am not anxious to saddle IEEE with an unmanageable program.

Sincerely yours,



WHAT ARE YOUR VIEWS ON THE RECRUITMENT OF ENGINEERS OVERSEAS?

USAB's OpCom has issued a call for comments on the adequacy and appropriateness of current U.S. Department of Labor (DOL) procedures for the entry and classification of foreign engineers.

Classification H-2 implies DOL certification of need based on proven domestic shortage of the employees to be recruited abroad. Attempts have recently been made to change the status of engineers recruited abroad to Classification H-I of the U.S. Immigration and Naturalization Service, which permits open entry of skilled aliens.

USAB OpCom favors the present procedures (Classification H-2) of DOL and is proposing that USAB adopt a position supporting their continuation.

What are your views? Write to: IEEE/USAB, 2029 K St., N.W., Washington, DC 20006, Attention: USAB OpCom.

WAGE BUSTING ATTACKED ON SEVERAL FRONTS

USAB Service Contract Task Force Leader Harb Hayre has begun meeting with executives of the largest Government service contractors in an effort to gain their cooperation on salary questions. In return for their cooperation, IEEE would join efforts to try to influence Government to alleviate contractor problems, such as sudden cutoff of contracts and lengthy periods without contracts.

Dr. Hayre's approach is to "build a bridge with industry." He believes that industry will be receptive to his offer because industry does not want to see salaries legislated. If industry works with IEEE on enforcement of existing regulations, there may be no need for legislation. His initial contacts have been positive.

If his approach to enforcement of the OMB directive is unsuccessful, Dr. Hayre has stated that legislation must be pursued. He is seeking volunteers to aid in his efforts. Contact Dr. Hayre at 10 Legend Lane, Houston, TX 77024; Tel.: 713-749-4503 (office) or 713-468-7135 (home).

Meanwhile, the Washington office is monitoring the progress of two bills to resolve wage busting, which were introduced in this session: H.R. 314, to amend the Service Contract Act of 1965 to extend its protections to professional employees; and H.R. 1032, to amend the U.S. Code of Regulations to guard against wage busting.

H.R. 314, introduced by Congressman Thompson (D-NJ), was referred to the Subcommittee on Labor-Management Relations of the House Education and Labor Committee. The bill is expected to receive rapid consideration once hearings get under way. IEEE drafted the original version of this bill. The current version now in the Subcommittee has omitted the provisions which IEEE endorsed.

H.R. 1032, introduced by Congressman Fuqua (D-FL), was referred to the Legislation and National Security Subcommittee of the House Committee on Government Affairs. Hearings were held during the previous Congress, but none have been scheduled for this session.

Institute support of these or other legislative proposals under consideration will depend on the effectiveness of Administrative regulations in prohibiting wage busting.

PENSION ACTIVITY

A BRIEF RETROSPECTIVE AND DIRECTIONS OF PRESENT AND FUTURE EFFORTS

IEEE is dedicated to marshalling broad based, bipartisan support for enactment of Limited Employee Retirement Account (LERA) legislation in the 96th Congress to rectify two significant problems:

1. The problem of the mobile employee who changes jobs frequently and, therefore, never vests under a qualified plan. Under these circumstances, the employee is disqualified from contributing to an Individual Retirement Account (IRA) because he/she is a so-called "active participant" in a qualified employer plan. Without vesting, he/she earns no retirement benefits.

2. The individual who is employed long enough to vest in a qualified plan, but vests in one considerably less valuable than the IRA could have been.

The IEEE Position is that the solution to these problems is the establishment of a LERA, in which the "active participant" can invest in a personal tax-deferred account. IEEE's position, as represented in Congressman Corman's bill, the IRA-Employer Plan Coordination Act of 1979 (H.R. 628), contains these basic provisions:

- The bill would permit an "active participant" in a qualified pension plan to make IRA/LERA contributions up to the regular IRA limit (currently 15% of earnings or \$1500 per year, whichever is less) without any reductions solely because an employee is an "active participant" so long as the employee is not 100% vested.

- When an employee becomes 100% vested in an employer's qualified pension plan, he/she would choose the greater amount: the IRA/LERA or the employer's plan. If the IRA/LERA exceeds the qualified plan, the employee would disgorge from the IRA/LERA an amount equal to that in the employer plan and pay taxes on it at ordinary rates. If the employer plan exceeds the IRA/LERA, the employee would terminate the IRA/LERA and again pay taxes on the amount disgorged at ordinary rates.

- Even though the employee is 100% vested in a qualified plan, he/she may contribute the difference to an IRA/LERA on a tax deferred basis, if the current value of a year's accrual under the qualified plan is less than the IRA/LERA limit..

In the 94th Congress, the House of Representatives passed a LERA bill. The Senate passed such a bill in the 95th Congress. IEEE actively seeks the support of all concerned individuals for passage of LERA legislation by both houses in the 96th Congress.

Toward achieving IEEE's pension goals, USAB Pension Task Force activities over the past several months have included:

- An intersociety meeting (including IEEE, NSPE and AIC) with Senator Lloyd M. Bentsen (D-TX), Chairman of the Senate Subcommittee on Private Pension Plans, in December 1978 in Houston Texas.

- Reintroduction of The IRA-Employer Plan Coordination Act of 1979 (H.R. 628) by Congressman James C. Corman (D-CA) in January 1979. In addition, a LERA bill was introduced by Senator Robert Dole (R-KS) and the ERISA Improvements Act was reintroduced by Senators Javits (R-NY) and Williams (D-NJ).

- In February 1979, IEEE met with Congressman Al Ullman (D-OR), Chairman of the House Ways and Means Committee, in Salem, OR. In addition, Senator Bentsen introduced a Homemakers IRA bill and an IRA/LERA proposal.

- IEEE submitted a statement for the record to the Senate Committee on Labor and Human Resources concerning the LERA concept included in the Javits-Williams bill during March 1979.

- On April 3, John J. Guarrera testified before the Senate Subcommittee on Private Pension Plans. The IEEE testimony was endorsed by ASME and NSPE.

- Also in April, IEEE met with Congressman Barber Conable, Jr. (R-NY), Ranking Minority Member of the House Ways and Means Committee, in Rochester, NY. Rep. Conable expects to introduce an IRA/LERA bill with Treasury support very soon. If the bill does not gain Treasury endorsement, Rep. Conable will support H.R. 628.

Meanwhile, the outlook for passage of some type of LERA legislation is promising.

WOMEN AND MINORITIES RESOLUTION

The Board of Directors has adopted a resolution aimed at increasing the number of minorities and women in the engineering profession. The resolution, which had been proposed by the IEEE Educational Activities Board, reads in part: "IEEE pledges its full support and cooperation to the National Academy of Engineering in its efforts to dramatically increase the number of black American, Chicano, Puerto Rican and American Indian students enrolled in the freshman class of U. S. engineering schools by 1982 and in all classes by 1987." The Institute further pledges to help increase the number of women in engineering "as rapidly as possible."

PAVE PAWS

The PAVE PAWS phased array radar (AN/FPS-115) is an Air Force developed detection and early warning system against sea launched ballistic missile (SLBM) attack on the continental United States. It also will keep tabs on satellites in earth orbit.

A high priority addition to the World Wide Military Command and Control System, PAVE PAWS will perform simultaneous surveillance missions. The system's primary purpose will be detection and warning of SLBM attack, to include the potential numbers and destination of the missiles. This information would be simultaneously passed to National Command Authorities in Washington, NORAD's (North American Air Defense Command) Cheyenne Mountain Complex, and SAC (the Strategic Air Command). As a secondary mission, PAVE PAWS will also support the USAF SPACETRACK System by feeding display data on the position and velocity of hundreds of satellites orbiting earth.

The sophisticated solid-state radar is being acquired by the Air Force System Command's Electronic Systems Division, Hanscom Air Force Base, MA. Technical support is provided by the Rome Air Development Center, Griffiss Air Force Base, NY, and the MITRE Corporation, Bedford, MA. Raytheon Company, through its Equipment Division in Wayland, MA, has the contract to construct two PAVE PAWS radar sites; one at Otis Air Force Base, MA, and the other at Beale Air Force Base, CA. Raytheon's major team members and sub-contractors include IBM's Federal Systems Division, Gaithersburg, MD, and Control Data Corporation, Minneapolis, MN. The technical facility was designed by United Engineers and Constructors of Boston, MA, another Raytheon subsidiary.

Phased array technology allows PAVE PAWS many advantages over conventional radar systems. It can track more targets, more accurately and at greater range, while at the same time using less power. This two-site PAVE PAWS system replaces aging radars of Aerospace Defense Command (ADCOM)

AN/FSS-7 SLBM Warning System. The Otis Air Force Base site was due to be turned over to ADCOM in April 1979, with the Beale Air Force Base radar to follow by April 1980.

The chief difference between PAVE PAWS and the conventional radar is that PAVE PAWS is steered electronically. The phased array system incorporates thousands of small radar antennas coordinated by two large Control Data CYBER series computers. They will feed energy to the antenna units in precise, controlled patterns, allowing the radar to detect orbiting objects at very high speeds since no mechanical

parts limit the speed of the radar scan. While the conventional dish-shaped radar may take up to a minute to mechanically swing from one area to another, the PAVE PAWS system can electronically change its point of focus in milliseconds.

A clock-like array 102 ft. (31 m) in diameter is contained in each dual face. They make up two walls of a triangular-shaped main building. The array walls themselves form a 60 degree angle and tilt back 20 degrees from the vertical. The Otis Air Force Base sensor peers eastward over the Atlantic Ocean, while its west coast partner looks out over the Pacific Ocean from Beale Air Force Base. Thirty-six hundred antenna elements (1,800 per face) form a beam reaching outward for 3,000 mi. (4,800 km) at 240 degrees. At this range, it can detect an object the size of a small auto.

Systems automation in PAVE PAWS enables it to automatically detect, track and predict the impact point of a missile. Its off-the-shelf computers are programmed to steer the beam, store and display the data, and perform the post mission data reduction and analysis.

PROFESSIONAL COMMUNICATION SOCIETY WELCOMES ALL IEEE MEMBERS

PCS is a society for all members of the IEEE - for engineers who are concerned with or for communication - for professional communicators, businessmen, teachers, humanists, sociologists, and others whose work relates to engineering. Anyone who is concerned with maintaining high quality standards in written, spoken, or visual communication should seriously consider joining PCS.

PCS sponsors seminars, conferences, workshops, and home study courses in various concepts of communication; publishes a journal and newsletter; fosters national and international activities to improve communication; promotes cooperation with other communication-oriented societies; publicly recognizes special achievements in communication; and, provides consulting support to other IEEE groups. As a result, PCS offers both professional and personal benefits to its members in the form of opportunities to share or sharpen skills in various types of communication, meet and work with communication-oriented colleagues from different companies and job situations, in both national and international projects. To join PCS, simply request a membership application from IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854.

ENGINEERING MANAGEMENT
REPRINT JOURNAL
NOW AVAILABLE TO ALL IEEE MEMBERS

The Engineering Management Society (EMS) of IEEE has decided to permit IEEE members who are not EMS members to subscribe to its quarterly reprint journal, Engineering Management Review (EMR). EMR combs the technical and management literature and reprints articles of importance to engineering managers. It, thus, aims to save managers the necessity of subscribing to or reading a large number of periodicals to glean items of special interest.

The subjects of the articles that appeared last year (1978) in EMR include:

GOVERNMENT and BUSINESS FUNCTIONS: A Systems Approach to Shoelace Marketing. Project Planning. The SEC Consumer Protection Role. The Profile of a Paycheck. Has A Customer Already Developed Your Next Product? Personnel Problems of Multinational Corporations. Assault on the Corporation. Standards Confusion. Product Line Diversification. Escalating Benefits Costs.

ADMINISTRATIVE TECHNIQUES: A "Staff Infection" - The Military Workaholic. Managing or Presiding. Motivation and Obsolescence in Engineers. Bracket Budgeting to Cope With Uncertainty. Effects of Adverse Attitudes on Training. A Job Outline to Serve Four Functions. The Use of GERT. Combining the Judgement of Individuals in Decision Conferences. Improving Productivity. Technological Obsolescence. Managerial Communications. Reasons for Inefficiency. Task Teams. Software Security. What Software is Made of. Job Satisfaction Criteria. Risk-Screening. Age and Experience Factors in Managerial Performance.

THE HIERARCHY: The Folly of Rewarding A While Hoping for B. Hiring an Executive. The Personality of MBAs. Managerial Obsolescence. Antiethical Managers. Interdepartmental Conflict. New Supervisors. Six Stages of Demotivation. Scientists Become Managers. Leadership. Motivation Theory and Applications. Motivating Junior Staff.

PROFESSIONAL and SELF DEVELOPMENT: Psyching-Out People Problems. Transactional Analysis. Fear and the Manager. Job Searching. Laboratory Notebooks. When and How to Delegate. The Accountability Factor. Survival of the Fittest. The Part-Time MBA. Career Planning. Playing Politics.

EMR will be available to IEEE members beginning in 1980 at an annual subscription rate of \$6.00. Interested members can subscribe when they pay their 1980 dues or can join the subscription list now by sending their payment to IEEE Headquarters.

4TH EMC SYMPOSIUM AND TECHNICAL EXHIBITION
CALL FOR PAPERS

After successful presentations at Montreux (1975, 1977) and Rotterdam (1979), the 4th Electromagnetic Compatibility (EMC) Symposium and Technical Exhibition is planned for March 10-12, 1981 at the Federal Institute of Technology Zurich (Switzerland). The conference is chaired by Prof. Dr. P. Leuthold, replacing the retiring past Chairman, Prof. Borgnis. Program Chairman is again Prof. Dr. F. L. Stumpers. The conference is sponsored by the Association of Swiss Electrotechnicians and organized by the Institute of Communications Technology of the above mentioned University under the direction of Dr. T. Dvorak.

Authors are invited to send 300 to 500 word summaries of papers not previously published and describing original work to:

EMC 1981 Program Committee
ETH Zentrum-HF
8092 Zurich - SWITZERLAND

so that they arrive not later than March 15, 1980. Authors will be notified by June 16, 1980. Photo-ready manuscripts will be due by November 15, 1980.

FEW TECHNOLOGISTS IN CONGRESS

Lawyers, businessmen and bankers comprise the majority of the population of the 96th Congress. There are only two Representatives who have an engineering background; none in the Senate. There are two scientists in both the House and the Senate.

GET IN ON THE ACTION

Dial 202-785-2180 for an update on USAB legislative activities. Follow up by letting your Senators and Representatives know about bills endorsed by IEEE.

INSTITUTIONAL LISTINGS

The IEEE Electromagnetic Compatibility Society is grateful for the assistance given by the firms listed below and invites application for Institutional Listings from other firms interested in the electromagnetic compatibility field.

SERVICE DIVISION, AMERICAN ELECTRONICS LABS., INC., Richardson Rd., Montgomeryville, PA 18936
EMI/EMC, shield, enc. consult. test. & anal.; Scrn. rm. (incl. for large veh.); Comp. instr. for Mil. EMI test.

AILTECH, Los Angeles Operation, 5340 Alla Road, Los Angeles, CA 90066
Computer operated/automatic/manual EMI test system, EMI meters, antennas, and components.

ELECTRO-METRICS, Division of Penril Corp., 100 Church St., Amsterdam, NY 12010
EMI meters and automated systems incl., calculator/computer-based; 20 Hz-40 GHz *MIL-STD/CISPR/VDE/SAE/FCC.

EMERSON & CUMING, INC., Canton, MA—Gardena, CA—Northbrook, IL.
Eccoshield RF shielded chambers—Eccoshield EMI/RFI gaskets and materials—Eccosorb anechoic chambers.

METEX ELECTRONIC SHIELDING GROUP, A Unit of Metex Corporation, 970 New Durham Road, Edison, NJ 08817
EMI/RFI, EMP & EMC Shielding Materials, Custom-Engineered Conductive Components, and Coatings.

CENTRALAB/USCC, 4561 Colorado Blvd., Los Angeles, CA 90039
EMI/RFI Filters, Monolithic Ceramic Capacitor (Chips).

TECKNIT, INC., 320 N. Nopal St., Santa Barbara, CA 93103
EMI/RFI Shielding Products, Conductive Components, Textiles, Coatings, Adhesives, and EMC Windows.

HONEYWELL, ANNAPOLIS OPERATION, P. O. BOX 391, Annapolis, MD 21404
Telephone (301) 224-4500
EMI/EMC/TEMPEST, R & D, Test and Analysis, Communication and Digital Design.

CHOMERICS, INC., 77 Dragon Ct., Woburn, MA 01801
Telephone (617) 935-4850
EMI/RFI shielding materials: gaskets, adhesives, coatings, shrinkable cable shields.

SPECTRUM CONTROL, INC., 8061 Avonia Rd., Fairview, PA 16415
Telephone (814) 474-1571 Telex 510/699-6848
EMC test and consulting VDE, CISPR, MIL-461, FCC. Mfr. RF filters, RFI capacitors, chips, variable caps—in stock at HALLMARK.

ELECTROMAGNETICS, INC., 6056 W. Jefferson Blvd., Los Angeles, CA 90016
Telephone (213) 870-9383
RF shielded enclosures, modular, prefabricated & all welded. RFI/EMI power line filters; signal line filters.

An Institutional Listing recognizes contributions to support the publication of the IEEE Newsletter and TRANSACTIONS ON ELECTRO-MAGNETIC COMPATIBILITY. Minimum rates are \$75.00 for listing in one issue; \$200.00 for four consecutive issues. Larger contributions will be most welcome. No agency fee is granted for soliciting such contributions. Inquiries, or contributions made payable to the IEEE, plus instructions on how you wish your Institutional Listing to appear, should be sent to M. Bonaviso, The Institute of Electrical and Electronics Engineers, Inc., 345 East 47 Street, New York, NY 10017.