



ELECTROMAGNETIC COMPATIBILITY GROUP

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PLEASE NOTE! Material for publication in the next issue must be received by the editor by March 4, 1969.

LETTERS

The editor would like to invite all interested persons to air their views in the Newsletter through letters to the editor. Each responsible letter received will be carefully considered. Publication of the letter will depend upon its timeliness, interest to the EMC community and on space available. The author's name may be withheld upon request.

PEOPLEOperations Research Analyst

A help wanted ad with the above caption appeared in the November 17, 1968 issue of The Philadelphia Inquirer. It describes a unique application of an EMC engineer as follows:

"Will perform computer systems engineering in fields of radio spectrum management and in electromagnetic compatibility. Systems engineer/operation background desired, but not mandatory. Additional duties will consist of manipulation of present computer systems data bases capability and performance of systems design for production of user data support on computer output media. Requires BS or MS in Engineering, Math, Physics or field demanding scientific disciplines desired, plus 3 to 5 years experience."

DR. F. KARL WILLENBROCK ELECTED PRESIDENT OF THE
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

New York, N. Y. November 20, 1968 --- Dr. F. Karl Willenbrock, Provost of the Faculty of Engineering and Applied Sciences at the State University of New York, Buffalo, will be President of the Institute of Electrical and Electronics Engineers for 1969.

Dr. Willenbrock's election was announced to-day by the IEEE Board of Directors. He will head the world's largest engineering society, with a membership totalling over 150,000 throughout the world.

He succeeds Dr. Seymour W. Herwald, Vice President of Engineering for the Westinghouse Electric Corporation.

IEEE Directors also announced the election by the voting members of Dr. John V. N. Granger as Vice President, 1969. Dr. Granger is President of Granger Associates in Palo Alto, California. Two additional Vice Presidents for 1969 will be elected at the IEEE's Annual Assembly in January.

Also elected were: Directors-at-large -- Mr. David M. Hodgins, Assistant Director of Research, Collins Radio Company, Cedar Rapids, Iowa; and Dr. John R. Whinnery, Professor of Electrical Engineering, University of California at Berkeley; Regional Directors -- Mr. D. C. Ports, Atlantic Research Corporation, Alexandria, Va.; Mr. H. P. Bruncke, Northern States Power Company, Minneapolis, Minn.; Mr. L. C. Hedrick, Tektronix, Inc. Beaverton, Oregon; Mr. R. P. Wellinger, Centre Electronique Horloger S. A., Neuchatel, Switzerland.

Dr. Willenbrock graduated from Brown University with the B. S. E. E. degree, summa cum laude. He received his Master's degree in Applied Physics and the Ph.D degree in Electron Physics from Harvard University.

He worked at Bell Telephone Laboratories and the Naval Ordnance Laboratory, and served as Naval Lieutenant overseas and aboard ship as an electronic underwater equipment specialist. He was a Research Fellow and Lecturer in Applied Physics at Harvard, and from 1960 to 1967, served as Director of Laboratories and Associate Dean of Engineering and Applied Physics there. During this time he was honored by Brown University with the Distinguished Engineering Service Award.

A. H. SULLIVAN JR. RECEIVES IEEE FELLOW AWARD

Elevation of 127 members to the grade of Fellow has been announced by the IEEE Board of Directors. The elections become effective as of January 1, 1969, with Fellow Award Certificates to be presented by the local IEEE Section to which each newly elected Fellow belongs.

The President of IEEE will also make recognition of the awards at the Institute's Annual Banquet, March 26, 1969, during the IEEE International Convention and Exhibition in New York City.

The grade of Fellow is the highest membership grade in the IEEE, and is attained by invitation only. A mark of unusual distinction, it is conferred only upon persons of outstanding and extraordinary qualifications in their particular fields.

Aaron H. Sullivan Jr., a member of the G-EMC received the Fellow Award with the following citation:

"For leadership in the field of electromagnetic compatibility and in radio spectrum utilization planning."

Mr. Sullivan served as chairman of the G-EMC Administrative Committee for two years, 1966 - 1967, and is presently the Editor of the IEEE EMC Transactions. He is a member of the Washington, D. C. Chapter.

IEEE is the world's largest technical society, with more than 160,000 members. Reflecting the world-wide nature of its membership its Fellows come from many countries as well as from the United States.



Mr. F. Nichols

Mr. Fred Nichols, President of LectroMagnetics, Inc., 6056 West Jefferson Blvd., Los Angeles, Calif. 90016, has been elected Chairman of the G-EMC Administrative Committee for 1969. He has been a member of the Ad Com since 1964 and served as Vice Chairman in 1964 and again in 1968.

Mr. Nichols has published numerous technical and management papers, and is a prominent speaker in the field of EMC. He has been active on many EMC committees within the AIA, EIA and the G-EMC of the IEEE, and was one of the founders of the RITC (Radio Interference Technical Committee). Mr. Nichols has several patents in the fields of electronic controls, RFI filters, and RF shielding. He is a registered Electrical Engineer in the State of California, and is listed in Who's Who in the West and Who's Who in Commerce and Industry.

The next issue of the Transactions (May) will contain a more detailed background of the Chairman, plus a special message from him addressed to the members of the IEEE G-EMC.

AD COM NEWS & VIEWS

Student Activities Committee

A report with the above title was presented to the G-EMC Ad Com at their meeting of December 2, 1968. Excerpts from this report are as follows:

It is the recommendation of the Southern California G-EMC Chapter that a national Student Activities Committee be established. The following discussion provides the background and rationale for this recommendation.

DISCUSSION:

The Southern California Chapter of G-EMC is starting a vigorous program to increase Student participation in the IEEE.

The program consists of three main elements, the establishment of G-EMC University Coordinators, the establishment of an annual Student Activities Night and the establishment of a Student Session and award at the National EMC Symposium in 1970. Since the latter element is a national activity, it is requested that the national organization provide coordination with other G-EMC chapters. This might best be accomplished through the establishment of a G-EMC National Student Activities Committee.

The Southern California tentative plan for accomplishment is as indicated below. It could be expanded to a national plan by maintaining the specific elements, and shifting elements dates to suit individual chapter schedules.

I	Chapter Call for Participation - Open Letter	Nov. 21, 68
II	Letter to University and College Student Chapter Advisors	Dec. 2, 68
III	Establishment of National Student Activities Committee	Dec. 2, 68
IV	Preliminary Chapter Planning Meeting Assign University Coordinators Preliminary Student Activity Plan Preliminary Student Night Program	Dec. 12, 68
V	Individual G-EMC University Coordinator Chapter Advisor Meeting	Dec. 12 - Jan. 1969
VI	1970 Symposium Planning Meeting	Jan. 13, 1969
VII	Chapter Planning Meeting University Coordinator Reports Student Night Program Finalization 1970 Symposium Student Session Report	Jan. 23, 1969
VIII	Student Activity Night	Mar. 20, 1968
IX	1970 First Call for Papers (Student paper competition attachment)	June 1969
X	1970 Second Call for Papers	Oct. 1969
XI	1970 Paper Abstract Deadline	Dec. 4, 1969
XII	Announcement of Student Paper Finalist	Feb. 1970
XIII	Student Session 1970 Symposium	July 1970

The University Coordinators play a significant role in that ideally they are alumnus of the college with which they are working; they are coaches for student competition and they keep communication channels open between chapters and colleges.

The Student Activities Night is a chapter activity to provide an organized presentation to the students defining the elements of an engineering career in EMC.

Obviously there are many details to work out such as undergraduate versus graduate competition, nature of the competition, subject relationship to EMC, types of prizes (cash or scholarship), etc. The resolution of these matters requires immediate attention.

Respectively submitted,

J. A. Spagon
Southern California
G-27 Chapter Chairman

Cont'd

G-EMC Administrative Committee Meeting

The next G-EMC Ad Com meeting will be held concurrently with the 1969 IEEE International Convention in New York City on Wednesday, March 26, 1969. Persons who attend the AdCom meeting most often are: elected members, Ad Hoc and Standing Committee Chairmen, and Chapter Chairmen. However, these meetings are generally open to all those who have an interest in G-EMC affairs. You are invited to attend the meeting observe, and meet the Group's executive committee. The Chairman, Fred Nichols, in particular, would appreciate hearing from each G-EMC chapter chairman with regard to any recommendations, suggestions or criticism that will help advance the professional standards of the G-EMC. The meeting arrangements are as follows:

Wednesday, March 26, 1969
9:00 A.M. to 12:00 Noon
Room 520, 5th Floor
New York Hilton Hotel

The date and time of the meeting have been selected so as to avoid conflict with technical sessions which may be of interest to the members of the Group.

Excerpts from the Report of the Awards Committee

James S. Hill, Chairman

In August the Awards Committee sent letters to each member of the Ad Com and each Chapter Chairman requesting comments on the proposed Chapter of the Year Award, Fellow nominations, and nominations for the prize paper awards. Fellow kits accompanied each letter. Four replies were received and these comments were discussed at meetings at which the proposed Chapter of the Year Award was set up. The proposal was attached to this report. If action is taken at this meeting of AdCom it will be possible to make the first award at the 1969 Symposium (Editor's note: no action was taken).

In other activities, nominations were made for each of the prize paper awards by the Committee, and a Fellow grade nomination is being processed.

It has come to the attention of the Committee that two author awards are scheduled to be made at the 1969 Symposium. These will be coordinated with the Awards Committee so that they will be within the IEEE restriction on Group awards. The Awards Committee is charged with reporting to the IEEE Director of Technical Services, Dr. Emberson, on all awards originating with the EMC Group. Coordination of awards for the 1970 Symposium is being carried out with the 1970 Symposium Committee.

Excerpts from the Report of the International Affairs Committee

James S. Hill, Chairman

An appeal was made at the last Ad Com meeting to find travel funds for foreign authors. Foreign governments, such as Great Britain, operate trans-Atlantic air shuttle services to accommodate government personnel including engineers and scientists. Consequently, contacts are being made with the British, French, and other embassies to recruit foreign papers. Each has expressed an interest and agreed to promote papers as a matter of national pride. In connection with this solicitation of papers, the committee has offered to furnish copies of the 1968 Symposium Record for distribution through the scientific officers of each embassy. This should encourage an interest in the G-EMC and its activities.

We have recently entered a member, Affiliate grade, from Sweden. Most foreign engineers will be interested in the affiliate grade of membership based on their membership in the principal scientific or engineering society of their nation. The Committee recommends to the Ad Com that the principal scientific and engineering societies of each foreign nation be approved as a basis for Affiliate membership in our Group.

G-EMC Ad Com elects officers for 1969

Mr. Fred Nichols of ElectroMagnetics, Inc., has been elected Chairman of the G-EMC for 1969 during the Ad Com meeting in Miami Beach, on December 2, 1968. Fred served as Vice Chairman during 1968. Dr. Heintz Schlicke of Allen Bradley was elected to the office of Vice Chairman, while Mr. John Roman of the Department of the Navy was re-elected as Treasurer, and Mr. Leonard Thomas of ECAC was re-elected as Secretary.

The meeting was held aboard the Lightning and Transients Research Institute's research ship "R. V. Thunderbolt". The converted World War II mine sweeper and cable layer provided a fitting setting in which to conduct the meeting, which was being held a day prior to the Lightning and Static Electricity Conference. Prior to the meeting, a tour of the ship with several demonstrations was provided by the Research Director of the Lightning Research Oceanic Laboratory Dr. M. M. Newman.

LTRI

CADAR Committee formed by the IEEE

The overall purpose of CADAR (Computer Aided Design Analysis and Realizability) is to perform a coordinating function for all computer-aided design activity within the IEEE, as well as with other engineering and scientific societies. It is not so much the purpose of CADAR to tell various IEEE Groups where they can utilize computers in the solution of problems in their respective technical areas, as it is to bring existing CAD application areas to the attention of the various Groups so that each can identify, for itself, interdisciplinary areas of common usage.

The coordinating function is presently fulfilled by the publication of the CADAR Newsletter which is presently being sent to approximately 2,000 people in over 10 countries. The Newsletter is free to all IEEE members but there is a \$5.00 annual fee for non-members. Persons wishing to have their names added to the mailing list should write to CADAR Committee, IEEE Headquarters, 345, East 47th Street, New York, New York, 10017. The value of the Newsletter as an agency for the dissemination of information on CAD activity is based upon inputs from various groups in the form of technical notes and abstracts of papers. To further increase its value, G-EMC members are encouraged to communicate with Mr. John Dumanian, the editor of the Newsletter, NASA/ERC, 565 Technology Square, Cambridge, Mass. 02139.

The following is the quoted definition of the role of CADAR in the IEEE:

"The Computer Aided Design, Analysis, and Realizability Committee (CADAR) shall consist of not more than 20 Institute members including a Chairman, Vice Chairman-Administration and Local Committees, Vice Chairman-Publications and Programs, and a Secretary-Treasurer. The members shall be appointed by the TAB Chairman and in doing so he shall give due consideration to the interests of the various Groups and Committees of the Technical Activities Board.

"The function of the CADAR Committee is to identify, collect, and disseminate periodically to the members of the Institute, information concerning computer programs, meetings, seminars, and training courses, book reviews, abstracts and similar material. This effort shall be directed to promoting the effective utilization of computers in the design, analysis and realization of electrical and electronic systems, devices, and circuits. The CADAR Committee shall not only aid in coordinating and promoting close cooperation and exchange of technical information in this technical area among members of the Institute but shall also assist in establishing and maintaining communication channels for exchanging and sharing such information with other engineering and scientific societies.

"Publications prepared by the CADAR Committee will be distributed to Institute members on request, and may be made available to non members who pay a special fee, through arrangements with IEEE Headquarters. On request by interested Groups and other units of the Institute, and subject to applicable rules and procedures, the Committee may organize special sessions, symposia, or technical conference.

"The TAB Chairman will be responsible for the review and approval of budgets for CADAR publications and for arranging for any related financial support."

Let's Change The Name. Again?

Written by B. Malka, Guest Editor

One segment of the members in our G-EMC community was concerned with the question, "What's in a name?" They felt that the term Electromagnetic Compatibility might be improved. Discussion of a name change has covered a long period of time and a wide range of reasons both pro and con.

A well known member of our group said "I feel that the name change opens the door to a better description of what we are." Another gentleman tried to better define a need for a new title. He wrote "In order to make the name of the group more encompassing in nature, we might use both terms as noted below:

Electro-compatibility) and Spectrum (Management
Electromagnetic Compatibility) Utilization

It seems to me that any one of the four possible combinations would be satisfactory" Someone else simply concluded "Let's be the Group of Universal Electromagnetic Spectrum Sciences."

The length of the title was important to some: "Somehow it seems to me that the shorter title, as we have it now, is still more pertinent and effective than the long combination proposed. I always feel that a very long and clumsy title indicates a fussiness of one's objectives. Some other names came to my mind. They are as follows:

1. EM Interference Control
2. EM Interference Management
3. EM Interference Manageneering
4. EM Co-existence"

Definition was quite important to some ".....definition from Electronics and Nucleonics Dictionary as 'Electromagnetic Compatibility - General term covering all types of r-f interference'. I believe that this is the worst possible definition of EMC. It is an after-the-fact definition and the thinking all too common to many is that EMC is just RFI."

In contrast to this, let us conclude with another thought on definition. " 'Compatibility is the state of being compatible' with compatible meaning 'to be capable of existing together in harmony.' Isn't this exactly what we are aiming at? So, rather than changing our name, I would propose to keep the name which is now sanctioned to the Department of Defense, in a way which is possibly quite acceptable to many of us. Thus, I suggest considering at least the possibility of keeping our name but trying to upgrade our efforts to be worthy of what this name implies." The G-EMC Administrative Committee must have agreed. The voted for no change of name at this time during their December 2nd meeting.

(The content of the above item was compiled from copies of correspondence between various members of the G-EMC AdCom, and letters written to the editor from members at large. Do you have an opinion on the subject?)

Report from the Committee on Information Dissemination

Dr. H. M. Schlicke, Chairman

The following report was presented at the EMC Administrative Committee meeting of December 2, 1968.

The object of this committee is to find means of promoting EMC awareness, in particular to convey the importance of a total EMC approach to management people.

After lively correspondence during this summer and fall, the following conclusions were agreed upon:

(1) The name of the Group should be maintained. We cannot improve the professional standing of the Group by a name change.

(2) Rather the reputation and recognition of EMC has to be improved internally by living up to that name, by up-grading our technical papers. Typical examples of extra efforts towards this goal are the special issues of the Transactions, past and contemplated. Mr. Sullivan, Chairman of the Transactions Committee, also increased the number of members on the editorial board to permit more careful reviews. In addition, a more active participation of the EMC community in "Letters to the Editor" is encouraged. We must realize that we, in EMC, are in a transitional stage, namely, the transition of an art to a science. Many people still think that EMC is the old trial and error affair and is not treatable in a predictive manner.

(3) The issuance of high grade semi-technical, tutorial papers on broad EMC aspects to appear in periodicals read by management. Typical for such periodicals is Science and Technology.

Finally, let's keep in mind that our goals have now been spelled out by two significant EMC directives of the highest order: The D.O.

Directives 3222.3 of July 5, 1967, in the military realm, and Pub Law PL30-379 of July 5, 1968, in the civilian realm.

Sincerely yours,

H. M. Schlicke

Ad Com Standing Committee

The G-EMC Newsletter staff is embarking on a new endeavour to present indepth coverage of the many standing committees. There are currently approximately sixteen such committees operating in the direction of the G-EMC Administrative Committee, and thus coverage will have to be spread over many issues. The committee reports will generally include a summary background and photo of the committee chairman, the history of the committee, a statement of its purpose, and the present status of its activities. We hope to build up to three reports per issue in the future. The following report on the Spectrum Study Committee is the first of this new series.

Conti

Spectrum Study Committee



Committee Chairman: Rexford Daniels
President
Interference Consultants, Inc.
Boston, Mass.

Mr. Daniels graduated from Yale Sheffield Scientific School in 1920 with a Ph.D., Degree. In 1952 he organized the Interference Testing and Research Laboratory, Inc., and served as president until 1959, and as chairman of the board until 1960. He organized Interference Consultants, Inc., in 1960 where he presently is serving as President.

Mr. Daniels has been quite active in professional society activities. He was a member of the Joint Technical Advisory Committee, Subcommittee 52.2 in 1955 and Vice-Chairman of the C.C.I.R. study Group VIII in 1960. We all remember him of course, as Editor of the G-EMC Newsletter for ten years from 1958 to 1968. His present activities include being a member of JTAC Sub-committee 63.1 on EMC and Chairman of JTAC Task Group 63.1.4 on Side Effects of Electromagnetic Energy.

In 1962, Mr. Daniels received a Certificate of Appreciation award from the IEEE PG-RFI, and again in 1968 for the G-EMC. He also received a Certificate of Recognition award from the G-EMC in 1968 and the Scroll of Appreciation award in 1967 presented by the U.S. Department of State.

Mr. Daniels has had numerous publications, including "Radio Interference and its Growing Threat" INDUSTRY, AIM, June 1958; "The New Breed - Electromagnetic Compatibility Engineer", IEEE STUDENT JOURNAL, March 1963; "The Broad Aspects of EMC" ELECTRONIC INDUSTRIES, July 1965; and "Nature, The New Interface in Electronics", EVALUATION ENGINEERING, May/June 1968.

The IEEE G-EMC is certainly quite fortunate to have a man possessing the energy, foresight and qualifications such as Mr. Daniels, who so unselfishly shares his knowledge with the EMC community, as he has done for so many years.

SPECTRUM STUDY COMMITTEE

The Spectrum Study Committee was organized in 1965 for two main purposes; to study the side effects of electromagnetic energy throughout the entire electromagnetic spectrum, and to serve as a source of information on side effect data which was then being gathered by the Joint Technical Advisory Committee for its study of the use of the electromagnetic spectrum. The latter function was due to the fact that the JTAC could not give out such information except in its final report.

The personnel of the committee was originally drawn from the membership of JTAC 63.1.4 - Side Effects of Electromagnetic Energy and is added to as special projects are initiated. Current projects and the member of the committee heading up each are as follows:

The expansion of the side effect data, such as appeared on the JTAC Frequency Chart, is being carried on by the originator of the chart, Luther Monell of North American Rockwell, Downey, California. He is concentrating, for the present, on acquiring all available information on sonics and ultrasonics, at one end, and infrared visual and ultraviolet light at the other end, with the interplays between them all.

Dr. H. L. Logan, of the Holophane Co., Inc., New York, New York, is reviewing his half century of experience with light and its effects on other disciplines as well as on environments and on the races of the world. He is one of the developers of the fluorescent light which duplicates the outdoor spectrum of the sun at sea level. All information, as to frequency, is forwarded to Mr. Monell.

A study of the magnetic and electromagnetic forces in the earth, which can affect the use of the electromagnetic spectrum, is being headed by Henry M. Hoffart, General Electric Company, Valley Forge Space Center, Pa. He is especially concerned with the increasingly complex problems involved in grounding and the denial, by the public utilities, for the use of their underground systems in NEC safety grounding. He is also studying the effects of magnetic storms on both grounding systems and on personnel exposed to this radiation.

The forces involved in hurricanes and tornadoes are being studied by Dr. John Carstou, Brookline, Mass., in conjunction with scientists throughout the world. These studies have led to the discovery of what might be called a second gravitational force which is circular in motion and wavy in character.

Everything which can affect the use of the electromagnetic spectrum is of interest to Rexford Daniels, chairman of the Committee. Unfortunately, much of the research concerned with the use of the spectrum is classified which prevents general mention. At the present time, there are at least five known projects which are using different parts of the spectrum and include most disciplines. The Spectrum Study Committee is very interested in the establishment of a central information exchange of all uses of the spectrum in order that conflicts may be avoided and new projects may not find that they have picked an already assigned frequency which would require a redesign of the equipment.

Contributions of information on the use of the spectrum are most welcome by the committee as well as the alerting of the committee to work in progress which might be of value.



CHAPTER CHATTER

By Ira M. Berman
Re-entry Systems
General Electric Co.

Happy New Year!

What's that you say? Happy New Year in February? Well, since this column was written on New Year's Day, just thought I'd wish you all the Best of the Season.

First: Welcome Aboard, Houston! We have a brand new Chapter deep in the heart of Texas, and it looks like their first meeting was held on the top of Saturn V. Good luck, fellows, and let's hear more of the same in future reports.

The Holiday Season hasn't suppressed the G-EMC activities, Judging by the results I've received in the mail, the individual chapters are really in high gear. There's news this issue from 14 of our 15 Chapters, and most look pretty busy. Let's dash around the country west to east, for a change, and see what's new.

SEATTLE Chairman: Alford Eckersley
616-166th Ave., N.W.
Bellevue, Wash. 98044

The members from Puget Sound are presenting a program this year (68-69) that could well be the envy of any other chapter. All one has to do is look at the guest attendance figures to tell that their programs are really great. Since September, their average member attendance was 12, and guest attendance was 9 per meeting. Having guests at our meeting is one of the most effective ways to spread the EMC word; they are virtually a captive audience!

Date: November 20, 1968

Speaker: Cdr. H. E. Winter, USN

Affiliation: ECAC, Annapolis, Md.

Topic: The DOD EMC Program

Attendance: 26 (including 15 guests!)

Three more meetings are planned for the balance of the activity year:

Date: January 29, 1969

Speaker: Robert O. Lewis

Affiliation: Boeing Company, Seattle, Washington

Topic: The Lunar Orbiter Electro-Compatibility Program

Date: March 26, 1969

Speaker:

Affiliation: From the Hewlett-Packard Co.

Topic: Use of Spectrum Analysis in EMI Measurement.

May 21, 1969 - Topic and Speaker not yet determined. Al Eckersley, the Chapter Chairman, tells me that several of his members plan to participate in the 1969 Symposium. Asbury Park should really jump when the engineers who treated us so well in '68 get there.

* * *

SAN FRANCISCO

Chairman: Wm. G. Coe
P.O. Box 1383
San Carlos, Calif. 940

What is so rare as a day in November -- when you truly understand an EMI specification? Or, even better, how to use it? That's what the San Francisco members did last November, when they hashed the knotty problem about.

Date: November 18, 1968

Speaker: Guy L. Ottinger

Affiliation: Lockheed Missile & Space Company

Topic: Applicability of EMI Specifications

Attendance: 22

San Francisco always seems to have such timely and interesting meetings. Just wondering: if all those chapters whose speakers gave out copies of their presentations would send me a copy, I could abstract them either in this column or in the notes of the Information Retrieval Committee (of which I am also a member). Then someone from Boston, say, could contact Mr. Ottinger for additional information on his presentation. It's very little effort on my part and may be of great value to someone else in the Group

* * *

SOUTHERN CALIFORNIA

Chairman: Jim Spagon
TRW Systems
One Space Park
Redondo Beach, Calif.
(213) 679-8711, Ext.

This chapter is well on its way to a banner year. They have decided to hold a meeting each month, a total of at least nine for the season. A report on the third meeting is as follows:

Date: November 21, 1968

Speaker: Joe Fischer - Genisco
Ed Kavanaugh - TRW
Bill Lash - McDonald-Douglas
Herb Martell - General Dynamics

Topic: Panel review of MIL-STD-461A and 462.

Attendance: 93

A Pre-Christmas Social Dinner and Dance was held at the Airport Marina Hotel on December 13, 1968 at which 30 people attended. Future programs will include talks on "Bugging Technology", the Stanford Linear Accelerator EMI Considerations, a Student Activities night, and an all day EMC Specialist Working Group Symposium. The Student Activities Committee is under the Chairmanship of Tom Walter of TRW Systems, and the Specialist Working Group Committee is headed by Jim Senn (recently elected to the Ad Com) of ElectroMagnetics Inc. Plans for the January and February meetings are as follows:

Date: January 16, 1969

Place: Rams Horn

Topic: Bugging, is it still around?

Cont

Date: February 20, 1969
Place: TBD
Topic: Stanford Linear Accelerator

If you are in the Los Angeles area, be sure to give the Chairman a call and catch a meeting.

* * *

HOUSTON Chairman: V. E. Haywood
1315 NASA Rd. 1
Apt. 329
Houston, Texas 77058

The first meeting of this group was held on November 6, 1968, with an attendance of 20 members. The Chapter elected four officers for the 68-69 year, and the topic was one of perennial interest.

Date: November 6, 1968
Speaker: Tom Herring
Affiliation: Boeing Co.
Topic: Sneak Circuits and EMC
Attendance: 20

With the growing interest in space technology (and that magnificent Apollo 8 Shot), this Chapter should really prosper. We'll be looking for great things from Houston.

* * *

CENTRAL TEXAS Chairman: Walter G. Dolle
542 Lakeview Blvd.
New Braunfels
Texas 78130

The Southwest Research Institute (SWRI) in San Antonio is a relative newcomer to me in the technical business, but from what I read in the technical journals, it's a real bear for technical expertise. The G-EMC Chapter is no exception. Their meetings, and the individual activities of the Chapter members, tell us that this is a vital, moving group. Their program for the balance of the year looks good:

Date: January 10, 1969
Affiliation: SWRI
Topic: Tour of SWRI Lab Facilities

Date: January 30, 1969
Affiliation: SWRI
Topic: Environmental Characteristics which Affect Measurements in Shielded Enclosures.

Date: Late March, 1969
Affiliation: SWRI
Topic: Directional Current Probe Technique for Conducted EMI Measurements.

G. N. Van Steenberg and J. F. Willman had a paper entitled "Innovated RIFI Meter Calibration Method" published in the June 1968 issue of FREQUENCY, and these same two members have submitted "Directional Current Probe Techniques for Conducted EMI Measurements" for publication in the G-EMC Transactions. A paper is also being proposed for the SWIEECO in April 1969 entitled "Environmental Characteristics which Affect Measurements in Shielded Enclosures." This sounds like the members are not only helping out their own Chapter, but they are helping out the entire EMC fraternity with two excellent papers. We'll all be watching the Group Transactions.

* * *

NEW ORLEANS Chairman: James C. Hughes
Chrysler Corp.
P.O. Box 2920
New Orleans, La. 7011

Talk about guests! The New Orleans Chapter had four times as many guests as members attending meetings. (No, it was not 1 members with his wife and kids.) An average member attendance of 6 per meeting with 24 guests per meeting. And digging a little deeper, we find that these guests were primarily members of the Tulane University Student Branch. What a tremendous way to introduce students into some of the intricacies of EMC. All Chapters might well consider a Students' Night as a regular feature. Now, let's hand out those application forms.

Date: December 17, 1968
Speaker: George Roessler
Affiliation: Technical Wire Products, Inc.
Topic: Corrosion and the Wire Mesh Gasket
Attendance: 30

Future meetings are still in a state of flux.

* * *

CHICAGO Chairman: C. P. Jespersen
Motorola Inc.
1450 N. Cicero Avenue
Chicago, Ill. 60651

Still not too much news from the Chicago Chapter. The best we can offer is that meetings are scheduled for January, February, March and May of 1969, on the second Tuesday or Thursday of the month. Sure wish we had more to report.

* * *

HUNTSVILLE

We regret announcing that the Huntsville Chapter has been disbanded.

* * *

CANAVERAL Chairman: George A. Tagge
375 Carissa Dr.
Indian Harbor Beach
Florida 32935

There's nothing like having an expert instruct you in his field, and the Florida members did just that when they met in November. Sprague, one of the biggest names in EMI filtering, provided this kind of instructing. I am a bit surprised that the attendance was so low, for even in these days of rate-controlled switches and IC's filters are still a powerful EMC tool.

Cont'd

Date: November 12, 1968
Speaker: Henry A. Brewer
Affiliation: Sprague Electric
Topic: Application of Noise Filters
Attendance: 10

* * *

ATLANTA Chairman: James C. Toler
1022 Reeder Circle, N.E.
Atlanta, Ga. 30306

As it says in the airlines ad, Atlanta is bustling and growing, and our Chapter down there is bustling and growing too. Meeting attendance was very good, with an average of 22 members attending out of a possible 32.

Date: November 12, 1968
Speaker: George Roessler
Affiliation: Technical Wire Products, Inc.
Topic: EMI Shielding
Attendance: 26

The only firm meeting in 1969 has an administrative theme:

Date: January 1969
Speaker: R. E. Watson
Affiliation: FCC
Topic: FCC Legislation

This meeting will be a joint meeting with the Atlanta Section. There is no definite word on the detailed plans for the October 1969 Region III EMC Symposium.

* * *

WASHINGTON, D.C. Chairman: C. J. Saunders
N.B.S. R-109
Bldg. 224
Washington, D.C. 20234

The Washington Chapter was "exposed" to this past year's act on Radiation Safety by the Assistant Director to the National Center for Radiation Health. This covers EMI in applications that are not normally considered in Aerospace and Defense, such as commercial microwave ovens and radiological devices. But when EMC is considered as stretching from d-c to light (and beyond), these fields should be well understood by all of us.

Date: November 21, 1968
Speaker: Dr. Robert L. Elder
Affiliation: National Center for Radiation Health
Topic: Radiation Control for Health and Safety Act of 1968
Attendance: 30

In addition, Mr. Edward W. Allen, Jr., former Chief Engineer of the FCC, a guest at the meeting, was notified of his receipt of the 1968 IEEE award for his contribution to international communications. Washington also has meetings scheduled for January 16, March 20, and May 15, 1969. As of this writing, the topics have not been determined.

* * *

PHILADELPHIA

Chairman: S. C. Garcia
Philco-Ford
4700 Wissahicken Ave.
Philadelphia, Pa. 19144

The Philadelphia Chapter has one of the best attendance records in the country, and no wonder. Their February meeting is one from which all EMC Engineers, and even those peripherally associated with EMC, would derive benefits. The speaker is one of the sharpest EMC "types" in the area.

Date: February 12, 1969
Speaker: Terry Dietrich
Affiliation: Philco-Ford
Topic: Practical EMC Measurement Techniques

This meeting was originally scheduled for February 5, 1969.

Bob Goldblum, the Newsletter Editor, and Past Chairman of the Philadelphia Chapter, also writes a Chapter News column in the Almanack, the Philadelphia Section's Monthly Newsletter. Its title: Chapter Chatter, of course. And your Associate Editor attends meetings of the General Electric Company's EMI Control Panel, a strictly informal bi-monthly get-together of GE EMC Engineers to hash out current EMC problems of interest to the Company.

* * *

NEW JERSEY COAST

Chairman: W. A. Kesselman
31 Hope Rd.
Eatontown, N.J. 07724

I don't know what kind of magnets they use up there in Jersey, but with 53 at the last reported meeting, they must be doing something right. The subject was pretty interesting, which could account for some of the interest. But 53!

Date: November 12, 1968
Speaker: Wm. Swift
Affiliation: Hewlett-Packard Co.
Topic: Using the Spectrum Analyzer for EMI Measurements
Attendance: 53

The January meeting will be joint with the Metropolitan New York Chapter. That's one that I would like to attend (when you read the New York report you'll know why).

* * *

METROPOLITAN NEW YORK

Chairman: H. G. Bostrom
Washington Valley Rd.
Morristown, N.J. 07960

I guess when winter starts in New York, you run to keep warm. The New York Chapter is running so hard they must be steaming. Their present meeting schedule has some very interesting facets.

Date: November 19, 1968
Speaker: R. J. Mohs
Affiliation: Airborne Instruments Lab.

Date: January 21, 1969
Speaker: J. D. Osburn
Affiliation: Electro-Mechanical Company
Topic: Pulsed Magnetic Field Susceptibility Testing of Electronic Equipment.

This latest meeting is planned for the Manhattan Playboy Club (!) and bears on an article that appeared in the November 1968 issue of FREQUENCY magazine in which they quoted the NEW YORK TIMES of September 25, 1968, talking about "Electronic Blackout in A-Blast Remains Problem". The TIMES article was written by Senator Henry M. Jackson, of Washington. This January meeting will also be a joint meeting with the New Jersey Coast Chapter, so it should be one of the highlights of the Group's year.

New York plans meetings for March and April, and a field trip in May.

BOSTON Chapter Chairman: A.W. DiMarzio
46 Bartlett Street
Malden, Mass. 02148

It pains me to say it, but the enthusiasm and the activities of the Boston Chapter put even my own (Philadelphia) to shame. To quote from Al DiMarzio, the Chapter Chairman: "The ad-lib (on shielding) was a fantastic success - we had good audience participation - many people solved real world problems by talking to these with similar experience." Hearing this from Chapter officers really makes an editor (and an Ad Com) feel like the Chapter and the Group are really doing their own thing - and doing it great!

Let's see what else the Boston Blitzers are doing:

Date: November 26, 1968

Speaker: W. Swift

Affiliation: Hewlett-Packard Corp.

Topic: How Good is the Spectrum Analyzer for EMI Measurement.

Date: January 29, 1969

Speaker:

Affiliation: At Sylvania's Waltham Plant

Topic: Spectrum Utilization for EMC in Aerospace Communications Systems.

Date: February 19, 1969

Topic: Joint Meeting with G-AES on Grounding and Bonding

Date: March 12, 1969

Topic: A discussion by a Technical Magazine Editor

Date: May 28, 1969

Topic: A Discussion on Instrumentation

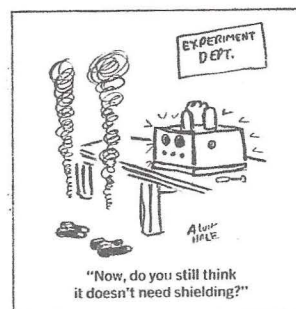
The February meeting is also scheduled as a Students' Night.

A note to the Chapters in the northeastern part of the country: Your Associate Editor for Chapter News might drop in on one of your meetings. So far, I've only corresponded with most of you, but I could get a better feel for your activities, accomplishments, and problems if I could see you face-to-face. I don't mean to slight the rest of the Chapters, but I don't know right now how far my overhead budget will go. I'll get to meet you all eventually, though.

Let's hear from everyone. Bob Goldblum said that he'll publish anything I write about Chapters (almost) and I'll write on anything you send me. Wasn't it Kate Smith who always said "If you don't write, you're wrong!"

A Bit of Humor

The following cartoon is reprinted by permission of Electronic Design News.



Meetings & Events

Summer Course on Electromagnetic Compatibility

The Georgia Institute of Technology has announced a series of one-week short courses one of which is on Electromagnetic Compatibility. The following has been abstracted from their bulletin. For additional information, write to Director, Department of Continuing Education, Georgia Institute of Technology, Atlanta, Georgia, 30332.

ELECTROMAGNETIC COMPATIBILITY

AUGUST 18 - 22, 1969

Introduction

Within the past few years, there has been a marked increase in both the tendency of electrical/electronic systems to become more and more complex and in the congestion of the available, frequency spectrum. As a consequence of these factors, it has become mandatory that program managers, design engineers, and test engineers be technically knowledgeable in a relatively new discipline known as Electromagnetic Compatibility (EMC). The EMC discipline is responsible for assuring that electrical/electronic equipments and system function in their intended operational environment without unacceptable degradation.

Objects:

This program will present current methodology applicable to electromagnetic compatibility and interference reduction. Emphasis will be placed on the coverage of all major considerations from the generation of an EMC control plan to the final test of an end product or installation.

Cont'd

MEETINGS AND EVENTS CONT'D

Who Should Attend:

This course is designed for engineers and managers who are in positions of responsibility in which their decisions affect the fulfillment of the EMC aspect of broader missions. The course does presume prior knowledge of fundamental electronic concepts. Using basic electronic, statistical, and mathematical techniques, it establishes a body of information useful in understanding the nature and implications of electromagnetic compatibility, and the application of contemporary tools and techniques to the solution of interference problems.

Faculty:

The course will be taught by experienced members of the Georgia Tech staff. The Co-academic Administrators will be D. W. Robertson and J. C. Toler, both of the Electronics Division.

Course Outline:

- I. Fundamental Concepts and Definitions
 - The Spectrum Crisis and EMC
 - Definitions and Terminology
 - EMC Program Management
 - Philosophies
 - Control Plans
 - Test Plans
 - Program Tasks
- II EMC Design Considerations - Equipment Level
 - Problem Identification
 - Problem Solutions
 - Representative Problem Solutions in Typical Electronic Equipments.
 - Receivers
 - Transmitters
 - Power Sources
 - Control Devices
- III EMC Design Considerations - Systems Level
 - Problem Identification
 - Problem Solution
 - Representative Problem Solutions in Typical Electronic Systems
 - Communications Systems
 - Radar Systems
 - Space Systems
 - Industrial, Scientific, and Medical Systems
- IV Tests and Measurements
 - Test Instruments
 - Specifications
 - Equipment Level Requirements Methods and Techniques
 - System Level Requirements Methods and Techniques
 - Operational Retrofit
- V Modeling
 - Interference Prediction
 - Systems
 - Equipment
 - Environment
 - Frequency Assignment

1969 CONFERENCE ON MICROELECTRONICS TO BE HELD

JUNE 3 - 5, 1969 -- EASTBOURNE, SUSSEX, ENGLAND

A Conference on Microelectronics will be held in the Congress Theatre, Eastbourne, Sussex, England from 3rd to 5th June 1969, and is being sponsored by The Institute of Electrical Engineers (Electronics Division) The Institute of Electronic and Radio Engineers, The Institute of Physics and The Physical Society, and The Institute of Electrical and Electronics Engineers (United Kingdom and Republic of Ireland Section).

The Conference aims to provide an opportunity for the discussion of significant advances in the design, manufacture, measurement, assembly and application of all forms of microelectronics. It will embrace such topics as semiconductor and film integrated circuits, microwave and opto-electronic devices, sub-systems e.g. integrated stores and iterative logic arrays, assembling and packaging, design methods, testing and reliability.

Contributions describing the application and impact of integrated circuits in the fields of consumer electronics, instrumentation and control, communications and computers will be included.



Session Omitted from 1969 IEEE International Convention

The G-EMC will not be sponsoring a papers session at the March IEEE International Convention this year. Although it was announced in an earlier issue of the Newsletter that there would be a session, a correspondence communications anomaly has resulted in the session schedule being completed without the inclusion of the G-EMC. There will still be many attractions at the convention for EMC Personnel, including numerous vendors displays and of course, the G-EMC Administrative Committee meeting. The G-EMC will be first in line for sponsoring a session at the 1970 convention.



1969 ELECTRICAL & ELECTRONIC MEASUREMENT & TEST

INSTRUMENT CONFERENCE - INSTRUMENT & MEASUREMENT

SYMPOSIUM -- TO BE HELD MAY 5-7, 1969 -- OTTAWA, ONT.

The 1969 Electrical and Electronic Measurement and Test Instrument Conference will be held May 5, 6, and 7, 1969 at the Skyline Hotel, Ottawa, Ontario, Canada. This is the first I & M symposium to be in conjunction with the Electrical and Electronic Measurement and Test Instrument Conference.

The aim of the symposium is the advancement of electromagnetic measurements and instrumentation broadly useful in engineering application. Test and calibration instrumentation in the d-c, l-f, h-f, and microwave regions forms the core of the symposium. Measurements and instruments directed toward the solution of the technical aspects of broad social problems will be emphasized. For 1969, major emphases will be on automated test and calibration instruments and measurement techniques. Additionally, instruments and measurement techniques applicable to the broad fields of observing, evaluating, and utilizing earth resources will be included.

The conference is sponsored by the Ottawa section and the Group on Instrumentation and Measurement, both of the Institute of Electrical and Electronics Engineers.



MEETINGS AND EVENTS CONT'D

1969 Carnahan Conference on Electronic Crime Countermeasures

The 1969 Carnahan Conference on Electronic Crime Countermeasures will be held at Lexington, Kentucky, April 24 - 26, and is jointly sponsored by the Lexington Section IEEE and the Electrical Engineering Department of the University of Kentucky.

The current national interest in crime control will focus attention on papers presented at this conference. Four of the 1968 Carnahan Conference papers were invited for presentation at the WESCON Convention. One has been published in the Spectrum.

Fields of interest will include computer use in dispatching, data processing, and security devices whose nature may be electronics, ultrasonic, microwave or infrared. Pattern recognition techniques in fingerprint identification will be covered. Area security techniques for banks, factories, and retail stores, communication systems (personal or vehicular), secure power systems, devices for rapid identification of personnel or property are all subjects that will be covered.

INSTITUTE OF ENVIRONMENTAL SCIENCES 1969 NATIONAL MEETING GENERAL INFORMATION

The following is a statement describing the Institute of Environmental Sciences. It has been used in the past for obtaining releases on papers and presentations.

"The Institute of Environmental Sciences is a professional organization of engineers and scientists engaged in the measurement and control of the effects on man and equipment, of the natural and induced phenomena encountered on earth and in space, for the advancement of industry and science."

National Office

Institute of Environmental Sciences
940 East Northwest Highway
Mt. Prospect, Illinois 60056
(312) CLearbrook 5-1561

Mr. T. W. H. Miller, Executive Secretary

Technical Program Chairman

Mr. Frank W. Hallstein
TRW Systems
One Space Park, R-5/2063
Redondo Beach, Cal. 90278
(213) 679-8711, Ext. 65015

Title of Meeting

15th Annual Institute of Environmental Sciences Technical Meeting and Equipment Exposition

Date of Meeting

April 20 - 24, 1969

Location

Anaheim Convention Center
800 West Katella
Anaheim, California
(714) 533-5536 - Visitor and Convention Bureau

Headquarters Hotel

Disneyland Hotel
1441 Southwest Street
Anaheim, California
(714) 535-8171

1969 Meeting of the International Scientific Radio Union

The University of Texas at Austin, Department of Electrical Engineering invites you to the 1969 United States Fall meeting of the International Scientific Radio Union to be held on December 8th through December 10th, and the 1969 International Antenna and Propagation Symposium of the IEEE on December 9th through December 11th. The general chairman of the meeting is Archie W. Straiton, of the Department of Electrical Engineering of the University of Texas. The call for papers will be issued later.

SOUTHWESTERN IEEE CONVENTION & EXHIBITION (SWIEEEO)

TO BE HELD APRIL 23, 24, 25, 1969 -- SAN ANTONIO, TEXAS

The 1969 Southwestern IEEE Convention and Exhibition, SWIEEEO, hosted by the IEEE Central Texas Section, and cosponsored by Region 5 of the Institute of Electrical and Electronics Engineers, is scheduled for April 23, 24, and 25, 1969 (FIESTA WEEK) in San Antonio, Texas.

Papers are solicited in the following areas:

Communication Circuits	Acoustic and Sonar Integrated Circuits & Microelectronics
Computers	Plasma and MHD
Biomedical	Quantum and Optical Electronics
Antennas and Propagation	Power
Space Science and Radio	Electromagnetic Compatibility
Astronomy	Control
Education	Geoscience

The above is a typical (but not exclusive) list of topics.

1969 NATIONAL AEROSPACE ELECTRONICS CONFERENCE

(NAECON) TO BE HELD MAY 19-21, 1969 -- SHERATON-DAYTON

HOTEL, DAYTON, OHIO

Sponsored by the Institute of Electrical and Electronics Engineers Group on Aerospace and Electronic Systems, the IEEE Dayton Section the Institute of Navigation and the American Institute of Aeronautics and Astronautics.

Mr. Harold Hussey, President of NAECON 1969, announces the theme for this year's Conference is THE 21ST NAECON LOOKS TO THE 21ST CENTURY.

NAECON provides the most specialized forum for the exchange of information on Aerospace Electronics. The 1969 NAECON, to be held at Dayton, Ohio, the birthplace of Aviation, will include a comprehensive technical program of interest to all engineers and scientists concerned with aerospace systems and electronics technology. Contributed papers on work not previously presented have been solicited.

Mr. Hussey is also pleased to announce Mr. James Singer as Chairman of the Technical Program, and he will be in charge of all Papers.

Following is the list of subject areas:

Avionic Communications	Integrated Electronics
Aerial Reconnaissance	Fluidics
Bionics-Cybernetics	Electromagnetic Compatibility
Navigation and Guidance	Laser Application
R & D Planning and Evaluation	Computers and Data Processors
V/STOL Aircraft Systems	Secondary Power Systems

Traffic Control System Needs Re-evaluated for New York Area

A two-page article with the above title written by Kenneth J. Stein appeared in the October 7, 1968 issue of AVIATION WEEK & SPACE TECHNOLOGY. Paragraphs of interest are excerpted as follows:

"Aircraft being vectored from different geographical fixes into the approach sequence for the same ILS runway frequently must be turned onto what could be potential collision courses although they are separated by miles of airspace and watched carefully on the radar scope by controllers. In this case, however, just as the aircraft turned to a potential collision heading, the primary approach control frequency - and its backups - failed in the IFR room according to controllers.

"Unable to communicate, the controller helplessly watched the targets merge on his radar scope.

"A fortunate break in the weather and an alert pilot enabled one aircraft to change altitude just enough to effect a near-miss, controllers say.

"Following this incident the 124.3 MHz frequency was changed to 126.7 for southbound traffic from the Rocky Hill fix, controllers say. But 126.7 was "borrowed" from New York Air Route Traffic Control Center, and brings in added interference from its remote site, according to controllers.

"At the same time the frequency for Budd Lake - the other primary approach fix for Newark - is 127.6 MHz and this frequency is reportedly close enough to the Rocky Hill frequency to cause a new interference problem in the Common IFR Room.

"One radar controller in the Newark sector says that every time a controller there transmits to aircraft at the Rocky Hill fix, he cuts out the radio of the Budd Lake controller who sits across the radar scope from him. These problems did not occur in the old IFR room in Newark tower, he claimed."

NEWS & REPORTS

EXCERPTS FROM SAE-4 NEWSLETTER SPIKES AND RIPPLES

News from Washington

In its dying hours, the 90th Congress passed the Federal Radiation Standards Law. The press speaks of this as the Johnson Administration's major consumer protection measure. It will undoubtedly take into account suitable measures to safeguard the public from unsuspected radiation hazards derived from color TV sets, and microwave ovens, to name but a few, apparently innocent, radiation sources. The Department of Health, Education and Welfare will be required to establish radiation standards no later than January 1, 1970 on electronic products necessary to protect public health and safety under the provisions of the Act. The AEC is expressly exempt only for the reason that by definition it comes under the Atomic Energy Act of 1954 for his purpose.

The fact that this legislation is addressed to the health hazard derived from radiation associated with consumer products had led some to believe that the Military Departments are exempt from its application. This is not true. In a letter to the Honorable Warren G. Magnuson, Chairman, Committee on Commerce, Mr. L. Niederlehner, Acting General Counsel, Department of Defense, interposed no objection to the proposed legislation but commented on its application to DoD. On Page 8 of the Senate Report (Number 1432), it is stated "The Secretary (HEW) is given discretionary authority to exempt any electronic product from application standards if the product is intended for use by the departments or agencies of the United States, provided

they have provided procurement specifications governing emissions of electronic radiation and provided that such product is of a type used solely or predominantly by departments or agencies of the United States." This is no waiver. It is a positive requirement to develop suitable standards as a condition of exemption.

NATO Standardization Activities In EMC

Military members of Committee AE-4, Charlie Seth, WPAFB, and Joe Fisher, NASCOM, represented the United States at a NATO EMC Conference in London, England. The purpose of the conference was to prepare a standard agreement between NATO countries on Electromagnetic Compatibility Test Methods for Aircraft and Electronic Equipment.

The task was completed with the issuance of STANAG 3516AE. This document is now being circulated among NATO countries for ratification and adoption.

The STANAG 3516AE agreement closely approximates MIL-I-6181. In addition to the new STANAG document, MIL-STD-461 has been circulated to the NATO countries for review. It is probable that future amendments to STANAG will more closely resemble MIL-STD-461.

MIL-STD-461A and Notice 1 to MIL-STD-462

MIL-STD-461A dated August 1, 1968, and Notice 1 to MIL-STD-462, have been issued and are available from the Naval Supply Depot, 5801 Tabor Avenue, Philadelphia, Pennsylvania. These revisions were prepared to correct typographical and technical errors in the first editions dated July 31, 1967.

Help Wanted

The Army Electronics Command (AMSEL-RD-GF) is soliciting comments and additions to MIL-STD-463, Definitions and Systems of Units for EMC, for a revision to the standard. Comments may be forwarded through SAE to Mr. Guy Johnson at ECOM.

Electromagnetic Pollution

Much is being said these days about various forms of pollution. Serious studies are being made into methods to control pollution of the air, water, land, food, highways and, of course, the electromagnetic spectrum. A less known but equally serious study is being conducted by several scientists into the effect of modern living environment on man's well being. Living in a "shielded" environment where air, temperature and humidity are closely controlled may deprive man of normal or natural levels of electromagnetic and radiation fluctuations. The postulation is that man isn't getting his full charge of nature's electromagnetic energy. On the other hand is the belief that man is gradually raising the levels of electromagnetic energy above energy levels at which nature operates. As yet, field densities have not been established for "turning on" the human machine.

Charles M. Dean, Editor
Spikes and Ripples
P. O. Box 12865
St. Petersburg, Florida 33733

Air Waves and Regulations

ENID, OKLAHOMA, TRUCK SERVICE TOLD TO END RERADIATION FROM ABANDONED TOWER

The B & W Truck Service, Enid, Oklahoma, must either dismantle or detune its abandoned communications tower, which is causing "severe distortion" of the authorized directional pattern of radio station KCRC, Enid, according to a Commission order. B & W has been given 30 days from the date of a Commission letter containing the order to submit a written report describing corrective measures taken or contemplated.

The Commission said in its letter that failure to dismantle or detune the tower would cause the Commission to examine B & W's qualifications to hold a license (KEN-393).

In its letter, the Commission referred to the "long standing reradiation complaint" by KCRC against B & W's operation and to "numerous, but unproductive, conferences and exchanges of correspondence" among the Commission, KCRC, and B & W.

The Commission stated that B & W built the communications tower in question in August 1967, approximately 1000 feet southeast of KCRC's antenna array. The Commission said that the tower was built in the wrong place; that the original construction permit issued to B & W specified geographic coordinates approximately a mile from the KCRC facility; and that B & W subsequently relocated its base station at another site and abandoned the original tower.

The Commission explained that as a result of distortion by the tower of KCRC's authorized directional pattern and a serious reduction in KCRC's signal strength over Enid and other parts of its primary coverage area, it has had to defer action on the KCRC license renewal application.

Action by the Commission December 18, 1968, by letter. Commissioners Hyde (Chairman), Bartley, Robert E. Lee, Wadsworth, Johnson, and H. Rex Lee.

(The above item appeared in Report No. 3222 of the December 18th, 1968 FCC News under Nonbroadcast and General Actions).

U.S. PREPARING MOVE TO HIGHER FREQUENCIES IN SPACE

A brief item with the above title appeared in the October 1968 issue of MICROWAVES. The first two paragraphs are extracted as follows:

"The FCC and the Director of Telecommunications Management have taken a very close look at the 10 to 40 GHz range for future space telecommunications needs. The reason: preparation for U.S. inputs to the World Administrative Radio Conference on space telecommunications to be held either late 1970 or early 1971. The FCC also has issued a Notice of Inquiry on radio astronomy and space-service frequency needs preparatory to this international meeting.

"Studies by both U.S. agencies show that existing and future needs in the 10 to 17.7 GHz range will obviate any wideband service by communications satellite on an exclusive basis. They did find, however, that communications satellite service could be provided for down links in the 17.7 to 23 GHz range and for up links at either 27.5 to 31.3 GHz or 38.6 to 40GHz."

Designers up in air over Specs

A two page article written by Lawrence Curran ELECTRONICS MAGAZINE, Los Angeles Bureau Manager, with the above title appeared in the September 16, 1968 issue. The first three paragraphs are extracted as follows:

"Occasionally, a few of the thousands of standards and specifications issued by the Pentagon work at cross purposes. When this happens, the contractor's program manager has to sit down with the service's project officers and thrash out an interim solution. In the meantime of course, designers are left hanging.

"A recent case in point involves Military Standard 704, which has been around since 1959 and covers, among other things, avionics hardware. Until the Air Force got to work in the C-5A transport, this standard wasn't rigidly enforced, so no one paid much attention to it. Since then, however, the standard, along with a revision - 704A - has been causing headaches for suppliers of avionics equipment because the Air Force is insisting on strict compliance. At first glance, this might not seem to be too great a burden, but contractors say certain key provisions are too vague.

"Specifically at issue is the question of electromagnetic compatibility (EMC) in aircraft - a major problem for designers of avionics gear. Wendell Wood, an engineer in the EMC Group at the Lockheed-Georgia Co., which is building the C-5A, complain that only about 1% of the 704 document deals with the voltage transients that cause EMC problems. It isn't clear that this is an EMC susceptibility standard for black boxes, he says. And EMC is definitely a problem, he says, particularly since pulse-operated digital equipment generates a host of high-frequency spikes. In the C-5A and other advanced aircraft, electrical transients can trip equipment or cause it to burn out."

Spectrum crowding assailed anew

A Washington report with the above title appeared in the October 24, 1968, issue of ELECTRONIC DESIGN. Excerpts from this report are as follows:

"Rep. James C. Corman (D. Calif) asserts that the recent expansion of public safety radio channels did little to relieve dangerous overcrowding of the spectrum. He likens the splitting of existing channels by narrowing bandwidth to the division of a two-way highway into three lanes. The result, he says does permit more traffic, but it also assures more accidents. Rf interference has steadily worsened, he contend.

The Congressman says that at present the Federal Communications Commission has allocated only 1 per cent of the radio spectrum for public safety use while commercial television has received 52 per cent, and much of this allocation remains unused. These unused channels, he says, are unavailable for services that need them desperately, including police and fire departments. In addition to public safety, Rep. Corman states, a host of other public services would benefit through the use of more two-way radio systems."

Seven Come Eleven!

The FCC demonstrated a "radio controlled dice table" which has been impounded by the Maryland State Police. Radio signals from a miniature transmitter up to 500 feet away from the table sets up a magnetic field in the table and the dice turn up "seven".

(Reprinted from the IEEE Vehicular Technology Group Newsletter November, 1968.)

Cont'd

1.0 G-46 Meeting was called to order by the Chairman at 9:30 A. M. on September 17, 1968 at the Caracos Room, Sheraton, Chicago Hotel.

4.0 Task Group Reports

012-67 Frank Garlington indicated a report would be available at the next G-46 meeting. It was also reported that B. DeNardi, ECOM, Ft. Monmouth, N.J., and Frank Giordana, Naval Applied Science Laboratory, Brooklyn, New York, are also looking into MIL-STD-461 Measuring Techniques. It was reported that Bill Prysner, Underwater Sound Laboratory, New London, Conn., could be contacted regarding questions of REO1 and RSO1 tests.

021-67 Steve Caine reported that Revision A of MIL-STD-461 will be available in the near future. This revision will have a date of 1, August 1968. Appendix A to MIL-STD-461 was discussed at length. As reported by Steve Caine existing EMC specifications were superceded upon issued of MIL-STD-461, 462 and 463, thereby limiting procuring agencies in reprocurment of equipment originally procured to these superceded specifications. The application of Appendix A to reprocurment is based on the issuance of Revision A to MIL-STD-461 which will contain a statement specifying Appendix A to MIL-STD-461 for reprocurment. The application of Appendix A to reprocurment should not impose EMC requirements more stringent than original equipment transients.

025-68 Mr. John M. Kikta of Grayhill, Inc., attended this meeting as representative of EIA P5.5 had previously requested support of G-46 in establishing EMI requirements for rotary switches. Mr. Lou Raburn of McDonnell Douglas, St. Louis, has taken over as Chairman of this task from George Blase. There was considerable discussion of this problem by all members of the G-46 Committee. A practical solution for the requirement problem appears to be two classes of requirements for switches. One class, with very stringent bonding requirements between the switch shaft and collar, and a second class with nominal resistance requirements so as not to unduly impact the cost factor of switches when an exceedingly stringent EMI requirement does not exist. The proposed values of ten milli-ohms and ten ohms, respectively, will be coordinated with P5.5 and Mr. George Fogleman of NAVELEX Component Section by John Kikta.

026-68 Steve Garcia reported on the status of "Civil EMI Legislation." No significant change was reported in the case of the City of Philadelphia Ordinance #10-817. The state of Pennsylvania is considering a bill almost identical to the Philadelphia ordinance. Steve reported that at a meeting held on April 29, 1968, with the City of Philadelphia Police Department Representatives, he did not have representation from EIA, and felt that this factor decreased the possibility of obtaining any remedial action on the Philadelphia ordinance in the near future. He requested that meetings in the future with Philadelphia Representatives include EIA representation.

Steve Garcia also reported on his contact with the State of Michigan with respect to activity of the 1968 session of the Michigan Legislature. It was felt that the manner in which the State of Michigan approached "Civil EMI Legislation," was exemplary and to be recommended to other local authorities as guidelines.

Effort continues to obtain copies of other legislation at state and local levels for study and report to G-46.

NO. 7 NOVEMBER 1968

SPECIAL REPORT -- Attenuation of Electromagnetic Fields Using Wrought Iron.

Under the above title this report contains a detailed account of the results obtained from tests performed on extended range shielded enclosures using wrought iron. To quote in part:

"Applicable Documents - The following specification was applied to govern tests performed in High Impedance Field and Plane Wave frequency ranges: MIL-STD-285 dated 25, June 1956 - 'Attenuation Measurements for Enclosures Electromagnetic Shielding for Electronic Test Purposes; method of.' This document was not employed during tests performed in the low impedance, magnetic field realm since to do so would have invalidated all test results. This circumstance results from the fact that the techniques specified therein will cause an erroneous test reference to be established. Specified techniques of calibrating the source signal field, in the absence of the shield to be evaluated, yields a field of different magnitude when the shield is introduced. Thus, shielding measurements made in accordance with these procedures are erroneous."

Copies are available from the A. M. Byers Company, P.O. Box 269, Ambridge, Pennsylvania 15003.

IEEE Standards Index

Recently the current issue of IEEE Headquarter's Index on Standards Publications became available to the editor by virtue of having stopped at the IEEE booth at the Seattle EMC Symposium in July, 1968. The publication date is June 1967. In addition to listing many documents published by the IRE/AIEE of interest to the EMC Engineer, a reference sheet is included cross-referencing AIEE documents to IEEE number. A reading of this index may possible wet the appetite of some of us for many of the EMC related publications.

MIL-D-18300F(AS), 1 January 1967: Design Data Requirements for Avionic Equipment.

This specification has been approved by the Naval Air Systems Command, Department of the Navy. Of interest to the EMC Engineer is paragraph 3.18, "Frequency Allocation and Spectrum Signature Data

The contractor shall provide data in accordance with MIL-STD-449 and Naval Air Systems Command Requirement WR-29 for use by the Procuring Activity in obtaining a military frequency allocation for the equipment and for establishing the compatibility of the equipment through its spectrum signature. Submission of frequency allocation data for the Procuring Activity's use does not relieve the contractor or any responsibility for obtaining a Federal Communications license to operate the equipment radiating electromagnetic energy."

MIL-STD-460 Series EMC Specifications.

As we all know the above specifications are gradually becoming the "bible" for we folks in the EMC area. The following items are of current interest to all EMC engineers, more will be published as they develop or are brought to the attention of the editor.

10uFD Condenser

The SAE specification for this feed-thru capacitor called for by MIL-STD-461 series of specifications has been finalized, and is in the printing process. The document is identified as SAE-ARP-936 with the title of "Capacitor, 10 uFD For EMI Measurements", and should be available by the time this newsletter is delivered, from the Society of Automotive Engineers, 485 Lexington Avenue, New York, N.Y. 10017.

Cont'd

Bi-Conical Antenna

Paragraph 2.1 of MIL-STD-461 calls for a Bi-Conical Antenna for use in EMI/RFI measurements from 20-200MHz, as described in drawing ES-F-201286. Your editor is in possession of Issue B (4, Jan. '68) of the drawing. Responsible government agency for the drawing is USAECOM at Fort Monmouth.

Recently the following companies have placed on the market antennas advertised as meeting the above requirements:

Honeywell, Inc., Model 7825
Filtron, Model No. M-B-100
Empire: No model number available.

The editor is a member of several committees which have a technical interest in the 461 Series specifications, and which are following up numerous technical questions which publication of the specifications have generated. Comments on the specifications are solicited by the editor.

Steven Garcia
Philco-Ford Corp.
4700 Wissahickon Ave.
Philadelphia, Pa. 19144



RADIATION EFFECTS

EMC and Radiation Hazards

A three page article with the above title appeared in the November 1968 issue of ELECTRO-TECHNOLOGY. It was written by Henry M. Hoffart, EMC consulting engineer, Missile Space Division, General Electric Co. Several paragraphs are excerpted as follows:

"With the present emphasis on safety it is necessary for the EMI control engineer to become familiar with the increasing knowledge about RF effects on humans and other living matter. With the wider use of the frequency spectrum and the higher radiating powers of communication and radar transmitters, the EMI control engineer will be required to add control of radiation hazards to his normal activities.

"In general, the effects of electromagnetic radiation on living tissue have been thought to be primarily thermal. Although the eyes and testes are the most vulnerable parts of the human body, other parts which can be effected include the brain, nerves, skin, and muscles. The effects will vary, depending on the frequency and the intensity of the incident energy. The thermal effects of RF radiation can range from mild heating of the skin or organs to fatal damage.

"Radio frequency radiation incident on a body may be reflected, absorbed, or passed through. The sensory elements of the body are located primarily in the skin tissues. Thus, frequencies below 1000 MHz are considered extremely hazardous from a thermal standpoint because the presence of radiation will not be detected by the surface sensory system. The energy absorbed in body tissues may be as high as 40% of the incident energy arriving at the body surface."

Consumer Electronics - Kitchen danger

A brief article with the above title appeared in the Electronics Review section of the September 30, 1968 issue of ELECTRONICS. Excerpts from this article are as follows:

"Congressional hearing on radiation safety have covered the broad range of potential hazards - from medical X-ray equipment to military radars. But color TV receivers - for obvious reasons - received most attention."

"Now, however, the National Center for Radiological Health is focusing on microwave ovens. The reason is that household use of these ovens is expected to rise from about 20,000 now to 40,000 by the end of next year and 1.8 million by the mid-70's. Prices of these ovens are rapidly tumbling, and some homebuilders are even installing them in kitchens as a sales lure.

The five domestic oven makers have cooperated with the center by offering samples for laboratory study. One major problem facing the center - as well as the manufacturers - is that there is no single nationally recognized standard for microwave exposure in the home. The Defense Department and NASA have standards but they've been criticized for being so much more liberal than those in some other nations, particularly the Soviet Union."

U. S. - U.S.S.R. Radiation-Hazards Data Differ

A half page article with the above title appeared in the November 24, 1968 issue of MICROWAVES. The first two paragraphs are abstracted as follows:

"Biological effects of microwave energy on humans may be more severe and extend over a broader frequency range than previously believed by U.S. experts, according to the 'Report on Microwave Radiation,' by Sen. Edward L. Bartlett (D-Ala). Sen. Bartlett, sponsoring and prime mover of the Radiation Control for Health and Safety Act of 1968, cited a review of such hazards made by Dr. Wellington Moore of the National Center for Radiological Health, Rockville, Md., indicating the 'cataracts, corneal opacities, degeneration of the testicles, and hemorrhagic effects can be produced by exposure to microwaves.' Dr. Moore related that the human eye is most susceptible to microwave damage in the frequency range of 3 GHz.

"Dr. Moore also cited Soviet research reports indicating an even broader array of physiological damage related to microwave exposure including serious effects on the human nervous system, various glands, and the bloodstream. Sen. Bartlett noted that U.S. experts have not confirmed these findings so far but should they do so, 'present U.S. standards for exposure might have to be tightened,' he declared."

Did you know that - ???

- Omnidirectional electromagnetic background radiation from an unknown source in space has been observed at a frequency of approximately 300 GHz.
- When a chicken is exposed to irradiation of approximately 10.8 GHz, it may cause his legs and wings to extend.
- Exposure to 50 MHz radiation may increase the threshold for pain.
- The growth of Gladiola may be increased by 200% when exposed to irradiation of approximately 20MHz.
- Radiation of approximately 20 MHz may be lethal to some bacteria cells.
- Radiation of approximately 29 MHz has been observed to kill bugs in bread.
- Radiation from approximately 420 to 560 MHz may affect the human nervous system.
- Pearl chain reaction in bacteria has been observed due to irradiation at approximately 370 MHz.
- Body protein may coagulate when exposed to irradiation of approximately 36 Hz.
- Lesions have been produced in the brain of a rat when exposed to irradiation of approximately 1.7GHz.

DESIGN & ANALYSIS

Flat Cable and Flexible Printed Circuitry

An article written by James A. Lipple, Contributing editor, with the above title appeared in the October 1968 issue of EEE. Two paragraphs of interest are excerpted as follows:

"Terminating flexible printed circuits has been less of a problem because the conductors are etched, the pattern can be spaced and solder pads included to facilitate connection to cylindrical connectors headers, sockets, etc. Conductors in an etched system can be twisted and turned for easy connection. Eyelets and pins can be added to flexible printed circuits too.

"For rf signal transmission applications, the user can specify capacitance to ground and impedance to control velocity propagation and cross talk. Shield material can be solid, perforated foils or wire mesh of various thicknesses. The shielding material can be placed on one or both sides of the cable to provide both electrostatic shielding and heat sinking. Metal foil shields are preferred over wire mesh for heavy flexing applications. Connections to the shielding may be made, Ed Nizoi, manufacturing manager of Flexotek points out, by positioning a ground conductor against the shield during lamination and then periodically welding the conductor to the shield."

Shift Frequency Automatically without Transients

A two page Design Idea written by Bob Koepfer, Senior Editor, with the above title, appeared in the November 11, 1968 issue of EDN. The first two paragraphs are abstracted as follows:

"A new design combines the attributes of both manual frequency selection and automatic sweep methods with digital techniques to control the discharge rate of an oscillator's frequency-determining capacitor. The digital logic also insures that a definite number of cycles (at low frequencies) or a definite time period (at higher frequencies) has elapsed before shifting to a new frequency. With this method sufficient look time is guaranteed for any frequency and the frequency is constant until shifted.

"Heart of the new system is a constant-amplitude triangular oscillator circuit and its associated frequency-selecting circuitry. Predetermined current flow in the emitted legs of the triangular oscillator, controlling its frequency. Each of the four-step groups is controlled by frequency selection circuit as shown. The table in Fig. 1 indicates the three frequencies available with the A selection circuitry. Similar circuitry selects the B, C and D frequencies. The 1, 2, 5 nominal frequency ratio was chosen so that each frequency can be adjusted to overlap the succeeding frequency for total coverage."

Extra-transistor provides noise immunity for monostable multivibrator

A half page article with the above title appeared in the October 1968 issue of EEE. Written by Merle Converse, Southwest Research Institute, San Antonio, Texas, the article includes a schematic diagram. Paragraphs of interest are excerpted as follows:

"The circuit is a conventional one-shot multivibrator with some added components. These components (Q_2 , R_2 , and R_4) eliminate one of the major disadvantages of the conventional circuit.

"Addition of Q_2 gives an added bonus. Because of the current gain of Q_2 , the maximum value of R_5 , to allow complete saturation of Q_1 , is much larger. Thus the output-pulse width can be much greater, with a given practical capacitor. Pulse width is approximately equal to $0.7 \times R_5 \times C_2$. With the values shown, pulse width is about 3 seconds."

Delayed Feedback improves ECL speed and noise immunity

A one-page Idea for Design with the above title appeared in the November 21, 1968, issue of ELECTRONIC DESIGN. Excerpts from the article are as follows:

"Emitter-coupled logic (ECL), with emitter-follower level shifters at the outputs, is one of the most common high-speed integrated logic circuits. It can be made to operate even faster or with greater noise immunity by the addition of a simple delayed feedback loop.

"The in-phase signal fed back to the reference terminal from the OR output effectively makes the threshold voltage of the circuit smaller, thus decreasing the propagation delay time. If high noise immunity is desired, delayed positive feedback, caused by an out-of-phase signal applied to the reference terminal from the NOR-output, can be used. However, this will also increase the propagation delay time slightly, because of the increased threshold voltage."

Designing with Compatible IC Logic Families

An eight-page article with the above title appeared in the November 1968 issue of EEE. Written by Wm. Slaymaker, Product Manager for Signetics, it is the third in a series of articles devoted to choosing digital logic IC's. This article provides an excellent material for designing EMC into your equipment. Subsection titles include Noise immunity, threshold voltage, Noise Margin Coupled Noise and "Clean" systems. The following paragraph is excerpted from the sub-section of Noise Margin.

"There are two basic aspects of ac noise immunity which should be considered. First, there is the ability of a logic circuit to withstand noise injected on its input, as shown in Figure 12. The basis consideration in this test is to bias the input of the gate under test to a nominal operating level, then superimpose ac noise at the input (see Figure 12). Failure criterion is the causing of a memory element to receive and store erroneous information. The amplitude and duration of the "noise" pulse required to cause a change of state in the memory are then plotted as indicated in Figure 13A. It is readily proved, and intuitively obvious, that the faster the circuit under test, the smaller the amplitude and shorter the duration of noise pulse required to cause the memory to change state. The curves in Figure 13B show the ability of various available logic forms to maintain logic integrity in the face of such noise. Note that for transient noise signals approaching 25 ns to 30 ns in duration, this ac noise margin approaches the dc noise margin of the basic logic form. The slower logic forms with high "O" dc noise margins must be considered to have an advantage in this type of noise environment

Simple Solid-State Noise Filter for Industrial Logic Systems

A half page article with the above title appeared in the October 1968 issue of EEE. Written by Peter A. Lajoie, Allegheny Ludham Steel, Brackenridge, Pa., the article includes a brief chart and schematic diagram. The first three paragraphs are extracted as follows:

"This circuit provides a useful interface between a noisy outside world and the necessary quiet of timing and logic circuits associated with electromechanical controls.

"Even with 24 volt logic circuits, noise is often a serious problem in situations where control lines may be extremely long, and where there may be considerable 60-hertz radiation - for example, with installations such as SCR mill drives. Buffer relays are often used

Cont'd

for logic interface in high-noise environments; but these are slow expensive and bulky. Passive filter networks provide another possible answer; but these are also expensive, they cannot filter out dc level shifts, and they adversely affect the rise and fall times of the logic signals.

"Though the circuit described here is relatively crude, it is simple and effective. It has none of the disadvantages associated with relays or passive filters. It is a three-terminal active network; and needs no external power other than the input logic."

Converting to d-c Solves Interference Problems

A two-page article with the above title appeared in the November 1968 issue of ELECTRONIC PRODUCTS. It was written by Jerome Deis, Designer, Automation and Measurement Div., The Bendix Corp., in Dayton, Ohio. Paragraphs of interest are excerpted from the article as follows:

"An early design problem confronting us was that a-c wiring to the solenoid-type locking devices for the x-y axes of the measuring machine ran adjacent to low-level signal wiring going to the readouts. Noise introduced by this a-c current could adversely affect the low-level signal, interfering with the accurate display of the high-resolution readout information.

"The solution was to incorporate an a-c to d-c power supply (24 Vdc, 1 amp output), and use d-c powered solenoids in the circuit."



MISCELLANY

Definitions for Transients

The following definitions have been extracted from proposed MIL-STD-1281 (EL), "Internal Transient Control for Solid State Power Supplies", dated 10 October 1968.

"**Transients.** A transient is the changing condition of a characteristic. These usually go beyond the steady-state limits and return to the steady-state limits within the specified time period.

"**Surges.** A surge is a variation from the controlled steady-state level of a characteristic, resulting from the inherent regulation of an electric power supply system and remedial action by the regulator.

"**Spikes.** A spike is a variation from the surge level or from the controlled steady-state level of a characteristic which reaches its greatest amplitude in an extremely short time. It results from very high frequency currents of complex wave form when loads are switched. A spike generally lasts for less than 50 microseconds and tapers off to the surge level or to the steady-state limits."

EMC Science Center Formed

An EMC Science Center, 1616 Victory Blvd., Glendale, California 91201, has recently been formed. Through its long range plans, its goal is to contribute toward the ultimate solution to some of the problems that result from a lack of technical service in our EMC discipline.

The EMC SCIENCE CENTER has many outstanding plans and programs progressively timed for future full scale implementation. Currently some of these programs, such as an EMC information center and classroom sessions for varied personnel from salesmen and reps to the higher technically oriented engineers, are in limited operation. The EMC SCIENCE CENTER provides a technical community of firms that are considered by some to be outstanding in their services and technical abilities in the ever expanding field of EMI Control.

A good analogy of the EMC SCIENCE CENTER is the doctor's professional building where a single phone call can get you an osteopath, pediatrician, optometrist, or a general practitioner.

Presently, the Center has in residence:

- Design Service Company (DESCO -Design and Drafting Service
- Electromagnetic Products Company (EMPCO -representing EM products lines)
- Electromagnetic Sciences Company (EMSCO -EMC, Systems engineering services)
- EMCKON Marketing Consultants (EMCKON-EMC Marketing services)
- Industrial Testing Company (INTEST -Environmental and EMI testing)

In addition, the EMC SCIENCE CENTER is the headquarters for:

- SAE AE -4 EMC Committee
- The 1970 IEEE International EMC Symposium Chairman
- The 1970 IEEE International EMC Symposium Publicity Chair

Ace Engineering acquired by METEX Corporation

It has been announced that METEX Corporation has recently acquired Ace Engineering. Ace was one of the pioneers in the construction of enclosures to shield against RF interference. This was initially done for the Navy in the early 1940's. Due to the similarity between the Danex product line of METEX (modular raceway systems for red-black communications) and Ace shielded enclosures, the Danex operation has been moved from the Edison location to Huntington Valley, Pa., where Ace maintains their manufacturing facilities and office space. Mr. Charles Borden was made President of Ace Engineering and Mr. Willard Staats, who is Vice President of Danex has picked up the added responsibility of being Sales Manager of Ace. Metex has also acquired Metal Textile Company, a Division of General Cable Corporation, for the manufacture and sales of all their industrial products.



NEW PRODUCTS.

BROCHURES & PUBLICATIONS

DASA Electromagnetic Pulse Handbook Published

The General Electric Company TEMPO, 816 State Street, Santa Barbara, California 92103, under contract DASA 01-68-C-0007, has published an Electromagnetic Pulse Handbook for the Defense Atomic Support Agency. Its complete title is:

DASA
EMP (Electromagnetic Pulse)
Handbook
September 1968

This has a DASA Number 2114-1. Each transmittal of the document outside the agencies of the U. S. Government must have prior approval of the Director, Defense Atomic Support Agency, Washington, D.C. 20305.

Cont'd

BROCHURE

Static Electricity Can Kill

A brochure with the above title has been published by Custom Materials, Inc., Alpha Industrial Park, Chelmsford, Mass. 01824. The eight-page brochure describes many interesting conductive items, such as boots, gloves, wrist straps, heel protectors, dust pans, flexible hose, containers and instruments to detect, monitor and eliminate static electricity. Free copies of the brochure are available by writing to Custom Materials.



Career Guidance Brochure from IEEE

IEEE has published a career guidance brochure entitled "Your Challenge in Electrical Engineering" for high school students who may be interested in electrical engineering as a career. They are available in single copies (25¢ each) or in bulk (20¢ in quantities over 100). For copies of this brochure, write to: Mrs. Elizabeth Escala, IEEE Headquarters, 345 East 47th Street, New York, New York 10017.



NEW PRODUCTS

Anti-static Aerosol Nulls Static Charges

An advertisement with the above title appeared in the October 24, 1968 issue of ELECTRONIC DESIGN. The ad reads as follows:

"Sprayon 610 antistatic spray quickly neutralizes electricity generated by friction or atmospheric conditions. Used sparingly the new aerosol gives immediate relief from unwanted static. It dries clear instantly and can be used on anything. Its effectiveness has already been proved on metals, plastic, paper, cellophane, cloth and thread."

Additional information on the aerosol is available from Sprayon Products, Inc., 26300 Fargo Ave., Bedford Heights, Ohio.



Conductive Calk and Seal as RFI Shield

Emerson and Cuming, Inc., has announced Eccoshield VY-G which is a single component electrically conductive calk and seal designed to provide additional electromagnetic shielding to a shielded room, black box, electronic component, or transmission line.

Proper calking with Eccoshield VY-G yields insertion losses greater than 100 dB over the entire radio frequency range and through the microwave band, according to the manufacturer. Volume resistivity is less than 0.001 ohm-cm. Other features include high tack, non-hardening characteristic with age, and corrosion prevention at seams where applied.

Eccoshield VY-G can be easily applied with a plastic syringe, calking gun, or spatula, but surface should be prepared in advance by removing all corrosion and dirt. For additional information, contact Eino J. Luoma, Emerson and Cuming, Inc., Microwave Products Division, Canton, Mass. 02021.



Subminiature EMI Filters

Improved subminiature EMI filters and feed-through capacitors for use on d-c circuits in aerospace and ground mobile equipment have been introduced by the Filter Division of the Sprague Electric Co.

The current rating has been increased from 5 amperes to 7 amperes on feed-through capacitors and from .25 amperes to .3 amperes on L and Pi circuits in the improved Sprague series JX2000 EMI Filters. In addition, the voltage rating on all units previously rated at 50VDC at 85C and 30 VDC at 125C has been increased to 100VDC and 50VDC respectively.

Improved ceramic dielectric capacitor elements, exhibit a poor temperature result in a negligible effect of temperature change on insertion loss characteristics over the range of -55C to plus 125C. A curve illustrating this is given in Engineering Bulletin No. 8130A, which gives complete details on the improved Series JX2000 EMI Filters.

Copies of the bulletin are available upon letterhead request to the Technical Literature Service, Sprague Electric Co., Marshall St., North Adams, Mass. 01247.



Broadband coax switch stops spurious modes

A short column with the above title, describing the Hewlett-Packard model 8761 coaxial switch, appeared in the October 24, 1968, issue of ELECTRONIC DESIGN. The first two paragraphs are extracted as follows:

"Adding a new performance dimension to the realm of microwave components, an spdt coaxial switch operates without spurious modes over the frequency range of dc to 17 GHz. This electromechanical device eliminates the frequency-limiting problem of moding, a narrow-band phenomenon that can seriously degrade insertion loss, isolation, and VSWR.

"Model 8761A/B has an rf structure consisting of a metal blade precisely suspended between two ground planes. The blade pivots at one port and is switched by solenoid-driven plastic fingers to one of the other two ports. Including settling time, switching speed is less than 50 ms."



Low Interference Power Controllers

A new line of electromagnetic interference-free power controllers which utilize the zero crossover switching principle is being introduced by OMNIONICS. The Model SPC-300-1 is a self contained panel-mounted controller capable of dimming 1,000 watts of 400Hz lighting, and is available in both airborne and commercial configurations for either 400 or 60Hz operation.

The Model CSO-300-1 is an SCR trigger generator which can be panel-mounted on 1.5 inch centers, and can control remote, high power SCR assemblies. Both devices allow precise positioning of SCR triggering about the zero crossover point, and, therefore, may be used as a standard to determine the absolute minimum interference levels attainable within the constraints of given load impedances and SCR holding current requirements. For further information write or call OMNIONICS vercor, 1111 Mt. View Dr., N.E., Marietta, Ga. 30060. (404) 427-8259.



MEMBERSHIP APPLICATION

IEEE ELECTROMAGNETIC COMPATIBILITY GROUP
Send to: Headquarters, 345 East 47th Street, New York, N.Y. 10017

NAME _____ IEEE MEMBERSHIP NO. _____

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FIELD OF INTEREST _____

☐ I am a _____ member of IEEE and hereby apply for membership
(Grade)
in G-EMC.

☐ My fee* is enclosed.

☐ I am interested in joining IEEE and the G-EMC. Please send information.

*Fee: \$4.00 for IEEE members of all grades except Student.
Student fee is \$2.00.

Pay one-half annual fee for Group payments received
in IEEE during the period April 1 thru September 30.

Out of the Past

Prior to editing the IEEE NEWSLETTER, Rex Daniels published an independent newsletter which he called Quasies and Peaks. The following items have been extracted from the July - August 1955 issue.

FCC Issues Notice of Proposed Rule Making, Part 18:

The Federal Communications Commission released, July 8, 1955, a Notice of Proposed Rule Making, Docket No. 11442. It is an Amendment of Part 18 to establish a type acceptance procedure for industrial heating equipment and in general to reorganize the regulations applicable to industrial heating equipment.

New Use for Shielded Rooms:

An article "How to Stop Wiretapping" in the June 24, 1955 issue of Collier's Magazine discusses the increasing use of shielded rooms - especially in sensitive government agencies - to prevent conversations from either being heard or recorded. The article tells how such a room should be constructed to outwit the various ingenious methods, now being used, to listen in and obtain information.

ASA Preparing Definitions for Noise Terminology:

The ASA Sectional Committee on Radio-Electrical Coordination, C63, J. J. Kark, Secretary (of NEMA), has sent out to its members a "Proposed ASA Definitions for Noise Terminology" which, when accepted, will be adopted as American Standards. These definitions will not be generally available until they have reached their final form.

BuDocks Technical Digest Carries Article on Interference:

The June 1955 issue of BuDocks Technical Digest carries an article on Electromagnetic Interference by S. A. Bennett, BuDocks Consultant. In this article, Mr. Bennett gives graphs to show the different types of interference waves and mathematical analyses.

Who's Who in Interference:

The Research Laboratory of Colorado, Inc., P.O. Box 307, Newton, Ohio, Phone: LOcust 1-6463, are presently engaged in research as applied to interference, and are working on a suppressor project. Perry Yaney is the electrical engineer.



IEEE

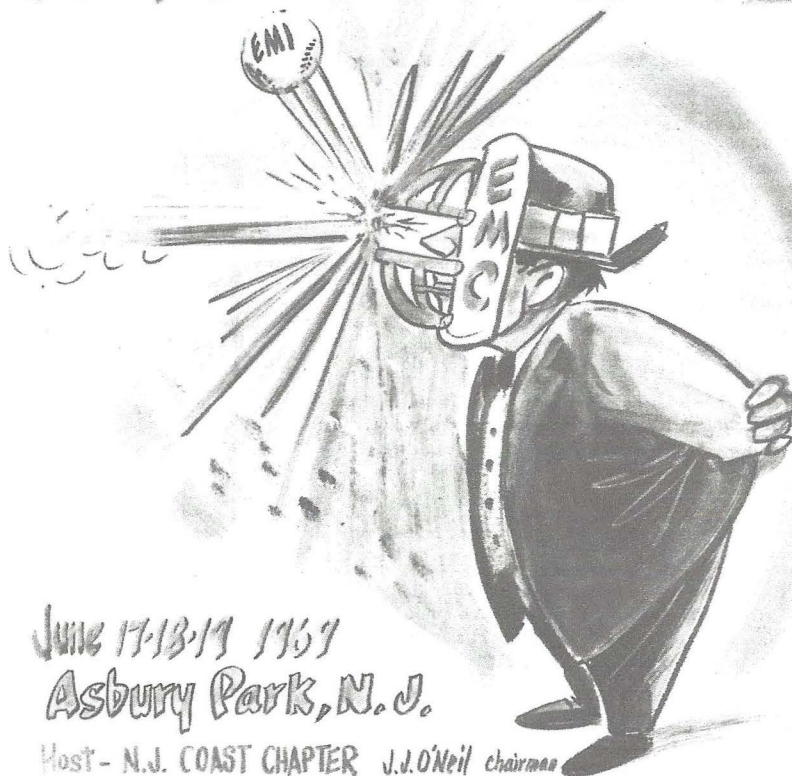
ELECTROMAGNETIC COMPATIBILITY GROUP

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You are invited -- IEEE 1969 INTERNATIONAL SYMPOSIUM on EMC



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"NOW IS THE TIME TO START MAKING YOUR PLANS TO ATTEND."

Acknowledgements

The editor would like to thank the following individuals for their contribution to this issue of the Newsletter.

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METEX Corporation.
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Re-entry Systems, General Electric Co.
The Potter Co.
Consultant
EMC Science Center

