IEEE

NEWSLETTER

ELECTROMAGNETIC COMPATIBILITY GROUP

ISSUE NO. 59

PLEASE NOTE! Material for publication in the next issue must be received by the Editor by August 1, 1969.

JUNE 1969

Newsletter Staff

EDITOR

Robert D. Goldblum
Space Systems
General Electric Co.
608 Gawain Rd.
Plymouth Meeting, Pa. 19462

ASSOCIATE EDITOR (Chapter Chatter)

Ira M. Berman
Re-Entry Systems
General Electric Co.
3198 Chestnut Street
Philadelphia, Pa. 19101

ASSOCIATE EDITOR (Steering Committee Reports)

William G. Duff
Atlantic Research Corp.
8601 Greeley Blvd.
Springfield, Va. 22150

CONSULTING EDITOR

Rexford Daniels
Interference Consultants, Inc.
150 Causeway Street
Boston, Mass. 02114

THINK EMC

Senator Goldwater to speak at the IEEE International Symposium

Mr. John J. O'Neil, Chairman, has announced that arrangements have been completed for the Honorable Barry Goldwater to be our speaker at the banquet of the June G-EMC Symposium. Senator Goldwater is currently a member of the Senate Armed Services Committee and the Senate Aeronautical and Space Sciences Committee. In addition, he is owner and operator of amateur radio station K7 UGA-K3UIG, which is now part of the Military Affiliate Radio System (MARS).

John J. O'Neil - 1969 Symposium Chairman

Mr. John J. O'Neil has been concerned with the control of electromagnetic interference for over twenty years. He is presently Deputy Chief of the Electromagnetic Environment Division at the U.S. Army Electronics Command, Fort Monmouth, N.J. As chairman of this year's International EMC Symposium, Mr. O'Neil would like to forward the following invitation:

International Symposium on EMC
June 17-19, 1969
Berkeley Carteret Hotel, Asbury Park, N.J.

AN INVITATION FROM THE 1969 - EMC SYMPOSIUM CHAIRMAN

In today's world of rapidly developing theories and expanding technology we must continually strive to maintain our technical competence or soon find ourselves hopelessly behind the state-of-the-art. This is especially true in the Electromagnetic Compatibility Area where the requirements and the techniques rapidly change. The IEEE 1969 International Symposium on EMC offers an excellent opportunity to assure we are fully cognizant of the accomplishments and advancements of our colleagues in this challenging area. This year papers will be presented on all facets of EMC and in addition five workshops will be conducted in specialized areas (Interference Control, Power Transmission, Shielding, Measurement Techniques and Instrumentation, and Interference Prediction and Propagation). Immediately upon conclusion of the symposium, the Department of Defense will conduct classified sessions at US Army Electronics Command, wherein their programs and advances will be presented. As an additional source of information approximately thirty exhibitors will display their latest products in the EMC area. Thus, a well-rounded technical program furnishing the latest information from industry, the academic world and the military will be presented during the period of June 17 through June 20, 1969.

I sincerely hope that you will be able to attend.

SIXTH SYMPOSIUM ON ELECTROEXPLOSIVE DEVICES

July 8, 9, & 10, 1969 at the St. Francis Hotel, San Francisco, Calif.

Objectives:

The purpose of this Symposium is to exchange information and stimulate new ideas among the developers, manufacturers, and users of electroexplosive devices (EED's). It is planned to survey and discuss the development of new items, report on current investigations, and anticipate future needs for EED's of all types. Among the applications will be fuzes, warheads, rockets, missiles, satellites, and space vehicles. Papers will include subject of interest to Defense, NASA, AEC, and the aerospace industry in general. This meeting will emphasize problems relating to electromagnetic compatibility (EMC) and interference (EMI, RFI). The efforts will result in helping the circuit designer understand explosives and vice versa. This is the sixth in a series of technical meetings on the subject of EED's.

Fee:

Symposium fee is $100. The fee includes technical sessions, a copy of the proceedings and coffee breaks. There is no single-session registration. Symposium lunches are available at $6.00. You may order extra copies of the proceedings at $25. Mixer will be Dutch treat. Please enclose check or purchase order with your registration to Mr. Gunther Cohn, Arrangements Chairman, The Franklin Institute Research Labs, Philadelphia, Penna. 19103.

Hotel:

Headquarters hotel for housing is the St. Francis. Rooms for the economy minded are available at Hotel Stewart next door.

Among the many papers which may be presented are:

Susceptibility of SPRINTS EED's to EMR.
Initiation of EED's by Lightning.
Discharge of an Electrostatically Charged Human.
EMI Hazard Measuring System.
Apollo Spacecraft Pyrotechnics.
Protection of EED's from Electrostatic Discharge.
Electrostatic Effects on EED's.
RF Attenuators Using Ferrites.
dx/dt vs. Time Detonation Monitoring.
Effects of CW and Radar Signals on Bridgewire Temp.
Broad Band RF Filter/Attenuator Plug.
RF Interaction Problems of Droppable Munitions.
EBW Firing Unit-Detonator Compatibility Tests.
Ordnance Circuit RF Filter.

Arrangements have been through the Naval Ordnance Laboratory, White Oak, Silver Spring, Maryland, the 12th Naval District and the Commander of Treasure Island Naval Station to hold a classified session of the 6th EED Symposium at Treasure Island. Buses will be provided to take the attendees from the hotel to the Naval Station and back to the hotel after the meeting.

For this one session on the third day, July 10, minimum clearance of Department of Defense Confidential is required. Forward your clearance to The Franklin Institute Research Laboratory, Philadelphia, Penna. 19103, Attn: Security Administrator, via your own security office.

FAIRCHILD/ELECTRO-METRICS OFFERS PERSONAL INSTRUCTION

Responding to this continual request for personal training, the Western District Office of FAIRCHILD/ELECTRO-METRICS CORP. instituted a two-evening training course designed to insure facility in instrument operation.

It was a rather tentative thing at first feeling out what actual response would be. The courses are now in their third month. Customer response has been incredible, and because of a somewhat limited seating capacity at the office (only 6 to 8 persons can be accommodated at each session), bookings are two months ahead.

Knox Johnson instructs the sessions, which are conducted successive Tuesday and Wednesday evenings, on alternate weeks, from 7:30 to 10 p.m. He is an EMC engineer at Northrop Electronics Division of Northrop Corporation, and has had vast experience in using F/EMC instrumentation, as well as instruments manufactured by others. He has authored the two texts used for the instruction -- "Notes on the Calibration of Semi-Automatic Interference Measurement Systems" and "Notes on Electromagnetic Interference Measurement Data Reduction for Semi-Automatic Measurement Equipment."

The course is primarily designed to facilitate competency in the transition from a manual method of data retrieval to use of F/EMC's semi-automatic interference measurement systems ... the FSS-250 Spectrum Surveillance System, and its modified versions. Previously, training was available only at factory headquarters, Amsterdam, N.Y.

The sessions are conducted at the Western District Office, 724 So. Victory Blvd., Burbank, California 91502 ... (telephone 213-849-7175), and those interested in attending have been asked to contact George Ufen, Western Manager.

CALL FOR PAPERS

THIRD ASILOMAR CONFERENCE CIRCUITS AND SYSTEMS

Sponsored by The Naval Postgraduate School, Monterey, California; University of Santa Clara, Santa Clara, California; Stanford University, Stanford, California; with the participation of the IEEE Groups on Circuit Theory and Automatic Control.

This conference is being held in CONJUNCTION WITH THE IEEE INTERNATIONAL SYMPOSIUM ON CIRCUIT THEORY (San Francisco, December 8 - 10, 1969). The Third Asilomar Conference is to be devoted to the presentation and discussion of new ideas and developments in the general areas of CIRCUITS AND SYSTEM THEORY. In addition to the regular program, a one day invited special session on FILTERS is being planned.

Papers are invited for presentation in twenty to thirty minutes.

Abstracts of 500 words and summaries (two copies of each) must be received prior to October 3, 1969. Summaries should be of sufficient detail and length to permit careful reviewing. Send two copies to:

Professor Shu-Park Chan
Department of Electrical Engineering
University of Santa Clara
Santa Clara, California 95053

Cont'd. .

1969 Southeastern EMC Symposium

The 1969 Southeastern EMC Symposium will be held at the Regency Hyatt House in Atlanta, Georgia, on October 27, 28, and 29, 1969.

Subject areas of interest include:

EMC/EMI Measurement Techniques
EMC/EMI Instrumentation
EMC/EMI Analysis
EMI Suppression Techniques
EMI Propogation
EMC/EMI Prediction Techniques
Frequency Management

For additional information, write to Mr. D. W. Matthias, Chairman, Symposium Committee, Lockheed - Georgia Company, Dept. 72-15, Zone 322, Marietta, Georgia 30060.

SYMPOSIUM ON THE BIOLOGICAL EFFECTS AND HEALTH IMPLICATIONS OF MICROWAVE RADIATION

A three day symposium on the biological effects and health implications of exposure to microwave radiation is being organized by the Biophysics Department of the Virginia Commonwealth University and the Bureau of Radiological Health Service. The Symposium is planned for the 17, 18, 19 September 1969 to be held in Richmond, Virginia.

The symposium will include invited and contributed papers on the biological effects of UHF, SHF, and lower frequency electromagnetic radiation at the cellular and organism level as well as the physical characteristics of these radiations and recent developments in microwave technology pertinent to biological effects.

Abstracts of not more than 300 words of the papers to be presented at the symposium should be submitted by 15 June 1969.

For additional information write to Dr. S. F. Cleary, at Dept. of Biophysics, Virginia Commonwealth University, Richmond, Va. 23219. Advanced registration will be required.

1969 8th IEEE REGION 3 CONVENTION -- HUNTSVILLE, ALA.

Technical papers are solicited for presentation at the 8th Annual (1969) IEEE Region 3 convention on November 19, 20, 21, 1969 in Huntsville, Alabama at the Sheraton Motor Inn. Papers are desired which are commensurate with the convention theme "Engineering for the Seventies" and which represent innovative and advanced concepts of the technologies in such areas as communications, power, aerospace, control systems, computers, quantum electronics, microelectronics, bio-engineering, systems engineering and management.

Prospective authors should submit abstracts of their papers, not to exceed 200 words, to the technical program chairman:

Dr. John P. Hallowes, Jr.
P. O. Box 4132
Huntsville, Alabama 35802

by June 2, 1969. Papers should be amendable to an oral presentation of 20 minutes in length.

Authors will be notified of paper acceptance by July 12, 1969. Final abstracts, suitable for printing in the Convention Record, are due September 22, 1969.

1969 JOINT ENGINEERING MANAGEMENT CONFERENCE

MONTREAL, CANADA

Engineering Management Strategy for "Survival in the Seventies" will be the theme of the 17th Annual Joint Engineering Management Conference to be held on October 9 - 10, 1969 in Montreal, Canada.

The Conference will cover a broad range of critical subjects that likely will represent major challenges to engineering managers in the coming decade. The program will be divided into four major sessions covering the new environment technological changes, human relations, and organizational techniques.

The conference is the combined effort of 9 major engineering societies in the United States and Canada which have a total membership of 330,000. The societies are:

The Institute of Electrical and Electronics Engineers (Engineering Management Group)

American Society of Mechanical Engineers

American Society of Civil Engineers

Engineering Institute of Canada

American Institute of Aeronautics and Astronautics

American Institute of Mining, Metallurgical and Petroleum Engineers

American Society for Quality Control

Instrument Society of America

The societies rotate from year to year in acting as host for the Conference; this year the host is The Engineering Institute of Canada.

Further information can be obtained by contacting the JEMC Staff Representative at any of the above societies or by getting in touch with -

Mr. W. A. McDill
Manager of Technical Services
The Engineering Institute of Canada
2050 Mansfield Street, 7th Floor
Montreal, 110, P.Q.

(842-8121)

AIR WAVES & REGULATIONS

OTM Bulletin on Use of Radio Spectrum

TELECOM BULLETIN #4-69 dated April 1969, Subject, "Field Level Selection and Coordination of the Uses of Radio Frequencies" has been issued by J. D. O'Connell, of the Office of Telecommunications Management (OTM). The Bulletin is addressed to "All Federal Agencies Users of Radio". The first four paragraphs are extracted as follows:

> "1. Purpose - The purpose of this Bulletin is to initiate a pilot program looking toward a formal Government-wide program for improving field level selection and coordination of the use of radio frequencies.
>
> 2. Objectives - The objectives of this program are a) the satisfaction of a greater number of communication requirements, b) a reduction in the time required to obtain IRAC/DTM frequency authorizations, c) a reduction in and faster resolution of cases of harmful interference, and d) a partial shift of detailed coordination procedures from the Washington level to the field, with a consequent greater emphasis on policy matters at the headquarters level.
>
> 3. Scope - This program applies to the use, within the United States and Possessions, of radio frequencies by each agency and department of the Federal Government. The program is being instituted on a limited scale, both as to frequency bands and geographical areas, in order to gain experience with the procedure and reduce the likelihood of problems.
>
> 4. Procedure - The initial test procedure is contained in the attachment to this Bulletin in the format for inclusion in the Manual of Regulations and Procedures for Radio Frequency Management. The procedure will be expanded and kept up to date through the mechanism. The test procedure will be reviewed by May 1, 1970, to determine its effectiveness."

The following paragraphs are excerpted from the Annex D, Procedure for Field Level Selection and Coordination of the Use of Radio Frequencies. (Revised June 1969).

Applicability - This procedure is applicable to the use of radio frequencies by U.S. Government radio stations in the following bands and areas:

Frequency Band (MHz)	Area of Use
1435-1535	California south of 37°30' N. including all offshore islands

Coordinators - The frequency coordination specified in this procedure shall be effected by liaison with the appropriate Department of Defense (DOD) Area Frequency Coordinator (AFC) indicated below. This procedure recognizes the authority of the AFC's, granted by the DOD, to coordinate with all activities - military, Government, and non-Government - within the geographical area described.

AFC	Areas of Cognizance
Western Area Frequency Coordinator, Pt. Mugu, California 93041 Telephone: 805-982-8933	California and Nevada south of 37° 30' N. including all offshore islands.

Procedures - All proposed frequency assignments in the applicable bands and areas shall be coordinated by the applicant with the appropriate AFC according to procedures mutually agreeable to the AFC and applicant concerned. If the applicant wishes, the AFC will recommend a frequency based on the applicant's requirements and the technical particulars furnished by the applicant. The AFC will inform the applicant of the probability of any harmful interference involving the proposed assignment and, if appropriate, will recommend alternatives and/or restrictions to preclude such interference. The AFC's comments to the applicant will be based on his records of spectrum usage in his geographical area of responsibility and such additional coordination with other entities and activities in that area which he deems appropriate.

APOLLO 7 FLIGHT AIDED BY FCC MONITORING ACTIVITIES

The FCC Field Engineering Bureau received 64 requests from NASA and supporting agencies for location of interference to essential radio circuits during the ten-day record flight of Apollo 7 the Commission has announced. Fifty-one sources of interference were definitely identified and located. In the remaining 13 cases, the signal went off the air before identification could be made, or was so weak that identification and location was impossible. Operating circuits were not affected by the interference.

The FCC's monitoring and direction finding system which operates throughout the continental United States, Puerto Rico, Hawaii and Alaska, located interfering signals originating all over the world.

One of the critical areas of signal reception from the spacecraft was at Corpus Christi, Texas, where problems were created by industrial operations. The Commission stationed microwave and VHF mobile monitoring teams in the area three days before the flight to survey potential interference. One source, which would have interfered with reception of radio signals from the spacecraft carrying biomedical and cabin environmental information was located. Corrective action was taken by NASA before flight time to eliminate the interference potential. The monitoring teams maintained an 11 day watch to detect any other disturbances that might occur in the area.

The Commission's interference monitoring activities covered twelve frequencies used by Apollo 7 for communications to and from ground control stations, in addition to about 225 frequencies used in point-to-point maritime and aeronautical operations from take-off to splashdown.

If you are in need of help due to interference to your Vehicular Radio system, the FCC Field Engineering Office nearest to you may be able to solve your problems; they have monitoring facilities. (Washington, D.C. Phone No. (202) 632-7090)

From Vehicular Technology Group Newsletter.

PEOPLE STATIC KNOCKS OUT TRANSISTOR RADIOS

A brief article with the above title appeared in the April 1969 issue of Electro-Technology. The first three paragraphs are extracted as follows:

> "Mysterious failures of transistor radios might be caused from static electricity generated by people or synthetic materials.
>
> A British automobile manufacturer, according to Signalite Inc., Neptune, N.J., found that 63% of all transistor radios have been returned for service because the first-stage transistor has been blown by a high-voltage overload.
>
> One cause was found to be 15,000 to 25,000-V static discharge from people grabbing the antenna when getting out of their cars. Other causes discovered were: the static electricity in the air built up by charged clouds and thunderstorm activity in the area; and discharges occurring under certain atmospheric conditions when a car passed under electrical power grid lines strung across roads and highways."

A NEW USE FOR THE SUN

A report from Bell Laboratories with the above title appeared in the March 1969 issue of Microwaves. Paragraphs of interest are excerpted below:

> "Radio frequencies in the range of 10 to 40 GHz are of interest for satellite communications. But signals at these frequencies --- including millimeter wavelengths at 30 to 40 GHz -- are attenuated by rain, snow, fog, and other weather conditions. To study these effects, we need a source of millimeter waves in the sky. What could we use?"
>
> "The sun emits radio signals at a great many frequencies, but the sun-tracker is tuned only to signals at 16 and 30 GHz. The received energy has two significant components; one due to the sun and one due to the atmosphere (which attenuates solar energy but also radiates energy of its own). To allow for the atmospheric components, we tilt our mirror away from the sun once each second, thus getting a sky-only reading. We subtract this from the sun/sky total and plot the difference. The equipment responds to and records signal changes as rapid as 30 dB in 15 seconds."

★ ★ ★

LASER FOR H-BOMB TRIGGER?

An article with the above title appeared in the March 1969 issue of Microwaves. The first three paragraphs are extracted as follows:

> "The AEC will worry about private lasers capable of initiating fusion when pulse energy reaches two or three times the present level.
>
> A laser device to trigger fusion could permit a small country, perhaps even a private company, to build a H-Bomb without first learning to build an A-Bomb. The laser for this job would need at least three times the short-pulse energy of the best present day systems.
>
> The Atomic Energy Commission has grappled with the policy headaches arising from non-government nuclear research for several decades now. Late last December, LASER TECHNOLOGY learned, the AEC temporarily shelved proposed regulation to control private laser progress towards a trigger for H-Bomb and other nuclear explosives. The AEC's hesitation apparently is related to the fact that as nuclear technology advances, it becomes more and more difficult to confine it to government laboratories."

★ ★ ★

"SRI Land Mobile Interim Report on Spectrum Utilization now available

Stanford Research Institute under contract to the FCC has submitted its initial report on the subject study of Land Mobile Spectrum Utilization. This volume, Part A of the complete report, describes the design and operation of a Scanning Receiver Monitoring System and presents data obtained with this system in Detroit and Los Angeles. Part B to be issued at a later date, will provide an analysis of the spectrum management problem, derived from the data in Part A and data from other sources.

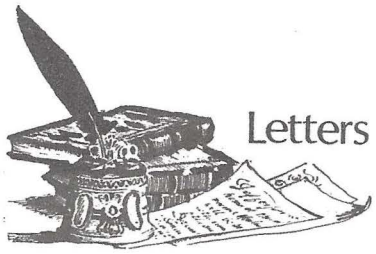
These reports may be ordered from the Dept. of Commerce, Clearing House for Federal Scientific and Technical Information, Springfield, Va., 22151. The cost is $3.00 for each Part. Microfile copies will also be available at $0.65 per Part. Part A is entitled "Requisition, Processing, and Analysis of Spectrum Occupancy Data" -- #PB-182-792. Part B is entitled "An Analysis of the Spectrum Management Problem" -- #PB-182-918."

★ ★ ★

How to Start a New Chapter

1. Write to IEEE Headquarters (TAB or Sections Departments) for a list of members in your Section area and for a Group Chapter Manual and general information.
2. Write to the Secretary of your Section, advising him of your interest in organizing a Chapter.
3. Write to the Ad Com Chairman, advising him of your interest in organizing a Chapter.
4. Draw up a petition, addressed to the General Manager of IEEE, requesting formation of the proposed Chapter, and have this petition signed by at least twelve G-EMC members residing in the Section.
5. Submit the signed petition to the Secretary of the Section for approval by the Section Executive Committee.
6. Forward petition and Section Executive Committee approval to the General Manager of IEEE. He will submit it to the IEEE Executive Committee for approval.
7. When you have been notified that the IEEE Executive Committee has approved this petition, elect officers and report their names and positions to Section, Ad Com Chairman and IEEE Headquarters*
8. Furnish copies of pertinent correspondence to the Section Secretary, the IEEE Section Department and the Ad Com Chairman.

* and, please, to the Newsletter Editor!



To: All IEEE members with an interest in Oceanography

I have been asked to coordinate oceanographic activities for IEEE nationally and internationally. It is fitting that IEEE, the largest international engineering society in the world, should play a prominent role in oceanography; a scientific and engineering discipline with strong international ties.

The Charter of the Geoscience Electronics Group specifically includes oceanography. There are, however, a number of other Groups that have ocean-related interests. It is the desire of the Geoscience Group and IEEE Headquarters that I serve as a focal point for coordination of the wide variety of interests and activities in this area. We plan to utilize the Geoscience Newsletter as the medium for the dissemination of timely information on oceanographi activities. The Newsletter will be available to any member upon request, regardless of his Group affiliation.

Since this is a relatively new concept, I am soliciting the IEEE membership for their comments on the oceanographic areas that they would like to be kept informed on. In addition, I would like to identify key correspondents who could provide oceanographic news items relating to their special interest. I will try to act as an effective point of contact for the Society but I need to know of your interests. Please communicate with me as follows:

Gilbert Jaffe
Director, Oceanographic Instrumentation Center
U. S. Naval Oceanographic Office
Building 160, Washington Navy Yard
Washington, D.C. 20390

People in the News

A. W. DIMARZIO JOINS FAIRCHILD/ELECTRO-METRICS

AMSTERDAM, N.Y. - Alfred DiMarzio, formerly in-house EMI/EMC consultant to RCA, Burlington, Mass., has joined Electro-Metrics Corporation, a subsidiary of Fairchild Camera and Instrument Corporation, as a project engineer. According to David Smoler, chief engineer, he assumes immediate responsibility for all digital remote control and computer/processor engineering projects relating to EMI/EMC instrumentation equipment and systems.

At RCA, DiMarzio was responsible for all EMI/EMC reviews of in-house and vendor designs including EMI control documents. He has developed several computer programs for interference analysis and prediction. His experience encompasses automatic test equipment, airborne computers, airborne radars and nuclear EMC effects.

Mr. DiMarzio, who holds both B.S. and M.S. degree from Northeastern University, Boston, is past chairman of the IEEE Boston Section on EMC and chairman of the IEEE workshop group on interference prediction and propagation. He has presented several symposium papers and is the author of numerous articles in major technical publications.

- -

JAMES FITZGERALD WINS SYMPOSIUM LOGO CONTEST

BURBANK, Calif. (April, 1969) --"A case of enthusiasm", brand of his choice, recently was awarded to James Fitzgerald of the Lockheed, Palmdale, Calif., facility.

The reason? Jim submitted the winning logo in a contest conducted by the 1970 IEEE/EMC Symposium officers and chairmen among members of the Southern California chapter of G-EMC. A trademark, symbol -- logo -- was needed for advertising, stationery, badges, etc. Jim had the best idea... extension of the vertical shaft in the IEEE logo to emphasize the importance of electromagnetic compatibility.

From more than 40 entries, the following runners-up were chosen:

Kim Schuette, TRW Systems Group, and Herb Mertel, General Dynamics/Pomona Division. These two winners each received "A slight infection" in recognition of their creative ability... that reduces down to about a "fifth".

According to George Ufen, 1970 Symposium Chairman, the contest was interesting, exciting and well - received. Other unique activities are planned.

H. SACHS AND R. FREEMAN FORM NEW COMPANY

Two individuals who have been in the EMC field for many years have just announced their formation of a new company, SACHS / FREEMAN ASSOCIATES, Inc., specializing in communications and radar systems analysis. The company will be located at 7515 Annapolis Road, Suite 306, Hyattsville, Maryland 20784, (a suburb of Washington, D.C.). and will initially concentrate on equipment degradation studies, frequency assignment and planning efforts, and related areas.

Both Herbert M. Sachs and Ernest R. Freeman were formerly in technical management positions at the Electromagnetic Compatibility Analysis Center, and more recently were with the Vertex Corporation. Herb's background also includes heading the IIT Research Institute's EMC program in Chicago, and Chairman of two of the old RFI conferences; while Ernie's previous experience was at Douglas Aircraft and Bell Tel. Labs.

A SALUTE TO LEN THOMAS

The following letter was sent to Colonel G. O. Nicholson, USAF, Commanding Officer of ECAC in Annapolis, Md. It was written by Fred Nichols, Chairman of the IEEE G-EMC.

Dear Colonel Nicholson:

On behalf of the membership of the IEEE Group, Electromagnetic Compatibility, and in particular from the direct experience of members of the G-EMC Administrative Committee and its officers, as well as the writer, I wish to express out thanks to you and to the Staff of ECAC for thecooperation that ECAC has given to the G-EMC and the EMC community by allowing the many services, loyalties and cooperation of Mr, L. W. Thomas of your staff.

Mr. Thomas has been Secretary to the EMC for a great number of years and has done an outstanding job in the notes of our minutes, business records etc. He also serves as Chairman of the G-EMC Constitution and Bylaws Committee.

I am sure you are aware that Mr. Thomas has spent a considerable amount of his own time on these dual functions and it is only with the cooperation of ECAC that his position has allowed him the flexibility to perform these necessary services. We appreciate that these functions could not b e performed on a personal basis onl

Leonard has great skills and the patience necessary for these vital functions and it is only appropriate that we show recognition to him by expressing our combined thanks for a job "well done" and acknowledge our appreciation to you and ECAC for making this possil and supporting him in his work.

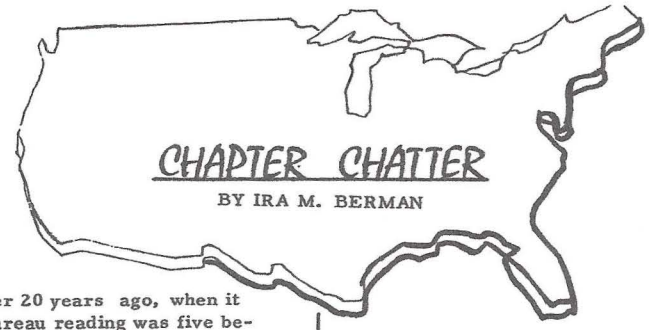
Leonard also performs a valuable service to ECAC as he informs us of the many policy and operational areas of ECAC and does an excellent job of being an unofficial ECAC member on our Ad Com This provides a valuable link between all of the EMC community, both to ECAC and to DoD. We of G-EMC Ad Com wish to expand our services and communications with ECAC and both Leonard an Mr. Georgi have a tremendous technical capability is vital to bot ECAC/DoD and the EMC community.

On behalf of G-EMC Ad Com, it is my pleasure to take this oppo tunity to pass on our thanks and appreciation to ECAC, yourself : to Leonard.

Thank you for your attention.

Very truly yours,

Fred J. Nichols
Chairman
1969 G-EMC Ad Com



CHAPTER CHATTER

BY IRA M. BERMAN

I remember one Saturday morning, over 20 years ago, when it got very cold. The official Weather Bureau reading was five below zero, which for the New York City area was cold even for January. The air had a blue tinge to it, and everything was covered with a thin coating of hard, blue frost. The snow that had fallen the previous week was solid underfoot and quite easy to walk on. I went for a walk that morning, with my camera under my coat, and I do not remember being especially cold.

Now I complain that it takes my car three miles of driving to provide sufficient heat when the outside temperature is near freezing. All of which adds up to the fact that I'm glad Spring is here (closer to Summer, by the time this column is printed and distributed). I guess my dislike of Winter and the cold is a sure sign that I am growing old.

What's not old is the Chapter News this month. Spring is when (boy, that's grammar!) the Chapters elect new officers and set up new programs and look ahead toward the next (and best) activity year. Let's see what the Chapters report, starting from south to north.

CANAVERAL — Chairman: Mr. George A. Tagge, 375 Carissa Drive, Satellite Beach, Fla. 32935

The Canaveral Chapter reports they have a new Chairman, taking over the Mr. D. W. Montgomery, who has moved to Redmond, Washington (northeast of Seattle). Good luck to both gentlemen in their new positions.

The Chapter had one meeting since the last report:

Date: March 18, 1969

Place: not available

Speaker: Mr. Thomas Herring, Boeing Company, Houston, Texas.

Topic: Sneak Circuits

Attendance: 16

What with potential EMI lurking in all corners of a circuit, ground loops slinking in and out of diagrams, and extraneous radiation skulking in the cabinets, you can see why the study of sneak circuits is important.

CENTRAL TEXAS — Chairman: Mr. W. C. Dolle, 542 Lakeview Boulevard, New Braunfels, Texas 78130

The members "deep in the heart of you-know-where" have two meetings to report:

Date: March 12, 1969

Place: USAF Cryptologic Depot, San Antonio, Texas

Speaker: Dr. J. F. Willman, Applied Research Lab, Univ. of Texas, and Mr. G. W. Van Steenberg, Southwest Research Institute.

Topic: A Differential Probe Technique for Conducted EMI Measurements.

Attendance: 18

For those of us who are accustomed to using a single-ended probe input, the technique may be of great interest.

Date: April 16, 1969

Place: USAF Cryptologic Depot, San Antonio, Texas

Speakers: Mr. W. E. Cory and Mr. W. C. Dolle, SWRI

Topic: Measurement of Attenuation of Electric and Magnetic Fields at Points Close to the Source.

Near field measurements are always a problem, particularly with those specs that require a measurement only one foot from the source. Any information and additional interpretation is always welcome.

The elections and program for the 1969-1970 year were not available as of the deadline for this issue, so we'll look for them in the next issue at the end of the Summer.

HOUSTON — Chairman: Mr. V. E. Haywood, 1315 NASA Road, Houston, Texas 77058

Houston reports a meeting in April on a true state-of-the-art technique:

Date: April 2, 1969

Place: Ramada Inn, Nassau Bay, Texas

Speaker: Mr. W. R. (Bill) Johnson, TRW Systems Group, Redondo Beach, Calif.

Topic: Computerized EMC Specification Development

Attendance: 16 IEEE members, 7 guests

Mr. Johnson is performing this type of work for TRW as head of the Research Analysis Group of the EMC Section.

Houston also reports that they have appointed two coordinators for the EMC Student Activities Committee (set up by the Ad Com). They are Professor W. T. Kettinger, University of Houston, and Professor John P. German, Texas A & M University. Our newest Chapter is apparently one of the first to help out in the stimulation of student interest. As the last two columns predicted, look for great things from Houston!

Another meeting is scheduled for May 7, 1969, with Mr. James G. Toler of Georgia Tech (and the Atlanta Chapter) as the speaker.

ATLANTA — Chairman: Mr. James C. Toler, 1022 Reeder Circle, Atlanta, Georgia 30306

"I don't want to set the world on fire, I just want to build one under G-EMC." Atlanta seems to be paraphrasing that song of a few seasons ago. The last reported meeting featured a double-header: two papers in one evening. That sounds like a first from here, and a pretty good idea too!

Date: March 11, 1969

Place: Southern Bell Telephone Electronic Switching Facility

Speakers: Mr. Hugh Denny, Georgia Tech.; Mr. James Toler, Georgia Tech.

Cont'd

Topics Receiver Preselection Techniques (Denny); Cable Coupling (Toler)

Attendance 18 (including guests)

A tour of the facility followed the meeting. For those of you who have been in a dial facility with crossbar or rotary selector switches, the silence of little transistors "doing their thing" must have been deafening.

On May 13 (after the date of this writing), the Atlanta Chapter will elect officers for the 1969-1970 term and present the final technical program of the year.

A progress report has been delivered each meeting by Mr. Dan Mathias, Chairman of the Region III Symposium. This will be held at the Atlanta Regency Hotel October 27-29, 1969. The program will include a cable-coupling workshop on the afternoon of the 27th. The other two days will be of general interest. There will even be exhibits. For those who can't make it to Asbury in June, Atlanta in October sounds just about as good.

LOS ANGELES (Southern California) Chairman: Mr. James Spagon
TRW Systems
One Space Park
Redondo Beach
California 90278

Right on the deadline, the postman came dashing breathlessly to my door, waving an envelope wildly in front of his face -- and shortly in front of mine. "Here it is!" he cried, and so it was -- the Los Angeles' Chapter news, with all kinds of interesting information. First of all, the meeting in January:

Date Janaury 16, 1969

Place Not available

Speaker Mr. Jesse K. Charles, TRW Systems

Topic Bugging -- is it still around?

Attendance 80

Vat you tink of dat, Boris? Dey got 80 Capitalists sittink dere in dat crowded room vile ve listen here in comfort in KAOS headqvarters. And who are dey kiddink vit dat topic?

Going from the bug in the eagle to the fly in the sky, Los Angeles reports on their March meetink -- I mean, meeting:

Date March 19, 1969

Place Chalon Mart Restaurant

Speaker Dr. Robert Tousworthe, JPL (Cal Tech)

Topic Evolution of Deep Space Communication Technology

Attendance 40

Now there is a subject that boggles the mind, if you will. TV pictures from Mars still fascinate me, and I've worked in Aerospace for 16 years.

These next two events will occur between this writing and the mailing of the Newsletter.

Date April 24, 1969

Place TRW Systems, Redondo Beach, California

Program First Annual Student Activities Night

This is indeed something to celebrate. The program is planned to be quite comprehensive. Let me quote from their meeting notice: "The purpose of the program is to acquaint engineering students with the field of electromagnetic compatibility. Opportunity will be provided for students to (communicate) with EMC engineers through participation in informal discussion groups .. . All engineering students, IEEE Student Counselors, and other interested faculty members are invited ... Students and faculty members will be provided a complimentary ticket for dinner... in addition, members of the IEEE Student Branches will receive a complimentary membership in G-EMC ..."

Date May 21, 1969

Place Anaheim Convention Center

Program EMC Specialist Workshop (one day)

It appears that Dr. Ralph Showers' efforts at setting up sub-groups for particular disciplines within G-EMC have borne fruit. I'll quo again from their handout: "Workshop groups have been organized the Southern California EMC Chapter in coordination with the ..A Com.. The task of each group will be to identify the state-of-the-a in each area and to identify future direction for development of that element in the EMC field."

Among the speakers will be Jim Spagon, Chapter Chairman; Jim Senn, Specialist Working Group Committee Chairman; and Fred Nichols, G-EMC National Chairman. The working group titles are: Systems EMC Management, Interference Prediction, Shielding, Propagation, Measurement Techniques and Instrumentation, Grounding, Filtering, and Interference Generation. The day runs from 8 a.m. to 6 p.m., so you really get your money's worth. T titles sound like just about all there is!

The Chapter has nominated a full slate of officers with a contest for each office:

Chairman: Joseph Berger, Astro Comm Lab/Jim Senn LectroMagnetics.
Vice-Chairman: Tom Walter, TRW Systems/Hank Knoller, Lockheed
Secretary: Don Davis, Hughes/John Merrell, Genistron
Treasurer: Bob Cowdell, Genistron/Larry LeDoux (Affiliation unknown)

Now do you see why the postman was out of breath? I sure hope the whole place doesn't slide away into the Pacific before 1970. It should be a swinging convention out there next year!

SAN FRANCISCO Chairman: Mr. W. G. Coe
P.O. Box 1383
San Carlos, Ca. 94070

My first draft of the Column had nothing new to report from San Francisco, but Bob Goldblum and the mailman brought me the following:

Date February 17, 1969

Place (Not available)

Speakers Mr. Richard Kelkenberg, Lockheed Missile and Spac Moderator.
Mr. Robert Cowdell, Genisco
Mr. H. C. MacQueen, Lockheed Missile and Space
Mr. George Springer, Hewlett-Packard
Mr. Victor Turesin, Lockheed Missile and Space

Topic A Panel Discussion: EMI Testing to MIL-STD-461

Attendance 22

Date April 21, 1969

Place Hewlett-Packard Auditorium

Speaker Mr. Roy Lange, Lockheed Missiles and Space

Topic Space Radiation Challenges the MOSFET

Attendance 15

Cont'd

Now, there's a "way-out" topic. EMC is normally considered to extend from dc to light. Should it really go beyond, for space radiation includes ultra-violet, X-rays, and cosmic radiation, beyond light in the Spectrum?

Date May 19, 1969

Place Hewlett-Packard Auditorium

Speaker Mr. Vernon G. Price, Stanford Accelerator

Topic The Stanford Linear Accelerator

No, I will not make any puns on this one. The Engineering problems involved in keeping a two-mile pipe that straight are enough unto themselves.

San Francisco has not yet elected its new officers or firmed up its 1969-1970 program.

WASHINGTON, D.C. Chairman: Mr. C. J. Saunders
National Bureau of Standards
A-109 Building 224
Washington, D.C. 20234

The Capitol Chapter was treated to an evening with Mr. Fred Nichols, and 40 pairs of ears were there to drink in what Fred had to say.

Date March 20, 1969

Place Blackie's House of Beef

Speaker Mr. Fred J. Nichols, President, LectroMagnetics, Inc.

Topic Simplified RF Electromagnetic Shielding

Attendance 26 members, 14 guests

PHILADELPHIA Chairman: Mr. V. Bashaw
General Electric Re-Entry Systems
3198 Chestnut Street
Philadelphia, Pa. 19104

Because of scheduling problems, Philadelphia held two meetings only 15 days apart. Attendance was excellent at both, despite an abysmal rainstorm for the March meeting. Of course, the speakers in each case were good "draws," too.

Date March 24, 1969

Place Boeing-Vertol Corporation, Morton, Pa.

Speaker Mr. Richard Schulz, Boeing Corporation, Seattle, Washington

Topic EMC in Avionics; film of the first flight of the 747 aircraft.

Attendance 74 (joint meeting with local IGA Chapter)

Date April 8, 1969

Place General Electric Company, Re-Entry Systems, Philadelphia, Pa.

Speaker Dr. Heinz Schlicke, Allen-Bradley Company, Milwaukee, Wisconsin.

Topic The Changing EMC Profession

Attendance 30

Dr. Schlicke's presentation showed some of the ways that the EMC Engineer must adapt himself to the expanding technology. To illustrate his points, he presented a short slide series on computer printouts of lumped-parameter filter characteristics, including some contour representations of these characteristics.

Elections were held at the April meeting, with the following elected:

Chairman: Vern Bashaw, GE
Vice Chairman: Terry Dietrich, Philco-Ford
Secretary: Jim Latimer, AEL

Appointments to such positions as local Newsletter Editor, Membership, etc., will be made shortly. The Philadelphia Chapter is planning a one-day Seminar in May, 1970, open to Engineers in general. The balance of the 1969-1970 program will be made up in executive session late in the Spring.

Average attendance for 68-69 was 44 per meeting. Pretty neat, if I do say so (and I should, as I was one of the 44).

NEW JERSEY COAST Chairman: Mr. W. Kesselman
31 Hope Road
New Shrewsbury
New Jersey 07724

A meeting in March -- a meeting in April -- a meeting in May -- a Symposium in June -- where do they get the energy and the drive? It wears me out just thinking about all that activity!

Date March 11, 1969

Place Gibbs Hall, Ft. Monmouth, New Jersey

Speaker Mr. M. Morris, Electronics Command, Ft. Monmouth

Topic Designing Microwave Mixers for Increased Dynamic Range.

Attendance (not reported)

Date April 8, 1969

Place Gibbs Hall, Ft. Monmouth, New Jersey

Speaker Mr. Henry Burke, Chief, EMC Section of Lunar Model Systems Engineering, Grumman Aircraft Engineering Company, Bethpage, New York.

Topic EMI Problems encountered at GAEC and Cape Kennedy which were factors in the decision to delay the first manned flight from Apollo 8 to Apollo 9.

This could be one of the more severe problems that EMI might cause, regarding schedule, costs, time -- and embarrassment. Mr. Burke has worked in the EMI field since 1956.

New Jersey Coast is sporting a new batch of officers, too:
Chairman: Warren Kesselman
Vice-Chairman: Maxwell Brown
Secretary: Charles D. Joly
Program Secy: Bruce Miller

Average attendance for the past year ran between 45 and 50, with some 10 guests per meeting. Pretty good!

METROPOLITAN NEW YORK Chairman: Mr. H. Bostrom
Metex Corporation
970 New Durham
Edison, N. J.

No news reported from New York.

BOSTON Chairman: Mr. S. Birnbach
AVCO
Wilmington, Mas

It was a real bad day in Philadelphia. The sky was dark. The wi blew cold. News from the Boston Chapter was lacking. Then, lil manna, it came: news of four meetings:

Date January 29, 1969

Speaker Mr. J. M. Clarke, NASA/ERC, Cambridge, Mas

Cont'd

Topic — Spectrum Utilization for EMC in Aerospace Communications Systems

Attendance — 19

Date — February 12, 1969

Speaker — Mr. A. W. DiMarzio, Fairchild Electrometrics Corp., Amsterdam, N.Y.

Topic — Automation and Semiautomation of EMC Measurements

Attendance — 13 (joint meeting with I&M Group Chapter)

Mr. DiMarzio was formerly Chairman of the Boston Chapter.

Date — February 19, 1969

Speaker — Mr. J. W. Dunnet, Sylvania, Needham Heights, Mass.

Topic — Computer-Aided Analysis Techniques for Predicting the Effects of Conducted Electromagnetic Interference

Attendance — 14 (joint meeting with AES Group Chapter)

Imagine -- two meetings a week apart. Even Philadelphia can't top that!

Date — March 12, 1969

Speaker — Mr. J. W. Hughes, Editor, FREQUENCY TECHNOLOGY magazine

Topic — Industrial Publication -- An Engineering Necessity

Attendance — 12

Mr. Hughes and his magazine were featured in an article in the April 1969 Newsletter, issue no. 58.

It looks like they've been busy in Boston, building a big business boosting Birnbach's boys to blast the bloomin' britches off EMI!

MOHAWK VALLEY

Chairman: Mr. Frank E. Ferrante
20 Evergreen Drive
Rome, New York 13440

The Chapter has been so busy having meetings that they just haven't had time to write. But after they did, I received a phone call from the Chairman to make sure I had all the information correct.

Date — March 13, 1969

Place — Rome, New York

Speaker — Mr. Edward F. Dyer, formerly of Westinghouse Aerospace Division

Topic — Switching Transients Measurements Using Automatic Spectrum Techniques

Attendance — 29 (approximately)

That sounds like information that many, many members could use.

Date — April 24, 1969

Place — Rome, New York

Speaker — Mr. Wm. G. Duff, Atlantic Research Corp.

Topic — Receiver Interference Characteristics -- Suggestions of a New Philosophy

The following nominations were made on April 16, 1969:

Chairman: George A. Long, Griffis Air Force Base
Vice Chairman: Major Marion T. Ruple, USAF, GAFB
Secretary: Warren T. Keller, GAFB

Meeting attendance was very good, too: 17 out of 21 members on the average, with 6 guests per meeting. You watch those fellows upstate. That looks like a going crew.

SEATTLE

Chairman: Mr. A. Eckersley
616-166th Avenue
Bellevue, Wash. 98044

I have an old ice pick in my tool box with the legend on the handle "ICE NEVER FAILS." Seattle is one Chapter that never fails to send me full reports on all their activities. They send in comments, suggestions, requests -- I even get chewed out once in a while (and I usually deserve it). But they send me the information! And of such information is a column made.

Date — March 26, 1969

Place — Boeing Scientific Research Labs

Speaker — Mr. Wm. Swift, Hewlett-Packard Company

Topic — Using the Spectrum Analyzer for EMI Measurement.

Attendance — 33

Date — May 21, 1969

Place — Boeing Scientific Research Labs.

Speaker — Mr. Gordon M. Pascoe, Secretary, Washington Cooperative Interference Committee.

Topic — Radio Spectrum Utilization: Walking the Tightrope

Nomination have been made for the new officers, and elections are scheduled for the May meeting. Meetings have been on the last Wednesday of the month, 5 or 6 times a year, with changes for the holidays as required.

Heavy participation in the Asbury Park Symposium is planned, along with papers to be presented at the International Conference on Communications. And they plan a "summer non-technical meeting" at the residence of an ex-Chairman some evening.

Well, it's 12:15 a.m. and the column is written. For those of you who sent me what with to write from, I thank you. For those of you who did NOT send me any news, I thank you, too, but not as heartily. The latter thanks are only for letting me go to sleep. But when it comes around to Chapter Chatter time, nothing would please me more than sitting up all night because I have so much stuff to write about. Maybe it's vicarious pleasure from reading about a meeting at the Playboy Club, or a new technique of measuring transients or just counting the number of times a certain speaker has travelled about the Chapters with a new technique or product that can be of help to us all.

But let's face it: I am blind and deaf all by myself. The Chapter Chairman and Publicity contacts to whom I send my questionnaires every two months are my sight and hearing for Chapter news. The Chapter Chatter column has received a number of favorable comments lately. I can not -- I will not -- take credit for this myself without sharing it in the fullest measure with those in the Chapters who have themselves taken time to communicate.

Please -- in this coming activity year -- send me what I need to know. Tell me about your Chapters so I can tell the membership. So I can tell your membership!

Asbury or Bust!!

ADCOM STANDING COMMITTEE
EMC Meetings Committee

Committee Chairman: Herman Garlan
Chief of Radio Frequency Devices Branch
Technical Division of the Office of the
Chief Engineer
Federal Communications Commission

Herman Garlan was born and educated in New York City and received his B.S., degree from the College of the City of New York. In 1936, he received the degree of EE from Columbia University. He has spent almost his entire working career with the Federal Communications Commission. Mr. Garlan is a registered Professional Engineer in the District of Columbia.

Starting as a Radio Inspector at the Chicago Office of the FCC in 1940, he was transferred to Washington, D.C. in 1945 where he worked on the engineering problems associated with licensing of radio stations in the land mobile radio service - particularly in the Police and Fire Radio Services. Since 1954, he has been Chief of the Radio Frequency Devices Branch in the Technical Division of the Office of the Chief Engineer. In this position he is responsible for all the engineering aspects of the regulatory program under Parts 15 and 18 of the FCC Rules.

Mr. Garlan participated actively in the preparation of interference legislation which culminated in the passage of Public Law 90-379 which authorizes the FCC to regulate the manufacture and sale of devices capable of causing harmful interference. He is currently working on regulations to implement this Law, and is assisting in the development of an effective equipment program to carry out the objective of PL 90-379 to reduce spectrum pollution from undesired radio noise.

Mr. Garlan is the US representative on Working Group 2 of USPR. The Special International Committee on Radio Interference, which is developing instrumentation and measurement techniques for measuring interfering emissions from all types of radio noise producting equipments. As US representative on Working Group 2, Mr. Garlan has been a member of the US Delegation to all the Plenary Assemblies of USPR since 1958.

Mr. Garlan is a senior member of the IEEE and a very active member of G-EMC. He was one of the organizers of the Washington D.C. Chapter in 1959 and served as its Vice Chairman in 1960-1961 and as Chairman during 1961-1962. He has been a member of the Administrative Committee (Ad Com) of G-EMC since 1960, and was the National Chairman of the Group for the year 1962-1963.

Since 1964, he has served as Chairman of the Meetings Committee. Mr. Garlan was Vice Chairman of the 2nd and 3rd National Symposium on Radio Frequency Interference and has organized the EMC sessions at the IEEE International Conventions in 1966, 1967 and 1968.

Mr Garlan is a member of Tau Beta Pi and Sigma Xi, and has received a number of scrolls and certificates of appreciation for his work on behalf of the Group on EMC

The Meetings Committee of the Group on EMC was set up when the Group was organized in 1957-8. The first Chairman was 1st Lt. J. P. McNaul, who at the time was Assistant Project Officer for the US Army on Project Monmouth, and who had been one of the organizers of the Group. Under Lt. McNaul's chairmanship, the Group started its series of symposia, first on RFI, and now on EMC. The first symposium titles "Radio Frequency Interference Seminar" was held in New York City on June 15 - 16, 1959.

The chairmen of the Meetings Committee were:
1958-1960 1st Lt. J. P. McNaul, US Army
1960-1962 Herman Garlan, FCC
1962-1963 D. R. J. White, White Electromagnetics Inc.
1963-1964 A. R. Kall, Ark Electronics Corporation
1964-present Herman Garlan, FCC

The functions of the Meetings Committee as set out in 311.5 of the G-EMC Bylaws (published in EMC Newsletter, No. 52, April 1968) are:

* to promote and manage the meetings of the Group;
* to cooperate with the Technical Papers Committee and with other Committees concerned with arranging programs at Group sponsored and jointly sponsored meetings and with the IEEE Convention Program Committee in arranging for participation of the Group at the IEEE International Convention;
* to handle all necessary arrangements for Group technical sessions at the WESCON or other IEEE sponsored meetings.

That is a lot of words to say that the Meetings Committee helps to arrange technical meetings and symposia where engineers and others interested in the problems of EMC can hear about the latest developments in the field.

As a practical matter and in recognition of their importance, management of the Group Symposia has been taken over by the AdCom for the Group. Most of the effort by the Meetings Committee is therefore devoted to fostering sessions on EMC at the IEEE International Convention and at Symposia and Conventions arranged by other Groups as well as by affiliated organizations. Thus G-EMC had arranged a session on EMC at the 1968 WESCON at Los Angeles during August 1968, and at the IEEE Communications Conference at Boulder, Colorado, June 1959. Our Group has been invited to arrange a session at NEC in Chicago, December, 1969.

The actual planning for these sessions is carried on by a session organizer who has been recruited for that task and who becomes a member of the Meetings Committee for the duration. The session organizer, in turn, recruits a chairman for the session and arranges for the papers that are to be presented. He is also the G-EMC representative on the Conference Program Committee.

In general papers are obtained in two ways: Donated in response to a general call for papers, or specific individuals are invited to present a paper on an agreed topic. Assistance is given the session organizer by publicizing any general call for papers in our EMC Newsletter.

(The session organizer seldom receives adequate recognition for the job he does which is difficult and time consuming, although rewarding. It is appropriate therefore to take this opportunity to thank all those who have served as session organizers at the various symposia and conferences in which G-EMC has participated. It is also appropriate to say that volunteers to serve as session organizers are always welcome. Any individual willing to take on this task is invited to make himself known to the Chairman of the Meetings Committee).

ADCOM NEWS & VIEWS

G-EMC CONSTITUTION CHANGES

The G-EMC Administrative Committee on December 2, 1968 at a regular meeting approved the increase of members of the Group Administrative Committee from the present fifteen members to eighteen members. The increase is to be accomplished by annually electing six members instead of five. The first election of six members will be during the calendar year 1969 covering the three-year term 1970-1-2.

This amendment to the constitution was approved by the G-EMC Ad Com, IEEE Technical Activities Board and IEEE Executive Committee. If no objections are received within 30 days of this publication date, the recommended revisions will be considered final. If at least ten percent of the Group members object (approximately 175) within 30 days, a copy of the proposed amendment will be mailed with a ballot to all members of the Group. Enactment will then be dependent upon approval by at least two-thirds of the ballots returned. Objections should be addressed to Mr. Leonard W. Thomas, 1604 Buchanan Street, N.E., Washington, D.C.

The sections which contain changes are excerpted below with the changes underlined:

Article V

Section 1 — The Group shall be managed by an Administrative Committee of 18 elected members of the Group plus members "ex-officio with vote" as specified in the Bylaws. (There may also be members "ex-officio without vote.") No less than 70% of the voting members of an Administrative Committee shall be elected members.

Section 3 — The terms of the 18 members-at-large of the Administrative Committee shall be for three years, six members to be elected each year. Only two consecutive full terms are permitted, but eligibility is restored after a lapse of one year.

Section 5 — Newly elected Chairman, Vice Chairman and members of the Administrative Committee shall assume office on the first of January of each year, unless a different time is provided by the Bylaws.

ARTICLE VI

Section 2 — Election of the 18 members-at-large of the Administrative Committee shall be as prescribed in the Bylaws.

ARTICLE VII

Section 4 — Fifty percent of the members of the Administrative Committee shall constitute a quorum. When fifty percent of the members of the Administrative Committee is not a whole number, the next largest number shall designate a quorum. All members shall have an equal vote. Ex-officio members will not have a vote unless the Bylaws specifically provide otherwise.

Section 5 — A majority vote of those members of the Administrative Committee attending a meeting shall be necessary for the conduct of its business except as otherwise provided in this Constitution.

EXCERPTS FROM REPORT OF THE AWARDS COMMITTEE

MARCH 26, 1969

Chairman: Mr. J. S. Hill

The Chapter of the Year Award proposal was made at the last meeting of Ad Com. No comments have been received since this last meeting in December. The Committee requests that the Ad-Com consider and act on the proposal at this March 1969 Ad Com meeting so that the Committee can either get such a program under way or revise the proposal so that it can be considered again at the June meeting of Ad Com.

At the suggestion of the Ad Com Chairman the committee has explored the policy of IEEE in acknowledging company support of an employee in voluntary service of IEEE activities such as Committees, conventions, symposia, publications, etc. Should a certificate type of award be presented to the company or the employee or would a letter be more appropriate? As the result of a conference with Dr. Emberson, the general policy which follows is suggested for use by the Group.

Acknowledgement of company support is in order where the company has underwritten the expense of an unusual amount of time, travel, or other expenditure in the support of Group activities. A letter of appreciation may be addressed to the president of the company, division manager or other company representative or official as indicated by the specific circumstances. The letter may originate with the Ad Com Chairman, TAB Chairman, the IEEE Vice-President for Technical Activities or other officer depending upon the extent and magnitude of the company support. A request for a letter of appreciation should be made through the Awards Committee to the Ad Com Chairman

EXCERPTS FROM REPORT ON STUDENT ACTIVITIES COMMITTEE

MARCH 26, 1969

Chairman: J. A. Spagon

SUMMARY

Since the committee's formation at the last ADCOM meeting in Miami, several things have been accomplished. They are:

* Preparation and submittal of the modification to the Group By-laws regarding the functions of the Student Activities Committee.
* Establishment of "Pilot Program" in the Southern California area including a survey of Southern California Engineering Schools.
* Initial planning with the 1970 Symposium Planning Committee regarding the Technical Program.

By-law Modifications

The modification to the IEEE By-laws was submitted in mid-January.

2.2 Pilot Program

A "Pilot Program" was initiated in Southern California to determine the feasibility of the Student Program and to discover first-hand what some of the practical problems might be. This included identifying local university coordinators and a Student Activities Chairman for the Southern California

Cont'd

Chapter. A three-man team consisting of the National and Local Student Activities Chairmen and the G-EMC coordinators for that particular school, visited schools in the Southern California area, to talk to the Student IEEEE Counselors. The purpose of the visit was to make them aware of our program, to discuss their existing Student Activity, solicit suggestions from them in regard to our proposed program, and to introduce the G-EMC coordinator for their school. The results of these visits, thus far, has re-emphasized the need for our effort and initially confirmed the feasibility of our approach. Considerable feed-back has been received from the schools which served to modify some of the planning details.

National Coordination

It is planned to coordinate national activity through the various chapter chairmen. A local student activities chairman would then appoint coordinators for each school in the chapter area. A letter was sent to all chapter chairmen describing the program and soliciting their co-operation.

Responses have been received from the Joint Section Chapter (New York, Long Island, North Jersey), the Houston Chapter, Central Texas Chapter, the San Francisco Chapter. In addition, some interesting student activities at the Southeast Regional Symposium were identified.

★ ★ ★

REPORT OF TECHNICAL ADVISORY COMMITTEE

Chairman: Dr. R. M. Showers

Plans are going ahead to have five of the Specialist Working Groups convene at the Annual Symposium to be held at Asbury Park in June. The five groups are:

Power Transmission
Interference Control
Shielding
Measurement and Instrumentation
Interference Prediction and Propagation

Chairmen have been designated for these groups.

The Southern California chapter of G-EMC has organized nine local Specialist Working Groups which are planning to hold meetings all day in Anaheim on May 21. In appropriate cases the output of the meetings will be available at the National meetings to be held in Asbury Park.

Following the meetings in Asbury Park, the various principals will meet with the Technical Advisory Committee to plan future activities along these lines.

There has been very little specific activity on the part of the Technical Advisory Committee in connection with the Workshop on Standards on Systems Electromagnetic Compatibility. However, it is most logical to coordinate any activity in this area with EIA, which ran a very successful Symposium on Systems Effectiveness in Chicago last fall. Specific interest in this matter is being shown by several branches of the Department of Defense. IEEE should cooperate with these organizations in this field.

★ ★ ★

IEEE READER SURVEY OF GROUP PUBLICATIONS

The IEEE Headquarters recently sent out a reader survey questionnaire to a sampling of the membership. The following listing is how the G-EMC publications service the group members by comparison with the other IEEE Professional Groups:

QUESTION	G-EMC RATING
1. Does this publication cover your main field of interest?	No. 5 @ 62%
2. What is its value to you in giving you up-to-date information in your professional work?	No. 2 @ 3.64 of 4.0
3. Do you consider this to be the leading publication in its field?	No. 3 @ 88.4%
4. To what degree does this publication cover the full field of interest to the Group?	No. 5 @ 3.77 of 4.0
5. Considering all the pages in recent issues, where would you rate the overall contents of this publication?	No. 8 @ 2.80 of 4.0
6. How effective are the editorial and review procedures to insure papers of high technical quality?	No. 30 @ 3.56 of 4.0
7. Indicate promptness in publishing results of recent work	No. 6 @ 3.38 of 4.0
8. How do you rate the publication according to factors other than technical content (quantity of material and regularity)?	No. 18 @ 3.42 of 4.0
9. Have you ever had a paper published, letter or review printed in this publication?	No. 25 @ 7.3%
10. With reference to recent issues, what did you do? Read it from cover to cover, read most etc?	No. 9 @ 2.52 of 4.0
11. Indicate your primary activity: 1. Consulting; 2. Research; 3. Development; 4. Management; 5. Manufacturing; 6. College Student; 7. Retired; 8. Other.	No. 6 @ 4.09 of 4.5
12. What is the highest degree that you have? Scoring system.	No. 28
13. How many years have you been active in any of the categories? Scoring system.	No. 15
14. How many years have you been a member of this Group or received the Journal of this Council? Scoring System.	No. 25

★ ★ ★

G-EMC SPOT LIGHT

The G-EMC received a boost during the recent IEEE International Convention in New York. Each registrant was given a Technical Information Service Pocket Reminder (a 3 by 8 inch card) which contained sample listings of Electrical and Electronics Abstracts (EEA) part of IEEE's worldwide current-awareness-titles journals. Sample listing from the EEA was as follows:

06.30 ELECTROMAGNETIC COMPATIBILITY

298 Environmental interference study aboard a naval vessel. R.F. Elsner, M.J. Frazier, L.S.Smulkstys, E. Wilson (IIT Research Inst., Chicago, Illinois USA). 1968 IEEE electromagnetic compatibility symposium record, Seattle, Washington, 23-25 July 1968 (New York: Institute of Electrical and Electronics Engineers 1968), p. 330-8.

A study of nonlinear environmental sources of interference was conducted under controlled conditions aboard the aircraft carrier the USS 'Bunker Hill'. Nonlinear sources were located, tested to determine their interference contributions to nearby receiving antennas and then removed. Recommendations based on this work were incorporated by the Navy as structural modifications for existing ships and changes in new ship design. Conclusive evidence was obtained that a ship can be 'cleaned-up' by locating and removing environmental nonlinearities.

★ ★ ★

Cont'd

EMC STANDARDS COMMITTEE REPORT

Chairman: J. F. Chappell

Status of Standards Projects Underway:

a. Recommended Practice for Measurement of Shielding Effectiveness of High Performance Shielding Enclosures

Was approved, with modifications, by the IEEE Standards Committee at their 6 June 1968 meeting. The Standard was submitted with the requested modifications, for publication on a trial basis during the calendar year 1969. Except for minor changes, the official version of the recommended Practices will be similar to the draft version published in the IEEE Transactions on Electromagnetic Compatibility, Vol EMC-10 Number 1, March 1968, pages 82 - 94.

b. Proposed Standard on Radio Interference: Methods of Measurement of Spurious Transmitter Output.

Undergoing letter ballot in EMC Standards Committee.

c. Standard for Measurement of Spurious Emissions From Land-Mobile Communication Transmitters

Item b above is primarily directed at braodcast transmitters. This proposed Standard is in an initial draft stage in the Subcommittee of Mobile Communications Equipment.

d. Measurement of Susceptibility of Electric Cables to Electromagnetic Fields

Early conceptual stage.

e. Standards on Impulse Measurement

A preliminary draft is being circulated to the members of the EMC Standards Committee.

New Standards Projects Being Initiated:

The Basic Measurements Subcommittee is exploring the need for a standard for measuring peak power satisfactory to the EMC area.

Areas Where Standardization Activity Would Be Desirable:

a. Measurement standard for oscillator radiation from TV and FM broadcast receivers.

b. Measurement standard for impulsenoise measurement considering pulse amplitude and frequency above prescribed amplitude levels.

c. Measurement standard for filter attenuation.
In this regard it is planned to bring the Committee's influence to bear on a DoD working group recently established for the revision of MIL-STD-220, "Method of Insertion Loss Measurement." As a first step, industry authorities in the area of filter attenuation measurement are being contacted and encouraged to provide their recommendations to the DoD working group. If this effort bears fruit, and the preparation of a Standard acceptable to IEEE appears feasible, a second step will be proposed for the initiation of an IEEE effort parallel and in close coordination with the efforts of the DoD working group. Such an effort, if successful, would promote uniform government-industry standardization in the filter attenuation measurement area.

☆ ☆ ☆

Miscellany

CHALLENGE

The following is an extract from a talk given by J. Paul Georgi, Deputy Director, ECAC to a IEEE Chapter in Tucson, Arizona.

"The biggest deterient to improved EMC analytical analysis systems today results from the fact that most of the available knowledge, data, measurement techniques, and instrumentation for analyzing electronic equipments have limited application to non-design or out-of-band, frequencies. These frequencies include the harmonics of carrier frequencies or tuned frequencies. This has come about because equipment designers are primarily concerned with the in-band, or design, frequencies. Their interest in the non-design frequencies is merely in determining whether some parameter, such as transmitter harmonic, receiver spurious response, or insertion loss, exceeds or falls below some specified level. Absolute levels in the out-of-band frequencies are often of little concern to the designer.

Theoretical information also seems to apply mostly to design frequencies, perhaps because the theoreticians have catered to the interest of designers and because the behavior of electronic circuits at out-of-band frequencies is usually more difficult to analyze."

The author writes, "Problem defined therein is still with us and will be for sometime to come unless we motivate to education to do something about it."

☆ ☆ ☆

ELECTRONIC NOISE REDUCTION

Scientists at the National Bureau of Standards in Boulder, Colo., have identified a previously unsuspected source of electronic noise which has for years been interfering with highly precise measurement of radio frequencies in laboratories all over the world. And they have found a simple and inexpensive way to eliminate nearly all of the troublesome noise. The discovery and cure will have applications in nearly all electronics systems which use transistors or tubes. It could mean great savings in time and money for the electronic industry, communications systems, and research and standards laboratories.

Because of work done by Dr. Donald Halford, Arthur Wainwright, and Dr. James Barnes in the Atomic Frequency and Time Standards Section of the NBS Boulder Laboratories, it is possible to eliminate enough of the electronic noise to produce for some practical purposes a noiseless piece of electronic equipment. The noise energy has been reduced by a factor of at least ten thousand (or 40 decibels in the language of the engineer.)

The NBS team discovered, contrary to some previously accepted beliefs, that the source of most of the unwanted noise is a peculiar random jitter of the phase of the signal (called flicker noise) in the transistors and vacuum tubes - that all transistors and tubes are nearly equally noisy - and that this noise is much more intense than the final minimum level of fundamental background thermal noise. Once this was proven, it was relatively easy to apply a technique to reduce the noise. The "negative feedback" technique involves only a minor change in the circuitry within the amplifier or multiplier.

(Extracted from the March 1969 issue of the G-IM Newsletter)

☆ ☆ ☆

NBS OFFERS WIDEBAND rf VOLTMETER-COMPARATOR

A news item with the above title appeared in the March 15, 1969 issue of Electronic Design. Paragraphs of interest are excerpted as follows:

> "In the course of carry out research on radio noise standards two National Bureau of Standards engineers have developed a wide-band rf voltmeter-comparator for making precise measurements of equipment in the frequency range of dc to 1GHz and the voltage range of 1 to 15 volts."
>
> "The voltmeter-comparator is a completely passive dual-channel co-axial, 50-ohm feedthrough device, which uses matched diodes as detectors of peak voltage amplitudes. Diode loading is such that negligible power is extracted from the signal."
>
> "Because of its wide bandwidth and very flat frequency response, the voltmeter-comparator is useful for certain swept-frequency measurements, such as a sensitive detector for level controlling the output voltage of a swept-frequency oscillator.
>
> Other applications include voltage calibration, systems development and evaluation, and servicing precision laboratory equipment. A set of engineering drawings for the voltmeter-comparator is available upon request from developers L. D. Driver or M. G. Arthur at the National Bureau of Standards' Radio Standards Engineering Div., Boulder, Colo."

TRYLON ACQUIRES AMERIND LINE OF RFI AND EMC ENCLOSURES

TRYLON INCORPORATED, Elverson, Pennsylvania, (known for their Towers and Antenna Systems) announces the acquisition of the Amerind line of RFI and EMC enclosures.

This patented product is being marketed under the name EMI-STRUC* and is available in pressure-clamped or welded modular construction.

Installations can be turnkey; i.e. Trylon not only manufactures or supplies the components, including the panels, doors, honeycomb vents, filters, and cable penetrations to meet the customers needs, but also installs the chamber at the customers site, and provides the services of an independent testing laboratory to test the chamber in accordance with MIL-STD-285.

For additional information, write to Mr. Phil Andress, Sales Representative, Trylon Inc., Elverson, Pa. 19520.

(Amerind is continuing its manufacturing of mechanical products for the mining and tractor industry.)

MARTIN MARIETTA WINS NEW MALLARD CONTRACT

Martin Marietta Corporation has received its fifth contract in support of the projected international MALLARD field army communications system presently undergoing development by the United States, the United Kingdom, Canada, and Australia.

Martin Marietta's Orlando Division will perform the 15-month study. The Corporation has already completed four contracts in support of the sophisticated MALLARD program, including a study to determine how the Army's advanced RADA tactical communication system -- developed by Martin Marietta -- can be adapted to MALLARD.

Purpose of the new study, awarded by the U.S. Army Electronics Command at Ft. Monmouth, New Jersey, is to conduct correlation bandwidth measurements over various troposcatter paths. Statistical data will be obtained at frequencies of 5 GHz and 8 GHz over 100-200 kilometer path links located in the New York plains region.

SHIELDED ANECHOIC AIRCRAFT HANGER

The following paragraph appeared in the February 1, 1969 issue of EDN:

> "Just finished and ready for full-scale integration testing is the largest shielded anechoic chamber for high-power radio-frequency radiation testing ever constructed. According to its builder, Grumman Aircraft Engineering Corp., the 87-ft.^{2} by 42-ft. high chamber also represents a major step forward in the methods of testing aircraft electronic systems. In it systems will be tested as part of the entire aircraft weapon system and not as individual elements. Aircraft will be isolated in the chamber from all sources of outside interference. The chamber is built inside an outer hanger building. Walls, floor, ceiling and doors are built to keep RF interference out and to absorb and convert radiated RF energy from the aircraft to heat. One entire side acts as a door. It opens and closes by sliding on its own track. In addition, screw jacks move the door 3in. toward the chamber to make a tight RF seal all around."

ELECTRIC POWER LINE WITH 10-FT. DIAMETER

A brief news item with the above title appeared in the March 1969 issue of Electro-Technology. The first three paragraphs are extracted as follows:

> "A circular wave guide, 10ft. in diameter, could be used in a microwave electric power transmission system, to handle 30 gigawatts in the 1 to 5 GHz frequency range.
>
> Such a line could be buried or run underwater to alleviate right-of-way procurement problems. The tolerance requirements for straightness of the guide would be 0.010 in. per 100 ft.
>
> While such a construction would present some difficulties, D. J. Goerz Jr., research manager, Bechtel Corp., San Francisco, believes that the tolerance requirements could be met. The cost of power delivered 100 miles by such a system would be about 4.62 mills/kWhr. This is comparable to costs of delivered power over a 500 kVac underground system handling 0.75 GW."

Excerpts from Spikes & Ripples

March 1969 AE-4 EMC Newsletter, Charles M. Dean, Editor

Minutes of Military/Industrial Meeting on the DoD EMC Standardization Program, December 9, 1968, under cover letter, Naval Electronics Systems Command, Washington, D.C., Ser. 410-OOT-12 EMCP December 20, 1968. This meeting was called to discuss the goals and status of the DoD EMC Standardization Program and specific problem areas that have been uncovered in Industry in the current Military standards, MIL-STD-461/462/463/469. Representatives from the military departments, AIA, EIA, IES, SAE, USASI, attended. The following condensation of discussions indicated the meeting completed an agenda of broad interest:

Project EMCP 0006: EMC Design Handbook, assigned, Army Electronics Command; scheduled for completion in second quarter FY/71. The Army will be requested to reevaluate this project, which although desirable is quite ambitious and for the present will have to give way to higher priority projects.

Project EMCP 0008: EMC Program Standard, preparing activity, NAVELEX; first draft scheduled late January or February; completion, June 1969. Preliminary outline distributed to attendees for comment at later meeting.

Project 0007: Bonding/Grounding Standard, assigned, Naval Ship Engineering Center; completion during first quarter FY/70. This standard is a consolidation of MIL-B-5087, MIL-STD-1310, and other bonding/grounding documents.

Project EMCP 0009: Standard on EMC Requirements for Systems, assigned, ASD, WPAFB; scheduled for completion by fourth quarter FY/69. This standard will expand MIL-E-6051, making it applicable for all systems.

Project EMCP 0015: Revision of MIL-STD-220, assigned, Army Electronics Command; scheduled for completion, fourth quarter FY/69. An USA ECOM letter dated, November 29, 1968 solicits comments and proposed changes to the present standard.

New projects were initiated to revise and update MIL-STD-461/462/463/469/449. The new IEEE Standard on Definitions will be coordinated into the revision of MIL-STD-463.

The trend of military departments to issue EMC standards rather than specifications was explained by referral to the DoD Manual on the Defense Standardization Program (DoD Manual 4120.3M). The meeting was in general agreement that Rad Haz, EMP, Lightning and Static should be considered as part of the system EMC problem since they all relate to the electromagnetic environment of the system. A clarification of DoD directive 3222.3 (EMC Program) will be requested to include these specific areas.

The conflict between MIL-STD-461A and MIL-STD-704A is among the considerations in a current review of MIL-STD-461A. Another item being explored by this revision is the relationship of emission limits to susceptibility requirements.

The meeting unanimously concluded that the present methods for making conducted emission measurement to MIL-STD-462 need improvement. It was recommended that the two current probe method, open wire directional coupler technique and ground current techniques be evaluated for possible inclusion in the MIL-STD-462 review project.

The SAE AE-4 Anaheim meeting (May 22-23, 1969) will include a workshop on MIL-STD-462 testing.

MIL-STD-826: ASNAC-30, Mr. Seth's letter dated October 2, 1968, to Autonetics, Anaheim, California.

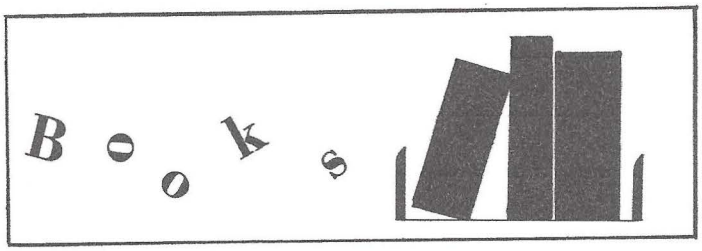
1. The following information is provided to confirm our telephone conversation of September 25, 1968:

   a. The broadband limit in figure 1001-1 was changed to 134 dBuI/MHz in MIL-STD-826A.

   b. The limit in figure 1001-6 was changed in MIL-STD-826-A.

   c. The limits in figure 1001-8 from 30 Hz to 15 kHz should read 10 percent of supply voltage or 3 volts (RMS), whichever is less.

2. Consideration should be given to use of these revised limits, if agreeable to the procuring activity. The limit change discussed in paragraph 1a is significant due to the possibility of an excessive weight penalty.



BOOK REVIEWS

It was only five years or so ago when you had to search through volumes of articles and magazines in order to find published material on RFI. The situation is somewhat better today with most of the major technical electrical engineering periodicals containing at least one and more articles in our broadbased field field of EMC. A few books specifically on EMC are presently available too, but strangely, most of them are a result of a government sponsored compilation and editorship.

The EMC engineer with considerable experience has a library consisting primarily of catalogs and periodical tear sheets, accompanied by a few design handbooks. One of the problems is that the field of EMC is continuously expanding in scope, making it almost impossible for a single text to provide adequate coverage in every aspect. Thus, we will endeavor to divide the EMC community into several categories, and to review new books in respect to the various categories. This is to help the G-EMC member in selecting new additions to his library. The categories will be as follows:

1. EMI Circuit and Box Design
2. EMI System Engineering
3. EMC Testing
4. Spectrum Utilization
5. Interference Prediction
6. Shielding
7. Propagation
8. Grounding
9. Filtering
10. Other

Each book will be rated for each specialty category as follows:

EU	Extremely useful
PU	Partially useful
OU	Occasionally useful
SU	Seldom useful

Members who have comments pertaining to this review format are encouraged to write to the editor.

TRANSISTOR AND DIODE NETWORK PROBLEMS AND SOLUTIONS

Harry E. Stockman - 352 pages including illustrations

Hayden Book Company, Inc. - New York - Catalog #5694 - 1968 - $9.95

This book presents a different approach to the solution of transistor and diode network problems. The subject matter pertains to modern methods for transistor and tunnel-diode network calculations, covering linear and non-linear applications. The eight chapter book starts with a review of network calculations, such as deriving transfer functions, conversions from PI and TEE networks, and other calculations for passive circuits. The second chapter is essentially an extension of the first, in that transistors and diodes are still not introduced, and that the basic network theory is extended to include the Superposition Theorem, Compensation Theorem, Thevenin's Theorems, etc. The basic CB, CE and CC transistor transformations are introduced in the third chapter, followed by transistor amplifiers, transistor feedback Networks, Tunnel Diode Amplifiers, Nonlinear Semiconductor Networks, and finally a chapter of mixed problems.

Each chapter is preceded by a brief statement indicating its partic ular area of investigation, and provides a "do of don't" list for fruitful calculation approaches and to indicate how to avoid time-consuming calculations.

Presented with numerous circuits, the reader is asked to solve related problems and then compare his solutions with the step-by-step, mathematical solutions given by the author. Following each group of solutions is a discussion and evaluation of the various applicable methods. In addition, appendices on common network rules and theorems, elements of two part theory, and matrix tables provides important background information.

This book would probably be quite useful as a classroom text or supplement. It would also help the practicing engineer who has no previous background in transistor theory, without forcing him through the agonizing prerequisite of hole and electron theory. However, there is no attention given to noise, grounding active filters, or other theory more directly related to the EMC community.

EMC CATEGORY	RATING
1. EMI Circuit and Box Design	OU
2. EMI System Engineer	SU
3. EMC Testing	SU
4. Spectrum Utilization	SU
5. Interference Reduction	SU
6. Shielding	SU
7. Propagation	SU
8. Grounding	SU
9. Filtering	SU
10. Other in EMC	SU

NEW BROCHURES & PRODUCTS

DRIVE CONVERTS RECEIVER INTO SCANNING SYSTEM

The following item appeared in the March 1969 issue of Communication Designer's Digest.

"Motor drive converts VHF-UHF manual receiver into a scanning system for automatically logging AM, FM and CW signals in the range from 30-1000 MHz. Designated the MD-104, the motor drive rotates the receiver tuning knobs at rates from 4-34 rpm and provides commands to a tape recorder for storing information. When the scanning system detects a signal, it fine tunes itself to the elected signal and commands the associated counter to measure and print out the frequency. In addition, the system monitors the selected signal for a predetermined time and supplies it to an external recorder or other monitor. Watkins-Johnson Co., CEI Division, Rockville, Md."

☆ ☆ ☆

THE PHENOMENAL FERRITE BEAD

A one-page advertisement with the above heading appeared in the March 1, 1969 issue of Electronic Design. Paragraphs of interest are excerpted as follows:

> "Ceramag* ferrite beads offer a simple, inexpensive, yet effective means of obtaining RF decoupling, shielding, and parasitic suppression without sacrificing low frequency power or signal level.
>
> Unlike conventional RF chokes, beads are compact, have no DC losses, and will not couple to stray capacity and introduce detuning or spurious oscillations. Ceramag* beads offer an impedance which varies from quite low at low frequencies to quite high at noise frequencies. Beads need not be grounded however, chassis contact is permissible when desired, as beads posses sufficiently high resistivity to preclude grounding."
>
> "Sample quantities of Ceramag* beads and beads with leads are available without charge upon request from: Stackpole Carbon Company, Electronic Components Division, St. Marys, Penna. 15857."

☆ ☆ ☆

PORCELAIN CAPACITORS OPERATE TO 6 GHz

Available in eighty-five standard values from 0.1 to 1000 pF, type MPC capacitors have a self-resonant frequency in excess of 6 GHz. Typical performance is 0.03-dB insertion loss at 10 W at 1 GHz with VSWR of 1.05 and less than 1% change over a -- 55° to + 125° C range. Available in seven lead styles, the 0.1 in. cubes may be mounted in stripline or microstrip circuits.

For additional information, contact American Technical Ceramics, Huntington Station, N.Y. 11746.

☆ ☆ ☆

RESISTOR-CAPACITOR ARC SUPPRESSION NETWORKS

----An engineering bulletin detailing preformance characteristics on popular resistor-capacitor arc suppression networks for use in business machines, industrial control equipment and allied applications is available from the Technical Literature Service, Sprague Electric Co., Marshall Street, North Adams, Mass. 01247.

Bulletin 8515 gives application information on the five most popular networks of this type offered by Sprague Electric for heavy duty applications.

☆ ☆ ☆

NASA FLAT CABLE REPORTS

The following item appeared in the February 1, 1969 issue of EDN:

"Flat Conductor Cable Technology", NASA SP-5043, Supt. of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Price: $0.40.

This report reviews advances in flat conductor cable technology resulting from development work directed by Wilhelm Angele, well-known designer of FCC systems, at Marshall Space Flight Center, Huntsville, Ala. It includes technical information covering FCC design, fabrication, assembly and characteristics.

"Tools, Fixtures and Test Equipment for Flat Conductor Cables", NASA SP-5924 (01), Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151. Price: $1.00.

This compilation of NASA Tech. Briefs complements the above report. It includes summary descriptions of various FCC tools and fixtures that Marshall Space Flight Center developed.

☆ ☆ ☆

EXPLOSIVES AND PYROTECHNICS NEWSLETTER

The Franklin Institute Research Laboratories of Philadelphia publishes a four page monthly newsletter entitled "Explosives and Pyrotechnics (e&p)". E & P is a project of the FIRL'S applied Physics Laboratory with Gunther Cohn, Editor. Volume 1, Number 1, started in January, 1968, and the Newsletter is now thriving in its second year. Among past features were:

> Navy Transportation - Safety Handbook: A Book Review
> One-Way Detonation and Transfer Device
> Electric Blasting Caps and RF Energy

A one-year subscription is available at $15.00 ($17 outside of the U.S.). Last year's volume is available for $12, while it lasts. Persons interested in subscribing or desiring additional information should address their correspondence to Explosives and Pyrotechnics, the Franklin Institute Research Laboratories, Philadelphia, Pa. 19103.

☆ ☆ ☆

"LOSSYLINE" EMI ABSORPTIVE FILTERS

A new brochures on absorptive filters with the above title has been issued by Lundy Electronics and Systems, Inc. A brief description of the filters is extracted from the first page as follows:

"The heart of Lossyline Filter is the dissipative element. This element embodies a high temperature resisting (175 C) epoxy resin, optimized as a magnetic lossy core, molded around the conductor, and case shielded. Hence, a true magnetic trap that absorbs rather than rejects or reflects unwanted energy. No oil is required to cool since there is a minimum heating effect. Practically no reactive current is present because there is little, if any, shunt capacity. LossyLine attenuates 100 dB minimum, or beyond of standard instrumentation, from 100 KHz up to 100 GHz and attenuation does not fall off with current. The level of RF attenuation at full load currents is maintained because of freedom from saturation. The electrical characteristics of LossyLine suppress sine waves per MIL-STD-220A, and cause the collapse of transient spikes of all kinds, particularly those with short rise times. These spikes are not reflected or transferred to other conductors, but are dissipated as heat within the lossy element (no ringing effects)."

For additional information, write to Lundy Electronics and Systems, Inc., Glen Head, New York 11545.

☆ ☆ ☆

ELECTROMAGNETIC MEASUREMENT - STATE-OF-THE-ART
Committee Report to G-IM Ad Com

The following two IEEE Standards reports were published by the IEEE:

State-of-the-Art of Measuring Field Strength, Continuous Wave, Sinusoidal. IEEE No. 284, August 1968. Prepared by Subcommittee under Chairmanship of Mr. W. R. Roberts.

State-of-the-Art of Measuring Phase Shift at Frequencies above 1 GHz. IEEE No. 285. Prepared by Subcommittee under Chairmanship of Mr. D. A. Ellerbruch.

The report on thermal noise (M. G. Arthur, Chairman) was approved by the Standards Committee and is to be published soon.

The report on Pulsed Field Strength (under Chairmanship of Mr. O. M. Salati) has undergone a review by the EMM Com members. It has received 9 approvals, 11 conditional approvals and 2 negative ballots out of a total of 26.

The thorough study of this, as well as of the other reports by the membership, attests to the importance and the serious concern and attitude on the part of the membership to the objectives of the Committee. The report on impedance, unbalanced, transmission line, (R. F. Desch, Chairman) is currently under membership review.

Preparation of three other reports seem to be progressing satisfactorily. These are: (1) CW Power, Hollow Waveguide (M. Sucher), (2) Pulsed Power, Voltage and Current, Baseband 1-1000 kV (Loeb), and (3) Attenuation, Lumped-Constant and T-L's (P. Lowrie).

A new subcommittee is being organized under the Chairmanship of Mr. M. G. Arthur on "Noise Performance Factors." Two others, both under Mr. J. L. Dalke on permeability and permittivity, are also being organized.

M. C. Selby, Chairman
March 21, 1969

(Extracted from the May 1969 issue of the G-IM Newsletter)

RFI SHIELDING STUDY ON CONTACT STRIPS

--- A test report evaluating "RFI Shielding Effectiveness" on newly introduced series 97-555 and 97-560 - A Sticky Fingers beryllium copper finger contact strips has just been released by Instrument Specialties Co., Inc., manufacturers of beryllium copper springs and precision components.

The report contains the results of certified tests, conducted independently by Ark Electronics Corporation of Willow Grove, Pennsylvania, followed procedures called out in Military Standard MIL-STD-285, dated June 25, 1956, modified as necessary for testing contact finger strips.

According to this report, the tests indicate that both of these new narrow, self-adhesive electronic gaskets provide effective RFI seals between mating surface when exposed to magnetic, electric, plane wave, and microwave fields. The shielding effectiveness has been shown to be equal to or greater than the range of the test equipment over the entire test frequency range.

This technical study should prove helpful to electronic packaging engineers and designers in selecting RFI/EMI shielding. Detailed descriptions of test conditions and setups, as well as an evaluation section for each of the electronic fields tested, are given. Two charts plotting the exact results of the shielding effectiveness are included to add to the clarity of this report.

For a free copy of this RFI Shielding Study, write to: J. D. Roberson, Vice-President/Sales, Instrument Specialties Co., Inc., Little Falls, New Jersey 07424.

A NOTEBOOK OF ENGINEERING FILMS

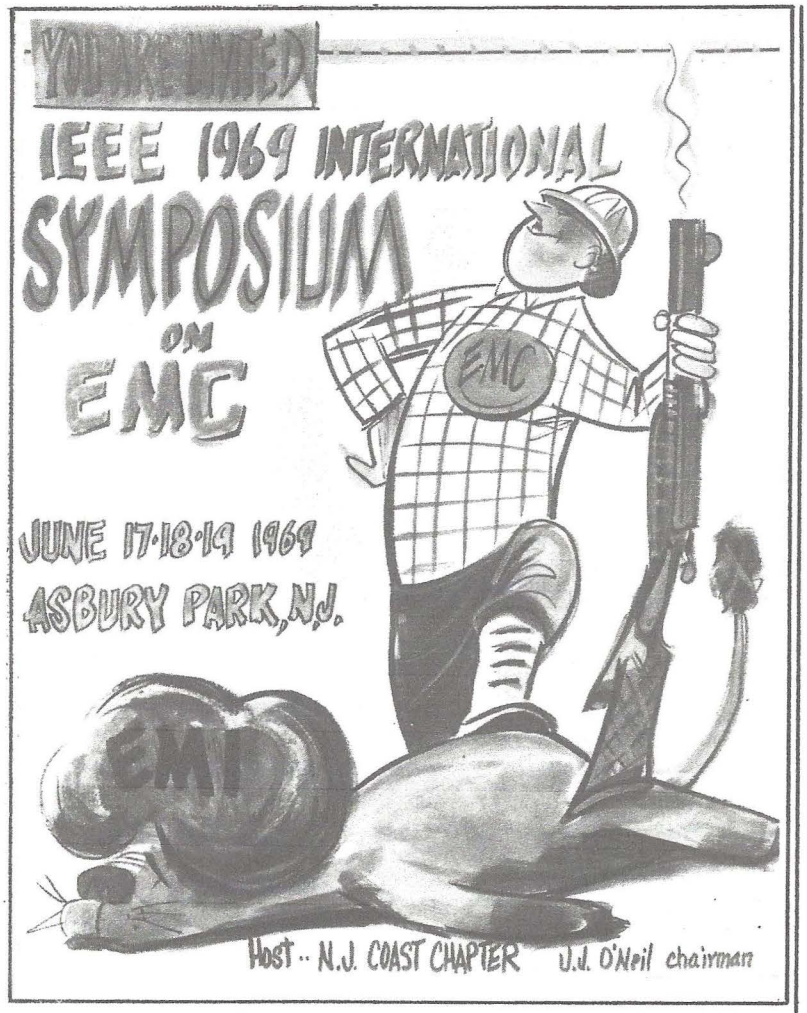
WASHINGTON -- A second edition of A Notebook of Engineering Films published by the Commission of Engineering Education in 1966 is now available without charge.

The new edition of the engineering education film catalog contains a list of motion pictures produced by and for industry, government, educational groups, and professional societies. The films were chosen for their value as instructional resources in engineering education. The catalog does not list films that are primarily motivational.

The catalog is available from the Commission on Education, National Academy of Engineering, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

CURRENT AWARENESS LISTING

A ten-page Current Awareness Listing covering the field of electronics measurement and standards technology appeared in the February-March 1969 issue of the G-IM Newsletter. The listings are selected from the Table of Contents of journals as displayed in "Current Contents Physical Sciences," plus miscellaneous other journals in the field. It was compiled by Radio Standards and Measurement Information Center, Radio Standards Engineering Division, National Bureau of Standards, Boulder, Colo. 80302. For additional information write to: Mr. Wilber J. Anson, Editor of the G-IM Newsletter, at the above address.



CONTENTS

Acknowledgements

The editor would like to thank the following individuals and their employers for their contributions to this issue of the Newsletter:

George Ufen	Fairchild, Electro-Metrics
John O'Neil	USAEC
Edward Hannum	The Franklin Institute Research Labs.
J. Paul Georgi	Deputy Director, ECAC
Herman Garlan	Chief, RF Devices, FCC

Special Mailing

In order to help assure that members will have the Newsletter prior to attending the G-EMC International Symposium starting June 17, 1969, this issue has been mailed in envelopes. The use of envelopes will not be a regular procedure, but will be implemented from time to time as the need arises.